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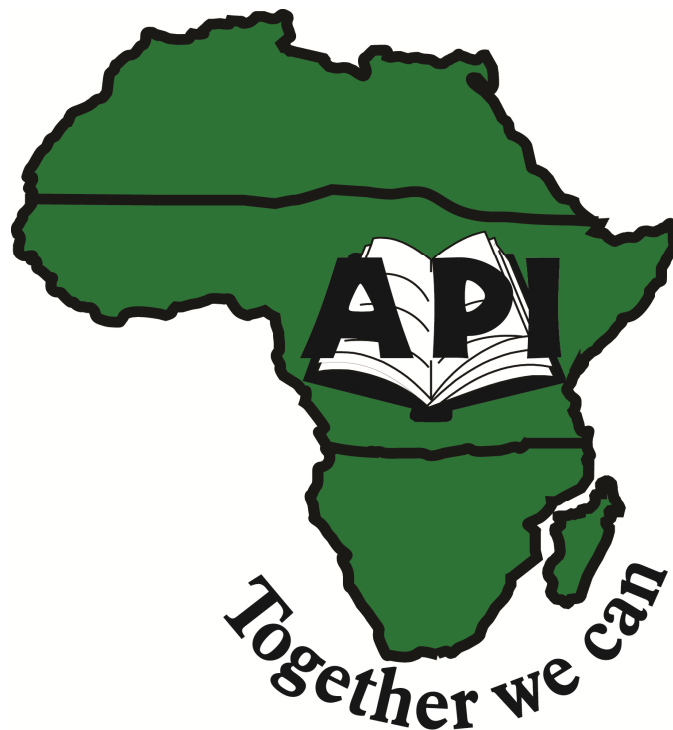

SOCIAL WORK AND SOCIAL ADMINISTRATION TERM THREE STUDENT'S MODULES
(SWSA)
Contents

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Course Name	: Demography

Course Description

The Course details the history of demography, demography transition, the science of population, meaning of bio-demography, demographic analysis, population composition, understanding political demography, population genetics, demarcation of
population geography, concept of ageing in demography, analysis of biological theories, what death means and prevention of premature deaths among populations, methods of birth rates, measuring total fertility rates, leadership developments amongst
different populations. The Course also is entitled to discuss the holistic meaning of Social Welfare Services/Programs, history of Social Welfare Services, different systems
through which social welfare programs are channeled to reach the appropriate population, exploring social assistance programs, social service organizations & welfare
reforms, what service providers know about welfare reforms, corporate welfare, social market economy, case studies of child welfare services.

Course Objectives

· To help students acquire skills in handling issues related to population needs and problems.
· To introduce students them to demographic knowledge which is composed of understanding the trends in birth rates, fertility rates and death rates of several populations in different countries.
· To help students get exposed to various biological theories that is relevant in understanding the growth and development of human beings.
· To increase student's capacities in recognizing challenges in computing demographic statistics.
· To demonstrate critical issues in management of welfare services by responsible sub units of governments.
· To help students acquire skills in differentiating between welfare services and non- welfare services.
· To increase the students' power of analysis in criticizing the government where appropriate to deliver services to its citizens.
· To definitely equip students with knowledge of designing relevant policies in regard to transparent and accountable provision of welfare services to the needy and marginalized groups of people in most developing countries.

Course Content

Introduction

· Definition of Demography
· Methods of data collections in Demography
· Population pyramid
· History of Demography
· Demography Transition

- Science of Population
- Human Migrations
- Modern migrations and Industrialization
- Contemporary migration
- Types of Migrations

Bio-demography
- Definition of Bio-demography
- Demographic analysis
- Population change
- Standardization of population numbers

Population Composition
- Definition of Population Composition
- Demographic analysis in institutions and organization
- Demographic economics

Political demography
- Meaning of Political demography
- Political demography and evolution
- Population and power: Ethnic, national and civilization conflict
- Other branches of political demography

Population genetics
- Meaning of Population genetics
- World human population
- Predicted growth and decline
- Human population control

Population geography
- Meaning of Population geography
- Population statistics
- Population estimates and projections
- Types of replacement migration

Ageing
- Meaning of Aging
- Distinction between Universal aging and Probabilistic aging
- How aging is calculated
- Dividing the Lifespan
- Impact of aging on cognitive aspects
- Coping and well-being
- Self-rated health
- Active engagement with life

Biological Theories
- Telomere theory
- Wear-and-Tear theory
- Somatic Mutation theory
- Error Accumulation theory
- Evolutionary theories
- Accumulative-Waste theory
- Autoimmune theory
- Ageing-Clock theory
- Free-Radical theory

Death

- Definition of Death
- Signs and symptoms of death
- Legal death
- Misdiagnosed: Premature burial
- Causes of Death

Prevention
- Life Extension
- Society and culture
- Natural selection
- Extinction

Birth Rate
- Meaning of birth rate
- Methods of measuring birthrate
- Factors affecting birth rate
- Birthrate and the Demographic Transition Model

Total Fertility Rate
- Definition of Total Fertility rate
- Replacement rates
- Infant Mortality
- Infant Mortality throughout history
- Influence of disabilities
- Calculating life expectancies

Team Performance Management
- Meaning of Team Performance Management
- Performance Improvement
- Levels of Performance Improvement
- Personal development
- The "Personal development industry"

Personal Development in psychology
- Self Confidence as a powerful predictor of success
- Personal development in higher education
- Personal development in the workplace

Leadership Development
- Definition of Leadership Development
- Variables of Leadership Development
- Design of the development program
- Developing Leadership at a collective Level
- Defining Collaborative leadership
- Key lessons for leaders
- Applications of collaborative leadership
- Executive development
- Basic Interpersonal Communicative Skills

Mode of delivery, Face to face lectures

Assessment

Coursework 40%

Exams 60%

Total Mark 100%

Demography is the <u>statistical study</u> of all <u>populations</u>. It can be a very general science that can be applied to any kind of dynamic population, that is, one that changes over time or space (see <u>population dynamics</u>). It encompasses the study of the size, structure and distribution of populations, and spatial and/or temporal changes in them in response to <u>birth</u>, <u>migration</u>, <u>aging</u> and <u>death</u>.

<u>Demographic analysis</u> can be applied to whole societies or to groups defined by criteria such as <u>education</u>, <u>nationality</u>, <u>religion</u> and <u>ethnicity</u>. In academia,demography is often regarded as a branch of either <u>anthropology</u>, <u>economics</u>, or <u>sociology</u>. Formal demography limits its object of study to the measurement of populations processes, while the more broad field of social demography population studies also analyze the relationships between economic, social, cultural and biological processes influencing a population.

The term <u>demographics</u> is often used erroneously for demography, but refers rather to selected population characteristics as used in government, <u>marketing</u> or <u>opinion research</u>, or the <u>demographic profiles</u> used in such research.

Data and methods
There are two methods of data collection: direct and indirect. Direct data come from vital statistics registries that track all births and deaths as well as certain changes in legal status such as marriage, divorce, and migration (registration of place of residence). In developed countries with good registration systems (such as the United States and much of Europe), registry statistics are the best method for estimating the number of births and deaths.

The <u>census</u> is the other common direct method of collecting demographic data. A census is usually conducted by a national government and attempts to enumerate every person in a country. However, in contrast to vital statistics data, which are typically collected continuously and summarized on an annual basis, censuses typically occur only every 10 years or so, and thus are not usually the best source of data on births and deaths. Analyses are conducted after a census to estimate how much over or undercounting took place.

Censuses do more than just count people. They typically collect information about families or households, as well as about such individual characteristics as age, sex, marital status, literacy/education, employment status and occupation, and geographical location. They may also collect data on migration (or place of birth or of previous residence), language, religion, nationality (or ethnicity or race), and citizenship. In countries in which the vital registration system may be incomplete, the censuses are also used as a direct source of information about fertility and mortality; for example the censuses of the <u>People's Republic of China</u> gather information on births and deaths that occurred in the 18 months immediately preceding the census.

Indirect methods of collecting data are required in countries where full data are not available, such as is the case in much of the developing world. One of these

techniques is the sister method, where survey researchers ask women how many of their sisters have died or had children and at what age. With these surveys, researchers can then indirectly estimate birth or death rates for the entire population. Other indirect methods include asking people about siblings, parents, and children.

There are a variety of demographic methods for modeling population processes. They include models of mortality (including the life table, Gompertz models, hazards models, Cox proportional hazards models, multiple decrement life tables, Brass relational logits), fertility (Hernes model, Coale-Trussell models, parity progression ratios), marriage (Singulate Mean at Marriage, Page model), disability (Sullivan's method, multistate life tables), population projections (Lee Carter, the Leslie Matrix), and population momentum (Keyfitz).

Important concepts
A population pyramid is an age/sex distribution diagram.
Important concepts in demography include:
The crude birth rate, the annual number of live births per 1000 people.
The general fertility rate, the annual number of live births per 1000 women of childbearing age (often taken to be from 15 to 49 years old, but sometimes from 15 to 44).
age-specific fertility rates, the annual number of live births per 1000 women in particular age groups (usually age 15-19, 20-24 etc.)
The crude death rate, the annual number of deaths per 1000 people.
The infant mortality rate, the annual number of deaths of children less than 1 year old per 1000 live births.
The expectation of life (or life expectancy), the number of years which an individual at a given age could expect to live at present mortality levels.
The total fertility rate, the number of live births per woman completing her reproductive life, if her childbearing at each age reflected current age-specific fertility rates.
The replacement level fertility, the average number of children a woman must have in order to replace herself with a daughter in the next generation. For example the replacement level fertility in the US is 2.11. This means that 100 women will bear 211 children, 103 of which will be females. About 3% of the alive female infants are expected to decease before they bear children, thus producing 100 women in the next generation.
The gross reproduction rate, the number of daughters who would be born to a woman completing her reproductive life at current age-specific fertility rates.
The net reproduction ratio is the expected number of daughters, per newborn prospective mother, who may or may not survive to and through the ages of childbearing.
A stable population, one that has had constant crude birth and death rates for such long time that the percentage of people in every age class remains constant, or equivalently, the population pyramid has an unchanging structure.[3]
A stationary population, one that is both stable and unchanging in size (the difference between crude birth rate and crude death rate is zero).
A stable population does not necessarily remain fixed in size, it can be expanding or shrinking.[5]

Note that the crude death rate as defined above and applied to a whole population can give a misleading impression. For example, the number of deaths per 1000 people can be higher for developed nations than in less-developed countries, despite standards of health being better in developed countries. This is because developed countries have proportionally more older people, who are more likely to die in a given year, so that the overall mortality rate can be higher even if the mortality rate at any given age is lower. A more complete picture of mortality is given by a life table which summarises mortality separately at each age. A life table is necessary to give a good estimate of life expectancy.

The fertility rates can also give a misleading impression that a population is growing faster than it in fact is, because measurement of fertility rates only involves the reproductive rate of women, and does not adjust for the sex ratio. For example, if a population has a total fertility rate of 4.0 but the sex ratio is 66/34 (twice as many men as women), this population is actually growing at a slower natural increase rate than would a population having a fertility rate of 3.0 and a sex ratio of 50/50. This distortion is greatest in India and Myanmar, and is present in China as well.

Basic equation

Suppose that a country (or other entity) contains $Population_t$ persons at time t. What is the size of the population at time t + 1 ?

$Population_{t + 1} = Population_t + Naturalincrease_t + Netmigration_t$

Natural increase from time t to t + 1:

$Naturalincrease_t = Births_t - Deaths_t$

Net migration from time t to t + 1:

$Netmigration_t = Immigration_t - Emigration_t$

This basic equation can also be applied to subpopulations. For example, the population size of ethnic groups or nationalities within a given society or country is subject to the same sources of change. However, when dealing with ethnic groups, "net migration" might have to be subdivided into physical migration and ethnic reidentification (assimilation). Individuals who change their ethnic self-labels or whose ethnic classification in government statistics changes over time may be thought of as migrating or moving from one population subcategory to another.

More generally, while the basic demographic equation holds true by definition, in practice the recording and counting of events (births, deaths, immigration, emigration) and the enumeration of the total population size are subject to error. So allowance needs to be made for error in the underlying statistics when any accounting of population size or change is made.

History

Ibn Khaldun (1332-1406) is regarded as the "father of demography" for his economic analysis of social organization which produced the first scientific and theoretical work on population, development, and group dynamics. His findings have inspired a recent wave of mathematical modeling of sociodemographic dynamics. His Muqaddimah also laid the groundwork for his observation of the role of state, communication and propaganda in history.

The Natural and Political Observations ... upon the Bills of Mortality (1662) of John Graunt contains a primitive form of life table. Mathematicians, such as Edmond Halley, developed the life table as the basis for life insurance mathematics. Richard Price was credited with the first textbook on life contingencies published in 1771,

followed later by Augustus de Morgan, 'On the Application of Probabilities to Life Contingencies', (1838).

At the end of the 18th century, Thomas Malthus concluded that, if unchecked, populations would be subject to exponential growth. He feared that population growth would tend to outstrip growth in food production, leading to ever increasing famine and poverty (see Malthusian catastrophe); he is seen as the intellectual father of ideas of overpopulation and the limits to growth. Later more sophisticated and realistic models were presented by e.g. Benjamin Gompertz and Verhulst.

The period 1860-1910 can be characterized as a period of transition wherein demography emerged from statistics as a separate field of interest. This period included a panoply of international 'great demographers' like Adolphe Quételet (1796-1874), William Farr (1807-1883), Louis-Adolphe Bertillon (1821-1883) and his son Jacques (1851-1922), Joseph Körösi (1844-1906), Anders Nicolas Kaier (1838-1919), Richard Böckh (1824-1907), Wilhelm Lexis (1837-1914) and Luigi Bodio (1840-1920) contributed to the development of demography and to the toolkit of methods and techniques of demographic analysis.
World population from 500CE to 2150, based on UN 2004 projections (red, orange, green) and US Census Bureau historical estimates (black). Only the section in blue is from reliable counts, not estimates or projections.

Demographic transition
Contrary to Malthus' predictions and in line with his thoughts on moral restraint, natural population growth in most developed countries has diminished to close to zero, without being held in check by famine or lack of resources, as people in developed nations have shown a tendency to have fewer children. The fall in population growth has occurred despite large rises in life expectancy in these countries. This pattern of population growth, with slow (or no) growth in pre-industrial societies, followed by fast growth as the society develops and industrializes, followed by slow growth again as it becomes more affluent, is known as the demographic transition.
Similar trends are now becoming visible in ever more developing countries, so that far from spiraling out of control, world population growth is expected to slow markedly in this century, coming to an eventual standstill or even declining. The change is likely to be accompanied by major shifts in the proportion of world population in particular regions. The United Nations Population Division expects the absolute number of infants and toddlers in the world to begin to fall by 2015, and the number of children under 15 by 2025.

The UN "medium" projection shows world population reaching an approximate equilibrium at 9 billion by 2075. Working independently, demographers at the International Institute for Applied Systems Analysis in Austria expect world population to peak at 9 billion by 2070. Throughout the 21st century, the average age of the population is likely to continue to rise.

Science of population
Populations can change through three processes: fertility, mortality, and migration. Fertility involves the number of children that women have and is to be contrasted

with fecundity (a woman's childbearing potential). Mortality is the study of the causes, consequences, and measurement of processes affecting death to members of the population. Demographers most commonly study mortality using the Life Table, a statistical device which provides information about the mortality conditions (most notably the life expectancy) in the population. Migration refers to the movement of persons from an origin place to a destination place across some pre-defined, political boundary. Migration researchers do not designate movements 'migrations' unless they are somewhat permanent. Thus demographers do not consider tourists and travelers to be migrating. While demographers who study migration typically do so through census data on place of residence, indirect sources of data including tax forms and labor force surveys are also important. Demography is today widely taught in many universities across the world, attracting students with initial training in social sciences, statistics or health studies. Being at the crossroads of several disciplines such as geography, economics, sociology or epidemiology, demography offers tools to approach a large range of population issues by combining a more technical quantitative approach that represents the core of the discipline with many other methods borrowed from social or other sciences. Demographic research is conducted in universities, in research institutes as well as in statistical departments and in several international agencies. Population institutions are part of the Cicred (International Committee for Coordination of Demographic Research) network while most individual scientists engaged in demographic research are members of the International Union for the Scientific Study of Population or, in the United States, the Birth

A woman giving birth on a birth chair, circa 1515

Birth (calving in livestock and some other animals, whelping in carnivorousmammals) is the act or process of bearing or bringing forth offspring. The offspring is brought forth from the mother. Different forms of birth are oviparity, vivipary or ovovivipary.
Childbirth is the process at the end of a human pregnancy that results in a baby being born.
Natural childbirth is the technique of minimizing medical intervention, particularly anaesthetics, during childbirth.
Unassisted childbirth (UC) is birth without the aid of medical or professional birth attendants. Also known as Freebirth
Multiple birth is the birth of two (twins), three (triplets), four (quadruplets), etc., babies resulting from a single pregnancy.
Birth canal is the term used for the vagina during birth, as it is the route through which the infant passes during a vaginal birth.
Caesarean section or C-Section is surgical birth through the wall of the abdomen.
Birth pangs are the pains felt by the mother during labour, resulting from contractions of the uterus and pressure on nerves and organs.
Lotus Birth is the practice of leaving the umbilical cord uncut after birth so that the baby is left attached to its placenta until the cord naturally separates
Afterbirth is the birth of the placenta following the birth of the infant.
Birth control methods are devices, medications or behavior patterns to reduce the probability of pregnancy.

Placenta is the organ in most mammals, formed in her lining of the uterus by the union of the uterine mucous membrane with the membranes of the fetus, that provides for the nourishment of the fetus and the elimination of its waste products. Midwife is the term for a health care provider that provides at home health care for expecting mothers, delivers baby during birth, and provides postpartum care. Birth doula is the term for a labor assistant that provides emotional support, physical comfort measures, and other assistance to expecting mothers, partners, families, and baby before, during, and after childbirth. A postpartum doula provides support after birth, and specializes in postpartum care for mother and infant, infant attachment, and other newborn care. The term "doula" stems from the Greek "doulos," or "one who serves."
Newborn after typical hospital birth
Infertility treatments are devices, medications, or behavior patterns to increase the probability of pregnancy.
Premature birth is the birth of an infant before the full term of pregnancy.
Birth defect is a physical or mental abnormality present at the time of birth.
Stillbirth is the birth of a dead fetus or infant.
Birth trauma is a theory in Pre & Perinatal psychology and natural medicine that the baby experiences extreme pain during the birthing process and that this pain influences the child later in life.
VBAC is a Vaginal Birth after a Caesarean Birth.
Complications may cause a miscarriage or spontaneous abortion to occur.
Musculoskeletal Disorders. Pregnancy related Pelvic Girdle Pain is a significant musculoskeletal disorder that begins in pregnancy and for some women last for years.

Legal meanings
Birthday is a day to celebrate that the person has lived a certain number of years. It is an annual event based either on the anniversary of a person's date of birth, or on astrological birthtime calculations.
Birth certificate is a legal document describing details of a person's birth.
A nuclear family comprising the father, mother, brother or sister, is an institution where the members are related by birth.
In some countries a person is considered of illegitimate birth if the child is born of parents not legally married to each other.
Spiritual meanings
Mother and child reunion, immediately after birth
Astrology is based upon the belief that an individual's life is influenced by the geocentric positions of the Sun, Moon, and planets in the sky or below the horizon at the moment of birth; a natal chart is calculated using the exact time, date, and place of birth in order to try and interpret these cyclical influences on a person's life.
Virgin Birth of Jesus is the Christian doctrine that asserts that Jesus Christ was born to a virgin, and thus that his conception was carried out without an earthly father.
Born again, a term used primarily in ProtestantChristianity, is associated with salvation, conversion, and spiritual rebirth.
Rebirth is a belief that a person is born again after their death based on the karma of their previous births.
Metaphorical meanings

The term birth is used metaphorically to refer to a beginning, especially of a natural phenomenon, one that is impressive in its scope or complexity, or one that is viewed favorably.
Stellar evolution is the field of study that deals with the birth of stars and their life cycles.

Human migration
Net migration rates for 2008: positive (blue), negative (orange), stable (green), and no data (gray).
Human migration is movement (physical or psychological) by humans from one district to another, sometimes over long distances or in large groups. The movement of populations in modern times has continued under the form of both voluntary migration within one's region, country, or beyond, and involuntary migration (which includes the slave trade, trafficking in human beings and ethnic cleansing). People who migrate are called migrants, or, more specifically, emigrants, immigrants, or settlers, depending on historical setting, circumstances and perspective.
The pressures of human migrations, whether as outright conquest or by slow cultural infiltration and resettlement, have affected the grand epochs in history (e.g. the Decline of the Roman Empire); under the form of colonization, migration has transformed the world (e.g. the prehistoric and historic settlements of Australia and the Americas). Population genetics studied in traditionally settled modern populations have opened a window into the historical patterns of migrations, a technique pioneered by Luigi Luca Cavalli-Sforza. mt DNA-based chart of large human migrations. (Numbers are millennia before present) Forced migration (see population transfer) has been a means of social control under authoritarian regimes, yet free initiative migration is a powerful factor in social adjustment (e.g. the growth of urban populations).

In December 2003 The Global Commission on International Migration (GCIM) was launched with the support of Kofi Annan and several countries, with an independent 19-member Commission, threefold mandate and a finite life-span, ending December 2005. Its report, based on regional consultation meetings with stakeholders and scientific reports from leading international migration experts, was published and presented to UN Secretary-General Kofi Annan on 5 October 2005.
Different types of migration include:
Daily human commuting.[citation needed]
Seasonal human migration is mainly related to agriculture.
Permanent migration, for the purposes of permanent or long-term stays.

RUM
Rural to Urban, more common in developing countries as industrialization takes effect (urbanization)
Urban to Rural, more common in developed countries due to a higher cost of urban living (suburbanization)

International migration
Pre-modern migrations
Historical migration of human populations begins with the movement of Homo erectus out of Africa across Eurasia about a million years ago. Homo sapiens appear

to have occupied all of Africa about 150,000 years ago, moved out of Africa 70,000 years ago, and had spread across Australia, Asia and Europe by 40,000 years. Migration to the Americas took place 20 to 15,000 years ago, and by 2,000 years ago, most of the Pacific Islands were colonized. Later population movements notably include the Neolithic Revolution, Indo-European expansion, and the Early Medieval Great Migrations including Turkic expansion.

This evidence indicates that the ancestors of the Austronesians' spread from the South Chinese mainland to Taiwan at some time around 8,000 years ago. Evidence from historical linguistics suggests that it is from this island that seafaring peoples migrated, perhaps in distinct waves separated by millennia, to the entire region encompassed by the Austronesian languages. It is believed that this migration began around 6,000 years ago. Indo-Aryan migration to and within Northern India is consequently presumed to have taken place in the Middle to Late Bronze Age, contemporary to the Late Harappan phase in India (ca. 1700 to 1300 BC). From 180 BC, a series of invasions from Central Asia followed, including those led by the Indo-Greeks, Indo-Scythians, Indo-Parthians and Kushans in the north-western Indian subcontinent.

From about 750 BC the Greeks began 250 years of expansion, settling colonies in all directions. In Europe two waves of migrations dominate demographic distributions, that of the Celtic people, and the later Migration Period from the east. Other examples are small movements like ancient Scots moving from Hibernia to Caledonia and Magyars into Pannonia (modern-day Hungary). Turkic peoples spread across most of Central Asia into Europe and the Middle East between the 6th and 11th centuries. Recent research suggests that the Madagascar was uninhabited until Austronesian seafarers from Indonesia arrived during the 5th and 6th centuries A.D. Subsequent migrations from both the Pacific and Africa further consolidated this original mixture, and Malagasy people emerged.
One common hypothesis of the Bantu expansion.

Before the expansion of the Bantu languages and their speakers, the southern half of Africa is believed to have been populated by Pygmies and Khoisan speaking people, today occupying the arid regions around the Kalahari Desert and the forest of Central Africa. By about 1000 AD Bantu migration had reached modern day Zimbabwe and South Africa. The Banu Hilal and Banu Ma'qil were a collection of ArabBedouin tribes from the Arabian Peninsula who migrated westwards via Egypt between the 11th and 13th centuries. Their migration strongly contributed to the arabization and islamization of the western Maghreb, which was until then dominated by Berber tribes. Ostsiedlung was the medieval eastward migration and settlement of Germans. The 13th century was the time of the great Mongol and Turkic migrations across Eurasia.

Between the 11th and 18th centuries, the Vietnamese expanded southward in a process known as nam tiến (southward expansion). Manchuria was separated from China proper by the Inner Willow Palisade, which restricted the movement of the Han Chinese into Manchuria during the Qing Dynasty, as the area was off-limits to the Han until the Qing started colonizing the area with them later on in the dynasty's rule.

The Age of Exploration and European Colonialism led to an accelerated pace of migration since Early Modern times. In the 16th century perhaps 240,000 Europeans entered American ports. In the 19th century over 50 million people left Europe for the Americas. The local populations or tribes, such as the Aboriginal people in Canada, Brazil, Argentina, Australia, Japan and the United States, were usually far overwhelmed numerically by the settlers. More recent examples are the movement of ethnic Chinese into Tibet and Xinjiang, ethnic Javanese into Western New Guinea and Kalimantan (Transmigration program), Brazilians into Amazonia, Israelis into the West Bank and Gaza, ethnic Arabs into Iraqi Kurdistan, and ethnic Russians into Siberia and Central Asia.

Modern migrations and Industrialization
While the pace of migration had accelerated since the 18th century already (including the involuntary slave trade), it would increase further in the 19th century. Manning distinguishes three major types of migration: labor migration, refugee migrations, and, lastly, urbanization. Millions of agricultural workers left the countryside and moved to the cities causing unprecedented levels of urbanization. This phenomenon began in Britain in the late 18th century and spread around the world and continues to this day in many areas.

Industrialization encouraged migration wherever it appeared. The increasingly global economy globalized the labor market. Atlantic slave trade diminished sharply after 1820, which gave rise to self-bound contract labor migration from Europe and Asia to plantations. Also overpopulation[citation needed], open agricultural frontiers and rising industrial centers attracted voluntary, encouraged and sometimes coerced migration. Moreover, migration was significantly eased by improved transportation techniques.
Transnational labor migration reached a peak of three million migrants per year in the early twentieth century. Italy, Norway, Ireland and the Quongdong region of China were regions with especially high emigration rates during these years. These large migration flows influenced the process of nation state formation in many ways. Immigration restrictions have been developed, as well as diaspora cultures and myths that reflect the importance of migration to the foundation of certain nations, like the American melting pot. The transnational labor migration fell to a lower level from 1930s to the 1960s and then rebounded.

The United States experienced considerable internal migration related to industrialization, including its African American population. From 1910–1970, approximately 7 million African Americans migrated from the rural Southern United States, where blacks faced both poor economic opportunities and considerable political and social prejudice, to the industrial cities of the Northeast, Midwest and West where relatively well paid jobs were available. This phenomenon came to be known in the United States as its own Great Migration.

The twentieth century experienced also an increase in migratory flows caused by war and politics. Muslims moved from the Balkan to Turkey, while Christians moved the other way, during the collapse of the Ottoman Empire. 400,000 Jews moved to Palestine in the early twentieth century. The Russian Civil War caused some 3

million Russians, Poles and Germans to migrate out of the Soviet Union. World War II and decolonization also caused migrations, see below.
World War II

The Jewish across Europe, the Mediterranean and the Middle East formed from voluntary migrations, enslavement, threats of enslavement and pogroms. After the Nazis brought the Holocaust upon Jewish people in the 1940s, there was increased migration to the British Mandate of Palestine, which became the modern day state of Israel as a result of the United Nations Partition Plan for Palestine.
Provisions of the Potsdam Agreement from 1945 signed by victorious Western Allies and the Soviet Union led to one of the largest European migrations, and definitely the largest in the 20th century. It involved the migration and resettlement of close to or over 20 million people. The largest affected group were 16.5 million Germans expelled from Eastern Europe westwards. The second largest group were Poles, millions of whom were expelled westwards from eastern Kresy region and resettled in the so-called Recovered Territories (see Allies decide Polish border in the article on the Oder-Neisse line). Hundreds of thousands of Poles, Ukrainians (Operation Wisła), Lithuanians, Latvians, Estonians and some Belarusians, were in the meantime expelled eastwards from Europe to the Soviet Union. Finally, many of the several hundred thousand Jews remaining in the Eastern Europe after the Holocaustmigrated outside Europe to Israel.

Contemporary migration

Further information: immigration, emigration, forced migration, and refugees
Target regions with currently high immigration rates are North America, Australia, Europe (except eastern Europe), and the Russian Federation.
Small countries like island states can have extremely high migration rates that fluctuate over short times due to their low overall population: Micronesia -2% per year, Grenada -1.6%, Samoa -1.2%, Dominica -0.93%, Suriname and Virgin Islands -0.87%, Greenland -0.83%, Guyana and Saint Vincent and the Grenadines -0.75%; Liberia 2.7%, Kuwait 1.6%, Turks and Caicos Islands 1.1%, San Marino 1.1%.
Migrations and climate cycles
The modern field of climate history suggests that the successive waves of Eurasian nomadic movement throughout history have had their origins in climatic cycles, which have expanded or contracted pastureland in Central Asia, especially Mongolia and the Altai. People were displaced from their home ground by other tribes trying to find land that could be grazed by essential flocks, each group pushing the next further to the south and west, into the highlands of Anatolia, the plains of Hungary, into Mesopotamia or southwards, into the rich pastures of China.
Toward an understanding of migration

Types of migrations

The cyclic movement which involves commuting,and a seasonal movement, and nomadism.
The periodic movement which consists of migrant labor, military service, and pastoral farming Transhumance.
The migratory movement that moves from the eastern part of the US to the western part. It also moves from China to southeast Asia, from Europe to North America, and from South America to the middle part of the Americas.

Rural exodus, migration from rural areas to the cities

Ravenstein's 'laws of migration'

Certain laws of social science have been proposed to describe human migration. The following was a standard list after Ravenstein's proposals during the time frame of 1834 to 1913. The laws are as follows:

every migration flow generates a return or countermigration.

the majority of migrants move a short distance.

migrants who move longer distances tend to choose big-city destinations

urban residents are less migratory than inhabitants of rural areas.

families are less likely to make international moves than young adults.

Other migration models

Migration occurs because individuals search for food, sex and security outside their usual habitation.(Idyorough, 2008)

Zipf's Inverse distance law (1956)

Gravity model of migration and the Friction of distance

Buffer Theory

Stouffer's Theory of intervening opportunities (1940)

Lee's Push-pull theory (1967)

Zelinsky's Mobility Transition Model (1971)

Bauder's Regulation of labor markets (2006) "suggests that the international migration of workers is necessary for the survival of industrialized economies...[It] turns the conventional view of international migration on its head: it investigates how migration regulates labor markets, rather than labor markets shaping migration flows." (from the book description)

Causes of migrations

Causes of migrations have modified over hundreds of years. Some cases are constant, some of them do not carry the same importance as years ago (for example: in 18th and 19th centuries labor migration did not have the same character like today).

In general we can divide factors causing migrations into two groups of factors: Push and pull factors. In general:

Push Factors are economic, political, cultural, and environmentally based.

Pull Factors are economic, political, cultural, and environmentally based.

Barriers/Obstacles of which Nigeria in the 1970s and 1980s is an example.

On the macro level, the causes of migration can be distilled into two main categories: security dimension of migration (natural disasters, conflicts, threats to individual safety, poor political prospects) and economic dimension of migration (poor economic situation, poor situation of national market). [AIV document]

Push and Pull Factors

Push and pull factors are those factors which either forcefully push people into migration or attract them. A push factor is forceful, and a factor which relates to the country from which a person migrates. It is generally some problem which results in people wanting to migrate. Different types of push factors can be seen further below. A push factor is a flaw or distress that drives a person away from a certain place. A pull factor is something concerning the country to which a person migrates. It is generally a benefit that attracts people to a certain place. Push and pull factors are usually considered as north and south poles on a magnet.

Push Factors
Not enough jobs
Few opportunities
"Primitive" conditions
Desertification
Famine/drought
Political fear/persecution
Poor medical care
Loss of wealth
Natural Disasters
Death threats
Slavery
Pollution
Poor housing
Landlords
Bullying
Discrimination
Poor chances of finding courtship
Pull Factors
Job opportunities
Better living conditions
Political and/or religious freedom
Enjoyment
Education
Better medical care
Security
Family links
Industry
Better chances of finding courtship
Effects of migration: Migration like any other process shapes many fields of life, having both advantages and disadvantages. Effects of migrations are:
changes in population distribution
demographic consequences: since migration is selective of particular age groups, migrants are mostly young and in productive age. It can cause a demographic crisis – population ageing, what in turn can be followed by economic problems (shrinking group of economically active population has to finance extending group of inactive population).
[[Economic results of migration, which are of the greatest importance for the development of the countries.
decreases in global poverty Crisis and the Diaspora Nation, Lauren Falcao, "International Economics Bulletin, June 18, 2009."</ref>
Migration has had a significant effect on world geography.
It has contributed to the evolution and development of separate cultures.
It has contributed to the diffusion of cultures by interchange and communication.
It has contributed to the complex mix of people and cultures found in different regions of the world today

European Union

The wages in Western Europe are generally higher than the rest of Europe – thus explaining why a large number of Eastern Europeans choose to migrate to Western Europe.

Migration patterns in India

Estimates based on industry sectors mainly employing migrants suggest that there are around 100 million circular migrants in India. Caste, social networks and historical precedents play a powerful role in shaping patterns of migration. Migration for the poor is mainly circular, as despite moving temporarily to urban areas, they lack the social security which might keep them there more permanently. They are also keen to maintain a foothold in home areas during the agricultural season. Research by the Overseas Development Institute identifies a rapid movement of labour from slower to faster growing parts of the economy. Migrants can often find themselves excluded by urban housing policies and migrant support initiatives are needed to give workers improved access to market information, certification of identity, housing and education. Jewish Diaspora

Ageing

Ageing (British and Australian English) or aging (American and Canadian English) is the accumulation of changes in an organism or object over time.[1] Ageing in humans refers to a multidimensional process of physical, psychological, and social change. Some dimensions of ageing grow and expand over time, while others decline. Reaction time, for example, may slow with age, while knowledge of world events and wisdom may expand. Research shows that even late in life potential exists for physical, mental, and social growth and development. Ageing is an important part of all human societies reflecting the biological changes that occur, but also reflecting cultural and societal conventions. Age is usually measured in full years — and months for young children. A person's birthday is often an important event. Roughly 100,000 people worldwide die each day of age-related causes.

The term "ageing" is somewhat ambiguous. Distinctions may be made between "universal ageing" (age changes that all people share) and "probabilistic ageing" (age changes that may happen to some, but not all people as they grow older, such as the onset of type two diabetes). Chronological ageing, referring to how old a person is, is arguably the most straightforward definition of ageing and may be distinguished from "social ageing" (society's expectations of how people should act as they grow older) and "biological ageing" (an organism's physical state as it ages). There is also a distinction between "proximal ageing" (age-based effects that come about because of factors in the recent past) and "distal ageing" (age-based differences that can be traced back to a cause early in person's life, such as childhood poliomyelitis).[3] Differences are sometimes made between populations of elderly people. Divisions are sometimes made between the young old (65–74), the middle old (75–84) and the oldest old (85+). However, problematic in this is that chronological age does not correlate perfectly with functional age, i.e. two people may be of the same age, but differ in their mental and physical capacities. Each nation, government and non-government organization has different ways of classifying age.

Population ageing is the increase in the number and proportion of older people in society. Population ageing has three possible causes: migration, longer life expectancy (decreased death rate), and decreased birth rate. Ageing has a significant

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impact on society. Young people tend to commit most crimes, they are more likely to push for political and social change, to develop and adopt new technologies, and to need education. Older people have different requirements from society and government as opposed to young people, and frequently differing values as well. Older people are also far more likely to vote, and in many countries the young are forbidden from voting. Thus, the aged have comparatively more political influence.

In biology, senescence is the state or process of ageing. Cellular senescence is a phenomenon where isolated cells demonstrate a limited ability to divide in culture (the Hayflick Limit, discovered by Leonard Hayflick in 1961), while organismal senescence is the ageing of organisms. After a period of near perfect renewal (in humans, between 20 and 35 years of age), organismal senescence is characterized by the declining ability to respond to stress, increasing homeostatic imbalance and increased risk of disease. This currently irreversible series of changes inevitably ends in death. Some researchers (specifically biogerontologists) are treating ageing as a disease. As genes that have an effect on ageing are discovered, ageing is increasingly being regarded in a similar fashion to other geneticly influenced "conditions", potentially "treatable."

Indeed, ageing is not an unavoidable property of life. Instead, it is the result of a genetic program. Numerous species show very low signs of ageing ("negligible senescence'), the best known being trees like the bristlecone pine (however Dr. Hayflick states that the bristlecone pine has no cells older than 30 years), fish like the sturgeon and the rockfish, invertebrates like the quahog or sea anemone.[4] In humans and other animals, cellular senescence has been attributed to the shortening of telomeres with each cell cycle; when telomeres become too short, the cells die. The length of telomeres is therefore the "molecular clock," predicted by Hayflick.

Telomere length is maintained in immortal cells (e.g. germ cells and keratinocyte stem cells, but not other skin cell types) by the telomerase enzyme. In the laboratory, mortal cell lines can be immortalized by the activation of their telomerase gene, present in all cells but active in few cell types. Cancerous cells must become immortal to multiply without limit. This important step towards carcinogenesis implies, in 85% of cancers, the reactivation of their telomerase gene by mutation. Since this mutation is rare, the telomere "clock" can be seen as a protective mechanism against cancer.[5] Research has shown that the clock must be located in the nucleus of each cell and there have been reports that the longevity clock might be located in genes on either the first or fourth chromosome of the twenty-three pairs of human chromosomes.
Other genes are known to affect the ageing process, the sirtuin family of genes have been shown to have a significant effect on the lifespan of yeast and nematodes. Over-expression of the RAS2 gene increases lifespan in yeast substantially.

In addition to genetic ties to lifespan, diet has been shown to substantially affect lifespan in many animals. Specifically, caloric restriction (that is, restricting calories to 30-50% less than an ad libitum animal would consume, while still maintaining proper nutrient intake), has been shown to increase lifespan in mice up to 50%. Caloric restriction works on many other species beyond mice (including species as

diverse as yeast and Drosophila), and appears (though the data is not conclusive) to increase lifespan in primates according to a study done on Rhesus monkeys at the National Institute of Health (US), although the increase in lifespan is only notable if the caloric restriction is started early in life. Since, at the molecular level, age is counted not as time but as the number of cell doublings, this effect of calorie reduction could be mediated by the slowing of cellular growth and, therefore, the lengthening of the time between cell divisions.
Drug companies are currently searching for ways to mimic the lifespan-extending effects of caloric restriction without having to severely reduce food consumption.

In his book, 'How and Why We Age', Dr. Hayflick notes a contradiction to the caloric restriction longevity increase theory for humans, noting that data from the Baltimore Longitudinal Study of Ageing show that being thin does not favour longevity.

Dividing the lifespan
An animal's life is often divided into various ages. Historically, the lifespan of humans is divided into Eight ages; because biological changes are slow moving and vary from person to person, arbitrary dates are usually set to mark periods of life. In some cultures the divisions given below are quite varied.
In the USA, adulthood legally begins at the age of eighteen, while old age is considered to begin at the age of legal retirement (approximately 65).
Pre-conception: ovum, spermatozoon
Conception: fertilization
Pre-birth: conception to birth (pregnancy)
Infancy: Birth to 1
Childhood: 1 to 12
Adolescence: 13 to 19
Early adulthood: 20 to 39
Middle adulthood: 40 to 64
Late adulthood: 65+
Death

People from 13 to 19 years of age are also known as teens or teenagers. The casual terms "twentysomething", "thirtysomething", etc. are also in use to describe people by decade or age.
Cultural variations

In some cultures (for example Serbian) there are four ways to express age: by counting years with or without including current year. For example, it could be said about the same person that he is twenty years old or that he is in the twenty-first year of his life. In Russian the former expression is generally used, the latter one has restricted usage: it is used for age of a deceased person in obituaries and for the age of an adult when it is desired to show him/her older than he/she is. (Psychologically, a woman in her 20th year seems older than one who is 19 years old.)

Considerable numbers of cultures have less of a problem with age compared with what has been described above, and it is seen as an important status to reach stages

in life, rather than defined numerical ages. Advanced age is given more respect and status.

East Asian age reckoning is different from that found in Western culture. Traditional Chinese culture uses a different ageing method, called Xusui (虛歲) with respect to common ageing which is called Zhousui (周歲). In the Xusui method, people are born at age 1, not age 0, because conception is already considered to be the start of the life span

Society
Legal
There are variations in many countries as to what age a person legally becomes an adult.
Most legal systems define a specific age for when an individual is allowed or obliged to do something. These ages include voting age, drinking age, age of consent, age of majority, age of criminal responsibility, marriageable age, age of candidacy, and mandatory retirement age. Admission to a movie for instance, may depend on age according to a motion picture rating system. A bus fare might be discounted for the young or old.

Similarly in many countries in jurisprudence, the defence of infancy is a form of defence by which a defendant argues that, at the time a law was broken, they were not liable for their actions, and thus should not be held liable for a crime. Many courts recognise that defendants who are considered to be juveniles may avoid criminal prosecution on account of their age, and in borderline cases the age of the offender is often held to be a mitigating circumstance.
Economics and marketing

The economics of ageing are also of great importance. Children and teenagers have little money of their own, but most of it is available for buying consumer goods. They also have considerable impact on how their parents spend money.
Young adults are an even more valuable cohort. They often have jobs with few responsibilities such as a mortgage or children. They do not yet have set buying habits and are more open to new products.
The young are thus the central target of marketers. Television is programmed to attract the range of 15 to 35 year olds. Mainstreammovies are also built around appealing to the young.
Health care demand

Many societies in the rich world, e.g. Western Europe and Japan, have ageing populations. While the effects on society are complex, there is a concern about the impact on health care demand. The large number of suggestions in the literature for specific interventions to cope with the expected increase in demand for long-term care in ageing societies can be organized under four headings: improve system performance; redesign service delivery; support informal caregivers; and shift demographic parameters.
However, the annual growth in national health spending is not mainly due to increasing demand from ageing populations, but rather has been driven by rising

incomes, costly new medical technology, a shortage of health care workers and informational asymmetries between providers and patients.

Even so, it has been estimated that population ageing only explains 0.2 percentage points of the annual growth rate in medical spending of 4.3 percent since 1970. In addition, certain reforms to Medicare decreased elderly spending on home health care by 12.5 percent per year between 1996 and 2000. This would suggest that the impact of ageing populations on health care costs is not inevitable.

Impact on prisons

As of July 2007, medical costs for a typical inmate in the United States might run an agency around $33 per day, while costs for an ageing inmate could run upwards of $100. Most State DOCs report spending more than 10 percent of the annual budget on elderly care. That is expected to rise over the next 10–20 years. Some states have talked about releasing ageing inmates early.

Cognitive effects

Steady decline in many cognitive processes is seen across the lifespan, starting in one's thirties. Research has focused in particular on memory and ageing, and has found decline in many types of memory with ageing, but not in semantic memory or general knowledge such as vocabulary definitions, which typically increases or remains steady. Early studies on changes in cognition with age generally found declines in intelligence in the elderly, but studies were cross-sectional rather than longitudinal and thus results may be an artefact of cohort rather than a true example of decline. Intelligence may decline with age, though the rate may vary depending on the type, and may in fact remain steady throughout most of the lifespan, dropping suddenly only as people near the end of their lives. Individual variations in rate of cognitive decline may therefore be explained in terms of people having different lengths of life.[3] There are changes to the brain: though neuron loss is minor after 20 years of age there is a 10% reduction each decade in the total length of the brain's myelinatedaxons.

Coping and well-being

Psychologists have examined coping skills in the elderly. Various factors, such as social support, religion and spirituality, active engagement with life and having an internal locus of control have been proposed as being beneficial in helping people to cope with stressful life events in later life. Social support and personal control are possibly the two most important factors that predict well-being, morbidity and mortality in adults. Other factors that may link to well-being and quality of life in the elderly include social relationships (possibly relationships with pets as well as humans), and health.

Individuals in different wings in the same retirement home have demonstrated a lower risk of mortality and higher alertness and self-rated health in the wing where residents had greater control over their environment, though personal control may have less impact on specific measures of health. Social control, perceptions of how much influence one has over one's social relationships, shows support as a moderator variable for the relationship between social support and perceived health in the elderly, and may positively influence coping in the elderly.

Religion

Religion has been an important factor used by the elderly in coping with the demands of later life, and appears more often than other forms of coping later in life.[20] Religious commitment may also be associated with reduced mortality,[citation needed] though religiosity is a multidimensional variable; while participation in religious activities in the sense of participation in formal and organized rituals may decline, it may become a more informal, but still important aspect of life such as through personal or private prayer.

Self-rated health
Self-ratings of health, the beliefs in one's own health as excellent, fair or poor, has been correlated with well-being and mortality in the elderly; positive ratings are linked to high well-being and reduced mortality. Various reasons have been proposed for this association; people who are objectively healthy may naturally rate their health better than that of their ill counterparts, though this link has been observed even in studies which have controlled for socioeconomic status, psychological functioning and health status. This finding is generally stronger for men than women, though the pattern between genders is not universal across all studies, and some results suggest sex-based differences only appear in certain age groups, for certain causes of mortality and within a specific sub-set of self-ratings of health.

Retirement
Retirement, a common transition faced by the elderly, may have both positive and negative consequences.
[Societal impact
Of the roughly 150,000 people who die each day across the globe, about two thirds — 100,000 per day — die of age-related causes. In industrialized nations, the proportion is much higher, reaching 90%.
Societal ageing refers to the demographic ageing of populations and societies.
Cultural differences in attitudes to ageing have been studied.
Emotional improvement
Given the physical and cognitive declines seen in ageing, a surprising finding is that emotional experience improves with age. Older adults are better at regulating their emotions and experience negative affect less frequently than younger adults and show a positivity effect in their attention and memory. The emotional improvements show up in longitudinal studies[specify] as well as in cross-sectional studies[specify] and so cannot be entirely due to only the happier individuals surviving.
Successful ageing

The concept of successful ageing can be traced back to the 1950s, and popularised in the 1980s. Previous research into ageing exaggerated the extent to which health disabilities, such as diabetes or osteoporosis, could be attributed exclusively to age, and research in gerontology exaggerated the homogeneity of samples of elderly people. Successful ageing consists of three components:[29]
Low probability of disease or disability;
High cognitive and physical function capacity;

Active engagement with life.

A greater number of people self-report successful ageing than those that strictly meet these criteria.

Successful ageing may be viewed an interdisciplinary concept, spanning both psychology and sociology, where it is seen as the transaction between society and individuals across the life span with specific focus on the later years of life. The terms "healthy ageing "optimal ageing" have been proposed as alternatives to successful ageing.

Six suggested dimensions of successful ageing include:

No physical disability over the age of 75 as rated by a physician;

Good subjective health assessment (i.e. good self-ratings of one's health);

Length of undisabled life;

Good mental health;

Objective social support;

Self-rated life satisfaction in eight domains, namely marriage, income-related work, children, friendship and social contacts, hobbies, community service activities, religion and recreation/sports.

Biological theories

At present, the biological basis of ageing is unknown. Most scientists agree that substantial variability exists in the rates of ageing across different species, and that this to a large extent is genetically based. In model organisms and laboratory settings, researchers have been able to demonstrate that selected alterations in specific genes can extend lifespan (quite substantially in nematodes, less so in fruit flies, and even less in mice). Nevertheless, even in the relatively simple organisms, the mechanism of ageing remain to be elucidated. Because the lifespan of even the simple lab mouse is around 3 years, very few experiments directly test specific ageing theories (most of the evidence for the ones listed below is correlative).

The US National Institute on Aging currently funds an intervention testing program, whereby investigators nominate compounds (based on specific molecular ageing theories) to have evaluated with respect to their effects on lifespan and age-related biomarkers in outbred mice.[31] Previous age-related testing in mammals has proved largely irreproducible, because of small numbers of animals, and lax mouse husbandry conditions. The intervention testing program aims to address this by conducting parallel experiments at three internationally recognized mouse ageing-centres, the Barshop Institute at UTHSCSA, the University of Michigan at Ann Arbor and the Jackson Laboratory. While the hypotheses below reflect some of the current direction in biological ageing research, none of them is accepted as a "theory" in the sense of the "theory of gravity" or "theory of relativity".

Telomere Theory

Telomeres (structures at the ends of chromosomes) have experimentally been shown to shorten with each successive cell division. Shortened telomeres activate a mechanism that prevents further cell multiplication. This may be an important mechanism of ageing in tissues like bone marrow and the arterial lining where active cell division is necessary. Importantly though, mice lacking telomerase enzyme do not show a dramatically reduced lifespan, as the simplest version of this theory would predict.

Reproductive-Cell Cycle Theory

The idea that ageing is regulated by reproductive hormones that act in an antagonistic pleiotropic manner via cell cycle signalling, promoting growth and development early in life in order to achieve reproduction, but later in life, in a futile attempt to maintain reproduction, become dysregulated and drive senescence (dyosis).

Wear-and-Tear Theory
The very general idea that changes associated with ageing are the result of chance damage that accumulates over time.

Somatic Mutation Theory
The biological theory that ageing results from damage to the genetic integrity of the body's cells.

Error Accumulation Theory
The idea that ageing results from chance events that escape proof reading mechanisms, which gradually damages the genetic code.
Evolutionary Theories
See Theories of ageing in Senescence. These are by far the most theoretical; however, their usefulness is somewhat limited as they do not provide readily testable biochemically based interventions.

Accumulative-Waste Theory
The biological theory of ageing that points to a buildup of cells of waste products that presumably interferes with metabolism.

Autoimmune Theory
The idea that ageing results from an increase in autoantibodies that attack the body's tissues. A number of diseases associated with ageing, such as atrophic gastritis and Hashimoto's thyroiditis, are probably autoimmune in this way. While inflammation is very much evident in old mammals, even SCID mice in SPF colonies still senescence.

Ageing-Clock Theory
The theory that ageing results from a preprogrammed sequence, as in a clock, built into the operation of the nervous or endocrine system of the body. In rapidly dividing cells the shortening of the telomeres would provide just such a clock. This idea is in direct contradiction with the evolutionary based theory of ageing.

Cross-Linkage Theory
The idea that ageing results from accumulation of cross-linked compounds that interfere with normal cell function.

Free-Radical Theory
The idea that free radicals (unstable and highly reactive organic molecules, also named reactive oxygen species or oxidative stress) create damage that gives rise to symptoms we recognize as ageing.
Reliability theory of ageing and longevity

A general theory about systems failure. It allows researchers to predict the age-related failure kinetics for a system of given architecture (reliability structure) and given reliability of its components. Reliability theory predicts that even those systems that are entirely composed of non-ageing elements (with a constant failure rate) will nevertheless deteriorate (fail more often) with age, if these systems are redundant in irreplaceable elements. Ageing, therefore, is a direct consequence of systems redundancy. Reliability theory also predicts the late-life mortality deceleration with subsequent levelling-off, as well as the late-life mortality plateaus, as an inevitable consequence of redundancy exhaustion at extreme old ages. The theory explains why mortality rates increase exponentially with age (the Gompertz law) in many species, by taking into account the initial flaws (defects) in newly formed systems. It also explains why organisms "prefer" to die according to the Gompertz law, while technical devices usually fail according to the Weibull (power) law. Reliability theory allows to specify conditions when organisms die according to the Weibull distribution: organisms should be relatively free of initial flaws and defects. The theory makes it possible to find a general failure law applicable to all adult and extreme old ages, where the Gompertz and the Weibull laws are just special cases of this more general failure law. The theory explains why relative differences in mortality rates of compared populations (within a given species) vanish with age (compensation law of mortality), and mortality convergence is observed due to the exhaustion of initial differences in redundancy levels.

Mitohormesis
It has been known since the 1930s that restricting calories while maintaining adequate amounts of other nutrients can extend lifespan in laboratory animals. Recently, Michael Ristow's group has provided evidence for the theory that this effect is due to increased formation of free radicals within the mitochondria causing a secondary induction of increased antioxidant defence capacity.[32]
Misrepair-Accumulation Theory: This very recent novel theory by Wang et al.[33] suggests that ageing is the result of the accumulation of "Misrepair". Important in this theory is to distinguish among "damage" which means a newly emerging defect BEFORE any reparation has taken place, and "Misrepair" which describes the remaining defective structure AFTER (incorrect) repair. The key points in this theory are:
There is no original damage left unrepaired in a living being. If damage was left unrepaired a life threatening condition (such as bleeding, infection, or organ failure) would develop.
Misrepair, the repair with less accuracy, does not happen accidentally. It is a necessary measure of the reparation system to achieve sufficiently quick reparation in situations of serious or repeated damage, to maintain the integrity and basic function of a structure, which is important for the survival of the living being.

Hence the appearance of Misrepair increases the chance for the survival of individual, by which the individual can live at least up to the reproduction age, which is critically important for the survival of species. Therefore the Misrepair mechanism was selected by nature due to its evolutionary advantage.
However, since Misrepair as a defective structure is invisible for the reparation system, it accumulates with time and causes gradually the disorganization of a structure (tissue, cell, or molecule); this is the actual source of ageing.

Ageing hence is the side-effect for survival, but important for species survival. Thus Misrepair might represent the mechanism by which organisms are not programmed to die but to survive (as long as possible), and ageing is just the price to be paid.

Non-biological theories
Disengagement Theory
This is the idea that separation of older people from active roles in society is normal and appropriate, and benefits both society and older individuals. Disengagement theory, first proposed by Cumming and Henry, has received considerable attention in gerontology, but has been much criticised.[3] The original data on which Cumming and Henry based the theory were from a rather small sample of older adults in Kansas City, and from this select sample Cumming and Henry then took disengagement to be a universal theory.[34] There are research data suggesting that the elderly who do become detached from society as those were initially reclusive individuals, and such disengagement is not purely a response to ageing.

Activity Theory
In contrast to disengagement theory, this theory implies that the more active elderly people are, the more likely they are to be satisfied with life. The view that elderly adults should maintain well-being by keeping active has had a considerable history, and since 1972, this has become to be known as activity theory.[34] However, this theory may be just as inappropriate as disengagement for some people as the current paradigm on the psychology of ageing is that both disengagement theory and activity theory may be optimal for certain people in old age, depending on both circumstances and personality traits of the individual concerned.[3] There are also data which query whether, as activity theory implies, greater social activity is linked with well-being in adulthood.

Selectivity Theory
mediates between Activity and Disengagement Theory, which suggests that it may benefit older people to become more active in some aspects of their lives, more disengaged in others.
The view that in ageing people are inclined to maintain, as much as they can, the same habits, personalities, and styles of life that they have developed in earlier years. Continuity theory is Atchley's theory that individuals, in later life, make adaptations to enable them to gain a sense of continuity between the past and the present, and the theory implies that this sense of continuity helps to contribute to well-being in later life. Disengagement theory, activity theory and continuity theory are social theories about ageing, though all may be products of their era rather than a valid, universal theory.

Prevention and reversal
Several drugs and food supplements have been shown to retard or reverse the biological effects of ageing in animal models; none has yet been proved in humans. Resveratrol, a chemical found in red grapes, has been shown to extend the lifespan of yeast by 60%, worms and flies by 30% and one species of fish by almost 60%. Small doses of heavy water increase fruit-fly lifespan by 30%, but large doses are toxic to complex organisms.

In 2002 a team led by Professor <u>Bruce Ames</u> at UC Berkeley discovered that feeding aged rats a combination of <u>acetyl-L-carnitine</u> and <u>alpha-lipoic acid</u> (both substances are already approved for human use and sold in health food stores) produced a rejuvenating effect. Ames said, "With these two supplements together, these old rats got up and did the macarena. The brain looks better, they are full of energy - everything we looked at looks like a young animal." UC Berkeley has patented the use of these supplements in combination and a company, Juvenon, has been established to market the treatment.

In 2007 researchers at the <u>Salk Institute for Biological Studies</u>, identified a critical gene in <u>nematode</u> worms that specifically links eating fewer calories with living longer. Professor <u>Andrew Dillin</u> and colleagues showed that the gene <u>pha-4</u> regulates the longevity response to calorie restriction. In the same year Dr <u>Howard Chang</u> of the <u>Stanford University School of Medicine</u> was able to rejuvenate the skin of two-year-old mice to resemble that of newborns by blocking the activity of the gene <u>NF-kappa-B</u>.

In 2008, a team at the Spanish National Cancer Research Center genetically engineered mice to produce ten times the normal level of the telomerase enzyme. The mice lived 26% longer than normal. The same year a team led by Professor <u>Michael O Thorner</u> at the University of Virginia discovered that the drug <u>MK-677</u> restored 20% of muscle mass lost due to ageing in humans aged 60 to 81. The subjects' growth hormone and insulin-like growth factor 1 (IGF-1) levels increased to that typical of healthy young adults.

In 2009 a drug called <u>rapamycin</u>, discovered in the 1970s in the soil of <u>Easter Island</u> in the South Pacific, was found to extend the life expectancy of 20-month-old mice by up to 38%. <u>Rapamycin</u> is generally used to suppress the immune system and prevent the rejection of transplanted organs. Dr <u>Arian Richardson</u> of the Barshop Institute said, "I never thought we would find an anti-ageing pill in my lifetime; however, rapamycin shows a great deal of promise to do just that." Professor <u>Randy Strong</u> of the <u>University of Texas Health Science Center at San Antonio</u> said, "We believe this is the first convincing evidence that the ageing process can be slowed and lifespan can be extended by a drug therapy starting at an advanced age."

Also in 2009 the British Journal of Nutrition reported a study at Tufts University in Boston which showed that brain function and motor skills in aged rats could be improved by adding walnuts to their diet. The human equivalent would be to eat seven to nine walnuts per day.

In September the same year researchers at UC Berkeley discovered they could restore youthful repair capability to muscle tissue taken from men aged 68 to 74 by in vitro treatment with mitogen-activated protein kinase. This protein was found to be essential for the production of the stem cells necessary to repair muscle after exercise and is present at reduced levels in aged individuals.

Measure of age

The age of an adult human is commonly measured in whole years since the day of birth. Fractional years or months or even weeks may be used to describe the age of children and infants for finer resolution. The time of day the birth occurred is not commonly considered.

The measure of age has historically varied from this approach in some cultures. For example, in China, Korea, Japan and Vietnam, children were considered to be one year old at the moment of birth and two years old on the following New Year's Day.

Thus, a child could be considered two years old several days after birth. In parts of Tibet, age is counted from conception i.e. one is 9 months old when one is born. Age in prenatal development is normally measured in gestational age, taking the last menstruation of the woman as a point of beginning. Alternatively, fertilisation age, beginning from fertilisation can be taken.

Death
Death is the termination of the biological functions that define a livingorganism. It refers both to a particular event and to the condition that results thereby. The true nature of the latter has, for millennia, been a central concern of the world's religious traditions and of philosophical enquiry. Belief in some kind of afterlife or rebirth is a central aspect of many religious traditions.
Humans and the vast majority of other animals die in due course from senescence. Remarkable exceptions include the hydra, and the jellyfish turritopsis nutricula, which is thought to possess in effect biological immortality.

Intervening phenomena which commonly bring about death earlier include malnutrition, disease, or accidents resulting in terminal physical injury. Predation is a cause of death for many species. Intentional human activity causing death includes suicide, homicide, and war. Roughly 150,000 people die each day across the globe. Death in the natural world can also occur as an indirect result of human activity: an increasing cause of species depletion in recent times has been destruction of ecosystems as a consequence of the widening spread of industrialtechnology.

Physiological death is now seen as less an event than a process: conditions once considered indicative of death are now reversible. Where in the process a dividing line is drawn between life and death depends on factors beyond the presence or absence of vital signs. In general, clinical death is neither necessary nor sufficient for a determination of legal death. A patient with working heart and lungs determined to be brain dead can be pronounced legally dead without clinical death occurring. Precise medical definition of death, in other words, becomes more problematic, paradoxically, as scientific knowledge and technology advance.

Signs and symptoms
Signs of death, or strong indications that a person is no longer alive are:
Ceasing respiration
The body no longer metabolizes
No pulse
Pallor mortis, paleness which happens in the 15–120 minutes after death
Livor mortis, a settling of the blood in the lower (dependent) portion of the body
Algor mortis, the reduction in body temperature following death. This is generally a steady decline until matching ambient temperature
Rigor mortis, the limbs of the corpse become stiff (Latin rigor) and difficult to move or manipulate
Decomposition, the reduction into simpler forms of matter, accompanied by a strong, unpleasant odor.
Diagnosis
Problems of definition

What is death? A flower, a skull and an hour-glass stand in for Life, Death and Time in this 17th-century painting by Philippe de Champaigne

For those who define death as a state following the state of life, one of the challenges in defining death is in distinguishing it from life. Death would seem to refer to either the moment at which life ends, or when the state that follows life begins. However, determining when death has occurred requires drawing precise conceptual boundaries between life and death. This is problematic because there is little consensus over how to define life. Some[who?] have suggested defining life in terms of consciousness. When consciousness ceases, a living organism can be said to have died. One of the notable flaws in this approach is that there are many organisms which are alive but probably not conscious (for example, single-celled organisms). Another problem with this approach is in defining consciousness, which has many different definitions given by modern scientists, psychologists and philosophers. This general problem of defining death applies to the particular challenge of defining death in the context of medicine.

Other definitions for death focus on the character of cessation of something.[5] In this context "death" describes merely the state where something has ceased, e.g., life. Thus, the definition of "life" simultaneously defines death.

Historically, attempts to define the exact moment of a human's death have been problematic. Death was once defined as the cessation of heartbeat (cardiac arrest) and of breathing, but the development of CPR and prompt defibrillation have rendered that definition inadequate because breathing and heartbeat can sometimes be restarted[citation needed]. Events which were causally linked to death in the past no longer kill in all circumstances; without a functioning heart or lungs, life can sometimes be sustained with a combination of life support devices, organ transplants and artificial pacemakers.

Today, where a definition of the moment of death is required, doctors and coroners usually turn to "brain death" or "biological death" to define a person as being clinically dead; people are considered dead when the electrical activity in their brain ceases. It is presumed that an end of electrical activity indicates the end of consciousness. However, suspension of consciousness must be permanent, and not transient, as occurs during certain sleep stages, and especially a coma. In the case of sleep, EEGs can easily tell the difference.

However, the category of "brain death" is seen by some scholars to be problematic. For instance, Dr Franklin Miller, senior faculty member at the Department of Bioethics, National Institutes of Health, notes "By the late 1990s, however, the equation of brain death with death of the human being was increasingly challenged by scholars, based on evidence regarding the array of biological functioning displayed by patients correctly diagnosed as having this condition who were maintained on mechanical ventilation for substantial periods of time. These patients maintained the ability to sustain circulation and respiration, control temperature, excrete wastes, heal wounds, fight infections and, most dramatically, to gestate fetuses (in the case of pregnant "brain-dead" women)."

Those people maintaining that only the neo-cortex of the brain is necessary for consciousness sometimes argue that only electrical activity there should be

considered when defining death. Eventually it is possible that the criterion for death will be the permanent and irreversible loss of cognitive function, as evidenced by the death of the cerebral cortex. All hope of recovering human thought and personality is then gone given current and foreseeable medical technology. However, at present, in most places the more conservative definition of death – irreversible cessation of electrical activity in the whole brain, as opposed to just in the neo-cortex – has been adopted (for example the Uniform Determination Of Death Act in the United States). In 2005, the Terri Schiavo case brought the question of brain death and artificial sustenance to the front of American politics.

Even by whole-brain criteria, the determination of brain death can be complicated. EEGs can detect spurious electrical impulses, while certain drugs, hypoglycemia, hypoxia, or hypothermia can suppress or even stop brain activity on a temporary basis. Because of this, hospitals have protocols for determining brain death involving EEGs at widely separated intervals under defined conditions.

Legal death
In the United States, a person is dead by law if a Statement of Death or Death Certificate is approved by a licensed medical practitioner. Various legal consequences follow death, including the removal from the person of what in legal terminology is called personhood.
The possession of brain activities, or ability to resume brain activity, is a necessary condition to legal personhood in the United States. "It appears that once brain death has been determined ... no criminal or civil liability will result from disconnecting the life-support devices." (Dority v. Superior Court of San Bernardino County, 193 Cal.Rptr. 288, 291 (1983))

Misdiagnosed: Premature burial
There are many anecdotal references to people being declared dead by physicians and then "coming back to life", sometimes days later in their own coffin, or when embalming procedures are about to begin. From the mid-18th century onwards, there was an upsurge in the public's fear of being mistakenly buried alive, and much debate about the uncertainty of the signs of death. Various suggestions were made to test for signs of life before burial, ranging from pouring vinegar and pepper into the corpse's mouth to applying red hot pokers to the feet, or even into the rectum. Writing in 1895, the physician J. C. Ouseley claimed that as many as 2,700 people were buried prematurely each year in England and Wales, although others estimated the figure to be closer to 800.
In cases of electric shock, CPR for an hour or longer can allow stunned nerves to recover, allowing an apparently dead person to survive. People found unconscious under icy water may survive if their faces are kept continuously cold until they arrive at an emergency room.[10] This "diving response", in which metabolic activity and oxygen requirements are minimal, is something humans share with cetaceans called the mammalian diving reflex.
As medical technologies advance, ideas about when death occurs may have to be re-evaluated in light of the ability to restore a person to vitality after longer periods of apparent death (as happened when CPR and defibrillation showed that cessation of heartbeat is inadequate as a decisive indicator of death). The lack of electrical brain activity may not be enough to consider someone scientifically dead. Therefore, the

concept of information theoretical death has been suggested as a better means of defining when true death occurs, though the concept has few practical applications outside of the field of cryonics.

There have been some scientific attempts to bring dead organisms back to life, but with limited success. In science fictionscenarios where such technology is readily available, real death is distinguished from reversible death.

Causes

The leading cause of death in developing countries is infectious disease. The leading causes of death in developed countries are atherosclerosis (heart disease and stroke), cancer, and other diseases related to obesity and aging. These conditions cause loss of homeostasis, leading to cardiac arrest, causing loss of oxygen and nutrient supply, causing irreversible deterioration of the brain and other tissues. Of the roughly 150,000 people who die each day across the globe, about two thirds – 100,000 per day – die of age-related causes. In industrialized nations, the proportion is much higher, reaching 90%. With improved medical capability, dying has become a condition to be managed. Home deaths, once commonplace, are now rare in the developed world.

In developing nations, inferior sanitary conditions and lack of access to modern medical technology makes death from infectious diseases more common than in developed countries. One such disease is tuberculosis, a bacterial disease which killed 1.7 million people in 2004. Malaria causes about 400–900 million cases of fever and 1–3 million deaths annually. AIDS death toll in Africa may reach 90–100 million by 2025.

According to Jean Ziegler, who was the United Nations Special reporter on the Right to Food from 2000 to March 2008; mortality due to malnutrition accounted for 58% of the total mortality rate in 2006. Ziegler says worldwide approximately 62 million people died from all causes and of those deaths more than 36 million died of hunger or diseases due to deficiencies in micronutrients."

Tobacco smoking killed 100 million people worldwide in the 20th century and could kill 1 billion people around the world in the 21st century, a WHO Report warned. Many leading developed world causes of death can be postponed by diet and physical activity, but the accelerating incidence of disease with age still imposes limits on human longevity. The evolutionary cause of aging is, at best, only just beginning to be understood. It has been suggested that direct intervention in the aging process may now be the most effective intervention against major causes of death.[19]

Autopsy

Rembrandt turns an autopsy into a masterpiece: The Anatomy Lesson of Dr. Nicolaes Tulp

An autopsy, also known as a postmortem examination or an obduction, is a medical procedure that consists of a thorough examination of a human corpse to determine the cause and manner of a person's death and to evaluate any disease or injury that may be present. It is usually performed by a specialized medical doctor called a pathologist.

Autopsies are either performed for legal or medical purposes. A forensic autopsy is carried out when the cause of death may be a criminal matter, while a clinical or academic autopsy is performed to find the medical cause of death and is used in cases of unknown or uncertain death, or for research purposes. Autopsies can be further classified into cases where external examination suffices, and those where

the body is dissected and an internal examination is conducted. Permission from next of kin may be required for internal autopsy in some cases. Once an internal autopsy is complete the body is generally reconstituted by sewing it back together. Autopsy is important in a medical environment and may shed light on mistakes and help improve practices.

A "necropsy" is an older term for a postmortem examination, unregulated, and not always a medical procedure. In modern times the term is more often used in the postmortem examination of the corpses of animals.

Prevention
Life extension
Life extension refers to an increase in maximum or average lifespan, especially in humans, by slowing down or reversing the processes of aging. Average lifespan is determined by vulnerability to accidents and age or lifestyle-related afflictions such as cancer, or cardiovascular disease. Extension of average lifespan can be achieved by good diet, exercise and avoidance of hazards such as smoking. Maximum lifespan is determined by the rate of aging for a species inherent in its genes. Currently, the only widely recognized method of extending maximum lifespan is calorie restriction. Theoretically, extension of maximum lifespan can be achieved by reducing the rate of aging damage, by periodic replacement of damaged tissues, or by molecular repair or rejuvenation of deteriorated cells and tissues.

Researchers of life extension are a subclass of biogerontologists known as "biomedical gerontologists". They try to understand the nature of aging and they develop treatments to reverse aging processes or to at least slow them down, for the improvement of health and the maintenance of youthful vigor at every stage of life. Those who take advantage of life extension findings and seek to apply them upon themselves are called "life extensionists" or "longevists". The primary life extension strategy currently is to apply available anti-aging methods in the hope of living long enough to benefit from a complete cure to aging once it is developed, which given the rapidly advancing state of biogenetic and general medical technology, could conceivably occur within the lifetimes of people living today.

Society and culture
Death haunts even the beautiful: an early 20th-century artist says, "All is Vanity" Death is the center of many traditions and organizations, and is a feature of every culture around the world. Much of this revolves around the care of the dead, as well as the afterlife and the disposal of bodies upon the onset of death. The disposal of human corpses does, in general, begin with the last offices before significant time has passed, and ritualistic ceremonies often occur, most commonly interment or cremation. This is not a unified practice, however, as in Tibet for instance the body is given a sky burial and left on a mountain top. Proper preparation for death and techniques and ceremonies for producing the ability to transfer one's spiritual attainments into another body (reincarnation) are subjects of detailed study in Tibet. Mummification or embalming is also prevalent in some cultures, to retard the rate of decay.

Legal aspects of death are also part of many cultures, particularly the settlement of the deceased estate and the issues of inheritance and in some countries, inheritance taxation.

Capital punishment is also a culturally divisive aspect of death. In most jurisdictions where capital punishment is carried out today, the death penalty is reserved for premeditated murder, espionage, treason, or as part of military justice. In some countries, sexual crimes, such as adultery and sodomy, carry the death penalty, as do religious crimes such as apostasy, the formal renunciation of one's religion. In many retentionist countries, drug trafficking is also a capital offense. In China human trafficking and serious cases of corruption are also punished by the death penalty. In militaries around the world courts-martial have imposed death sentences for offenses such as cowardice, desertion, insubordination, and mutiny.

Death in warfare and in suicide attack also have cultural links, and the ideas of dulce et decorum est pro patria mori, mutiny punishable by death, grieving relatives of dead soldiers and death notification are embedded in many cultures. Recently in the western world, with the supposed increase in terrorism following the September 11 attacks, but also further back in time with suicide bombings, kamikaze missions in World War II and suicide missions in a host of other conflicts in history, death for a cause by way of suicide attack, and martyrdom have had significant cultural impacts.

Suicide in general, and particularly euthanasia, are also points of cultural debate. Both acts are understood very differently in different cultures. In Japan, for example, ending a life with honor by seppuku was considered a desirable death, whereas according to traditional Christian and Islamic cultures, suicide is viewed as a sin. Death is personified in many cultures, with such symbolic representations as the Grim Reaper, Azrael and Father Time.

In biology

After death the remains of an organism become part of the biogeochemical cycle. Animals may be consumed by a predator or a scavenger. Organic material may then be further decomposed by detritivores, organisms which recycle detritus, returning it to the environment for reuse in the food chain. Examples of detritivores include earthworms, woodlice and dung beetles.

Microorganisms also play a vital role, raising the temperature of the decomposing matter as they break it down into yet simpler molecules. Not all materials need be decomposed fully, however. Coal, a fossil fuel formed over vast tracts of time in swamp ecosystems, is one example.

Natural selection

Competition (biology), natural selection, and extinction

Contemporary evolutionary theory sees death as an important part of the process of natural selection. It is considered that organisms less adapted to their environment are more likely to die having produced fewer offspring, thereby reducing their contribution to the gene pool. Their genes are thus eventually bred out of a population, leading at worst to extinction and, more positively, making possible the process referred to as speciation. Frequency of reproduction plays an equally important role in determining species survival: an organism that dies young but leaves numerous offspring displays, according to Darwinian criteria, much greater fitness than a long-lived organism leaving only one.

Extinction

Dead as a dodo: the bird that became a byword in English for species extinction

Extinction is the cessation of existence of a species or group of taxa, reducing biodiversity. The moment of extinction is generally considered to be the death of the last individual of that species (although the capacity to breed and recover may have been lost before this point). Because a species' potential range may be very large, determining this moment is difficult, and is usually done retrospectively. This difficulty leads to phenomena such as Lazarus taxa, where a species presumed extinct abruptly "reappears" (typically in the fossil record) after a period of apparent absence. New species arise through the process of speciation, an aspect of evolution. New varieties of organisms arise and thrive when they are able to find and exploit an ecological niche – and species become extinct when they are no longer able to survive in changing conditions or against superior competition.

Evolution of ageing

Inquiry into the evolution of aging aims to explain why so many living things and the vast majority of animals weaken and die with age (a notable exception being hydra, which may be biologically immortal). The evolutionary origin of senescence remains one of the fundamental puzzles of biology. Gerontology specializes in the science of human aging processes.

Causes of Death 1916 How the medical profession categorized causes of death a century ago.

George Wald: The Origin of Death A biologist explains life and death in different kinds of organisms in relation to evolution.

Before and After Death Interviews with people dying in hospices, and portraits of them before, and shortly after, death

Birth rate

Crude birth rate is the nativity or childbirths per 1,000 people per year. According to the United Nations' World Population Prospects: The 2008 Revision Population Database, crude birth rate is the Number of births over a given period divided by the person-years lived by the population over that period. It is expressed as number of births per 1,000 population. CBR = (births in a period / population of person-years over that period).

According to the Dictionary of Geography by Audrey Clark, crude birth rate is also known as natural increase. It ranges from 12 to 50 per 1000 people. Furthermore, Clark describes that there is only a small tendency for birth-rates to fall even with more usage of birth control. During the period of 1960 to 1980, the world population's annual rate of increase fell two percentage points, from 3.7 percent per annum 1.7 per cent per annum in the 1980s. [Is this what the original sentence meant?].

It can be represented by number of childbirths in that year, and p is the current population. This figure is combined with the crude death rate to produce the rate of natural population growth (natural in that it does not take into account net migration).

Another indicator of fertility that is frequently used is the total fertility rate, which is the average number of children born to each woman over the course of her life. In general, the total fertility rate is a better indicator of (current) fertility rates because unlike the crude birth rate it is not affected by the age distribution of the population.

Fertility rates tend to be higher in less economically developed countries and lower in more economically developed countries.

The birth rate is an item of concern and policy for a number of national governments. Some, including those of Italy and Malaysia, seek to increase the national birth rate using measures such as financial incentives or provision of support services to new mothers. Conversely, others aim to reduce the birth rate. For example, China's One child policy; measures such as improved information about and availability of birth control have achieved similar results in countries such as Iran.

There has also been discussion on whether bring women into the forefront of development initiatives will lead to a decline in birth rates. In some places, government policies have been focused on reducing birth rates through improving women's sexual and reproductive health and rights. Typically, high birth rates has been associated with health impairments and low life expectancy, low living standards, low status of women, and low levels of education. There are claims that as countries go through economic development and social change, population growth such as birth rate declines. Family programmes become widely accepted and birth rates decline
In 1974 at the World Population Conference in Bucharest, women's issues gained considerable attention. family programmes were seriously discussed and 137 countries drafted a World Population Plan of Action. In the discussion, many countries accepted modern birth control, such as the pill and the condom, but opposed abortion. In 1994, Another Action plan was drafted in Cairo under the United Nations. They discussed the concern on population and the need to incorporate women into the discourse. They agreed that a need to improve women's status, initiatives in defence of reproductive health and freedom, the environment, and sustainable socio-economic development were needed.

Generally, birth rate is calculated using live birth counts from a universal system of registration of births, deaths, and marriages, and population counts from a census or using estimation through specialized demographic techniques. Birth rate is also commonly used to calculate population growth. It is combined with death rates and migration rates to calculate population growth.

As for 2009, the average birth rate for the whole world is 19.95 per year per 1000 total population. Birth rate from 2003 to 2009 shows that there has been a -.48% decline from 2003's world birth rate of 20.43 per 1000 total population. According to the CIA - The World Factbook, the country with the highest birth rate currently is Niger at 51.6 births per 1000 people. The country with the lowest birth rate is Japan at 7.64 births per 1000 people. (Hong Kong as a Special Administrative Region of China is at 7.42 births per 1000 people.) As compared to the 1950s (birth rate was at 36 births per 1000 in the 1950s[3]), birth rate has declined by 16 births per 1000 people.

Countries with birth rates ranging from 10-20 births per 1000 is considered low and countries ranging from 40-50 births per 1000 is considered high. There are problems associated with both an extremely high birth rate and extremely low birth rate. High

birth rates could cause stress on the government welfare and family programs to support the youthful population. Further problems of a country with a high birth rate include: how to educate growing number of children, creating jobs for these children when they grow up to be working age, and dealing with the environmental effects that a large population can produce. Low birth rates can also put stress on the government to prove adequate senior welfare systems and also the stress on families to support the elders themselves. There will be less children or working age population to support the constantly growing aging population.

Methods of measuring birth rate
General fertility rate (GFR): This measures the number of births per 1,000 women aged 15 to 44 or 15 to 49. Standardised birth rate (SBR): This compares the age-sex structure to a hypothetical standard population.
Total fertility rate (TFR): The mean number of children a woman is expected to bear during her child-bearing years. It is also independent of the age-sex structure of the population.
Child-to-woman ratio: This measures the number of children below five to the number of women of child-bearing years (age 15 to 44). In the past, when there is no universal registration of births, this ratio is a relatively good indicator of fertility since it can be measure using data from the Census. However, high infant mortality rate would cause huge difference between child to woman ratio and general fertility rate (GFR).

Factors affecting birth rate
Pro-natalist policies and Antinatalist policies from government
Existing age-sex structure
Availability of family planning services
Social and religious beliefs - especially in relation to contraception and abortion
Female literacy levels
Economic prosperity (although in theory when the economy is doing well families can afford to have more children, in practice the higher the economic prosperity the lower the birth rate: the Demographic-economic paradox).
Poverty levels – Children can be seen as an economic resource in developing countries as they can earn money.
Infant Mortality Rate – A family may have more children if a country's IMR is high as it is likely some of those children will die.
Urbanization
Typical age of marriage
Pension availability
Conflict

Birth rate and the Demographic Transition Model
The demographic Transition Model describes population mortality and fertility may decline as social and economic development occurs through time. The two major factors in the Demographic Transition Model is Crude Birth Rate (CBR) and Crude Death Rate (CDR). There are 4 stages to the Demographic Model and in the first and second stage, CBR remains high because people are still in agrarian cultures and need more labour to work on farms. In addition, the chances of children dying are high because medicine is not as advance during that phrase. However, in the third

stage, CBR starts to decline due to more women's participation in society and the reduced need of families to have many children. In the fourth stage, CBR is sustained at a really low level with some countries below replacement levels.

Total fertility rate
The total fertility rate (TFR, sometimes also called the fertility rate, period total fertility rate (PTFR) or total period fertility rate (TPFR)) of a population is the average number of children that would be born to a woman over her lifetime if (1) she were to experience the exact current age-specific fertility rates (ASFRs) through her lifetime, and (2) she were to survive from birth through the end of her reproductive life.[1] It is obtained by summing the single-year age-specific rates at a given time.

The TFR is a synthetic rate, not based on the fertility of any real group of women, since this would involve waiting until they had completed childbearing. Nor is it based on counting up the total number of children actually born over their lifetime, but instead is based on the age-specific fertility rates of women in their "child-bearing years," which in conventional international statistical usage is ages 15–44 or 15-49The TFR is therefore a measure of the fertility of an imaginary woman who passes through her reproductive life subject to all the age-specific fertility rates for ages 15–49 that were recorded for a given population in a given year. The TFR represents the average number of children a woman would have were she to fast-forward through all her childbearing years in a single year, under all the age-specific fertility rates for that year. In other words, this rate is the number of children a woman would have if she was subject to prevailing fertility rates at all ages from a single given year, and survives throughout all her childbearing years.

An alternative fertility measure is the net reproduction rate (NRR), which measures the number of daughters a woman would have in her lifetime if she were subject to prevailing age-specific fertility and mortality rates in the given year. When the NRR is exactly one, then each generation of women is exactly reproducing itself. The NRR is less widely used than the TFR, and the United Nations stopped reporting NRR data for member nations after 1998. But the NRR is particularly relevant where the number of male babies born is very high. The gross reproduction rate (GRR), is the same as the NRR, except that - like the TFR - it ignores life expectancy.

The TFR (or TPFR—total period fertility rate) is a better index of fertility than the Crude birth rate (annual number of births per thousand population) because it is independent of the age structure of the population, but it is a poorer estimate of actual completed family size than the total cohort fertility rate, which is obtained by summing the age-specific fertility rates that actually applied to each cohort as they aged through time. In particular, the TFR does not necessarily predict how many children young women now will eventually have, as their fertility rates in years to come may change from those of older women now. However, the TFR is a reasonable summary of current fertility levels.

Replacement rates
Graph of Total Fertility Rates vs. GDP per capita of the corresponding country, 2009. Only countries with over 5 Million population were plotted to reduce outliers. Sources: CIA World Fact Book

Replacement fertility is the total fertility rate at which newborn girls would have an average of exactly 1 daughter over their lifetimes. In more familiar terms, women have just enough babies to replace themselves.

If there were no mortality in the female population until the end of the childbearing years (generally taken as 44 or 49, though some exceptions exist) then the replacement level of TFR would be very close to 2.0 (actually slightly higher because of the excess of boy over girl births in human populations). However, the replacement level is also affected by mortality, especially childhood mortality. The replacement fertility rate is roughly 2.1 births per woman for most industrialized countries (2.075 in the UK for example), but ranges from 2.5 to 3.3 in developing countries because of higher mortality rates.[3] Taken globally, the total fertility rate at replacement is 2.33 children per woman. At this rate, global population growth would trend towards zero.

Developed countries usually have a much lower fertility rate due to greater wealth, education, and urbanization. Mortality rates are low, birth control is understood and easily accessible, and costs are often deemed very high because of education, clothing, feeding, and social amenities. Further, longer periods of time spent getting higher education often mean women have children later in life. The result is the demographic-economic paradox. Female labor participation rate also has substantial negative impact on fertility. However, this effect is neutralized among Nordic or liberalist countries.[4]

In developing countries on the other hand, families desire children for their labour and as caregivers for their parents in old age. Fertility rates are also higher due to the lack of access to contraceptives, generally lower levels of female education, and lower rates of female employment in industry.

The total fertility rate in the United States after World War II peaked at about 3.8 children per woman in the late 1950s and by 1999 was at 2 children. This means that an imaginary woman (defined in the introduction) who fast-forwarded through her life in the late 1950s would have been expected to have about four children, whereas an imaginary woman who fast-forwarded through her life in 1999 would have been expected to have only about two children in her lifetime. The fertility rate of the total U.S. population is at around the replacement level of about 2.1 children per woman. However, the fertility of the population of the United States is below replacement among those native born, and above replacement among immigrantfamilies, most of whom come to the U.S. from countries with higher fertility than that of the U.S.[citation needed] However, the fertility rates of immigrants to the U.S. has been found to decrease sharply in the second generation, correlating with improved education and income.

According to a thesis submitted in 2005 to the Office of Graduate Studies of Texas A&M University, the lowest TFR recorded anywhere in the world in recorded history is for Xiangyang district of Jiamusi city (Heilongjiang, China) which had a TFR of 0.41. Outside China, the lowest TFR ever recorded was 0.80 for Eastern Germany in 1994.

A population that maintains a TFR of 3.8 over a long time without a correspondingly high death or emigration rate would increase rapidly, whereas a population that maintains a TFR of 2.0 over a long time would decline (unless it had a large enough

immigration). However, it may take several generations for a change in the total fertility rate to be reflected in birth rate, because the age distribution must reach equilibrium. For example, a population that has recently dropped below replacement-level fertility will continue to grow, because the recent high fertility produced large numbers of young couples who would now be in their child-bearing years. This phenomenon carries forward for several generations and is called population momentum or population-lag effect. This time-lag effect is of great importance to the growth rates of human populations.

Infant mortality
World infant mortality rates in 2008
Infant mortality is defined as the number of infant deaths (one year of age or younger) per 1000 live births. The most common cause worldwide has traditionally been due to dehydration from diarrhea. However, the spreading information about Oral Rehydration Solution (a mixture of salts, sugar, and water) to mothers around the world has decreased the rate of children dying from dehydration. Currently the most common cause is pneumonia. Other causes of infant mortality include malnutrition, malaria, congenital malformation, infection and SIDS.
Infanticide, child abuse, child abandonment, and neglect may also contribute to infant mortality.[weasel words][vague] Related statistical categories:
Perinatal mortality only includes deaths between the foetal viability (22 weeks gestation) and the end of the 7th day after delivery.
Neonatal mortality only includes deaths in the first 28 days of life.
Postneonatal mortality only includes deaths after 28 days of life but before one year.
Child mortality includes deaths within the first five years after birth.

Infant mortality throughout history
Infant mortality rate (IMR) is the number of newborns dying under a year of age divided by the number of live births during the year times 1000. The infant mortality rate is also called the infant death rate. It is the number of deaths that occur in the first year of life for 1000 live births.
In past times, infant mortality claimed a considerable percentage of children born, but the rates have significantly declined in the West in modern times, mainly due to improvements in basic health care, though high technology medical advances have also helped. Infant mortality rate is commonly included as a part of standard of living evaluations in economics.
The infant mortality rate is reported as number of live newborns dying under a year of age per 1,000 live births, so that IMRs from different countries can be compared.
Comparing infant mortality rates

The infant mortality rate correlates very strongly with and is among the best predictors of state failure.[4] IMR is also a useful indicator of a country's level of health or development, and is a component of the physical quality of life index. But the method of calculating IMR often varies widely between countries based on the way they define a live birth and how many premature infants are born in the country. The World Health Organization (WHO) defines a live birth as any born human being who demonstrates independent signs of life, including breathing, voluntary muscle movement, or heartbeat. Many countries, however, including certain European states and Japan, only count as live births cases where an infant

breathes at birth, which makes their reported IMR numbers somewhat lower and raises their rates of perinatal mortality.

The exclusion of any high-risk infants from the denominator or numerator in reported IMRs can be problematic for comparisons. Many countries, including the United States, Sweden or Germany, count an infant exhibiting any sign of life as alive, no matter the month of gestation or the size, but according to United States Centers for Disease Control researchers,[6] some other countries differ in these practices. All of the countries named adopted the WHO definitions in the late 1980s or early 1990s,[7] which are used throughout the European Union.[8] However, in 2009, the US CDC issued a report which stated that the American rates of infant mortality were affected by the United States' high rates of premature babies compared to European countries and which outlines the differences in reporting requirements between the United States and Europe, noting that France, the Czech Republic, Ireland, the Netherlands, and Poland do not report all live births of babies under 500 g and/or 22 weeks of gestation.[6][9][10] However, the report also concludes that the differences in reporting are unlikely to be the primary explanation for the United States' relatively low international ranking.

Another well-documented example also illustrates this problem. Historically, until the 1990s Russia and the Soviet Union did not count as a live birth or as an infant death extremely premature infants (less than 1,000 g, less than 28 weeks gestational age, or less than 35 cm in length) that were born alive (breathed, had a heartbeat, or exhibited voluntary muscle movement) but failed to survive for at least seven days. Although such extremely premature infants typically accounted for only about 0.005 of all live-born children, their exclusion from both the numerator and the denominator in the reported IMR led to an estimated 22%-25% lower reported IMR.[12] In some cases, too, perhaps because hospitals or regional health departments were held accountable for lowering the IMR in their catchment area, infant deaths that occurred in the 12th month were "transferred" statistically to the 13th month (i.e., the second year of life), and thus no longer classified as an infant death.

UNICEF uses a statistical methodology to account for reporting differences among countries. "UNICEF compiles infant mortality country estimates derived from all sources and methods of estimation obtained either from standard reports, direct estimation from micro data sets, or from UNICEF's yearly exercise. In order to sort out differences between estimates produced from different sources, with different methods, UNICEF developed, in coordination with WHO, the WB and UNSD, an estimation methodology that minimizes the errors embodied in each estimate and harmonize trends along time. Since the estimates are not necessarily the exact values used as input for the model, they are often not recognized as the official IMR estimates used at the country level. However, as mentioned before, these estimates minimize errors and maximize the consistency of trends along time."

Another challenge to comparability is the practice of counting frail or premature infants who die before the normal due date as miscarriages (spontaneous abortions) or those who die during or immediately after childbirth as stillborn. Therefore, the quality of a country's documentation of perinatal mortality can matter greatly to the

accuracy of its infant mortality statistics. This point is reinforced by the demographer Ansley Coale, who finds dubiously high ratios of reported stillbirths to infant deaths in Hong Kong and Japan in the first 24 hours after birth, a pattern that is consistent with the high recorded sex ratios at birth in those countries and suggests not only that many female infants who die in the first 24 hours are misreported as stillbirths rather than infant deaths but also that those countries do not follow WHO recommendations for the reporting of live births and infant deaths.

Another seemingly paradoxical finding is that when countries with poor medical services introduce new medical centers and services, instead of declining the reported IMRs often increase for a time. The main cause of this is that improvement in access to medical care is often accompanied by improvement in the registration of births and deaths. Deaths that might have occurred in a remote or rural area and not been reported to the government might now be reported by the new medical personnel or facilities. Thus, even if the new health services reduce the actual IMR, the reported IMR may increase.
Global infant mortality trends

For the world, and for both Less Developed Countries (LDCs) and More Developed Countries (MDCs), IMR declined significantly between 1960 and 2001. World infant mortality rate declined from 126 in 1960 to 57 in 2001. However, IMR remained higher in LDCs. In 2001, the Infant Mortality Rate for Less Developed Countries (91) was about 10 times as large as it was for More Developed Countries (8). For Least Developed Countries, the Infant Mortality Rate is 17 times as high as it is for More Developed Countries. Also, while both LDCs and MDCs made dramatic reductions in infant mortality rates, reductions among less developed countries are, on average, much less than those among the more developed countries.

Infant mortality rate in countries
In the United States, infant mortality is 630 per 100,000 live births or 6.3 per 1000 live births. Life expectancy is the expected (in the statistical sense) number of years of life remaining at a given age. It is denoted by ex, which means the average number of subsequent years of life for someone now aged x, according to a particular mortality experience. (In technical literature, this symbol means the average number of complete years of life remaining, ie excluding fractions of a year. The corresponding statistic including fractions of a year, ie the normal meaning of life expectancy, has a symbol with a small circle over the \(see for example)

The term is most often used in the human context, but is also used in plant or animal ecology; it is calculated by the analysis of life tables (also known as actuarial tables). The term life expectancy may also be used in the context of manufactured objects[3] although the related term shelf life is used for consumer products and the term mean time to breakdown (MTTB) is used in engineering literature.
Life expectancy is heavily dependent on the criteria used to select the group. For example, in countries with high infant mortality rates, the life expectancy at birth is highly sensitive to the rate of death in the first few years of life. In these cases, another measure such as life expectancy at age 5 (e5) can be used to exclude the effects of infant mortality to provide a simple measure of overall mortality rates other

than in early childhood. Life expectancy is usually calculated separately for males and females.

Humans

Humans live on average 39.5 years in Swaziland and 81 years in Japan (2008 est.), although Japan's recorded life expectancy may have been very slightly increased by counting many infant deaths as stillborn. The oldest confirmed recorded age for any human is 122 years (see Jeanne Calment), though some people are reported to have lived longer. This is referred to as the "maximum life span", which is the upper boundary of life, the maximum number of years any human is known to have lived. Lifespan variation over time
The following information is derived from Encyclopaedia Britannica, 1961 and other sources, and unless otherwise stated represents estimates of the life expectancies of the population as a whole. In many instances life expectancy varied considerably according to class and gender.

The average life expectancy in Colonial America was under 25 years in the Virginia colony,[22] and in New England about 40% of children failed to reach adulthood.[23] During the Industrial Revolution, the life expectancy of children increased dramatically.[24] The percentage of children born in London who died before the age of five decreased from 74.5% in 1730-1749 to 31.8% in 1810-1829.[25][26] Public health measures are credited with much of the recent increase in life expectancy. During the 20th century, the average lifespan in the United States increased by more than 30 years, of which 25 years can be attributed to advances in public health.

In order to assess the quality of these additional years of life, 'healthy life expectancies' have been calculated for the last 30 years. Since 2001, the World Health Organization publishes statistics called Healthy life expectancy (HALE), defined as the average number of years that a person can expect to live in "full health", excluding the years lived in less than full health due to disease and/or injury. Since 2004, Eurostat publishes annual statistics called Healthy Life Years (HLY) based on reported activity limitations. The United States of America uses similar indicators in the framework of their nationwide health promotion and disease prevention plan "Healthy People 2010". An increasing number of countries are using health expectancy indicators to monitor the health of their population.

There are great variations in life expectancy worldwide, mostly caused by differences in public health, medical care and diet from country to country. Much of the excess mortality (higher death rates) in poorer nations is due to war, starvation, and diseases (AIDS, Malaria, etc.). Over the past 200 years, countries with Black or African populations have generally not had the same improvements in mortality rates that have been enjoyed by populations of European origin. Even in countries with a majority of White people, such as USA, England, and France, Black people tend to have shorter life expectancies than their White counterparts (although often the statistics are not analysed by race). For example, in the U.S. White Americans are expected to live until age 78, but African Americans only until age 71.[6]. Climate may also have an effect, and the way data is collected may also influence the figures.

According to the U.S. Census Bureau, Andorra has the world's longest life expectancy of 83.5 years.

There are also significant differences in life expectancy between men and women in most countries, with women typically outliving men by around five years. Economic circumstances also affect life expectancy. For example, in the United Kingdom, life expectancy in the wealthiest areas is several years longer than in the poorest areas. This may reflect factors such as diet and lifestyle as well as access to medical care. It may also reflect a selective effect: people with chronic life-threatening illnesses are less likely to become wealthy or to reside in affluent areas.[28] In Glasgow the disparity is among the highest in the world with life expectancy for males in the heavily deprived Calton standing at 54 – 28 years less than in the affluent area of Lenzie, which is only eight kilometres away.

Life expectancy is also likely to be affected by exposure to high levels of highway air pollution or industrial air pollution.[citation needed] Thus occupation may also have a major effect on life expectancy. Well-educated professionals working in offices have a high life expectancy, while coal miners (and in prior generations, asbestos cutters) do not. Other factors affecting an individual's life expectancy are genetic disorders, obesity, access to health care, diet, exercise, tobacco smoking, drug use and excessive alcohol use.

Gender differences
Women tend to have a lower mortality rate at every age. In the womb, male fetuses have a higher mortality rate (babies are conceived at a ratio of about 124 males to 100 females, but the ratio of those surviving to birth is only 105 males to 100 females). Among the smallest premature babies (those under 2 pounds or 900 g) females again have a higher survival rate. At the other extreme, about 90% of individuals aged 110 are female.

In the past, mortality rates for females in child-bearing age groups were higher than for males at the same age. This is no longer the case, and female human life expectancy is considerably higher than those of men. The reasons for this are not entirely certain[31]. Traditional arguments tend to favor socio-environmental factors: historically, men have generally consumed more tobacco, alcohol and drugs than females in most societies, and are more likely to die from many associated diseases such as lung cancer, tuberculosis and cirrhosis of the liver.[32] Men are more likely to die from injuries, whether unintentional (such as car accidents) or intentional (suicide, violence, war).[32] Men are also more likely to die from most of the leading causes of death (some already stated above) than women. Some of these in the United States include: cancer of the respiratory system, motor vehicle accidents, suicide, cirrhosis of the liver, emphysema, and coronary heart disease [6]. These far outweigh the female mortality rate from breast cancer and cervical cancer etc. However, such arguments are not entirely satisfactory and, even if the statistics are corrected for known socio-environmental effects on mortality, females still have longer life expectancy. Interestingly, the age of equalization[clarification needed] (about 13) tends to be close to the age of menarche, suggesting a potential reproductive-equilibrium explanation.

Some argue that shorter male life expectancy is merely another manifestation of the general rule, seen in all mammal species, that larger individuals tend on average to have shorter lives.. This biological difference occurs because women have more resistance to infections and degenerative diseases.

Influence of disabilities
In the western world, people with a serious mental illness die on average 25 years earlier than the rest of the population. In the 1990s the life expectancy of the seriously mentally ill was 10 to 15 years shorter, and now has grown to a 25 year average shorter life span.[citation needed]
There is no objective test for mental illness[citation needed], yet studies show the evidence of the increasingly earlier death of those diagnosed mentally ill.
Mental illnesses include schizophrenia, bipolar disorder and major depression. Three out of five mentally ill die from mostly preventable physical diseases. Diseases such as Heart/Cardiovascular disease, Diabetes, Dyslipidaemia, Respiratory ailments, Pneumonia, Influenza.[citation needed]
Stress also decreases life expectancy. The side effects of stress are: pain of any kind, heart disease, digestive problems, sleep problems, depression, obesity, autoimmune diseases, skin conditions, etc., all of which contribute to mental disorders, faster ageing, and other physical diseases.[citation needed]

Centenarians
The number of centenarians is increasing at 7% per year, which means doubling the centanarian population every decade, pushing it into the millions in the next few years.[citation needed] Japan has the highest ratio of centenarians. In Okinawa, there are 34.7 centenarians for every 100,000 inhabitants [6].
In the United States, the number of centenarians grew from 15,000 in 1980 to 77,000 in 2000.[citation needed]

Evolution and aging rate
It is interesting to consider why the various species of plants and animals, including humans, have different lifespans. There is a well-developed evolutionary theory of aging, and general consensus in the academic community of evolutionary theorists; however the theory doesn't work well in practice, and there are many unexplained exceptions. Evolutionary theory states that organisms that, by virtue of their defenses or lifestyle, live for long periods whilst avoiding accidents, disease, predation, etc., are likely to have genes that code for slow ageing - which often translates to good cellular repair. This is theorized to be true because if predation or accidental deaths prevent most individuals from living to an old age, then there will be less natural selection to increase intrinsic life span. The finding was supported in a classic study of opossums by Austad, however the opposite relationship was found in an equally-prominent study of guppies by Reznick

One prominent and very popular theory attributes aging to a tight budget for food energy. The theory has difficulty with the caloric restriction effect, in which animals live longer the less food they eat.
In theory, reproduction is costly and takes energy away from the repair processes that extend life spans. However, in actuality females of many species invest much more energy in reproduction than do their male counterparts, and live longer

nevertheless. In a broad survey of zoo animals, no relationship was found between the fertility of the animal and its life span .

One area in which theory seems to be well validated: Better-defended animals such as small birds and bats, that can fly away from danger, and naked mole rats that live underground, survive for decades, whereas mice, which cannot, die of old age in a year or two. Tortoises and turtles are very well defended and can live for over 100 years.

Calculating life expectancies

The starting point for calculating life expectancies is the age-specific death rates of the population members. A very simple model of age-specific mortality uses the Gompertz function, although these days more sophisticated methods are used.
In cases where the amount of data is relatively small, the most common methods are to fit the data to a mathematical formula, such as an extension of the Gompertz function, or to look at an established mortality table previously derived for a larger population and make a simple adjustment to it (eg multiply by a constant factor) to fit the data.
With a large amount of data, one looks at the mortality rates actually experienced at each age, and applies smoothing (eg by cubic splines) to iron out any apparently random statistical fluctuations from one year of age to the next.

While the data required is easily identified in the case of humans, the computation of life expectancy of industrial products and wild animals involves more indirect techniques. The life expectancy and demography of wild animals are often estimated by capturing, marking and recapturing them. The life of a product, more often termed shelf life is also computed using similar methods. In the case of long-lived components such as those used in critical applications, such as in aircraft methods such as accelerated aging are used to model the life expectancy of a component.

The age-specific death rates are calculated separately for separate groups of data which are believed to have different mortality rates (eg males and females, and perhaps smokers and non-smokers if data is available separately for those groups) and are then used to calculate a life table, from which one can calculate the probability of surviving to each age. In actuarial notation the probability of surviving from age x to age x+n is denoted and the probability of dying during age x (i.e. between ages x and x+1) is denoted . For example, if 10% of a group of people alive at their 90th birthday die before their 91st birthday, then the age-specific death probability at age 90 would be 10%. The life expectancy at age x, denoted , is then calculated by adding up the probabilities to survive to every age. This is the expected number of complete years lived (one may think of it as the number of birthdays they celebrate).

Because age is rounded down to the last birthday, on average people live half a year beyond their final birthday, so half a year is added to the life expectancy to calculate the full life expectancy. Life expectancy is by definition an arithmetic mean. It can also be calculated by integrating the survival curve from ages 0 to positive infinity (the maximum lifespan, sometimes called 'omega'). For an extinct cohort (all people born in year 1850, for example), of course, it can simply be calculated by averaging

the ages at death. For cohorts with some survivors it is estimated by using mortality experience in recent years.

It is important to note that this statistic is usually based on past mortality experience, and assumes that the same age-specific mortality rates will continue into the future. Thus such life expectancy figures are not generally appropriate for calculating how long any given individual of a particular age is expected to live. But they are a useful statistic to summarize the current health status of a population. However for some purposes, such as pensions calculations, it is usual to adjust the life table used, thus assuming that age-specific death rates will continue to decrease over the years, as they have done in the past. This is often done by simply extrapolating past trends; however some models do exist to account for the evolution of mortality (e.g., the Lee-Carter model.

As discussed above, on an individual basis, there are a number of factors that have been shown to correlate with a longer life. Factors that are associated with variations in life expectancy include family history, marital status, economic status, physique, exercise, diet, drug use including smoking and alcohol consumption, disposition, education, environment, sleep, climate, and health care.[6]

Life Expectancy Index

The Life Expectancy Index is a statistical measure used to determine the average lifespan of the population of a certain nation or area. Life expectancy is one of the factors in measuring the Human Development Index (HDI) of each nation, along with adult literacy, education, and standard of living.[44]

The gross reproduction rate (GRR) is the average number of daughters that would be born to a woman (or a group of women) if she survived at least to the age of 45 and conformed to the age-specific fertility rate of a given year. This rate is similar to the net reproduction rate but it ignores the fact that some women will die before completing their childbearing years.[1] See also total fertility rate and replacement-level fertility.

The GRR is particularly relevant where sex ratios are significantly affected by the use of reproductive technologies. In actuarial science, a life table (also called a mortality table or actuarial table) is a table which shows, for each age, what the probability is that a person of that age will die before their next birthday. From this starting point, a number of statistics can be derived and thus also included in the table: the probability of surviving any particular year of age remaining life expectancy for people at different ages the proportion of the original birth cohort still alive estimates of a cohort's longevity characteristics.

Life tables are usually constructed separately for men and for women because of their substantially different mortality rates. Other characteristics can also be used to distinguish different risks, such as smoking status, occupation, and socio-economic class.

Life tables can be extended to include other information in addition to mortality, for instance health information to calculate health expectancy. Health expectancies, of which disability-free life expectancy (DFLE) and Healthy Life Years (HLY) are the best-known examples, are the remaining number of years a person can expect to live in a specific health state, such as free of disability. Two types of life tables are used

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to divide the life expectancy into life spent in various states: 1) multi-state life tables (also known as increment-decrement life tables) based on transition rates in and out of the different states and to death, and 2) prevelence-based life tables (also known as the Sullivan method) based on external information on the proportion in each state. Life tables can also be extended to show life expectancies in different labor force states or marital status states. Life tables are also used extensively in biology and epidemiology. The concept is also of importance in product life cycle management.

Insurance applications
In order to price insurance products, and ensure the solvency of insurance companies through adequate reserves, actuaries must develop projections of future insured events (such as death, sickness, and disability). To do this, actuaries develop mathematical models of the rates and timing of the events. They do this by studying the incidence of these events in the recent past, and sometimes developing expectations of how these past events will change over time (for example, whether the progressive reductions in mortality rates in the past will continue) and deriving expected rates of such events in the future, usually based on the age or other relevant characteristics of the population. These are called mortality tables if they show death rates, and morbidity tables if they show various types of sickness or disability rates.

The availability of computers and the proliferation of data gathering about individuals has made possible calculations that are more voluminous and intensive than those used in the past (i.e. they crunch more numbers) and it is more common to attempt to provide different tables for different uses, and to factor in a range of non-traditional behaviors (e.g. gambling, debt load) into specialized calculations utilized by some institutions for evaluating risk. This is particularly the case in non-life insurance (eg the pricing of motor insurance can allow for a large number of risk factors, which requires a correspondingly complex table of expected claim rates).
The mathematics
The basic algebra used in life tables is as follows.
: the probability that someone aged exactly will die before reaching age .
: the probability that someone aged exactly will survive to age .
: the number of people who survive to age note that this is based on a starting point of lives, typically taken as 100,000
: the number of people who die aged last birthday
: the probability that someone aged exactly will survive for more years, i.e. live up to at least age years
: the probability that someone aged exactly will survive for more years, then die within the following years
μx : the force of mortality, ie the instantaneous mortality rate at age x, ie the number of people dying in a short interval starting at age x, divided by lx and also divided by the length of the interval. Unlike , the instantaneous mortality rate, μx, may exceed 1.
[edit] Biology
When biologists and demographers use life tables, they will normally also include fertility for each age. The extra parameter used is
: expected number of progeny for an individual aged

Epidemiology

In epidemiology and public health, both standard life tables to calculate life expectancy and Sullivan and multistate life tables to calculate health expectancy are commonly used. The latter include information on health in addition to mortality.
 History of religious categories
In world cultures, there have traditionally been many different groupings of religious belief. In India and China, different religious philosophies were traditionally respected as academic differences in pursuit of the same truth. In Islam, the Qu'ran mandates three different categories: true Muslims (to be treated as brothers), the People of the Book (to be respected), and idol worshipers (to be converted). To some extent these theories of religiousness are still prevalent today. However, the most common classification today was birthed out of Western Christianity.

Initially, Christians had a simple dichotomy of world beliefs: Christian civility versus foreign heresy or barbarity. In the eighteenth century, "heresy" was clarified to mean Judaism and Islam; along with outright paganism, this created a fourfold classification which spawned such works as John Toland's Nazarenus, or Jewish, Gentile, and Mahometan Christianity, which represented the three Abrahamic traditions as different "nations" or sects within religion itself, the true monotheism. At the turn of the 18th century, in between 1780 and 1810, the language dramatically changed: instead of "religion" being synonymous with spirituality, authors began using the plural, "religions", to refer to both Christianity and other forms of worship. This new definition was described as follows by Daniel Defoe: "Religion is properly the Worship given to God, but 'tis also applied to the Worship of Idols and false Deities."

In 1838, the four-way division of Christianity, Judaism, "Mahommedanism" and Paganism was multiplied considerably by Josiah Conder's Analytical and Comparative View of All Religions Now Extant among Mankind. Conder's work still adheres to the four-way classification, but in his eye for detail he puts together much historical work to create something resembling our modern Western image: he includes Druze, Yezidis, Mandeans, and Elamites under a list of possibly monotheistic groups, and under the final category, of "polytheism and pantheism", he lists Zoroastrianism, "Vedas, Puranas, Tantras, Reformed sects" of India as well as "Brahminical idolatry", Buddhism, Jainism, Sikhism, "Lamaism", "religion of China and Japan", and "illiterate superstitions".[2]
Even through the late nineteenth century, it was common to view these "pagan" sects as dead traditions which preceded Christianity, the final, complete word of God. This in no way reflected the reality of religious experience: Christians supposed these traditions to have maintained themselves in an unchanging state since whenever they were "invented", but actually all traditions survived in the words and deeds of people, some of whom could make radical new inventions without needing to create a new sect. The biggest problem in this approach was the existence of Islam, a religion which had been "founded" after Christianity, and which had been experienced by Christians as intellectual and material prosperity. By the nineteenth century, however, it was possible to dismiss Islam as a revelation of "the letter, which killeth", given to savage desert nomads. In this context, the term "world

religion" referred only to Christianity, which Europeans considered uniquely posed to civilize the world.

The modern meaning of the phrase "world religion" began with the 1893 Parliament of the World's Religions in Chicago, Illinois. This event was sharply criticized by European Orientalists up until the 1960s as "unscientific", because it allowed religious leaders to speak for themselves instead of bowing to the superior knowledge of the Western academic. As a result its approach to "world religion" was not taken seriously in the scholarly world for some time. Nevertheless, the Parliament spurred the creation of a dozen privately funded lectures with the intent of informing people of the diversity of religious experience: these lectures funded researchers such as William James, D.T. Suzuki, and Alan Watts.
In the latter half of the 20th century, the category of "world religion" fell into serious question, especially for drawing parallels between vastly different cultures, and thereby creating an arbitrary separation between the religious and the secular.[5] Even history professors have now taken note of these complications and advise against teaching "world religions" in schools.

Western classification
Further information: Comparative religion and Sociological classifications of religious movements
Religious traditions fall into super-groups in comparative religion, arranged by historical origin and mutual influence. Abrahamic religions originate in the Middle East, Indian religions in India and Far Eastern religions in East Asia. Another group with supra-regional influence are African diasporic religions, which have their origins in Central and West Africa.

Abrahamic religions are by far the largest group, and these consist mainly of Christianity, Islam and Judaism (sometimes the Bahá'í Faith is also included). They are named for the patriarch Abraham, and are unified by the practice of monotheism. Today, around 3.4 billion people are followers of Abrahamic religions and are spread widely around the world apart from the regions around South-East Asia. Several Abrahamic organizations are vigorous proselytizers.

Indian religions originated in Greater India and tend to share a number of key concepts, such as dharma and karma. They are of the most influence across the Indian subcontinent, East Asia, South East Asia, as well as isolated parts of Russia. The main Indian religions are Hinduism, Buddhism, Sikhism, and Jainism. Indian religions mutually influenced each other. Sikhism was also influenced by the Abrahamic tradition of Sufism.

East Asian religions consist of several East Asian religions which make use of the concept of Tao (in Chinese) or Do (in Japanese or Korean), namely Taoism and Confucianism, both of which are asserted by some scholars to be non-religious in nature.

African diasporic religions practiced in the Americas, imported as a result of the Atlantic slave trade of the 16th to 18th centuries, building of traditional religions of Central and West Africa.

Indigenous tribal religions, formerly found on every continent, now marginalized by the major organized faiths, but persisting as undercurrents of folk religion. Includes African traditional religions, Asian Shamanism, Native American religions, Austronesian and Australian Aboriginal traditions, Chinese folk religion, and postwar Shinto. Under more traditional listings, this has been referred to as "Paganism" along with historical polytheism.
Iranic religions (not listed below due to overlaps) originated in Iran and include Zoroastrianism, Yazdanism, Ahl-e Haqq and historical traditions of Gnosticism (Mandaeanism, Manichaeism). It has significant overlaps with Abrahamic traditions, e.g. in Sufism and in recent movements such as Bábísm and the Bahá'í Faith.

New religious movement is the term applied to any religious faith which has emerged since the 19th century, often syncretizing, re-interpreting or reviving aspects of older traditions: Hindu revivalism, Ayyavazhi, Pentecostalism, polytheistic reconstructionism, and so forth.
The generally agreed upon demographic distribution of the major super-groupings mentioned is shown in the table below:

Religious demographics
One way to define a major religion is by the number of current adherents. The population numbers by religion are computed by a combination of census reports and population surveys (in countries where religion data is not collected in census, for example USA or France), but results can vary widely depending on the way questions are phrased, the definitions of religion used and the bias of the agencies or organizations conducting the survey. Informal or unorganized religions are especially difficult to count.
There is no consensus among researchers as to the best methodology for determining the religiosity profile of the world's population. A number of fundamental aspects are unresolved:
Whether to count "historically predominant religious culture[s]"
Whether to count only those who actively "practice" a particular religion
Whether to count based on a concept of "adherence"
Whether to count only those who expressly self-identify with a particular denomination[22]
Whether to count only adults, or to include children as well.
Whether to rely only on official government-provided statistics[23]
Whether to use multiple sources and ranges or single "best source(s)"
Largest religions or belief systems by number of adherents

The population numbers below are computed by a combination of census reports, random surveys (in countries where religion data is not collected in census, for example USA or France), and self-reported attendance numbers, but results can vary widely depending on the way questions are phrased, the definitions of religion used and the bias of the agencies or organizations conducting the survey. Informal or unorganized religions are especially difficult to count. Some organizations may wildly inflate their numbers.

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Course Name	: Management of Welfare Services

Course Objectives
· To help students acquire skills in handling issues related to population needs and problems.
· To introduce students them to demographic knowledge which is composed of understanding the trends in birth rates, fertility rates and death rates of several populations in different countries.
· To help students get exposed to various biological theories that is relevant in understanding the growth and development of human beings.
· To increase student's capacities in recognizing challenges in computing demographic statistics.
· To demonstrate critical issues in management of welfare services by responsible sub units of governments.
· To help students acquire skills in differentiating between welfare services and non- welfare services.
· To increase the students' power of analysis in criticizing the government where appropriate to deliver services to its citizens.
· To definitely equip students with knowledge of designing relevant policies in regard to transparent and accountable provision of welfare services to the needy and marginalized groups of people in most developing countries.

Course Content
Introduction to welfare management
· Meaning of social welfare programs
· Different perspectives of social services
· Meaning of Welfare or welfare work
· Provision and funding
· History of social welfare services
· Welfare systems
· Case studies: Germany, Canada, Italy, Sweden, United states

Social assistance programs
· Meaning of social assistance programs
· History of these programs
· Major aspects of current social assistance programs
· Critiques of these programs

Social Service Organizations and Welfare reform
· The changing network of social services
· The findings in brief
· The project on devolution and urban change and the institutional study
· Why study community institutions and welfare reform
· Welfare reform policies in the Urban Change sites

What do service providers know about welfare reform
· Overall levels of knowledge
· Knowledge level by site
· Knowledge of specific aspects of welfare reform policies
· Sources of knowledge about welfare reforms

Corporate Welfare

· Meaning of Corporate welfare
· Corporate welfare as corrupt subsidies
· Social democracy

Welfare state

· Definition of welfare state
· Main interpretations of the idea of a welfare state
· Etymology of welfare state
· History of welfare states
· Three forms of the welfare state
· Its effects on poverty
· Criticisms of welfare states
· The welfare state and social expenditure

Social Market Economy

· Meaning of a social market economy
59
· Model of the social market economy
· History of the model
· Main elements of the social market economy

Child Welfare Service/Case Management System (CWS/CMS)

· Program overview
· Functionality of the program
· Its governance
· Policy issues
· Corporate social responsibility (CSR)

Mode of delivery, Face to face lectures

Assessment

Coursework 40%

Exams 60%

Total Mark 100%

Management of Welfare Services

Social welfare program, any of a variety of governmental programs designed to protect citizens from the economic risks and insecurities of life. The most common types of programs provide benefits to the elderly or retired, the sick or invalid, dependent survivors, mothers, the unemployed, the work-injured, and families. Methods of financing and administration and the scope of coverage and benefits vary widely among countries.

Social services also called welfare service, or social work, Any of various professional activities or methods concerned with providing social services (such as investigatory and treatment services or material aid) to disadvantaged, distressed, or vulnerable persons or groups.

The field originated in the charity organizations in Europe and the U.S. in the late 19th century. The training of volunteer workers by these organizations led directly to the founding of the first schools of social work and indirectly to increased government responsibility for the welfare of the disadvantaged.

Social work is a professional and academic discipline committed to the pursuit of social welfare and social change. The field works towards research and practice to improve the quality of life and to the development of the potential of each individual, group and community of a society. Social workers perform interventions through research, policy, community organizing, direct practice and teaching. Research is often focused on areas such as human development, social policy, public administration, program evaluation and international and community development. Social workers are organized into local, national, continental and international professional bodies. Social work, an interdisciplinary field, includes theories from economics, education, sociology, medicine, philosophy, politics, psychology, and as well as anti-oppressive and anti-racist discourse.

Social work has its roots in the struggle of society to deal with poverty and the resultant problems. Therefore, social work is intricately linked with the idea of charity work; but must be understood in broader terms. The concept of charity goes back to ancient times, and the practice of providing for the poor has roots in many major ancient civilizations and world religions.It is described as the (peoples helper).

Welfare

Welfare or **Welfare Work** consists of actions or procedures — especially on the part of governments and institutions — striving to promote the basic well-being of individuals or the society. These efforts usually strive to improve the financial situation of people in need but may also strive to improve their employment chances and many other aspects of their lives including sometimes their mental health. In many countries, most such aid is provided by family members, relatives, and the local community and is only theoretically available from government sources.

In American English, *Welfare* is often also used to refer to financial aid provided to individuals in need, which is called *Benefit(s)* or *Welfare Benefits* in British English.

Welfare can take a variety of forms, such as monetary payments, subsidies and vouchers, health services, or housing. Welfare can be provided by governments, non-governmental organizations, or a combination of the two. Welfare schemes may be funded directly by governments, or in social insurance models, by the members of the welfare scheme.

Welfare systems differ from country to country, but welfare is commonly provided to those who are unemployed, those with illness or disability, those of old age, those with dependent children and to veterans. A person's eligibility for welfare may also be constrained by means testing or other conditions.

In a more general sense, *welfare* also means the well-being of individuals or a group, in other words their health, happiness, safety, prosperity, and fortunes.

Provision and funding

Welfare may be provided directly by governments or their agencies, by private organizations, or by a combination of both in a mixed economy model. The term welfare state is used to describe a state in which the government provides the majority of welfare services, or to describe those services collectively.

Welfare may be funded by governments out of general revenue, typically by way of redistributive taxation. Social insurance type welfare schemes are funded on a contributory

basis by the members of the scheme. Contributions may be pooled to fund the scheme as a whole, or reserved for the benefit of the particular member. Participation in such schemes is either compulsory or the program is subsidized sufficiently heavily that most eligible individuals choose to participate.

Examples of social insurance programs include the Social Security (United States), and Medicare programs in the United States.[1]

States also may support the welfare of its citizens, such as the non-working poor, through direct cash transfers.

History

In the Roman Empire, social welfare to help the poor was enlarged by the Caesar Trajan.[2] Trajan's program brought acclaim from many including Pliny the Younger.[3]

In the Jewish tradition, charity represented by tzedakah, justice, and the poor are entitled to charity as a matter of right rather than benevolence. Contemporary charity is regarded as a continuation of the Biblical Maaser Ani, or poor-tithe, as well as Biblical practices including permitting the poor to glean the corners of a field, harvest during the Shmita (Sabbatical year), and other practices. Voluntary charity, along with prayer and repentance, is regarded as ameliorating the consequences of bad acts.

The medieval Roman Catholic Church operated a far- reaching and comprehensive welfare system for the poor.[4] The 12th century witnessed a significant expansion of support for the needy, particularly in the form of hospices, hostels, and hospitals in towns and along pilgrim routes.[5]

The concepts of welfare and pension were put into practice in the early Islamic law[6][*not in citation given*] of the Caliphate as forms of *Zakat* (charity), one of the Five Pillars of Islam, since the time of the Rashidun caliph Umar in the 7th century. The taxes (including *Zakat* and *Jizya*) collected in the treasury of an Islamic government were used to provide income for the needy, including the poor, elderly, orphans, widows, and the disabled. According to the Islamic jurist Al-Ghazali (Algazel, 1058–1111), the government was also expected to store up food supplies in every region in case a disaster or famine occurs.[6][7] (See Bayt al-mal for further information.)

There is relatively little statistical data on welfare transfer payments until at least the High Middle Ages. In the medieval period and until the Industrial Revolution, the function of welfare payments in Europe was principally achieved through private giving or charity. In those early times there was a much broader group considered in poverty compared to the 21st century.

Early welfare programs in Europe included the English Poor Law of 1601, which gave parishes the responsibility for providing welfare payments to the poor.[8] This system was substantially modified by the 19th-century Poor Law Amendment Act, which introduced the system of workhouses.

It was predominantly in the late 19th and early 20th centuries that an organized system of state welfare provision was introduced in many countries. Otto von Bismarck, Chancellor of Germany, introduced one of the first welfare systems for the working classes. In Great Britain the Liberal government of Henry Campbell-Bannerman and David Lloyd George

introduced the National Insurance system in 1911,[9] a system later expanded by Clement Attlee. The United States did not have an organized welfare system until the Great Depression, when emergency relief measures were introduced under President Franklin D. Roosevelt. Even then, Roosevelt's New Deal focused predominantly on a program of providing work and stimulating the economy through public spending on projects, rather than on cash payments.

Welfare systems
France

Solidarity is a strong value of the French Social Protection system. The first article of the French Code of Social Security describes the principle of solidarity. Solidarity is commonly comprehended in relations of similar work, shared responsibility and common risks. Existing solidarities in France caused the expansion of health and social security.

Germany

The welfare-state has a long tradition in Germany dating back to the industrial revolution. Due to the pressure of the workers movement in the late 19th century, Reichskanzler Otto von Bismarck introduced the first rudimentary state social insurance scheme. Today, the social protection of all its citizens is considered a central pillar of German national policy. 27.6 percent of Germany's GDP are channeled into an all-embracing system of health, pension, accident, longterm care and unemployment insurance, compared to only 16.2 percent in the US. In addition there are tax financed services such as child benefits (*Kindergeld*, beginning at €184 per month for the first and second children, €190 for the third and €215 for each child thereafter, until they attain 25 years or receive their first professional qualification)[10] and basic provisions for those unable to work or anyone with an income below the poverty line.[11]

Since 2005, reception of full unemployment pay (60-67% of the previous net salary), has been restricted to 12 months in general and 18 months for over 55 year-olds. This is now followed by (usually much lower) *Arbeitslosengeld II (ALG II)* or *Sozialhilfe* which is independent of previous employment.

Under ALG II, a single person receives €359 per month plus the cost of 'adequate' housing, a pension scheme and health insurance. ALG II can also be paid partially to supplement a low work income.

Canada

Canadian social safety net covers a broad spectrums of programs, and because Canada is a federation, many are run by the provinces. Canada has a wide range of government transfer payments to individuals, which totaled $145 billion in 2006.[12] Only social programs that direct funds to individuals are included in that cost; programs such as medicare and public education are additional costs.

Generally speaking before the Great Depression most social services were provided by religious charities and other private groups. Changing government policy between the 1930s and 1960s saw the emergence of a welfare state, similar to many Western European countries. Most programs from that era are still in use, although many were scaled back during the 1990s as government priorities shifted towards reducing debt and deficit.

Italy

The Italian welfare state's foundations were laid along the lines of the corporatist-conservative model, or of its Mediterranean variant. Later, in the 1960s and 1970s, increases in public spending and a major focus on universality brought it on the same path as social-democratic systems. These policies proved to be financially unsustainable, as public debt and inflation grew alarmingly, not allowing the welfare state to develop completely. In the 1990s, efforts moving towards decentralisation and privatisation were used in an attempt to cope with European pressures for economic stability, which were finally reached by 2001.

Sweden

Sweden has been categorised by some observers[who?] as a middle way between a capitalist economy and a socialist economy[citation needed]. Supporters of this system assert that Sweden has found a way of achieving high levels of social equality, without stifling entrepreneurialism. The perspective has been questioned by supporters of economic liberalization in Sweden.

Government pension payments are financed through an 18.5% pension tax on all taxed incomes in the country, which comes partly from a tax category called a public pension fee (7% on gross income), and 30% of a tax category called employer fees on salaries (which is 33% on a netted income). Since January 2001 the 18.5% is divided in two parts, 16% goes to current payments. And 2.5% goes into individual retirement accounts, which was introduced in 2001. Money saved and invested in government funds and IRAs for future pension costs are roughly 5 times annual government pension expenses (725/150).

United States

From the 1930s on, New York City government provided welfare payments to the poor.[15] By the 1960s, as whites moved to the suburbs, the city was having trouble making the payments and attempted to purge the rolls of those who were committing welfare fraud.[15] Twenty individuals who had been denied welfare sued in a case that went to the United States Supreme Court, *Goldberg v. Kelly*. The Court ruled that those suspected of committing welfare fraud must receive individual hearings before being denied welfare.[15] Journalist David Frum considers this ruling to be a milestone leading to the city's 1975 budget disaster.[15]

After the Great Society legislation of the 1960s, for the first time a person who was not elderly or disabled could receive a living from the American government.[16] This could include general welfare payments, health care through Medicaid, food stamps, special payments for pregnant women and young mothers, and federal and state housing benefits.[16] In 1968, 4.1% of families were headed by a woman on welfare; by 1980, this increased to 10%.[16] In the 1970s, California was the U.S. state with the most generous welfare system.[17] Virtually all food stamp costs are paid by the federal government.[18] In 2008, 28.7 percent of the households headed by single women were considered poor. <http://www.npc.umich.edu/poverty/>

Before the Welfare Reform Act of 1996, welfare was "once considered an open-ended right," but welfare reform converted it "into a finite program built to provide short-term cash assistance and steer people quickly into jobs."[19] Prior to reform, states were given "limitless"[19] money by the federal government, increasing per family on welfare, under the 60-year-old Aid to Families with Dependent Children (AFDC) program.[20] This gave states no

incentive to direct welfare funds to the neediest recipients or to encourage individuals to go off welfare (the state lost federal money when someone left the system).[21] One child in seven nationwide received AFDC funds,[20] which mostly went to single mothers.[18]

After reforms, which President Bill Clinton said would "end welfare as we know it,"[18] amounts from the federal government were given out in a flat rate per state based on population.[21] Each state must meet certain criteria to ensure recipients are being encouraged to work themselves out of welfare. The new program is called Temporary Assistance to Needy Families (TANF).[20] It also encourages states to require some sort of employment search in exchange for providing funds to individuals and imposes a five-year time limit on cash assistance.[18][20][22] The bill restricts welfare from most legal immigrants and increased financial assistance for child care.[22] The federal government also maintains an emergency $2 billion TANF fund to assist states that may have rising unemployment.[20]

Millions of people left the welfare rolls (a 60% drop overall),[22] employment rose, and the child poverty rate was reduced.[18] A 2007 Congressional Budget Office study found that incomes in affected families rose by 35%.[22] The reforms were "widely applauded"[23] after "bitter protest."[18] *The Times* called the reform "one of the few undisputed triumphs of American government in the past 20 years."[24] Critics of the reforms sometimes point out that the reason for the massive decrease of people on the welfare rolls in the United States in the 1990s wasn't due to a rise in actual gainful employment in this population, but rather, due almost exclusively to their offloading into workfare, giving them a different classification than classic welfare recipient. The late 1990s were also considered an unusually strong economic time, and critics voiced their concern about what would happen in an economic downturn.[18]

Aspects of the program vary in different states; Michigan, for example, requires a month in a job search program before benefits can begin.[18]

The National Review editorialized that the Economic Stimulus Act of 2009 will reverse the welfare-to-work provisions that Bill Clinton signed in the 1990s and again base federal grants to states on the number of people signed up for welfare rather than at a flat rate.[21] One of the experts who worked on the 1996 bill said that the provisions would lead to the largest one-year increase in welfare spending in American history.[24] The House bill provides $4 billion to pay 80% of states' welfare caseloads.[20] Although each state received $16.5 billion annually from the federal government as welfare rolls dropped, they spent the rest of the block grant on other types of assistance rather than saving it for worse economic times.[19]

Timeline

1880's-1890's: Attempts were made to move poor from work yards to poor houses if they were in search of relief funds.

1893-1894: Attempts were made at the first unemployment payments, but were unsuccessful due to the 1893-1894 recession.

1932: The Great Depression had gotten worse and the first attempts to fund relief failed. The "Emergency Relief Act", which gave local governments $300 million, was passed into law.

1933: In March 1933, President Franklin D. Roosevelt pushed congress to establish the Civilian Conservation Corps.

1935: The Social Security Bill was passed on June 17, 1935. The bill included direct relief (cash, food stamps, etc.) and changes for unemployment insurance.

1940: Aid to Families With Dependent Children (AFDC) was established.

1964: Johnson's War on Poverty is underway, and the Economic Opportunity Act was passed. Commonly known as "the Great Society"

1996: Passed under Clinton; "The Personal Responsibility and Work Opportunity Reconciliation Act of 1996" becomes law.

History

The 1980s marked a change in the structure of Latin American social protection programs. Social protection embraces three major areas; social insurance, financed by workers and employers, social assistance to the population's poorest, financed by the state, and labor market regulations to protect worker rights.[26] Although diverse, recent Latin American social policy has tended to concentrate on social assistance.

The 1980s had a significant effect on social protection policies. Prior to the 1980s, most Latin American countries focused on social insurance policies involving formal sector workers, assuming that the informal sector would disappear with economic development. The economic crisis of the 1980s and the liberalization of the labor market led to a growing informal sector and a rapid increase in poverty and inequality. Latin American countries did not have the institutions and funds to properly handle such a crisis, both due to the structure of the social security system, and to the previously implemented structural adjustment policies (SAPs) that had decreased the size of the state.

New welfare programs have integrated the multidimensional, social risk management, and capabilities approaches into poverty alleviation. They focus on income transfers and service provisions and aim at alleviating both long and short-term poverty through, among other things, education, health, security, and housing. Unlike previous programs that targeted the working class, new programs have successfully focused on locating and targeting the very poorest.

The impacts of social assistance programs vary between countries, and many programs have yet to be fully evaluated. According to Barrientos and Santibanez, the programs have been more successful in increasing investment in human capital than in bringing households above the poverty line. Challenges still exist. Some of these are the extreme inequality levels and the mass scale of poverty; locating a financial basis for programs; and deciding on exit strategies or on the long-term establishment of programs.[26]

Major aspects of current social assistance programs

- **Conditional Cash Transfer (CCT) combined with service provisions.** Transfer cash directly to households, most often through the women of the household, if certain conditions (e.g. children's school attendance or doctor visits) are met (10). Providing free schooling or healthcare is often not sufficient, because there is an opportunity cost for the parents in, for example, sending children to school (lost labor power), or in paying for the transportation costs of getting to a health clinic.
- **Household.** The household has been the focal point of social assistance programs.

- **Target the poorest.** Recent programs have been more successful than past ones in targeting the poorest. Previous programs often targeted the working class.
- **Multidimensional.** Programs have attempted to address many dimensions of poverty at once. Chile Solidario is the best example.

Critiques

Income transfers can be either conditional or unconditional. There is no substantial evidence that conditional transfers are more effective than unconditional ones. Conditionalities are sometimes critiqued for being paternalistic and unnecessary.

Current programs have been built as short term, rather than as permanent institutions and many of them have rather short time spans (~five years). Some programs have time frames that reflect available funding. One example of this is Bolivia's Bonosol, which is financed by proceeds from the privatization of utilities—an unsustainable funding source.

Some see Latin America's social assistance programs as a way to patch up high levels of poverty and inequalities, partly brought on by the current economic system. The effectiveness of the programs relies on the ability of mostly free-trade, neoliberally-oriented economic systems to address poverty. Latin America's social assistance programs do not require a systemic change, but instead work within the current structures.

Social Service Organizations and Welfare Reform
I. Introduction: The Changing Network of Social Services

Social service organizations address a wide range of low-income families' needs. These agencies are part of a larger system that involves government provision of services and government funding for private institutions. Significant change in one part of this network affects the others. The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), passed in 1996, dramatically changed welfare policies. Welfare recipients now face time limits on eligibility for cash assistance, requirements that they must engage in work or work activities, and incentives and supports to encourage them to find employment. Because these welfare policy changes are so dramatic, many anticipate that the delivery of social services by private organizations will also be affected.

Predictions about the effects of welfare reform on social service agencies vary widely. Supporters of welfare reform anticipate a general increase in employment and a decrease in poverty. These predictions suggest that private donations to social service organizations will increase, allowing churches and other private agencies to play a larger role in helping families. Thus, the government safety net will be less and less needed over time. Critics, on the other hand, predict an increase in poverty and homelessness, even as social service organizations lack the resources to handle the increased needs of poor families. This is a vision of government pulling out of the social safety net without reinforcing the supportive services for people in poverty.

In order to fully understand how welfare reform influences the well-being of low-income families and communities, we must learn how human service organizations are affected by new welfare policies. This report examines agency staff members'

knowledge about welfare reform, their overall views of welfare reform, their experience of its impact on their agencies, and their expectations of how it will affect them. The findings offer preliminary insights into how new government policies shape other components of the network of service provision that is essential to the well-being of low-income families.

A. The Findings in Brief

- Agency staff were generally aware that major changes in welfare policy had occurred, but few expressed detailed knowledge of the policies.

- The overwhelming majority of respondents expressed negative or mixed views of welfare reform.

- Changes attributed to welfare reform began soon after the policies were implemented, but these changes have not yet been as dramatic as the critics of reform have predicted.

- Changes in the demand for education and training services have been the biggest effect of welfare reform so far. Agencies' experiences — whether demand increased or decreased — depended partly on the state and local welfare policies and how they were implemented.

- Most basic needs organizations have not yet seen an increase in demand. Nor, however, have they seen increases in private donations as predicted by supporters of welfare reform. Moreover, the experiences of a few Cleveland agencies suggest that time limits or sanctioning policies that cause many people to lose benefits will significantly affect the demand faced by these private charities.

- Despite the limited impact that the first year of welfare reform had on community organizations, respondents anticipate that the new policies will appreciably increase the demand for their services in the future. Many, however, have no plans for meeting the new needs or the possible rise in demand.

B. The Project on Devolution and Urban Change and the Institutional Study

This report is based on data collected for the Project on Devolution and Urban Change (Urban Change, for short). Urban Change is a research project designed to understand how devolution and the Temporary Assistance for Needy Families (TANF) block grants play out in four large urban areas; the project is being undertaken by the Manpower Demonstration Research Corporation (MDRC). (See Table 1 for a description of the Urban Change project.)

Specifically, the report is the first from the project's Institutional Study, the objective of which is to understand how the new welfare policies and funding mechanisms affect human service agencies in neighborhoods with high concentrations of welfare recipients and people living in poverty.

The social service system involves complex, interdependent relationships between governments and private institutions. Governments provide some services directly, some services are provided through contracts between governments and private organizations, and private agencies acting on their own initiative fill some of the gaps. Smith and Lipsky (1995) point out that governments increasingly provide services by purchasing them from private social service agencies, expanding the welfare state through these organizations. Welfare reform could affect agencies both directly (for example, if they receive many more or many fewer referrals from the welfare department) and indirectly, through effects on their clients (for example, if clients gain or lose income, they may need less or more assistance from private agencies). These changes could then affect the services available to people living in poverty.

Many researchers are monitoring the implementation and effects of welfare reform.[1] Others have applied organizational theories to human service agencies.[2] In addition to integrating these literatures, this report makes two key contributions. First, the breadth of the sample allows us to examine how welfare reform affects many types of agencies: faith-based and non-faith-based, with varying services, with and without contracts from welfare departments, and with a range of budget and staffing levels. Second, the report examines the effects of specific local policy changes on organizations serving impoverished urban communities. The data on these policy changes come from other Urban Change components (see Table 1).

Finally, as policymakers judge the effects of welfare reform on individuals and communities, they need to consider whether the safety net will be able to hold up. Advocates of welfare reform assert that the private sector will compensate or make up for the elimination of welfareentitlements. However, to evaluate this claim, we must examine the entire network of social services. Agencies in high-poverty urban neighborhoods play a crucial role in this network.[3]

D.   Welfare Reform Policies in the Urban Change Sites

In thinking about how welfare reform has affected agencies, it is useful to distinguish various aspects of the welfare reform package. States and counties have different policies. These distinct approaches and their implementation at each site likely affect social service agencies differently. (See Table 2 for summary information about the policies in each Urban Change site.) Many aspects of welfare policy changes could influence these agencies. Among the important factors, but not the only key ones, are time limits, sanctioning, and the emphasis on work.

By limiting the duration of recipients' eligibility for cash assistance, new welfare policies depart fundamentally from previous practices. Time limits appear to lead more welfare recipients to employment, even before the time limits would actually have cut off their benefits. However, these policies, especially when combined with earned income disregards, do not lead families to leave welfare more quickly in the pre-time-limit period (Bloom, 1999). Increases in employment may lead to increases in demand for child care or for services offered during different hours. In addition, if

recipients reach time limits and lose income, this could affect the demand for food and other emergency services, such as money to pay utility bills and housing costs. New sanctioning policies could also affect the income of current and former welfare recipients and thereby influence the demand for services. These policies are stricter under welfare reform, with some sites adding full-family sanctions, in which the entire family loses cash assistance for a specified period of time (Quint et al., 1999, p. 187). In addition, if people who leave cash assistance do not receive all the benefits to which they are entitled, such as Medicaid and food stamps, their need and demand for services might increase. In short, loss of income from time limits or sanctions could affect demand for basic services such as food and shelter. In addition, if these policies lead to increased work, demand for child care and other services could rise.

In addition to time limits, welfare reform's work and participation requirements led most states to develop "work-first" approaches to moving welfare recipients into jobs. The work-first philosophy emphasizes rapid attachment to jobs. To that end, these policies mandate that in order to receive their cash grant, recipients must be employed, volunteering, or participating in approved education and employment preparation programs. (See Table 2 for more details on the sites' policies.) These policies could affect institutions in a variety of ways, including the demand for their services, the types of clients they serve, the services they offer, and their funding.

This study considers the early influence of welfare reform policies on institutions in high-poverty urban neighborhoods. Following a description of our research methodology and sample, Section III describes whether respondents knew about the new welfare policies at the time of the interviews and which aspects of the policies they most commonly mentioned. Section IV describes respondents' views on welfare reform. Section V considers what effects welfare reform has had on social service agencies so far — in particular, whether welfare reform has changed the demand for services, the services offered, and agencies' relationship with the welfare department. Section VI looks to the future and respondents' expectations about demand for services, existence of funding for services, and plans to address changes resulting from welfare reform. The conclusion, Section VII, explores the implications of these findings for social service organizations, welfare departments, and funders.

II. Research Methodology and Sample

In order to learn how welfare reform affected social service organizations in high-poverty neighborhoods, we interviewed key personnel at 106 agencies located in the four Urban Change sites. (Table 3 shows the number of agencies at which respondents were interviewed in each site.)

A. Selection of the Sample

Within each site, institutions were selected in three neighborhoods that had moderate or high poverty levels and large concentrations of welfare recipients.[4] The agencies selected were central to the vitality of each neighborhood and offer a range of services important to low-income families. The sample includes a mix of churches; small, grassroots organizations; and larger, more established organizations. This is

not a random sample of institutions, nor is it representative of all institutions in each city or neighborhood. However, this purposive sampling technique yields a diverse group of agencies that offer a variety of perspectives on the effects of welfare reform.

B. Description of the Sample

Agencies were categorized by the "main" services they offer, as shown in Table 4.5 The 19 adult education and employment preparation agencies offer basic education, vocational skills training, or employment preparation services. They typically provide combinations of these services, either clustered in one program or separately. Twelve child care agencies deliver direct services for preschool-age children, and one focuses on services for parents and child care providers, accrediting child care facilities and providing parent-child play groups. The 30 basic needs agencies supply food, shelter, and other "emergency" items such as clothing and money to pay utilities. The 13 health agencies provide general family health care, mental health services, or specialized services such as reproductive health care. The 18 school and youth agencies are evenly divided between elementary schools and organizations providing services to school-age youth. The remaining agencies focus on real estate and economic development, advocacy (for example, legal services), or family well-being services (such as parenting classes or domestic violence services). These 13 agencies were categorized as "other" because there are not enough of any one type to analyze them as separate groups. (For more information on the agencies in each category, see the Appendix.)

Eighty percent of the institutions are nonprofit agencies, and the remainder are split between for-profit and government organizations.6 About one-third of the organizations are faith-based. (See Figure 1.) Almost 90 percent of the agencies are classified as having almost all or mostly low-income clients ("mostly" is defined as 61 percent or more); 50 percent of the agencies serve almost all or mostly families with children on public assistance.

Based on the size of their total annual budget, about one-quarter of the organizations qualified as large (with a budget greater than $1 million), another quarter were medium-sized (more than $200,000), and a similar number were small (more than $50,000). Less than 10 percent of the sample had very small budgets ($50,000 or less).7 Over 10 percent had 51 or more paid staff, about 40 percent employed between 11 and 50 staff, and another 40 percent had 10 or fewer paid staff members. In addition, less than 10 percent had no paid staff and relied entirely on volunteers. (See Figure 2.)

Local researchers conducted structured interviews with administrators and other key personnel. They spoke with agency and/or program directors, whenever possible.8 This report is based on interviews conducted between March 1998 and March 1999. Although this time period was relatively early in the implementation of welfare reform, sufficient time had elapsed since the implementation of the new policies that it is reasonable to assume that respondents were familiar with them. All interviews were conducted at least one year (in Philadelphia and Miami) or six months (in Cleveland and Los Angeles) after the start of welfare reform. Still, as

Table 5 shows, welfare recipients had not yet reached time limits during the interview period, so the full impact of the new policies would not be expected to appear in these interviews.9

Interviews covered each agency's mission and history, staffing, budget, clientele, and the services currently offered as well as those planned for the next year or two. Researchers asked respondents about their knowledge of welfare reform, their views of the new policies, perceptions of how the policies have affected their agency so far, and their expectations of how the policies would affect the agency in the future. To supplement the interview data, we also collected printed materials, such as annual reports or flyers advertising services, from most of the agencies.

III. What Do Service Providers Know About Welfare Reform?

A.   Overall Levels of Knowledge

For agencies to respond effectively to changes brought about by welfare reform, they must understand the nature of the new policies. Thus, to assess agencies' knowledge of welfare reform, we asked respondents what they had heard about changes in welfare policies that affect families with children. Responses from about three-quarters of the agencies indicated an awareness of welfare reform.10 However, most respondents in this group expressed awareness only of basic, nationwide changes aimed at reducing welfare rolls and getting welfare recipients into the workforce. The respondents generally knew about the time-limited nature of welfare benefits and/or about the renewed emphasis on employment, but they knew little about the specific policies implemented in their locale. For example, one respondent said: "The mothers have to get out, get educated, and become self-dependent. That's basically what it is." Still, some respondents were quite knowledgeable about the particulars of the new policies. For example, the following indicates a Philadelphia respondent's familiarity with the new policies:

The government is trying to transition families from welfare check to self-sufficiency. Welfare parents have a total of five years to become self-sufficient. They are pushing parents to get work within two years. The first two years ended on March 3. Welfare parents had to develop a plan for self-sufficiency with their caseworker. Money has been provided for transportation and child care. Some people are excluded because of physical handicap or parental obligations.

Similar numbers of respondents from all types of agencies, except for health services, expressed knowledge about welfare reform. About three-quarters of agencies in each of the other categories knew something about welfare reform, but only one-third of the health agencies had such knowledge. We suspect that because health care agencies focus somewhat narrowly on Medicaid, these respondents were less likely to be aware of time limits or work requirements for cash benefits.

B. Knowledge Level, by Site

Contextual factors seem to have influenced respondents' knowledge about welfare reform. Staff from more agencies in the northern cities — Cleveland and Philadelphia

— were knowledgeable about welfare reform policies than their counterparts in Los Angeles and Miami.11 In Cleveland and Philadelphia, responses of the agency staff indicated that at least 8 out of 10 expressed a general awareness of welfare reform, compared with less than 7 out of 10 in Los Angeles and with 6 out of 10 in Miami.12 (See Table 6.)

C. Knowledge of Specific Aspects of Welfare Reform Policies

In response to the question about what they had heard about welfare reform, respondents touched on several aspects of the new policies.13 The temporary nature of welfare benefits was the most cited aspect of welfare reform. Of all the agencies whose respondents knew something about welfare reform, 73 percent mentioned time limits. Nonetheless, most of these responses provide only a general sense of the limits now placed on receipt of welfare benefits, as illustrated by the following: "The new requirements are that people have short-term stay[s] on public assistance" and "We're very much aware that in this state the clock is ticking, it has been ticking for a while, for those persons who are on public assistance to prepare themselves to come off welfare."

About one third of the knowledgeable respondents in Cuyahoga, Los Angeles, and Philadelphia provided detailed information about time limits.14 For example, one Philadelphia respondent correctly identified that "there is a five-year time limit; there is a two-year work-related-activity time limit." Several Los Angeles respondents noted that California's time-limit policies apply only to the adult's portion of the TANF grant. As one Los Angeles respondent said, "Children will always get aid." Several Philadelphia respondents commented that large numbers of the city's residents would be affected by time limits. This could be influenced in part by the local media.15 For instance, one respondent reported: "A lot will be struggling after the March [1999] deadline hits. They need to get some 59,000 off the rolls in March and that is a huge task."

Respondents also frequently mentioned the new emphasis on getting welfare recipients into the workforce. For example, a Cleveland respondent said:

The focus has changed from a long-term assistance to getting them into work and getting them off the rolls of welfare. And, everything seems to be centered around whether they're working or not and training.

Also, a Philadelphia respondent mentioned:

There are provisions that you must be working during those restricted years — you have to make an effort to get in job training or school or a job that fills the requirement that you are in a work-related activity.

Respondents from more agencies in Cleveland than in the other sites mentioned sanctions. One-third of the Cuyahoga respondents mentioned sanctions, as did a few from Philadelphia, whereas sanctions did not come up among respondents in the other two sites.16

Respondents reported learning about welfare reform from a variety of sources. The most frequently mentioned sources of information were the welfare department or other government agencies and professional and social contacts. Some mentioned personal contacts with welfare office staff. Respondents also obtained information from their clients, news media, and seminars or other training opportunities within their agency. About three-quarters of the respondents mentioned more than one source. Ultimately, though, there was no clear correlation between the extent of respondents' awareness about welfare reform and the source of that information, although those who mentioned more than one source of knowledge were slightly more likely to be aware of welfare reform.

Corporate welfare

Corporate welfare is a term describing a government's bestowal of money grants, tax breaks, or other special favorable treatment on corporations or selected corporations. The term compares corporate subsidies and welfare payments to the poor, and implies that corporations are much less needy of such treatment than the poor. The Canadian New Democratic Party picked up the term as a major theme in its 1972 federal election campaign.[1] Ralph Nader, a prominent critic of corporate welfare,[2][3] is often credited with coining the term

Corporate welfare as corrupt subsidies

Subsidies considered excessive, unwarranted, wasteful, unfair, inefficient, or bought by lobbying are often called corporate welfare. The label of corporate welfare is often used to decry projects advertised as benefiting the general welfare that spend a disproportionate amount of funds on large corporations, and often in uncompetitive, or anti-competitive ways. For instance, in the United States, agricultural subsidies are usually portrayed as helping honest, hardworking independent farmers stay afloat. However, the majority of income gained from commodity support programs actually goes to large agribusiness corporations such as Archer Daniels Midland, as they own a considerably larger percentage of production.[5]

According to the Cato Institute, the U.S. federal government spent $92 billion on corporate welfare during fiscal year 2006. Recipients included Boeing, Xerox, IBM, Motorola, Dow Chemical, and General Electric.[6]

Alan Peters and Peter Fisher have estimated that state and local governments provide $40-50 billion annually in economic development incentives,[7] which many critics characterize as corporate welfare.

Social democracy is a political ideology of the centre-left on the classic political spectrum. The contemporary social democratic movement seeks to reform capitalism to align it with the ethical ideals of social justice while maintaining the capitalist mode of production, as opposed to creating an alternative socialist economic system.[1] Practical modern social democratic policies include the promotion of a welfare state, and the creation of economic democracy as a means to secure workers' rights.[2]

Historically, social democracy was a form of evolutionary reformist socialism[2] that advocated the establishment of a socialist economy through class struggle. During the early 20th century, major European social democratic parties began to reject elements of Marxism, Revolutionary socialism and class struggle, taking a moderate position that socialism could be established through political reforms. The distinction between *Social Democracy* and *Democratic Socialism* had yet to fully develop at this time. The Frankfurt Declaration of the Socialist International in 1951, attended by many social democratic parties from across the world, committed adherents to oppose Bolshevik communism and Stalinism, and to promote a gradual transformation of capitalism into socialism.[3]

Social democracy, as practiced in Europe in 1951, was a socialist movement supporting gradualism; the belief that gradual democratic reforms to capitalist economies will eventually succeed in creating a socialist economy.[4] rejecting forcible imposition of socialism through revolutionary means.[4] This gradualism has resulted in various far left groups, including communists, of accusing social democracy of accepting the values of capitalist society and therefore not being a genuine form of socialism[4], instead labeling it a concession made to the working class classes by the ruling class. Social democracy rejects the Marxian principle of dictatorship of the proletariat and the creation of a socialist state, claiming that gradualist democratic reforms will improve the rights of the working class.[5]

Since the rise in popularity of the New Right and neoliberalism, a number of prominent social democratic parties have abandoned the goal of the gradual evolution of capitalism to socialism and instead support welfare state capitalism.[6] Social democracy as such has arisen as a distinct ideology from democratic socialism. In many countries, social democrats continue to exist alongside democratic socialists, who stand to the left of them on the political spectrum. The two movements sometimes operate within the same political party, such as the Brazilian Workers' Party[7] and the Socialist Party of France. In recent years, several social democratic parties (in particular, the British Labour Party) have embraced more centrist, Third Way policy positions. This development has generated considerable controversy.

The Socialist International (SI) is the main international organization of social democratic and moderate socialist parties. It affirms the following principles: first, *freedom*—not only individual liberties, but also freedom from discrimination and freedom from dependence on either the owners of the means of production or the holders of abusive political power; second, *equality and social justice*—not only before the law but also economic and socio-cultural equality as well, and equal opportunities for all including those with physical, mental, or social disabilities; and, third, *solidarity*—unity and a sense of compassion for the victims of injustice and inequality. These ideals are described in further detail in the SI's Declaration of Principles

Welfare state

A **welfare state** is a concept of government where the state plays a key role in the protection and promotion of the economic and social well-being of its citizens. It is based on the principles of equality of opportunity, equitable distribution of wealth, and public responsibility for those unable to avail themselves of the minimal provisions for a good life. The general term may cover a variety of forms of economic and social organization.[1]

There are two main interpretations of the idea of a welfare state:

- A model in which the state assumes primary responsibility for the welfare of its citizens. This responsibility in theory ought to be comprehensive, because all aspects of welfare are considered and universally applied to citizens as a "right".
- Welfare state can also mean the creation of a "social safety net" of minimum standards of varying forms of welfare.

There is some confusion between a "welfare state" and a "welfare society," and debate about how each term should be defined. In many countries, especially in the United States, some degree of welfare is not actually provided by the state, but directly to welfare recipients from a combination of independent volunteers, corporations (both non-profit charitable corporations as well as for-profit corporations), and government services. This phenomenon has been termed a "welfare society," and the term "welfare system" has been used to describe the range of welfare state and welfare society mixes that are found.[2] The welfare state involves a direct transfer of funds from the public sector to welfare recipients, but indirectly, the private sector is often contributing those funds via redistributionist taxation; the welfare state has been referred to as a type of "mixed economy".[3]

Etymology

English term "welfare state" is believed by Asa Briggs to have been coined by Archbishop William Temple during the Second World War, contrasting wartime Britain with the "warfare state" of Nazi Germany.[4] Friedrich Hayek contends that the term derived from the older German word *Wohlfahrtsstaat*, which itself was used by nineteenth century historians to describe a variant of the ideal of *Polizeistaat* ("police state"). It was fully developed by the German academic *Sozialpolitiker*—"socialists of the chair"—from 1870 and first implemented through Bismarck's "state socialism".[5] Bismarck's policies have also been seen as the creation of a welfare state.[6]

In German, a roughly equivalent term (*Sozialstaat*, "social state") had been in use since 1870. There had been earlier attempts to use the same phrase in English, for example in Munroe Smith's text "Four German Jurists",[7] but the term did not enter common use until William Temple popularized it. The Italian term "Social state" (*Stato sociale*) has the same origin.

The Swedish welfare state is called Folkhemmet and goes back to the 1936 compromise between the Union and big Corporate companies. It is a Mixed economy, built on strong unions and a strong system of Social security and universal health care.

In French, the synonymous term "providence state" *(État-providence)* was originally coined as a sarcastic pejorative remark used by opponents of welfare state policies during the Second Empire (1854–1870).

In Spanish and many other languages, an analogous term is used: *estado del bienestar;* translated literally: "state of well-being".

In Portuguese, a similar phrase exists: *Estado Providência;* which means "Providing State", as in the State should provide citizens their demands in order to achieve people's well-being.

In Brazil it is referred to as *Estado de Bem-Estar Social*, translated as social well-being state.

History of welfare states

The existence of military pensions can be traced back at least to the Roman Empire.[8] The Mauryan Empire was the first welfare state that became of the form when Emperor Ashoka introduced reforms after the Kalinga war.[citation needed]

The modern welfare state developed during the late 19th and 20th century in response to Karl Marx's theory of the inherent instability of capitalism in an attempt to protect the capitalist system from a socialist revolution. The first practical implementation of the welfare state was instituted by German Chancellor Otto von Bismarck as a direct attempt to stave off socialism.[9] These welfare programs differed from previous schemes of poverty relief due to their relatively universal coverage. The development of social insurance in Germany under Bismarck was particularly influential. Some schemes, like those in Scandinavia, were based largely in the development of autonomous, mutualist provision of benefits. Others were founded on state provision. The term was not, however, applied to all states offering social protection. The sociologist T.H. Marshall identified the welfare state as a distinctive combination of democracy, welfare and capitalism. Examples of early welfare states in the modern world are Germany, all of the Nordic Countries, the Netherlands, Uruguay and New Zealand and the United Kingdom in the 1930s.

Changed attitudes in reaction to the Great Depression were instrumental in the move to the welfare state in many countries, a harbinger of new times where "cradle-to-grave" services became a reality after the poverty of the Depression. During the Great Depression, it was seen as an alternative "middle way" between communism and capitalism.[10] In the period following the Second World War, many countries in Europe moved from partial or selective provision of social services to relatively comprehensive coverage of the population.

The activities of present-day welfare states extend to the provision of both cash welfare benefits (such as old-age pensions or unemployment benefits) and in-kind welfare services (such as health or childcare services). Through these provisions, welfare states can affect the distribution of wellbeing and personal autonomy among their citizens, as well as influencing how their citizens consume and how they spend their time.[11][12]

After the discovery and inflow of the oil revenue, Saudi Arabia,[13][14] Brunei, Kuwait, Qatar, Bahrain, Oman, and the United Arab Emirates all became welfare states for their respective citizens if not for guest labourers.

In the United Kingdom, the beginning of the modern welfare state was in 1911 when David Lloyd George suggested everyone in work should pay national insurance contribution for unemployment and health benefits from work.

In 1942, the Social Insurance and Allied Services was created by Sir William Beveridge in order to aid those who were in need of help, or in poverty. Beveridge worked as a volunteer for the poor, and set up national insurance. He stated that 'All people of working age should pay a weekly national insurance contribution. In return, benefits would be paid to people who were sick, unemployed, retired or widowed.' The basic assumptions of the report were the National Health Service, which provided free health care to the UK. The Universal Child Benefit was a scheme to give benefits to parents, encouraging people to have children by enabling them to feed and support a family. One theme of the report was the relative cheapness of universal benefits. Beverage quoted miner's pension schemes as some of the most efficient available, and argued that a state scheme would be cheaper to run than individual friendly societies and private insurance schemes, as well as being cheaper than means-tested government-run schemes for the poor. The cheapness of what was to be called

National Insurance was an argument alongside fairness, and justified a scheme in which the rich paid-in and the state paid-out to the rich, just as for the poor. In the original scheme, only some benefits called National Assistance were to be paid regardless of contribution. Universal benefits paid to rich and poor such as child benefit were particularly beneficial after the second world war when the population of the United Kingdom declined. Universal Child Benefit may have helped drive the Baby boom. The impact of the report was huge and 600,000 copies were made.

Beveridge recommended to the government that they should find ways of tackling the five giants, being Want, Disease, Ignorance, Squalor and Idleness. He argued to cure these problems, the government should provide adequate income to people, adequate health care, adequate education, adequate housing and adequate employment. Before 1939, most health care had to be paid for through non government organisations, this was done through a vast network of friendly societies, trade unions and other insurance companies which counted the vast majority of the UK working population as members. These friendly societies provided insurance for sickness, unemployment and invalidity, therefore providing people with an income when they were unable to work. But because of the 1942 Beveridge Report, in 5 July 1948, the National Insurance Act, National Assistance Act and National Health Service Act came into force, thus this is the day that the modern UK welfare state was founded. Institutions run by local councils to provide health services for the uninsured poor - part of the poor law tradition of workhouses - were merged into the new national system.

Welfare systems were developing intensively since the end of the World War II. At the end of century due to their restructuring part of their responsibilities started to be channeled through non-governmental organizations which became important providers of social services.[15]

Three forms of the welfare state

According to Esping-Anderson (1990)[16], there are three ways of organizing a welfare state instead of only two.[17]

Rothstein argues that the first model the state is primarily concerned with directing the resources to "the people most in need". This requires a tight bureaucratic control over the people concerned. According to the second model the state distributes welfare with as little bureaucratic interference as possible, to all people who fulfill easily established criteria (e.g. having children, receiving medical treatment, etc). This requires high taxing. This model was constructed by the Scandinavian ministers Karl Kristian Steincke and Gustav Möller in the 30s and is dominant in Scandinavia.

Esping-Anderson argues, based on comparative histories of actual welfare states, that they fall into three types of policies: liberalist (heavily means tested, limited services), corporatist (pre-market conservative welfare state in origin, social insurance schemes), and social democratic (universalistic "Beveridge" style social rights based on citizenship instead of working life).

Effects on poverty

Empirical evidence suggests that taxes and transfers considerably reduce poverty in most countries, whose welfare states commonly constitute at least a fifth of GDP.[18][19] The information shows that many "welfare states" would have lower poverty rates than a "non-welfare state" such as the U.S. before the transfer of wealth; an example would be Sweden

that has a 23.7% poverty rate pre-transfer while the U.S. has a 21% poverty rate pre-transfer.

Country [M]	Absolute poverty rate (threshold set at 40% of U.S. median household income)[18] [M]		Relative poverty rate[19] [M]	
	Pre-transfer	Post-transfer	Pre-transfer	Post-transfer
Sweden	23.7	5.8	14.8	4.8
Norway	9.2	1.7	12.4	4.0
Netherlands	22.1	7.3	18.5	11.5
Finland	11.9	3.7	12.4	3.1
Denmark	26.4	5.9	17.4	4.8
Germany	15.2	4.3	9.7	5.1
Switzerland	12.5	3.8	10.9	9.1
Canada	22.5	6.5	17.1	11.9
France	36.1	9.8	21.8	6.1
Belgium	26.8	6.0	19.5	4.1
Australia	23.3	11.9	16.2	9.2
United Kingdom	16.8	8.7	16.4	8.2
United States	21.0	11.7	17.2	15.1
Italy	30.7	14.3	19.7	9.1

Criticisms

Critics of the welfare state argue that such a system will make citizens dependent on the system and less inclined to work. However, "certain studies" indicate there is no association between economic performance and welfare expenditure in developed countries,[20] and that there is no evidence for the contention that welfare states impede progressive social development. R. E. Goodin et al., in *The Real Worlds of Welfare Capitalism*,[21] compares the United States, which spends relatively little on social welfare (less than 17 per cent of GDP), with other countries which spend considerably more. This study claims that on some economic and social indicators the United States performs worse than the Netherlands, which has a high commitment to welfare provision.

However, the United States, until the Financial crisis of 2007–2010 which brought a significant fall in GDP, led most welfare states on certain economic indicators, such as GDP per capita, with the notable exception of Scandinavian countries, where Norway for example has significantly higher GDP per capita.[22] Until the recession of 2008 brought about a significant rise in unemployment in the USA, the United States also had a low unemployment rate and a high GDP growth rate, at least in comparison to other developed countries (its growth rate, however, is lower than many welfare states which grow from a lower base and may benefit from recent economic liberalizations, further U.S. GDP per capita is sometimes 20-30% higher than that of welfare states).[22] The United States also had led some welfare states in the ownership of consumer goods. For example, compared to some welfare states, it has more TVs per capita,[23] more personal computers per capita,[24] and more radios per capita.[25].

Socialists criticize welfare state programs as concessions made by the capitalist class in order to divert the working class and middle class away from wanting to pursue a completely new socialist organization of the economy and society, for which it had been historically used in Germany by Bismarck along with his anti-socialist laws. Furthermore, socialists believe social programs are an attempt to "patch up" the ineffective capitalist market economy, therefore only treating the symptoms rather than the cause. By implementing public or cooperative ownership of the means of production, socialists believe there will be no need for a welfare state.[26] Marxists further argue that welfare states and modern social democratic policies limit the incentive system of the market by providing things such as minimum wages, unemployment insurance, taxing profits and reducing the reserve army of labor, resulting in capitalists have little incentive to invest; in essence, social welfare policies cripple the capitalist system and its incentive system, the only solution being a socialist economic system.[27]

Another criticism characterizes welfare as theft of property or forced labor (i.e. slavery). This criticism is based upon the classical liberal human right to obtain and own property, wherein every human being owns his body, and owns the product of his body's labor (i.e. goods, services, land, or money). It follows that the removal of money by any state or government mechanism from one person to another is argued to be theft of the former person's property or a requirement to perform forced labor for the benefit of others, and thus is a violation of his property rights or his liberty, even if the mechanism was legally established by a democratically elected assembly.[citation needed] In April, 2010, the Associated Press reported that 47% of US households will pay no federal income taxes at all for 2009.[28] In his book, The Servile State, English political writer Hilaire Belloc makes his case for the natural instability of pure capitalism and discusses how (as he believes) attempts to reform capitalism will lead almost inexorably to an economy where state regulation has removed the freedom of capitalism and thereby replaced capitalism with what he calls the Servile State. According to Belloc, the Servile State shares with ancient slavery the fact that positive law (as opposed to custom or economic necessity by themselves) dictates that certain people will work for others, who likewise must take care of them. Ergo, according to Belloc, the welfare state may leads to a kind of serfdom where one group works to support another group that does not work.

A third criticism is that the welfare state allegedly provides its dependents with a similar level of income to the minimum wage. Critics argue that fraud and economic inactivity are apparently quite common now in the United Kingdom and France[citation needed]. Some conservatives in the UK claim that the welfare state has produced a generation of dependents who, instead of working, rely solely upon the state for income and support; even though assistance is only legally available to those unable to work. The welfare state in the UK was created to provide certain people with a basic level of benefits in order to alleviate poverty, but that as a matter of opinion has been expanded to provide a larger number of people with more money than the country can ideally afford. Some feel that this argument is demonstrably false: the benefits system in the UK provides individuals with considerably less money than the national minimum wage, although people on welfare often find that they qualify for a variety of benefits, including benefits in-kind, such as accommodation costs which usually make the overall benefits much higher than basic figures show.[29][30]

A fourth criticism of the welfare state is that it results in high taxes. This is usually true, as evidenced by places like Denmark (tax level at 48.9% of GDP in 2007)[31] and Sweden (tax level at 48.2% of GDP in 2007)[31].

A fifth criticism of the welfare state is the belief that welfare services provided by the state are more expensive and less efficient than the same services would be if provided by private

businesses. In 2000, Professors Louis Kaplow and Steven Shafell published two papers, arguing that any social policy based on such concepts as justice or fairness would result in an economy which is Pareto inefficient. Anything which is supplied free at the point of consumption would be subject to artificially high demand, whereas resources would be more properly allocated if provision reflected the cost.

The most extreme criticisms of states and governments are made by anarchists, who believe that all states and governments are undesirable and/or unnecessary. Some socialist anarchists believe that while social welfare gives a certain level of independency from the market and individual capitalists, it creates dependence to the state, which is the institution that, according to this view, supports and protects capitalism in the first place. Nonetheless, according to Noam Chomsky, "social democrats and anarchists always agreed, fairly generally, on so-called 'welfare state measures'" and "Anarchists propose other measures to deal with these problems, without recourse to state authority."[32] Some socialist anarchists believe in stopping welfare programs only if it means abolishing government and capitalism as well.[33]

The welfare state and social expenditure

Welfare provision in the contemporary world tends to be more advanced in countries with stronger developed economies. Poor countries tend to have limited resources for social services. There is very little correlation between economic performance and welfare expenditure.[34]

The table does not show the effect of expenditure on income inequalities, and does not encompass some other forms of welfare provision (such as occupational welfare).

The table below shows, first, welfare expenditure as a percentage of GDP for some (selected) OECD member states, with and without public education,[35] and second, GDP per capita (PPP US$) in 2001:

Nation⬧	Welfare expenditure (% of GDP) omitting education ⬧	Welfare expenditure (% of GDP) including education[35] ⬧	GDP per capita (PPP US$) ⬧
Denmark	29.2	37.9	$29,000
Sweden	28.9	38.2	$24,180
France	28.5	34.9	$23,990
Germany	27.4	33.2	$25,350
Belgium	27.2	32.7	$25,520
Switzerland	26.4	31.6	$28,100
Austria	26.0	32.4	$26,730
Finland	24.8	32.3	$24,430
Netherlands	24.3	27.3	$27,190
Italy	24.4	28.6	$24,670
Greece	24.3	28.4	$17,440
Norway	23.9	33.2	$29,620
Poland	23.0	N/A	$9,450

United Kingdom	21.8	25.9	$24,160
Portugal	21.1	25.5	$18,150
Luxembourg	20.8	N/A	$53,780
Czech Republic	20.1	N/A	$14,720
Hungary	20.1	N/A	$12,340
Iceland	19.8	23.2	$29,990
Spain	19.6	25.3	$20,150
New Zealand	18.5	25.8	$19,160
Australia	18.0	22.5	$25,370
Slovak Republic	17.9	N/A	$11,960
Canada	17.8	23.1	$27,130
Japan	16.9	18.6	$25,130
United States	14.8	19.4	$46,000
Ireland	13.8	18.5	$32,410
Mexico	11.8	N/A	$8,430
South Korea	6.1	11.0	$15,090

Figures from the OECD[36] and the UNDP.[37]

Note: *no data for China, India, Indonesia, Brazil, and Russia, which are not members of the OECD.*

Social market economy

The **social market economy** (German: ***Soziale Marktwirtschaft***) is the main economic model used in West Germany after World War II. It is based on the political philosophy of Ordoliberalism from the Freiburg School. Ordoliberal ideas were most prominently developed in the academic journal ORDO and implemented in practice by Ludwig Erhard, Minister of Economics and Vice Chancellor under Konrad Adenauer's chancellorship (from 1949 to 1963) and afterwards Chancellor himself (1963 - 1966).

Model

The social market economy seeks a market economic system rejecting both socialism and *laissez-faire* capitalism, combining private enterprise with measures of government regulation in an attempt to establish fair competition, low inflation, low levels of unemployment, a standard of working conditions, and social welfare. Erhard once told Friedrich Hayek that the free market economy did not need to be made social but was social in its origin.[1] The term "social" was chosen rather than "socialist" to distinguish the social market economy from a system in which the state directed economic activity and/or owned the means of production,[2] which are privately-owned in the social market model.

In a social market economy, collective bargaining is often done on a national level not between one corporation and one union, but national employers' organizations and national trade unions.

Important figures in the development of the concept include <u>Franz Oppenheimer</u>, <u>Walter Eucken</u>, <u>Wilhelm Röpke</u>, <u>Franz Böhm</u> and <u>Alfred Müller-Armack</u>, who originally coined the term *Soziale Marktwirtschaft*.[3]

History

At first controversial, the model became increasingly popular in West Germany and Austria, since in both states economic success (*Wirtschaftswunder*) was identified with it. From the 1960s, the social market economy was the main economic model in mainland Western Europe, pursued by administrations of both the <u>centre-right</u> (usually led by some <u>Christian democratic</u> parties) and the <u>centre-left</u> (usually led by some <u>social democratic</u> parties).

<u>Southern European</u> states preferred large-scale <u>public services</u>, high salary growth rates and a low unemployment rate over low <u>inflation</u>, low national debt, low public expenditure and other economic health policies.

The term "Social market economy" is still the common economic basis of most political parties in Germany[4][5][6] and a commitment to some form of social market economy was present in the <u>European Union Constitution</u> (a project which was abandoned in 2005 following the negative outcomes of referenda in <u>France</u> and the <u>Netherlands</u>).

Main Elements

The main elements of the Social Market Economy in Germany are basically:[7]

- The Social Market Economy contains the central elements of the free market economy such as *private property*, *free foreign trade*, *exchange of goods* and *free formation of prices*.

- Other elements shall diminish occurring problems of the free market economy. These elements, such as *pension insurance*, *health care* and *unemployment insurance* are part of the social security system. The payments to the social security system are mainly made by the labor force. In addition, there are provisions to restrain the free market (e.g. anti-trust code, laws against the abuse of market power etc.).

Unemployment benefits

Unemployment benefits are payments made by the <u>state</u> or other authorized bodies to <u>unemployed</u> people. Benefits may be based on a compulsory para-governmental insurance system. Depending on the jurisdiction and the status of the person, those sums may be small, covering only basic needs (thus a form of basic <u>welfare</u>), or may compensate the lost time proportionally to the previous earned salary. They often are part of a larger <u>social security</u> scheme.

Unemployment benefits are generally given only to those registering as unemployed, and often on conditions ensuring that they seek work and do not currently have a job.

In some countries, a significant proportion of unemployment benefits are distributed by <u>trade/labor unions</u>, an arrangement known as the <u>Ghent system</u>.

Contemporary professional development

Social Work education begins in a systematised manner in higher educational institutes (universities, colleges etc), but is also an ongoing process that occurs though research and in the workplace.

International Federation of Social Workers states, of social work today, that

"social work bases its methodology on a systematic body of evidence-based knowledge derived from research and practice evaluation, including local and indigenous knowledge specific to its context. It recognizes the complexity of interactions between human beings and their environment, and the capacity of people both to be affected by and to alter the multiple influences upon them including bio-psychosocial factors. The social work profession draws on theories of human development, social theory and social systems to analyse complex situations and to facilitate individual, organizational, social and cultural changes."[1]

A hopeful development for bridging this gap is the compilation of collections of "best practices" which attempt to distill research findings and the experience of respected social work practitioners, educators and researchers into effective interventions. Another important contemporary development in the profession is overcoming suspicion of technology and taking advantage of the potential of information technology.[2]

Qualifications

Professional social workers are generally considered those who hold a degree in social work. Often these practitioners must also obtain a license or be professionally registered.

In some areas of the world, social workers education begins with a Bachelor of Social Work (BA, BSc, BSSW or BSW) degree. Some countries offer Postgraduate degrees like Master's or PhD (doctoral studies) or diplomas (such as MA, MSc, MRes or PhD in/of Social Work). There are many, however, which offer titles like MSW (Master of Social Work) and DSW (Doctor of Social Work).

In a number of countries and jurisdictions, registration or licensure of people working as social workers is required and there are mandated qualifications.[3] In other places, a professional association sets academic and experiential requirements for admission to membership. The success of these professional bodies' efforts is demonstrated in the fact that these same requirements are recognized by employers as necessary for employment.[4]

Professional associations

There are a number of associations for social workers, which exist to provide ethical guidance and other forms of support for their members and social work in general. These associations/organizations are distinguished in international, continental or semi-continental, national and regional. The main international ones are the International Federation of Social Workers (IFSW) and International Association of Schools of Social Work (IASSW).

Role of the professional
Main article: Role of the professional social worker

The main tasks of professional social workers can include a variety of services such as <u>case management</u> (linking users/clients with agencies and programs that will meet their psychosocial needs), counseling (<u>psychotherapy</u>), human services management, social <u>welfare</u> policy analysis, policy and practice development, <u>community organizing</u>, international, social and community development, advocacy, teaching (in schools of social work), and <u>social and political research</u>.

Child Welfare Services/Case Management System (CWS/CMS)
PROGRAM OVERVIEW

<u>Children and Family Services Division</u>, is responsible for developing and overseeing a vast array of programs and services for California at-risk children and families, providing a statewide system for out-of-home care providers, appropriating services to children in out-of-home care, and facilitating adoptions for children who need permanent homes. California's program for child protection is comprised of a number of services and interventions called Child Welfare Services (CWS). These services are organized into programs which together, form a continuum of efforts aimed at safeguarding the well-being of children and adults in ways that strengthen and preserve families, encourage personal responsibility, and foster independence. Generally, the continuum can be broken down into four broad categories:

- Programs and Services intended to prevent abuse or strengthen families;

- Programs and Services intended to remedy the effects of abuse or neglect (e.g., emergency response, family maintenance and family reunification;

- Programs and Services that provide for the out-of-home care of children (e.g. Foster Care and Relative Home Placements);

- Programs and Services that provide for the permanent removal of children from abusive homes (e.g. Adoptions, legal guardianship, Kinship Care).
  California's child welfare services programs are administered by the 58 individual counties. This means that each county organizes and operates its own program of child protection based on local needs while complying with state and federal regulations. Counties are the primary governmental entities that interact with children and families when addressing issues of child abuse and neglect. Counties, either directly or through providers, are responsible for obtaining or providing the interventions and applicable services to protect the well being of children and to help families address issues of child abuse and neglect.
  The California Department of Social Services (CDSS) monitors and provides support in the counties efforts to best serve children and families. The State supports counties through program regulatory oversight and administration and the development of program policy and statute. The CDSS Children and Family Services Division (CFSD) provides a broad spectrum of county child welfare services support activities. CFSD secures federal funding to support child welfare services programs; conducts research and develops new programs and services; provides oversight and evaluation of local and statewide demonstration projects; provides statewide "best practices" training for social workers; coordinates scholarships for social work students; and helps formulate post-secondary social services curriculums. CDSS also provides some direct services such as adoptions placements.

CWS/CMS OVERVIEW

In 1989, SB 370 (Chapter 1294, Statutes of 1989) authorized the development and implementation of a statewide computer system to automate the case management, services planning, and information gathering functions of child welfare services. CWS/CMS is California's version of the federal Statewide Automated Child Welfare Information System (SACWIS).

The provisions of SB 370 laid out specific goals in the development of a statewide child welfare system. In accordance with the goals of SB 370, CWS/CMS has been designed to:

- Provide Child Welfare Services (CWS) workers with immediate access to child, family and case-specific information in order to make appropriate and timely case decisions;

- Provide CWS workers with current and accurate information to effectively and efficiently manage their caseloads and take appropriate and timely case management actions;

- Provide State and County administrators with the information needed to administer programs and monitor and evaluate the achievement of program goals and objectives;

- Provide State and County CWS agencies with a common database and definition of information from which to evaluate CWS; and

- Consolidate the collection and reporting of information for CWS programs pursuant to State and federal requirements.

At the time SB 370 was enacted, there was no centralized statewide system that allowed State or county child welfare workers to share information. Each county had its own locally designed method of managing cases which ranged from manual, paper-file systems to computer-based systems. The different systems made information sharing inefficient and time-consuming.

The CWS/CMS is a personal computer (PC)-based, Windows application that links all 58 counties and the State to a common database. The CWS/CMS is an automated, online client management database that tracks each case from initial contact through termination of services.

The CWS/CMS is one of the largest Windows-based systems. CWS/CMS is designed so caseworkers can move through the application, performing work in the sequence that is most appropriate. The application allows caseworkers to open and track cases through the components of the CWS/CMS program. The system assists caseworkers in recording client demographics, contacts, services delivered, and placement information. The system also enables case workers to record and update assessments, create and maintain case plans, and manage the placement of children in the appropriate foster homes or facilities. The system will generate and manage many forms associated with a client or case. The application also collects data for the purposes of State, county, and federal reporting.

FUNCTIONALITY

The CWS/CMS has eleven functional components designed to reflect the processes employed by child welfare workers in investigating, servicing and managing a child welfare case.

Combined, these eleven components automate the many phases and programmatic functions of CWS. The eleven components and their functions are as follows:

1. Intake -- referral screening, investigation and cross reporting.
2. Client Information -- recording and accessing information on clients;
3. Service Delivery -- recording of services delivered to clients;
4. Case Management -- development of case plans, monitoring service delivery, progress assessment;
5. Placement -- placement management and matching of children to placement alternatives;
6. Court Processing -- hearing preparation, filing of petitions, generating subpoenas, citations, notices, recording court actions;
7. Caseload -- assignment and transfer of cases;
8. Resource Management -- information on resources available for CWS (services providers, county staff resources, etc.)
9. Program Management -- caseload, county, program-level information for program management purposes;
10. Adoptions -- recording of information for reporting purposes; and
11. Licensing -- information on licensees used in placement decisions.

Each functional component captures information and provides automated tools for case management, service provision, and program management or documenting case history.

GOVERNANCE

An Oversight Committee governs the CWS/CMS. The CWS/CMS Oversight Committee is comprised of representatives from the following organizations: eight members selected by the President of the County Welfare Director's Association (CWDA), with the concurrence of the CWDA Executive Committee; the Office of Systems Integration (OSI) CWS/CMS Project Manager; the OSI CWS/CMS County Liaison; and the Deputy Director for CDSS Children and Family Services Division (Chair). The Oversight Committee provides policy direction and a Strategic Plan for the continuing development and operation of CWS/CMS to ensure the system supports the achievement of statutory CWS program goals. The CWS/CMS Oversight Committee has put in place methods of communicating decisions, upcoming changes and status reports to the stakeholders throughout the State. The goal is to continue the successful utilization of CWS/CMS to ensure the safety, permanence and well-being of children.

POLICY ISSUES

In August of 1997, the CDSS formed the CMS Support Branch within the Children and Family Services Division in an effort to bring a programmatic and policy perspective to bear on the resolution of issues that arose as CWS/CMS was implemented and became operational. The CMS Support Branch works in concert with the OSI project team and the project vendor in resolving issues and concerns with CWS/CMS. The CMS Support Branch has assumed responsibility for many issues with significant policy or program impact requiring extensive analysis and subsequent policy interpretation or change.

CONCLUSION

The CWS/CMS will continue to be a "living tool" in a constant state of improvement to accommodate: (1) mandated statutory and regulatory changes, (2) promising program and services practices, and (3) needs of the counties so they can provide for the children and

families they serve. As policies, regulations and/or county business practices change and improve, the Application will need to change and improve as well.

The management of children admitted to child welfare services in Ontario: a review and discussion of current problems and practices.

Children coming into the care of the Ontario Child Welfare System are generally older and more seriously disturbed. Foster parents and Children's Aid Societies have had to change in order to meet the needs of these troubled children. While the efficacy of foster care continues to be debated, there are ways to improve in-care management including: ways of preventing drift, appropriate assessment of parenting capacity, minimizing emergency placements, and more energetic and focused casework which deals appropriately both with the deficits and distortions internalized in the child as a result of previous damage and with the ongoing interactional stresses operative within the foster family system. The advantages of planned over emergency placements are discussed. The child separated from natural parents will mourn. Foster parents' and workers' roles in assisting the work of mourning in foster children are discussed. Soon after admission to care, the practicality of restoration to the natural family must be assessed, and management should then aim towards restoration or towards freeing the child for adoption or planned permanent foster care, should that represent the least detrimental available alternative. The family court system as presently constituted frequently and unnecessarily undermines rather than protects the adjustment and development of vulnerable children. Mechanisms by which this occurs and some proposed solutions are suggested. The paper concludes by suggesting that the traditional low priority given to child welfare services by governments is unlikely to be altered unless mental health professionals succeed in eliciting considerably more community support for adequate social services than is currently available.

Supervising Child Welfare Services

Child welfare supervisors play a pivotal role in translating and fulfilling their agencies' missions and values. Effective supervision enhances staff performance and retention, and can lead to improved outcomes for children and families. The supervisor also plays an important role in reaching out and building relationships with the community. This section provides resources on many aspects of supervision, including clinical and administrative supervision, improving staff performance and retention through supervision, supervision and data management, supervisory development, supervision tools, and more.

    Clinical supervision
    Administrative supervision
    Improving worker performance through supervision

> Improving staff retention through supervision
> Facilitating staff development
> Supervising interdisciplinary practice
> Supervision and data management
> Supervising for organizational change
> Working with the community
> Peer supervision
> Supervisory development/self-development
> Supervision tools

Social responsibility

Social responsibility is an ethical ideology or theory that an entity, be it an organization or individual, has an obligation to act to benefit society at large. This responsibility can be passive, by avoiding engaging in socially harmful acts, or active, by performing activities that directly advance social goals.

Businesses can use ethical decision making to secure their businesses by making decisions that allow for government agencies to minimize their involvement with the corporation. (Kaliski, 2001) For instance if a company is proactive and follows the United States Environmental Protection Agency (EPA) guidelines for emissions on dangerous pollutants and even goes an extra step to get involved in the community and address those concerns that the public might have; they would be less likely to have the EPA investigate them for environmental concerns. "A significant element of current thinking about privacy, however, stresses "self-regulation" rather than market or government mechanisms for protecting personal information" (Swire , 1997) Most rules and regulations are formed due to public outcry, if there is not outcry there often will be limited regulation.

Critics argue that Corporate social responsibility (CSR) distracts from the fundamental economic role of businesses; others argue that it is nothing more than superficial window-dressing; others argue that it is an attempt to pre-empt the role of governments as a watchdog over powerful multinational corporations (Carpenter, Bauer, & Erdogan, 2009).

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Course Name	: Urban Sociology

Course Description
The course deals with further understanding of urban sociology in conjunction with the earlier studies on rural aspects of development. It largely involves analyzing communities implementing smart growth, criticisms of the smart growth, description of suburbs, their histories,, the relationship of rural-urban fringe, modern times of housing estate, the frame works of recent and past public housing, introduction to welfare state in urban centers as opposed to rural areas, criticisms of welfare state, determining the metropolitan area as well as activities, policies implemented in the designated area.

Course Objectives
- To encourage students understand the levels and stages of development in the urban areas.
- To help them grasp knowledge in discovering measures of how urban centers should be organized.
- To educate students the science behind socialization amongst people in the urban areas.
- To help students appreciate different cultures, beliefs, values that are integrated with in an urban setting besides those in rural areas.

Course Content
Introduction
- Meaning of Urban Sociology
- Official definitions
- History of Urban Sociology
- Smart growth
- History of Smart growth
- Rationale of Smart growth
- Communities Implementing Smart growth
- Criticisms of Smart growth
- Characteristics of Smart growth

Suburbs
- Definitions of Suburbs
- Etymology and usage
- History of Suburbs
- Rural-Urban fringe
- Modern times of housing estate
- Public Housing

Welfare State
- Introduction of Welfare State
- History of Welfare states
- Its effects on Poverty
- Criticisms of Welfare states
- The Welfare state and Social expenditure

Metropolitan Area
- Meaning of Metropolitan Area
- Official definition
- Human Migrations
- Modern Migrations
- Theories of Human Migrations

Mode of delivery   Face to face lectures
Assessment
Coursework 40%
Exams   60%
Total Mark 100%

Urban planning

Urban planning designs settlements, from the smallest towns to the largest cities. Shown here is Hong Kong from Western District overlooking Kowloon, across Victoria Harbour.

Partizánske in Slovakia – an example of a typical planned European industrial city founded in 1938 together with a shoemaking factory in which practically all adult inhabitants of the city were employed.

Urban planning is a technical and political process concerned with the development and use of land, planning permission, protection and use of the environment, public welfare, and the design of the urban environment, including air, water, and the infrastructure passing into and out of urban areas, such as transportation, communications, and distribution networks.[1] Urban planning is also referred to as **urban and regional planning**, **regional planning**, **town planning**, **city planning**, **rural planning** or some combination in various areas worldwide. It takes many forms and it can share perspectives and practices with urban design.[2]

Urban planning guides orderly development in urban, suburban and rural areas. Although predominantly concerned with the planning of settlements and communities, urban planning is also responsible for the planning and development of water use and resources, rural and agricultural land, parks and conserving areas of natural environmental significance. Practitioners of urban planning are concerned with research and analysis, strategic thinking, architecture, urban design, public consultation, policy recommendations, implementation and management.[3]

Urban planners work with the cognate fields of architecture, landscape architecture, civil engineering, and public administration to achieve strategic, policy and sustainability goals. Early urban planners were often members of these cognate fields. Today urban planning is a separate, independent professional discipline. The discipline is the broader category that includes different sub-fields such as land-use planning, zoning, economic development, environmental planning, and transportation planning.[4]

History

There is evidence of urban planning and designed communities dating back to the Mesopotamian, Indus Valley, Minoan, and Egyptian civilizations in the third millennium BCE. Archeologists studying the ruins of cities in these areas find paved streets that were laid out at right angles in a grid pattern.[5] The idea of a planned out urban area evolved as different civilizations adopted it. Beginning in the 8th century BCE, Greek city states were primarily centered on orthogonal (or grid-like) plans.[6] The ancient Romans, inspired by the Greeks, also used orthogonal plans for their cities. City planning in the Roman world was developed for military defense and public convenience. The spread of the Roman Empire subsequently spread the ideas of urban planning. As the Roman Empire declined, these ideas slowly disappeared. However, many cities in Europe still held onto the planned Roman city center. Cities in Europe from the 9th to 14th centuries, often grew organically and sometimes chaotically. But many hundreds of new towns were newly built according to preconceived

plans, and many others were enlarged with newly planned extensions. Most of these were realized from the 12th to 14th centuries, with a peak-period at the end of the 13th.[7] From the 15th century on, much more is recorded of urban design and the people that were involved. In this period, theoretical treatises on architecture and urban planning start to appear in which theoretical questions are addressed and designs of towns and cities are described and depicted. During the Enlightenment period, several European rulers ambitiously attempted to redesign capital cities. During the Second French Republic, Baron Georges-Eugène Haussmann, under the direction of Napoleon III, redesigned the city of Paris into a more modern capital, with long, straight, wide boulevards.[8]

Planning and architecture went through a paradigm shift at the turn of the 20th century. The industrialized cities of the 19th century grew at a tremendous rate. The pace and style of this industrial construction was largely dictated by the concerns of private business. The evils of urban life for the working poor were becoming increasingly evident as a matter for public concern. The laissez-faire style of government management of the economy, in fashion for most of the Victorian era, was starting to give way to a New Liberalism that championed intervention on the part of the poor and disadvantaged. Around 1900, theorists began developing urban planning models to mitigate the consequences of the industrial age, by providing citizens, especially factory workers, with healthier environments.

Urban planning started to become professionalized during this time. The Town and Country Planning Association was founded in 1899 and the first academic course in Great Britain on urban planning was offered by the University of Liverpool in 1909.[9] In the 1920s, the ideas of modernism and uniformity began to surface in urban planning, and lasted until the 1970s. Many planners started to believe that the ideas of modernism in urban planning led to higher crime rates and social problems.[10] Urban planners now focus more on individualism and diversity in urban centers.

Theories

Theories of urban planning

Planning theory is the body of scientific concepts, definitions, behavioral relationships, and assumptions that define the body of knowledge of urban planning. There are eight procedural theories of planning that remain the principal theories of planning procedure today: the rational-comprehensive approach, the incremental approach, the transactive approach, the communicative approach, the advocacy approach, the equity approach, the radical approach, and the humanist or phenomenological approach.[11]

Theories of urban planning
Urban planning designs settlements, from the smallest towns to the largest cities. Shown here is Hong Kong from Western District overlooking Kowloon, across Victoria Harbour.

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rational-comprehensive approach, the incremental approach, the transactive approach, the communicative approach, the advocacy approach, the equity approach, the radical approach, and the humanist or phenomenological approach.[1]

Background

The modern origins of urban planning lie in the movement for urban reform that arose as a reaction against the disorder of the industrial city in the mid-19th century. Urban planning exists in various forms and it addresses many different issues.[2] Urban planning can include urban renewal, by adapting urban planning methods to existing cities suffering from decline. Alternatively, it can concern the massive challenges associated with urban growth, particularly in the Global South.[3]

In the late 20th century, the term sustainable development has come to represent an ideal outcome in the sum of all planning goals.[4]

Blueprint planning

Following the rise of empiricism during the industrial revolution, the rational planning movement (1890–1960) emphasized the improvement of the built environment based on key spatial factors. Examples of these factors include: exposure to direct sunlight, movement of vehicular traffic, standardized housing units, and proximity to green-space.[5] To identify and design for these spatial factors, rational planning relied on a small group of highly specialized technicians, including architects, urban designers, and engineers. Other, less common, but nonetheless influential groups included governmental officials, private developers, and landscape architects. Through the strategies associated with these professions, the rational planning movement developed a collection of techniques for quantitative assessment, predictive modeling, and design. Due to the high level of training required to grasp these methods, however, rational planning fails to provide an avenue for public participation. In both theory and practice, this shortcoming opened rational planning to claims of elitism and social insensitivity.

Although it can be seen as an extension of the sort of civic pragmatism seen in Oglethorpe's plan for Savannah or William Penn's plan for Philadelphia, the roots of the rational planning movement lie in Britain's Sanitary Movement (1800-1890).[6] During this period, advocates such as Charles Booth and Ebenezer Howard argued for central organized, top-down solutions to the problems of industrializing cities. In keeping with the rising power of industry, the source of planning authority in the Sanitary Movement included both traditional governmental offices and private development corporations. In London and its surrounding suburbs, cooperation between these two entities created a network of new communities clustered around the expanding rail system.[7] Two of the best examples of these communities are Letchworth in Hertfordshire and Hampstead Garden Suburb in Greater London. In both communities, architects Raymond Unwin and Richard Barry Parker exemplify the elite, top-down approach associated with the rational planning movement by using the planning process to establish a uniform landscape and architectural style based on an idealized medieval village.

From Britain, the rational planning movement spread out across the world. In areas undergoing industrialization themselves, British influences combined with local movements to create unique reinterpretations of the rational planning process. In Paris, architect Le Corbusier adopted rational planning's centralized approach and added to it a dedication to quantitative assessment and a love for the automobile. Together, these two factors yielded the influential planning aesthetic known as "Tower in the Park". In the United States, Frank Lloyd Wright similarly identified vehicular mobility as a principal planning metric. However, where Le Corbusier emphasized design through quantitative assessment of spatial processes, Wright identified the insights of local public technicians as the key design criteria. Wright's Broadacre City provides a vivid expression of what this landscape might look like.

Throughout both the United States and Europe, the rational planning movement declined in the later half of the 20th century.[8] The reason for the movement's decline was also its strength. By focusing so much on design by technical elites, rational planning lost touch with the public it hoped to serve. Key events in this decline in the United States include the demolition of the Pruitt-Igoe housing project in St. Louis and the national backlash against urban renewal projects, particularly urban expressway projects.[9]

Synoptic planning

After the "fall" of blueprint planning in the late 1950s and early 1960s, the synoptic model began to emerge as a dominant force in planning. Lane (2005) describes synoptic planning as having four central elements:

> "(1) an enhanced emphasis on the specification of goals and targets; (2) an emphasis on quantitative analysis and predication of the environment; (3) a concern to identify and evaluate alternative policy options; and (4) the evaluation of means against ends (page 289)."[10]

Public participation was first introduced into this model and it was generally integrated into the system process described above. However, the problem was that the idea of a single public interest still dominated attitudes, effectively devaluing the importance of participation because it suggests the idea that the public interest is relatively easy to find and only requires the most minimal form of participation.[10]

Blueprint and synoptic planning both employ what is called the rational paradigm of planning. The rational model is perhaps the most widely accepted model among planning practitioners and scholars, and is considered by many to be the orthodox view of planning. As its name clearly suggests, the goal of the rational model is to make planning as rational and systematic as possible. Proponents of this paradigm would generally come up with a list of steps that the planning process can be at least relatively neatly sorted out into and that planning practitioners should go through in order when setting out to plan in virtually any area. As noted above, this paradigm has clear implications for public involvement in planning decisions.[10]

Participatory planning
A public consultation event about urban planning in Helsinki

Participatory planning is an urban planning paradigm that emphasizes involving the entire community in the strategic and management processes of urban planning; or, community-level planning processes, urban or rural. It is often considered as part of community development.[11] Participatory planning aims to harmonize views among all of its participants as well as prevent conflict between opposing parties. In addition, marginalized groups have an opportunity to participate in the planning process.[12]

Incrementalism

Beginning in the late 1950s and early 1960s, critiques of the rational paradigm began to emerge and formed into several different schools of planning thought. The first of these schools is Lindblom's incrementalism. Lindblom describes planning as "muddling through" and thought that practical planning required decisions to be made incrementally. This incremental approach meant choosing from small number of policy approaches that can only have a small number consequences and are firmly bounded by reality, constantly adjusting the objectives of the planning process and using multiple analyses and evaluations.[13] Lane (2005) explains the public involvement implications of this philosophy. Though this perspective of planning could be considered a large step forward in that it recognizes that there are number of "public interests" and because it provides room for the planning process to be less centralized and incorporate the voices other than those of planners, it in practice would only allow for the public to be involved in a minimal, more reactive rather than proactive way.[10]

Mixed scanning model

The mixed scanning model, developed by Etzioni, takes a similar, but slightly different approach. Etzioni (1968) suggested that organizations plan on two different levels: the tactical and the strategic. He posited that organizations could accomplish this by essentially scanning the environment on multiple levels and then choose different strategies and tactics to address what they found there. While Lindblom's approach only operated on the functional level Etzioni argued, the mixed scanning approach would allow planning organizations to work on both the functional and more big-picture oriented levels.[14] Lane explains though, that this model does not do much more at improving public involvement since the planner or planning organization is still at its focus and since its goal is not necessarily to achieve consensus or reconcile differing points of view on a particular subject.

By the late 1960s and early 1970s, planners began to look for new approaches because as happened nearly a decade before, it was realized that the current models were not necessarily sufficient. As had happened before, a number of different models emerged. Lane (2005) notes that it is most useful to think of these model as emerging from a social transformation planning tradition as opposed to a social guidance one, so the emphasis is more bottom-up in nature than it is top-down.[10]

Transactive planning

Transactive planning was a radical break from previous models. Instead of considering public participation as method that would be used in addition to the normal training planning process, participation was a central goal. For the first time, the public was encouraged to take on an active role in the policy setting process, while the planner took on the role of a distributor of information and a feedback source.[10] Transactive planning focuses on interpersonal dialogue that develops ideas, which will be turned into action. One of the central goals is mutual learning where the planner gets more information on the community and citizens become more educated about planning issues.[15]

Advocacy planning

Formulated in the 1960s by lawyer and planning scholar Paul Davidoff, the advocacy planning model takes the perspective that there are large inequalities in the political system and in the bargaining process between groups that result in large numbers of people unorganized and unrepresented in the process. It concerns itself with ensuring that all people are equally represented in the planning process by advocating for the interests of the underprivileged and seeking social change.[16][17] Again, public participation is a central tenet of this model. A plurality of public interests is assumed, and the role of planner is essentially the one as a facilitator who either advocates directly for underrepresented groups directly or encourages them to become part of the process.[10]

Bargaining model

The bargaining model views planning as the result of give and take on the part of a number of interests who are all involved in the process. It argues that this bargaining is the best way to conduct planning within the bounds of legal and political institutions.[18] The most interesting part of this theory of planning is that makes public participation the central dynamic in the decision-making process. Decisions are made first and foremost by the public, and the planner plays a more minor role.[10]

Communicative approach
Main article: Communicative planning

The communicative approach to planning is perhaps the most difficult to explain. It focuses on using communication to help different interests in the process understand each other. The idea is that each individual will approach a conversation with his or her own subjective experience in mind and that from that conservation shared goals and possibilities will emerge. Again, participation plays a central role under this model. The model seeks to include as a broad range of voice to enhance the debate and negotiation that is supposed to form the core of actual plan making. In this model, participation is actually fundamental to the planning process happening. Without the involvement of concerned interests there is no planning.[10]

Looking at each of these models it becomes clear that participation is not only shaped by the public in a given area or by the attitude of the planning organization or planners that work for

it. In fact, public participation is largely influenced by how planning is defined, how planning problems are defined, the kinds of knowledge that planners choose to employ and how the planning context is set.[10] Though some might argue that is too difficult to involve the public through transactive, advocacy, bargaining and communicative models because transportation is some ways more technical than other fields, it is important to note that transportation is perhaps unique among planning fields in that its systems depend on the interaction of a number of individuals and organizations.[19]

Process
Blight may sometimes cause communities to consider redeveloping and urban planning.

Prior to 1950, Urban Planning was seldom considered a unique profession in Canada.[20] There were, and are, of course, differences from country to country. For example, the UK's Royal Town Planning Institute was created as a professional organisation in 1914 and given a Royal Charter in 1959. Town planning focused on top-down processes by which the urban planner created the plans. The planner would know architecture, surveying, or engineering, bringing to the town planning process ideals based on these disciplines. They typically worked for national or local governments. Urban planners were seen as generalists, capable of integrating the work of other disciplines into a coherent plan for whole cities or parts of cities. A good example of this kind of planner was Lewis Keeble and his standard textbook, *Principles and Practice of Town and Country Planning*, published in 1951.[21]

Changes to the planning process

Strategic Urban Planning over past decades have witnessed the metamorphosis of the role of the urban planner in the planning process. More citizens calling for democratic planning & development processes have played a huge role in allowing the public to make important decisions as part of the planning process. Community organizers and social workers are now very involved in planning from the grassroots level.[22] The term advocacy planning was coined by Paul Davidoff in his influential 1965 paper, "Advocacy and Pluralism in Planning" which acknowledged the political nature of planning and urged planners to acknowledge that their actions are not value-neutral and encouraged minority and under represented voices to be part of planning decisions.[23] Benveniste argued that planners had a political role to play and had to bend some truth to power if their plans were to be implemented.[24]

Developers have also played huge roles in development, particularly by planning projects. Many recent developments were results of large and small-scale developers who purchased land, designed the district and constructed the development from scratch. The Melbourne Docklands, for example, was largely an initiative pushed by private developers to redevelop the waterfront into a high-end residential and commercial district.

Recent theories of urban planning, espoused, for example by Salingaros see the city as an adaptive system that grows according to process similar to those of plants. They say that urban planning should thus take its cues from such natural processes.[25] Such theories also advocate participation by inhabitants in the design of the urban environment, as opposed to simply leaving all development to large-scale construction firms.[26]

In the process of creating an urban plan or urban design, carrier-infill is one mechanism of spatial organization in which the city's figure and ground components are considered separately. The urban figure, namely buildings, are represented as total possible building volumes, which are left to be designed by architects in following stages. The urban ground, namely in-between spaces and open areas, are designed to a higher level of detail. The carrier-infill approach is defined by an urban design performing as the carrying structure that creates the shape and scale of the spaces, including future building volumes that are then infilled by architects' designs. The contents of the carrier structure may include street pattern, landscape architecture, open space, waterways, and other infrastructure. The infill structure may contain zoning, building codes, quality guidelines, and Solar Access based upon a solar envelope.[27][28] Carrier-Infill urban design is differentiated from complete urban design, such as in the monumental axis of Brasília, in which the urban design and architecture were created together.

In carrier-infill urban design or urban planning, the negative space of the city, including landscape, open space, and infrastructure is designed in detail. The positive space, typically building site for future construction, are only represented as unresolved volumes. The volumes are representative of the total possible building envelope, which can then be infilled by individual architects.

Technical aspects of urban planning

Technical aspects of urban planning involve the applying scientific, technical processes, considerations and features that are involved in planning for land use, urban design, natural resources, transportation, and infrastructure. Urban planning includes techniques such as: predicting population growth, zoning, geographic mapping and analysis, analyzing park space, surveying the water supply, identifying transportation patterns, recognizing food supply demands, allocating healthcare and social services, and analyzing the impact of land use.

Technical aspects of urban planning involve the technical processes, considerations and features that are involved in planning for land use, urban design, natural resources, transportation, and infrastructure.

Towns and cities have been planned with aesthetics in mind. Here in Bath, England, 18th-century private sector development was designed to appear attractive.

In developed countries, there has been a backlash against excessive human-made clutter in the visual environment, such as signposts, signs, and hoardings.[1] Other issues that generate strong debate among urban designers are tensions between peripheral growth, housing density and new settlements. There are also debates about the mixing tenures and land uses, versus distinguishing geographic zones where different uses dominate. Regardless, all successful urban planning considers urban character, local identity, respects heritage, pedestrians, traffic, utilities and natural hazards.

Planners can help manage the growth of cities, applying tools like zoning and growth management to manage the uses of land. Historically, many of the cities now thought[by whom?] the most beautiful are the result of dense, long lasting systems of prohibitions and guidance about building sizes, uses and features.[2] These allowed substantial freedoms, yet enforce styles, safety, and often materials in practical ways. Many conventional planning techniques are being repackaged using the contemporary term smart growth.

There are some cities that have been planned from conception, and while the results often do not turn out quite as planned, evidence of the initial plan often remains. (*See List of planned cities*)

The 20th and 21st century trend for New Classical Architecture seeks to develop aesthetically pleasing smart growth in urban areas and to continue architectural tradition and classical design.[3][4]

Safety and security

The medieval walled city of Carcassonne in France is built upon high ground to provide maximum protection from attackers.

Historically within the Middle East, Europe and the rest of the Old World, settlements were located on higher ground (for defense) and close to fresh water sources.[citation needed] Cities have often grown onto coastal and flood plains at risk of floods and storm surges. Urban planners must consider these threats. If the dangers can be localised then the affected regions can be made into parkland or green belt, often with the added benefit of open space provision.

Extreme weather, flood, or other emergencies can often be greatly mitigated with secure emergency evacuation routes and emergency operations centres. These are relatively inexpensive and unintrusive, and many consider them a reasonable precaution for any urban space. Many cities will also have planned, built safety features, such as levees, retaining walls, and shelters.

In recent years,[when?] practitioners have also been expected to maximise the accessibility of an area to people with different abilities, practicing the notion of "inclusive design," to anticipate criminal behaviour and consequently to "design-out crime" and to consider "traffic calming" or "pedestrianisation" as ways of making urban life more pleasant.

Some city planners try to control criminality with structures designed from theories such as socio-architecture or architectural determinism a subset of environmental determinism. These theories say that an urban environment can influence individuals' obedience to social rules and level of power. Refer to Foucault and the Encyclopaedia of the Prison System for more details. The theories often say that psychological pressure develops in more densely developed, unadorned areas. This stress causes some crimes and some use of illegal drugs. The antidote is believed to be more individual space and better, more beautiful design in place of functionalism.[citation needed]

Oscar Newman's defensible space theory cites the modernist housing projects of the 1960s as an example of environmental determinism, where large blocks of flats are surrounded by shared and disassociated public areas, which are hard for residents to identify with. As those on lower incomes cannot hire others to maintain public space such as security guards or grounds keepers, and because no individual feels personally responsible, there was a general deterioration of public space leading to a sense of alienation and social disorder.

Jane Jacobs is another notable environmental determinist and is associated with the "eyes on the street" concept. By improving 'natural surveillance' of shared land and facilities of nearby residents by literally increasing the number of people who can see it, and increasing the familiarity of residents, as a collective, residents can more easily detect undesirable or criminal behaviour, as, she argued, used to be the case in small traditional communities.

Jacobs went further, though, in emphasising the details in how to achieve this 'natural surveillance', in stressing the necessity of multiple uses on city streets, so that different people co-mingle with different stores and parks in a condensed part of city space.[5] By doing this, as well as by making city streets interesting, she theorised a continuous animation of social actions during an average city day, which would keep city streets interesting and well occupied throughout a 24-hour period. She presented the North End in Boston, Massachusetts, as an idealisation of this persistent occupation and tasking in a condensed city space, as a model for criminal control.

The "broken-windows" theory argues that small indicators of neglect, such as broken windows and unkempt lawns, promote a feeling that an area is in a state of decay. Anticipating decay, people likewise fail to maintain their own properties. The theory suggests that abandonment causes crime, rather than crime causing abandonment.[6]

Some planning methods might help an elite group to control ordinary citizens. Haussmann's renovation of Paris created a system of wide boulevards which prevented the construction of barricades in the streets and eased the movement of military troops. In Rome, the Fascists in the 1930s created *ex novo* many new suburbs in order to concentrate criminals and poorer classes away from the elegant town.

Decay

Urban decay is a process by which a city, or a part of a city, falls into a state of disrepair and neglect. It is characterised by depopulation, economic restructuring, property abandonment, high unemployment, fragmented families, political disenfranchisement, crime, and desolate urban landscapes.

During the 1970s and 1980s, urban decay was often associated with central areas of cities in North America and Europe. During this time, changes in global economies, demographics, transportation, and policies fostered urban decay.[7] Many planners spoke of "white flight" during this time. This pattern was different from the pattern of "outlying slums" and "suburban ghettos" found in many cities outside of North America and Western Europe, where central urban areas actually had higher real estate values.

Starting in the 1990s, many of the central urban areas in North America have been experiencing a reversal of the urban decay, with rising real estate values, smarter development, demolition of obsolete social housing and a wider variety of housing choices.[8] However, reversal of urban decay (gentrification) often causes housing affordability in the inner city to decrease, with the consequence that poorer residents are pushed out, often to older inner and middle ring suburbs. This "suburbanisation of poverty" has important implications for siting affordable housing, and transportation and social services planning.

Slums

The rapid urbanisation of the last century caused more slums in the major cities of the world, particularly in developing countries. Planning resources and strategies are needed to address the problems of slum development. Many planners are calling for slum improvement, particularly the Commonwealth Association of Planners.[9] When urban planners work on slums, they must cope with racial and cultural differences to ensure that racial steering does not occur.

Slums were often "fixed" by clearance. However, more creative solutions are beginning to emerge such as Nairobi's "Camp of Fire" program, where established slum-dwellers promise to build proper houses, schools, and community centres without government money, in return for land on which they have been illegally squatting on for 30 years. The "Camp of Fire" program is one of many similar projects initiated by Slum Dwellers International, which has programs in Africa, Asia, and South America.[10]

Reconstruction and renewal
The overall area plan for the reconstruction of Kabul's Old City area, the proposed Kabul - City of Light Development

Areas devastated by war or invasion challenge urban planners. Resources are scarce. The existing population has needs. Buildings, roads, services and basic infrastructure like power, water and sewerage are often damaged, but with salvageable parts. Historic, religious or social centres also need to be preserved and re-integrated into the new city plan. A prime example of this is the capital city of Kabul, Afghanistan, which, after decades of civil war and occupation, has regions of rubble and desolation. Despite this, the indigenous population continues to live in the area, constructing makeshift homes and shops out of salvaged materials. Any reconstruction plan, such as Hisham Ashkouri's City of Light Development, needs to be sensitive to the needs of this community and its existing culture and businesses.

Urban reconstruction development plans must also work with government agencies as well as private interests to develop workable designs.

New master-planned cities

In the 21st Century, countries in Asia and the Middle-East have embarked on plans to build brand new large cities.[11][12][13] Masdar City, a new city in UAE, cost $18 billion.[12]

One expert has said building a brand new city for 1 million people would be regarded as a "terrifying concept" in the United Kingdom[14] while in Asia brand new large cities are being built.[14]

Many of these new cities are built to use new technologies such as District cooling and automatic waste collection[15] in GIFT City[or Personal Rapid Transit in Masdar City.[18]

Saudi Arabia is building 5 new cities to control congestion and sprawl in existing cities.[11] While India is building 7 new cities to provide space and facilities that are missing in existing cities, such as cycling paths, parks and public transport within a 10-minute walk to every office and home.[19]

Transport
Very densely built-up areas require high capacity urban transit, and urban planners must consider these factors in long term plans (Canary Wharf tube station).
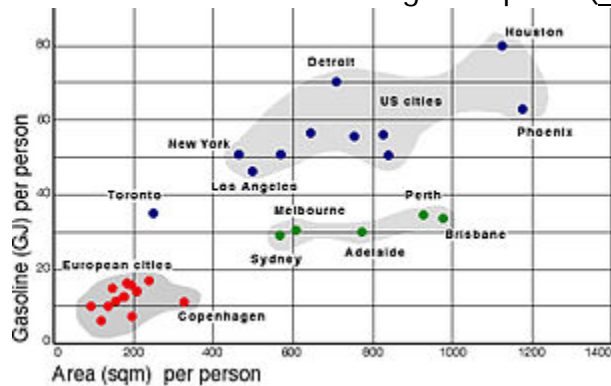
Although an important factor, there is a complex relationship between urban densities and car use.

Transport within urbanised areas presents unique problems. The density of an urban environment increases traffic, which can harm businesses and increase pollution unless properly managed. Parking space for private vehicles requires the construction of large parking garages in high density areas. This space could often be more valuable for other development.

Good planning uses transit oriented development, which attempts to place higher densities of jobs or residents near high-volume transportation. For example, some cities permit commerce and multi-story apartment buildings only within one block of train stations and multilane boulevards, and accept single-family dwellings and parks farther away.

Floor area ratio is often used to measure density. This is the floor area of buildings divided by the land area. Ratios below 1.5 are low density. Ratios above five constitute very high density. Most exurbs are below two, while most city centres are well above five. Walk-up apartments with basement garages can easily achieve a density of three. Skyscrapers easily achieve densities of thirty or more.

City authorities may try to encourage higher densities to reduce per-capita infrastructure costs. In the UK, recent years have seen a concerted effort to increase the density of residential

development in order to better achieve sustainable development. Increasing development density has the advantage of making mass transport systems, district heating and other community facilities (schools, health centres, etc.) more viable. However critics of this approach dub the densification of development as 'town cramming' and claim that it lowers quality of life and restricts market-led choice.[*citation needed*]

Problems can often occur at residential densities between about two and five.[20] These densities can cause traffic jams for automobiles, yet are too low to be commercially served by trains or light rail systems. The conventional solution is to use buses, but these and light rail systems may fail where automobiles and excess road network capacity are both available, achieving less than 2% ridership.[21]

The Lewis–Mogridge Position claims that increasing road space is not an effective way of relieving traffic jams as latent or induced demand invariably emerges to restore a socially tolerable level of congestion.

Suburbanisation
Low-density (auto-oriented) suburban development near Colorado Springs, Colorado, United States

In some countries, declining satisfaction with the urban environment is held to blame for continuing migration to smaller towns and rural areas (so-called urban exodus). Successful urban planning supported Regional planning can bring benefits to a much larger hinterland or city region and help to reduce both congestion along transport routes and the wastage of energy implied by excessive commuting.

Environmental factors

Environmental protection and conservation are of utmost importance to many planning systems across the world. Not only are the specific effects of development to be mitigated, but attempts are made to minimise the overall effect of development on the local and global environment. This is commonly done through the assessment of Sustainable urban infrastructure and microclimate.

Zoning

The primary purpose of zoning is to segregate uses that are thought to be incompatible. In practice, zoning is used to prevent new development from interfering with existing residents or businesses and to preserve the "character" of a community. Zoning is commonly controlled by local governments such as counties or municipalities, though the nature of the zoning regime may be determined or limited by state or national planning authorities or through enabling legislation.[22] In Australia, land under the control of the Commonwealth (federal) government is not subject to state planning controls. The United States and other federal countries are similar. Zoning and urban planning in France and Germany are regulated by national or federal codes. In the case of Germany this code includes contents of zoning plans as well as the legal procedure.

Zoning may include regulation of the kinds of activities which will be acceptable on particular lots (such as open space, residential, agricultural, commercial or industrial), the densities at which those activities can be performed (from low-density housing such as single family homes to high-density such as high-rise apartment buildings), the height of building process is known as a Sustainability Appraisal.

Light and sound

The **urban canyon effect** is a colloquial, non-scientific term referring to street space bordered by very high buildings. This type of environment may shade the sidewalk level from direct sunlight during most daylight hours. While an oft-decried phenomenon, it is rare except in very dense, hyper-tall urban environments, such as those found in Lower and Midtown Manhattan, Chicago's Loop and Hong Kong's Kowloon and Central.

In urban planning, sound is usually measured as a source of pollution. Another perspective on urban sounds is developed in Soundscape studies emphasising that sound aesthetics involves more than noise abatement and decibel measurements. Hedfors[23] coined 'Sonotope' as a useful concept in urban planning to relate typical sounds to a specific place.

Light pollution has become a problem in urban residential areas, not only as it relates to its effects on the night sky, but as some lighting is so intrusive as to cause conflict in the residential areas and paradoxically intense improperly installed security lighting may pose a danger to the public, producing excessive glare. The development of the full cutoff fixture, properly installed, has reduced this problem considerably.

Water and sanitation infrastructure

Water and sanitation services are key considerations in the planning of cities. This encompasses water provision, waste-water treatment, and sewage infrastructure. These services are crucial for public health – thus, one aspect of urban planning is to consider how to best provide these services to urban residents in effective and cost-sensitive ways.

Within urban environments, there are a number of disparities with regards to access to these services. For example, as of 2006, among the poorest quartile of the urban population in India, over 80% lacked access to piped water at home and over half did not have sanitary flushes or pit toilets.[24] Data collected in 2005–2006 revealed that under half of the urban poor could access adequate sanitation compared to about 95% of the urban non-poor.[25] In India, slums compose a major part of the urban environment – one of the largest barriers to improving slum conditions is that many slums go undocumented. Because most slums are informal settlements with no tenure rights, their illegal status excludes them from official listings and thus excludes them from access to municipal water and sanitation services.[26]

Economic status is highly correlated to water and sanitation service access in urban environments. But economic status is often tied to other demographic characteristics such as caste, ethnicity, and race. Therefore, access to water and sanitation services is an equity issue that faces urban planners working for urban governments. In the absence of policy to address

these infrastructural disparities, the urban poor and minorities suffer disproportionately. A study of the social determinants of children's health in urban settings in India looked at data from India's National Family Health Survey and found that even within poor urban areas, caste status, religion, and sex are major factors which determine family employment and education level, factors which in turn affect access to sanitation and water.[27]

Water and sanitation issues relate directly to health outcomes due to the susceptibility to disease experienced by populations that lack adequate access. In the 19th and 20th centuries, diseases like cholera were particularly feared due to their devastating effects and due to their proliferation in areas with poor waste management practices.[28] Today diseases such as dengue fever, Hepatitis A, and intestinal parasites, are all examples of water-borne illnesses that affect the urban poor. Diarrheal illnesses are perhaps today the leading type of waterborne disease with cities like Jakarta experiencing disease rates as high as 50 cases per 1000 people.[29] In India, waterborne disease accounts for the loss of roughly 180 million person-workdays annually, the economic equivalent of approximately 12 billion rupees.[25] Thus inadequate access to water and sanitation among the urban poor and socially disadvantaged leads to systematic vulnerability to disease, which has both public health and economic consequences.

In Uganda, in order to address some of these access issues, NGOs and community-based organisations (CBOs) have stepped in. The government in Uganda has acknowledged the role of sanitation in improving public health among the poor, but as NGOs and CBOs have pointed out, the government has been unable to adequately address the need for these services in urban environments or the high cost of procuring these services from private service providers.[30] However, NGOs and CBOs are inherently limited in their ability to provide sanitation services, however, due to the need to obtain permissions for undertaking infrastructure projects and due to the high costs of implementing them.

Latrines]

One aspect of sanitation infrastructure that is a major determinant of environmental health in slums is the latrine. There are a number of variables surrounding latrines and sewage which can play a critical role in determining health outcomes for urban families, including latrine location (in house versus out of house), latrine usage (family vs community), and latrine type (for example pit latrine versus toilet). Furthermore, the latrine is a critical aspect of urban household-level layouts and designs.

Waste-water]

Waste-water collection and treatment has always been an important consideration in urban planning, but it is becoming increasingly critical as urban population levels rise and water conservation becomes a growing concern. Many planners are now considering how to properly incorporate waste-water treatment into urban environments in effective, and equitable ways.

In the US, prior to the 19th century, cities often used a de-centralised privy vault-cesspool model for waste management. Urban households had vaults or tubs beneath their latrines, which would collect waste-water until the vaults needed to be emptied into a nearby cesspool. This model worked at the time due to relatively low urban populations. However, industrialisation, urbanisation, and population growth during the 19th century led to a dramatic increase in America's city-dwelling population and thus increased the need for a centralised waste-water collection and processing system.[31] With the introduction of piped water, such a centralised system became possible as larger quantities of water were necessary for water-carriage waste removal. Since the 19th century, water-carriage sewage management has been preferred by planners due to its scalability.

However, more recently, de-centralised waste water management has made a resurgence among planners and researchers. While centralised water-carriage systems have more potential for scalability, de-centralised systems are simply more efficient because the waste-water is managed closer to where it is generated, thus allowing for each management system to be adapted to the local community/household needs.[32]

Urban planners

An urban planner is a professional who works in the field of urban planning for the purpose of optimizing the effectiveness of a community's land use and infrastructure. They formulate plans for the development and management of urban and suburban areas, typically analyzing land use compatibility as well as economic, environmental and social trends. In developing the plan for a community (whether commercial, residential, agricultural, natural or recreational), urban planners must also consider a wide array of issues such as sustainability, air pollution, traffic congestion, crime, land values, legislation and zoning codes.

The importance of the urban planner is increasing throughout the 21st century, as modern society begins to face issues of increased population growth, climate change and unsustainable development. An urban planner could be considered a green collar professional.

Urban sociology

Urban sociology is the sociological study of life and human interaction in metropolitan areas. It is a normative discipline of sociology seeking to study the structures, processes, changes and problems of an urban area and by doing so provide inputs for urban planning and policy making. In other words, it is the sociological study of cities and their role in the development of society.[1] Like most areas of sociology, urban sociologists use statistical analysis, observation, social theory, interviews, and other methods to study a range of topics, including migration and demographic trends, economics, poverty, race relations and economic trends.

The philosophical foundations of modern urban sociology originate from the work of sociologists such as Karl Marx, Ferdinand Tönnies, Émile Durkheim, Max Weber and Georg Simmel who studied and theorized the economic, social and cultural processes of

urbanization and its effects on social alienation, class formation, and the production or destruction of collective and individual identities.

These theoretical foundations were further expanded upon and analyzed by a group of sociologists and researchers who worked at the University of Chicago in the early twentieth century. In what became known as the Chicago School of sociology the work of Robert Park, Louis Wirth and Ernest Burgess on the inner city of Chicago revolutionized the purpose of urban research in sociology but also the development of human geography through its use of quantitative and ethnographic research methods. The importance of the theories developed by the Chicago School within urban sociology have been critically sustained and critiqued but still remain one of the most significant historical advancements in understanding urbanization and the city within the social sciences.[2]

Development and rise of urban sociology

Urban sociology rose to prominence within the academy in North America through a group of sociologists and theorists at the University of Chicago from 1915 to 1940 in what became known as the Chicago School of Sociology. The Chicago School of Sociology combined sociological and anthropological theory with ethnographic fieldwork in order to understand how individuals interact within urban social systems.[3][4] Unlike the primarily macro-based sociology that had marked earlier subfields, members of the Chicago School placed greater emphasis on micro-scale social interactions that sought to provide subjective meaning to how humans interact under structural, cultural and social conditions. The theory of symbolic interaction, the basis through which many methodologically-groundbreaking ethnographies were framed in this period, took primitive shape alongside urban sociology and shaped its early methodological leanings. Symbolic interaction was forged out of the writings of early micro-sociologists George Mead and Max Weber, and sought to frame how individuals interpret symbols in everyday interactions. With early urban sociologists framing the city as a 'superorganism', the concept of symbolic interaction aided in parsing out how individual communities contribute to the seamless functioning of the city itself.[5]

Scholars of the Chicago School originally sought to answer a single question: how did an increase in urbanism during the time of the Industrial Revolution contribute to the magnification of contemporary social problems? Sociologists centered on Chicago due to its 'tabula rasa' state, having expanded from a small town of 10,000 in 1860 to an urban metropolis of over two million in the next half-century. Along with this expansion came many of the era's emerging social problems - ranging from issues with concentrated homelessness and harsh living conditions to the low wages and long hours that characterized the work of the many newly arrived European immigrants. Furthermore, unlike many other metropolitan areas, Chicago did not expand outward at the edges as predicted by early expansionist theorists, but instead 'reformatted' the space available in a concentric ring pattern.[6] As with many modern cities the business district occupied the city center and was surrounded by slum and blighted neighborhoods, which were further surrounded by workingmens' homes and the early forms of the modern suburbs. Urban theorists suggested that these spatially distinct regions helped to solidify and isolate class relations within the modern city, moving

the middle class away from the urban core and into the privatized environment of the outer suburbs.[7]

Due to the high concentration of first-generation immigrant families in the inner city of Chicago during the early 20th century, many prominent early studies in urban sociology focused upon the transmission of immigrants' native culture roles and norms into new and developing environments. Political participation and the rise in inter-community organizations were also frequently covered in this period, with many metropolitan areas adopting census techniques that allowed for information to be stored and easily accessed by participating institutions such as the University of Chicago. Park, Burgess and McKenzie, professors at the University of Chicago and three of the earliest proponents of urban sociology, developed the Subculture Theories, which helped to explain the often-positive role of local institutions on the formation of community acceptance and social ties.[8] When race relations break down and expansion renders one's community members anonymous, as was proposed to be occurring in this period, the inner city becomes marked by high levels of social disorganization that prevent local ties from being established and maintained in local political arenas.

The rise of urban sociology coincided with the expansion of statistical inference in the behavioural sciences, which helped ease its transition and acceptance in educational institutions along with other burgeoning social sciences. Micro-sociology courses at the University of Chicago were among the earliest and most prominent courses on urban sociological research in the United States.

Evolution of urban sociology

The evolution and transition of sociological theory from the Chicago School began to emerge in the 1970s with the publication of Claude Fischer's (1975) "Toward a Theory of Subculture Urbanism" which incorporated Bourdieu's theories on social capital and symbolic capital within the invasion and succession framework of the Chicago School in explaining how cultural groups form, expand and solidify a neighbourhood. The theme of transition by subcultures and groups within the city was further expanded by Barry Wellman's (1979) "The Community Question: The Intimate Networks of East Yorkers" which determined the function and position of the individual, institution and community in the urban landscape in relation to their community. Wellman's categorization and incorporation of community focused theories as "Community Lost", "Community Saved", and "Community Liberated" which center around the structure of the urban community in shaping interactions between individuals and facilitating active participation in the local community are explained in detail below:

Community lost: The earliest of the three theories, this concept was developed in the late 19th century to account for the rapid development of industrial patterns that seemingly caused rifts between the individual and their local community. Urbanites were claimed to hold networks that were "impersonal, transitory and segmental", maintaining ties in multiple social networks while at the same time lacking the strong ties that bound them to any specific group. This disorganization in turn caused members of urban communities to subsist almost

solely on secondary affiliations with others, and rarely allowed them to rely on other members of the community for assistance with their needs.

Community saved: A critical response to the community lost theory that developed during the 1960s, the community saved argument suggests that multistranded ties often emerge in sparsely-knit communities as time goes on, and that urban communities often possess these strong ties, albeit in different forms. Especially among low-income communities, individuals have a tendency to adapt to their environment and pool resources in order to protect themselves collectively against structural changes. Over time urban communities have tendencies to become "urban villages", where individuals possess strong ties with only a few individuals that connect them to an intricate web of other urbanities within the same local environment.

Community liberated: A cross-section of the community lost and community saved arguments, the community liberated theory suggests that the separation of workplace, residence and familial kinship groups has caused urbanites to maintain weak ties in multiple community groups that are further weakened by high rates of residential mobility. However, the concentrated number of environments present in the city for interaction increase the likelihood of individuals developing secondary ties, even if they simultaneously maintain distance from tightly-knit communities. Primary ties that offer the individual assistance in everyday life form out of sparsely-knit and spatially dispersed interactions, with the individual's access to resources dependent on the quality of the ties they maintain within their community.[9]

Along with the development of these theories, urban sociologists have increasingly begun to study the differences between the urban, rural and suburban environment within the last half-century. Consistent with the community liberated argument, researchers have in large part found that urban residents tend to maintain more spatially-dispersed networks of ties than rural or suburban residents. Among lower-income urban residents, the lack of mobility and communal space within the city often disrupts the formation of social ties and lends itself to creating an unintegrated and distant community space. While the high density of networks within the city weakens relations between individuals, it increases the likelihood that at least one individual within a network can provide the primary support found among smaller and more tightly-knit networks. Since the 1970s, research into social networks has focused primarily on the types of ties developed within residential environments. Bonding ties, common of tightly-knit neighborhoods, consist of connections that provide an individual with primary support, such as access to income or upward mobility among a neighborhood organization. Bridging ties, in contrast, are the ties that weakly connect strong networks of individuals together. A group of communities concerned about the placement of a nearby highway may only be connected through a few individuals that represent their views at a community board meeting, for instance.[10]

However, as theory surrounding social networks has developed, sociologists such as Alejandro Portes and the Wisconsin model of sociological research began placing increased leverage on the importance of these weak ties.[11] While strong ties are necessary for providing residents with primary services and a sense of community, weak ties bring together elements

of different cultural and economic landscapes in solving problems affecting a great number of individuals. As theorist Eric Oliver notes, neighborhoods with vast social networks are also those that most commonly rely on heterogeneous support in problem solving, and are also the most politically active.[12]

As the suburban landscape developed during the 20th century and the outer city became a refuge for the wealthy and, later, the burgeoning middle class, sociologists and urban geographers such as Harvey Molotov, David Harvey and Neil Smith began to study the structure and revitalization of the most impoverished areas of the inner city. In their research, impoverished neighborhoods, which often rely on tightly-knit local ties for economic and social support, were found to be targeted by developers for gentrification which displaced residents living within these communities.[13] Political experimentation in providing these residents with semi-permanent housing and structural support - ranging from Section 8 housing to Community Development Block Grant programs- have in many cases eased the transition of low-income residents into stable housing and employment. Yet research covering the social impact of forced movement among these residents has noted the difficulties individuals often have with maintaining a level of economic comfort, which is spurred by rising land values and inter-urban competition between cities in as a means to attract capital investment.[14] [15] The interaction between inner-city dwellers and middle class passersby in such settings has also been a topic of study for urban sociologists.[16][17]

Criticism

Many theories in urban sociology have been criticized, most prominently directed toward the ethnocentric approaches taken by many early theorists that lay groundwork for urban studies throughout the 20th century. Early theories that sought to frame the city as an adaptable "superorganism" often disregarded the intricate roles of social ties within local communities, suggesting that the urban environment itself rather than the individuals living within it controlled the spread and shape of the city. For impoverished inner-city residents, the role of highway planning policies and other government-spurred initiatives instituted by the planner Robert Moses and others have been criticized as unsightly and unresponsive to residential needs. The slow development of empirically-based urban research reflects the failure of local urban governments to adapt and ease the transition of local residents to the short-lived industrialization of the city.[18]

Some modern social theorists have also been critical toward the apparent shortsightedness that urban sociologists have shown toward the role of culture in the inner city. William Julius Wilson has criticized theory developed throughout the middle of the twentieth century as relying primarily on structural roles of institutions, and not how culture itself affects common aspects of inner-city life such as poverty. The distance shown toward this topic, he argues, presents an incomplete picture of inner-city life.The urban sociological theory is viewed as one important aspect of sociology.

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Course Name	: Research Methods & Data Management

Course Description
This Course explores basic philosophy of research, its types and variables, its defines sampling design, research design, methods/tools of data collection, planning the survey as a tool of data collection, the structure of a research proposal , modes of analysis, interpretation and validation.

Course Objectives
- To provide students with descriptive and exploratory skills required in research.
- To help them develop writing skills in relation to research discoveries from different research studies undertaken.
- To provide students with a better analytical perspective on the findings acquired from the field.
- To expose students to the field experiences in attempts to collecting data.

Course content
Introduction
- Definition of research
- Different forms of research
- Distinguish between qualitative and quantitative variables
- Differences between qualitative and quantitative research
- Concepts that relate broadly to both quantitative and qualitative research

Sample Design
- Definition of sampling
- Different types of both random and non-random sampling

Research Design
- Meaning of a research design
- Types of research design i.e descriptive designs, co relational designs, case study designs
- How to design and conduct a case study

Methods of data collection
- Observation method
- Survey
- Group interviews (Focus Group Discussions)
- Questionnaires
- Advantages and disadvantages of each stated method/tool

Planning the survey as a data collection tool
- Hypotheses
- Determine the respondents
- Questionnaire, interview or telephone survey
- Format issues
- Rules for asking good questions
- Analyzing survey data

The structure of a research proposal
- Title

- Table of contents
- An abstract
- Chapter one: Background to the problem
- Chapter two: Literature review
- Chapter three: Methodology
- Chapter four: Results/findings of the study
- Chapter five: Discussion, conclusion and recommendations
- References
- Appendices

Assessment
Coursework 40%
Exams   60%
Total Mark 100%

Introduction

This module generally focuses on the various health research methods used in public health, with these methods various techniques are applied to identify issues. By the end of this module one should be in position to identify the various research methods and explain them efficiently as well as knowing their relevancies

Course work

a) Through proper explanations and illustrations briefly explain ten medical research methods used in public health.

b) What is the importance's of research to the profession of Public health and the health fraternity as a whole

What Are Health Services Research Methods? Why Are They Important?

In the 1960's, the field of health services research was created by combining several study sections at the National Institutes of Health to create the Health Services Research Study Section. The HSR study section sought to define HSR as a distinct field of scientific inquiry at the intersection of public health and medical care, informed by disciplinary perspectives. Since that time, the field has evolved to encompass multiple disciplinary perspectives, including methods from cognate disciplines such as economics, statistics, political science, sociology, and many other schools of thought. The field has also developed new models and techniques to address research questions in specialized areas of inquiry such as patient safety and access to care.

Due to the breadth of the field, two terms are critical to defining the scope of health services research methods. These are: 1) health services research, and 2) methodology.

The Academy Health definition of health services research, developed in 2000 by Kathleen Lohr and Don Steinwachs, is as follows:

Health services research is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviours affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations.

An additional definition of health services research is provided by *Lexikon*:

Research concerned with the organization, financing, administration, effects, and other aspects of health services. Health services research is often concerned with the relationships among need, demand, supply, use, and outcomes of health services. Structure, process, and outcome of health services may be evaluated. Evaluation of structure is concerned with resources, facilities, and manpower; process, with matters, such as where, by whom, and how health care is provided; and outcome, with the results of the services (such as the degree to which individuals receiving health services actually experience measurable benefits).

Methodology is the collection or study of methods (practices, procedures, and rules) used by those who work in a discipline or engage in an inquiry, as in the methodology of measuring, assessing, and improving performance. Methodology addresses the full range of issues confronted by empirical work in health services research, including conceptualization, modelling, literature review, study design, sampling, data collection, measurement, and research ethics.

By combining the definitions above, it is apparent how wide the scope of methods employed by health services researchers is. HSR methods encompass a variety of study frameworks, designs, and analytic techniques. These include a spectrum of methods, from understanding of various epistemological perspectives on research, to study designs including focus groups and randomised controlled trials, to specific analytic techniques such as longitudinal data analysis.

To help organise the array of HSR methods, core and desired resources have been divided into 18 major topic areas, including:

Economics & Cost Effectiveness
Epidemiology
Ethics
Evaluation
Health Services Research Applied Methods
Information Technology
Management Sciences

Medicine
Outcomes Research
Policy
Psychology
Public Health
Qualitative Research
Quality and Safety
Sociology
Statistics, Biostatistics & Econometrics
Survey Research
Trials

Reviewing the topic areas above, it is apparent that HSR methods are not confined to disciplinary methods, but rather, are unique in their approach to medical and health care delivery questions because the field was developed to facilitate study of applied questions. These include:

- Who has access to health care?
- Do patients in large urban areas receive the same level of services as those in rural areas?
- At different levels of care, which patients have the best outcomes?

Many of these types of questions have policy implications. As a result, funding for health services research has often been linked to political interests. Yet, HSR studies are girded by the same methods as many other disciplines. As discussed above, econometric, epidemiological, survey research, and other widely accepted methods form the backbone of HSR.

A related challenge for health services researchers is that the types of questions of interest to the field rely on the ability to generalise from data to the population at large. In order to collect information that may be generalised to the population, it is often necessary to draw associations from existing sources of data such as claims databases or large population surveys - frequently referred to as observational data. Observational data is collected in situations when it would be unethical or impractical to randomize participants to one condition or another - such as having or not having health insurance. Because the data is not randomised, it is not possible to assume that an intervention causes a particular outcome; rather, researchers rely on statistical analyses to draw associations between factors in a study.

Despite concerns about the shortcomings of using non-randomised data in HSR studies, there are major benefits to studying the implications of care delivery or policy at the population level. The scope of HSR studies often allows for greater understanding of an intervention's effectiveness, or effect in a real-world population, as opposed to randomized controlled trials, which are better at assessing efficacy -- the outcome in an ideal, controlled population. In addition, HSR studies have always been closely linked to policy considerations, and as such, have the potential to enhance understanding of health care systems and impact care delivery for large numbers of individuals.

For librarians it is becoming increasingly important to create a collection of materials that address the types of applied questions that health services research addresses. This is a daunting task because of the breadth and depth of the disciplines and subjects encompassed by HSR. As the list of disciplines and topic areas relevant to HSR demonstrates, a wide array of disciplines are included in the health services research methodological 'toolkit'.

Librarians may wish to utilise the module by choosing specific content areas that will benefit their personal library needs. Likewise, faculty developing new courses may look to this list for suggested current textbooks in the field. The organisation of the list is intended to facilitate understanding of the array of options in different disciplines.

This list of resources is not intended to define the full range of HSR methods texts, rather, to provide a set of resources considered valuable by librarians and academics in the field of health services research.

The field of health services research is continually expanding and developing new methods to apply to health care and health care delivery questions. Due to the fact that the field is growing rapidly, we recommend that users of this list search for updated versions of the resources cited here in order to ensure the most recent information on methodological topics.

They are basically two main types of research methods which is quantitative and qualitative, which all the methods lie under

Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications." Thus research is a careful and systematic investigation in some field of knowledge such as culture of people, religion, etc (Neon 1995)

Variable: Variables are properties or characteristics of some event, object, or person that can take on different values or amounts (as opposed to constants which do not vary). When conducting research, experimenters often manipulate variables. For example, an experimenter might compare the effectiveness of four types of antidepressants. In this case, the variable is the "type of antidepressant" I.e. attributes which take on different values from time to time e.g.
- Height
- Weight
- Age etc

The following are the types of variables

1: *Independent variable*
When a variable is manipulated by an experimenter

2: *Dependent variable*

> The experiment seeks to determine the effect of the independent variable on relief from depression. In this example, relief from depression is called a dependent variable.

In general the independent variable is manipulated by the experimenter and its effects on the dependent variable are measured.

Or

Dependent variable: a variable in a logical or mathematical expression whose value depends on the independent variable; "if f(x) =y, y is the dependent variable"

Consider age with beauty of an individual: beauty deterioration of an individual is caused by advancement in age .Age is an independent variable and beauty is thedependent variable.

3:Extraneous variable; this is the characteristics whose effects are not needed in the study like noise, for the case if one is studying the causes of lack of concentration in a given computer class or any other class.

4: Active variables characteristics that can be manipulated e.g. study environment or teaching methods etc

5; Assigned variables, certain characteristics assigned by nature and can not be changed or manipulated like height, sex of individual, age etc

Qualitative and Quantitative Variables

Qualitative variables: These are variables that express a qualitative attribute. Some examples of qualitative variables are hair color, eye color, religion, favorite movie, gender, and so on. The values of a qualitative variable do not imply a numerical ordering. Values of the variable "religion" differ qualitatively; no ordering of religions is implied. Qualitative variables are sometimes referred to as *categorical variables*. Values on qualitative variables do not imply order, they are simply categories

Quantitative variables: *These are v*ariables that are measured in terms of numbers, Some examples of quantitative variables are height, weight, and shoe size.

Discrete and Continuous Variables: *Variables such as number of children in a household are called discrete variable.*

Discrete variables: *These are v*ariable with possible scores of discrete points on the scale e.g a household could have three children or six children, but not 4.53 children. Other variables such as "time to respond to a question" are continuous variable

Continuous variable: *These are v*ariables where the scale is continuous and not made up of discrete steps e.g. The response time could be 1.64 seconds, or it could be 1.64237123922121 seconds. Of course, the practicalities of measurement preclude most measured variables from being truly continuous.

Random *selection:* is how you draw the sample of people for your study from a population.

Random *assignment* is how you assign the sample that you draw to different groups or treatments in your study. It is possible to have *both* random selection and assignment in a study. Let's say you drew a random sample of 100 clients from a population list of 1000 current clients of your organization. That is random sampling. Now, let's say you randomly assign 50 of these clients to get some new additional treatment and the other 50 to be controls. That's random assignment .

Concepts that relate broadly to both quantitative and qualitative research

Association:

Sometimes there is a relationship between two variables but the relationship may not be causal i.e., neither variable is dependent upon the other. It may be seen that short men are more assertive than taller men but it does not follow that being short causes men to be assertive and we can not state that being assertive make a man short; there is no causal relationship

Bias:

Distortion of the findings resulting from an undesirable influence.

Causality / Causal relationship:

A relationship in which one action brings about (causes) a particular consequence. More correctly, (since research can only hope to disprove a theory rather than prove it), a relationship in which failure to do 'x' means that 'y' will not follow. E.G., We can be less certain that bathing in the sun for two hours around midday causes skin to burn, than we can know that keeping out of the sun for the two hours around midday is unlikely to cause skin to   burn.

Hawthorn Effect:

A psychological response in which subjects alter their behaviour because they are aware of their participation   in the study

Piloting:

A small-scale trial of the research method to ensure that the design is feasible, Although only a small number of subjects may be used, a variety of practical questions may be determined. E.g., can the subjects understand the questions they   are being   asked?

Population:

Literally means "all the people" and in research the term is most commonly used to refer to a specific group of people. However, in a research context, population refers to all the members or objects of any defined group which might be taken or about which information might be given. A research population refers to the entire group to which the research results apply e.g., a relevant age group, or equipment group such as syringes.

Sample:
 Refers to the segment of the population that is selected for investigation (the subset of the population)

Sampling frame: it is the listing of all the units in the population from which the sample will be selected

Census: this is a complete enumeration of an entire population

Reliability:
Is concerned with the accuracy (consistency, stability and repeatability) of a measure in representing the true score of the subject being assessed on a particular dimension, the same results must be achieved, as far as possible, regardless of whom is doing the measuring. e.g., several nurses weighing the same patient on the same set of scales, in quick succession, should gain the same results. Reliability of measurement reduces influence or bias on the part of the person(s) doing the measurement, to a minimum.

Representative:
Refers to the extent to which a sample reflects the "truth" for the whole population in the study. The sampling technique should aim to ensure that the views of the population are reflected by the sample.

Validity:
Refers to whether a particular instrument actually measures the construct it is designed to assess. e.g., a cardiac monitor is not a valid tool for measuring the peripheral pulse. A cardiac monitor is a valid tool for measuring the electrical activity of the heart.

Internal validity:
The extent to which the effects detected in a study are a true reflection of what is real, e.g., if the detected effect is that better nutrition leads to greater height gain in infants, internal validity exists if the height gain can not be attributed to another factor. (NB this other factor may be referred to as a confounding or extraneous variable).

External validity:
"The extent to which study findings can be generalised beyond the sample used in the study" (Burns and Grove 1993) e.g., One study may find that better nutrition leads to increased height gain in infants but external validity exists only if this finding is found with other samples.
NB the concept "Variable" appeared on the glossary of the previous session

SAMPLE DESIGN

The way of selecting a sample from a population is known as sample design. It describes various sampling techniques and sample size. It refers to the technique or procedure the researcher would adopt in selecting items for the sample.

Sampling:

Sample; Sampling; method of selecting a certain number of units from a total population

(Macleod Clark J and Hockey L. 1981)

The way a sample is selected should be clearly demonstrated in a research report. The aim of a sample is that it should be as unbiased a cross section of the "parent" population as possible, i.e., a sample of subjects needs to be as representative as possible of the population under study.

To obtain a cross section we need to devise a sampling frame to define the boundaries (limits) within the context of the study and to reflect the organization within which the sampling is taking place.

The larger the size of the sample, the lower is the likelihood of it failing to represent the population under study. However, the law of diminishing returns tells us that there is, for each study, a desirable sample size under which their may fail to be accuracy yet above which there is no better a reflection of the parent population.

Sampling may be

a) Random and non random sampling.
b) Non random: In a nonrandom sample, members are selected on the basis of a particular set of characteristics, rather than a random chance of being included and certainly it introduces bias.

Random- Random sampling is completely based on chance. For example, one might identify all members of a population, (n=250) write their names on separate pieces of paper, and then draw 25 names out of a hat to determine who is actually to be included in the study and every individual has a chance   of being included in the study.

Types of random sampling

Systematic

Is a statistical method involving the selection of every k^{th} element from a sampling frame, where k, the sampling interval, is calculated as:

k = population size (N) / sample size (n)

- Stratified
- cluster sampling

Stratified sample

In a stratified sample the sampling frame is divided into non-overlapping groups or strata, e.g. geographical areas, age-groups, genders. A sample is taken from each stratum, and when this sample is a simple random sample it is referred to as stratified random sampling.

Where there is heterogeneity in the population this can be reflected in the strata, i.e., each stratum can be weighed to reflect the heterogeneity. In this way a proportional representation of the whole population can be gained.

Cluster sample

Best used where there is a wide geographical spread. Clusters may be chosen subjectively to be representative of the whole. The clusters can be further stratified. E.G., if we want to know about all A&E patients in the country we need to take a

sample from a variety of A/E's. Each department can bring a number of patients into the sample according to whether they meet the stratification criteria and it is often used in marketing research

Multistage sampling

This is the use of sampling methods that are considerably more complex than these other methods. The most important principle here is that we can combine the simple methods described above in a variety of useful ways that help us address our sampling needs in the most efficient and effective manner possible. When we combine sampling methods, we call this **multi-stage sampling**.

Concepts strongly associated with quantitative research

Survey:
Involves the study of a large number of subjects drawn from a defined population

Randomisation:
A method for controlling possible extraneous variables involving assigning objects (subjects, treatments etc.,) to a group or condition in such a way that every object has an equal probability of being assigned to any particular condition. Randomisation can also be applied in other settings for research e.g., within a questionnaire there may be a sequence of questions, which, if reordered randomly, may evoke different responses because the previous question does not then influence the current question.

Control:
In order to increase the probability that findings accurately reflect the reality of the situation being studied, the study needs to be designed in such a way as to maximise the amount of control over the research situation and variables. Through control the influence of extraneous variables, variables which are not being studied but which could influence the results of the study by interfering with the action of the ones being studied, is reduced.

Manipulation:
Refers to the fact that we can create artificial divisions and circumstances in order that we can test a particular hypothesis, In experimental research the "causative" variable must be amenable to manipulation by the investigator; i.e., the researcher "does something" to subjects in the experimental condition. Subjects in the control group are not "manipulated" in the way that subjects in the "experimental group" are manipulated.

Treatment Group: The portion of a sample or population that is exposed to a manipulation of the independent variable is known as the treatment group. For example, youth who enroll and participate in recreation programs are the treatment group, and the group to which no recreation services are provided constitutes the control group

Confounding Errors
Errors: are conditions that may confuse the effect of the independent variable with that of some other variable(s).

1. Premeasurement and interaction errors
2. Maturation errors
3. History errors
4. Instrumentation errors
5. Selection bias errors
6. Mortality errors

Measurement (levels)

Nominal: Subjects of research are differentiated by possessing or not possessing a given characteristic, e.g., pass/fail, single/married, and divided into a number of categories but the difference between the categories is not measurable in any real sense. This is the least sophisticated level of measurement.

Ordinal: Subjects are ranked in order from greatest to least or best to worst. Again there is no precisely measurable difference between the ranks.

Interval: Genuinely quantitative measurement such as that of temperature is measured at the interval level of measurement. Here the difference between 10 and 11 degrees centigrade is the same as the difference between 11 and 12degrees centigrade.

Ratio: In a scale of measurement where the difference between points on the scale is precise (as in the measurement of height and weight,) *and the scale starts at zero* the level of measurement is referred to as ratio. Height and weight start at zero. You can not weigh less than 0.00kg and cannot be less than 0.00mm in length/height; these are ratio scales. You can however record temperatures of the weather in terms of minus *x* degrees centigrade and this is   why the scale is interval and not ratio.

Research Design

Research design can be thought of as the *structure* of research -- it is the "glue" that holds all of the elements in a research project together or plan for a study that guides the collection and analysis of the data

 We often describe a design using a concise notation that enables us to summarize a complex design structure efficiently. What are the "elements" that a design includes?

Types of design:- Experimental design , Quasi-experimental design, Survey design, cross-sectional design, Case studies, comparative study etc
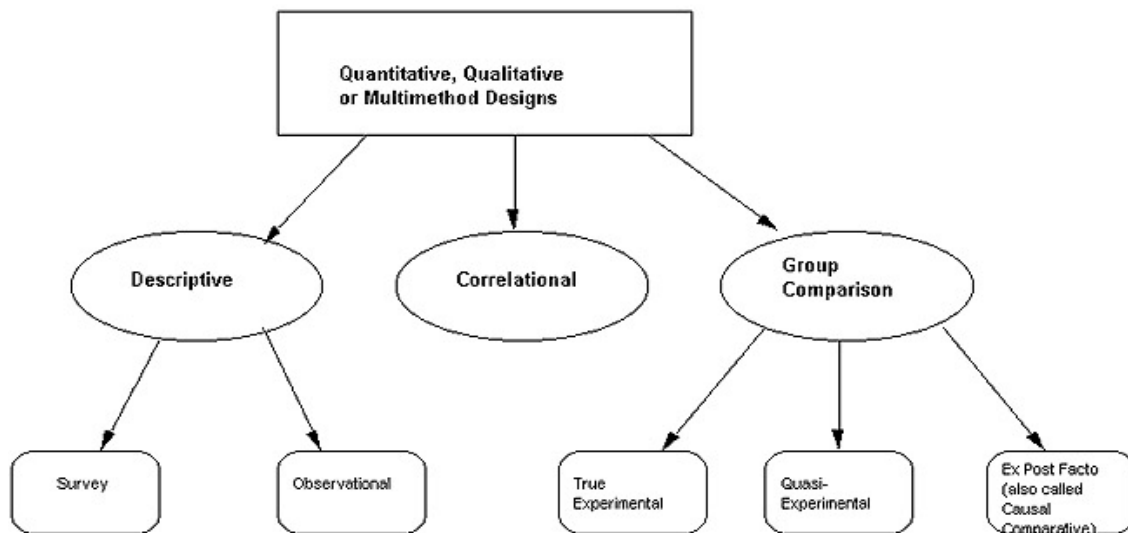
The research design:
(1) Is driven by there search problem
(2) Depends upon how much is known about the problem

Types of Research Design

For example, if you are doing a study where you will be *rating* students (numerically) on their performance of a sensory-motor skill AND also *interviewing* these students (data in words) to determine how they perceive their own skill levels (if one does that !), *then at least one "design methodology label" that would apply is "multimethod*."

Now, some design labels apply only to qualitative studies -- while others could apply to a study that's any of the of designs. We'll look at the qualitative labels in a future follow-up lesson. For now, let's look at the possibility: families of design methodology labels that could apply to any/all of the above 3 possibilities.

Figure 2.

Quantitative, Qualitative or Multimethod Designs

Descriptive · Correlational · Group Comparison

Survey · Observational · True Experimental · Quasi-Experimental · Ex Post Facto (also called Causal Comparative)

Design Methodology
That Correspond To Quant/ Qual/ Multi method Studies

Most of these, as we'll see, "link" to certain "keywords" in the research question or problem statement!

I. Descriptive Designs

Example: This study is to *identify* the perceived barriers to successful implementation of the Career Ladder Teacher Incentive & Development Program in X School District.

"Identify"/"what is - what are" (the perceived barriers) - > Descriptive problem statement AND also descriptive research design methodology!

Two "sub-types" (add'l. design methodology labels that could apply to "descriptive designs):"

Survey - This label also applies to any study in which data or responses (be they quant/qual/both) are recorded via any form of what we think of as "survey instrumentation."

You've probably seen (more than you care to think about! if you've been 'approached' by a 'needy dissertation stage doctoral student' to participate in his/her study!) such surveys. They can take many forms:

A. Check-off items (e.g., gender, position);
B. Fill-in-the-blank items;
C. Likert-type scales (e.g., on a 5-point scale, say, from "strongly disagree" to "strongly agree," you're asked to circle or check your opinion regarding a statement such as, "The Career Ladder Teacher Incentive and Development Program provides ample opportunity for teacher advancement in my district")
D. Open-ended fill-in items (you're asked to give a response in your own words, using the back of the survey sheet or extra paper if necessary; something like "Please state the three main reasons you chose to apply for the Career Ladder Teacher Incentive and Development Program this year.")

Types of Survey Research

While often these surveys are paper-&-pencil in nature (e.g., you're handed one or receive it in the mail & asked to fill it out and return it to the researcher), they are

sometimes "administered" orally in a face-to-face or telephone interview (e.g., the researcher records your answers him/herself).

Some Guidelines for Interviews

There are other variations on survey-type questions; the above are just examples of the most common forms and scaling of such responses.

If the responses to our earlier example were collected in the form of a survey -- be it, say, Likert-scaled attitudinal items and/or open-ended questions where the teachers are asked to share the perceived barriers in their own words -- then the study would be characterized as a *descriptive survey design methodology*.

E. **Observational** - In these design methodologies, instead of administering a survey instrument, the researcher collects data by observing/tallying/recording the occurrence or incidence of some outcome -- perhaps with the aid of assistants.

He/she might want to identify the most frequently occurring type(s) of disruptive behavior in a particular classroom. With clear prior agreement on what constitutes such "disruptive behavior" (operational definitions of our variables are important, remember?! It becomes an issue of "reliability," or verifiability that "we saw what we saw" vs. "our own bias" of what constitutes this disruptive behavior!), the researcher could develop a listing of such behaviors and observe and record the number of times each one occured in a particular observation session in a classroom. (Again, he/she might wish to 'compare notes' with assistants in order to enhance reliability or verifiability -- e.g., as a cross-check for accuracy).

This type of research would warrant the design methodology label of not only "descriptive" (due to the 'identify/what is - what are [the most frequently occurring ...]?') but also "observational" due to the recording/tallying protocol.

(By the way, qualitative-type observations can also be recorded. They don't have to be strictly numeric tallies. Examples that come to mind include case notes of counselors, where they record their perceptions in words.)

II. Correlational Designs

We've seen these too! Just as in the case of "descriptive" designs, these "link" to the keywords of "association," "relationship," and/or "predictive ability" that we've come to associate with "correlational" research questions or problem statements!

Correlational Research

III. Group Comparisons

We've briefly talked about "experiments" generally, in terms of "key features" such as the following:

a. **tight control** (the researcher attempts to identify in advance as many possible 'contaminating' and/or confounding variables as possible and to control for them in his/her design -- by, say, building them in and balancing on them -- equal numbers of boys and girls to 'control for gender' -- or 'randomizing them away' by drawing a random sample of subjects and thereby 'getting a good mix' on them -- e.g., all levels of 'socioeconomic status')

b. because of the preceding control, the 'confidence' to **make 'cause/effect statements'**

That is, we begin to get the idea of *2 or more groups, as balanced and equivalent as possible on all but one "thing:" our "treatment"* (e.g., type of lesson, type of counseling). *We measure them before and after this treatment and if we do find a difference in the group that 'got the treatment,' we hope to attribute that difference to the treatment only* (because of this tight control, randomization, and so forth).

Now ... there are actually two "sub-types" of experimental designs. Plainly put, they have to do with how much 'control' or 'power' you as the researcher have to do the above randomization and grouping!

A. **True experimental** - If you can BOTH randomly draw (select) individuals for your study AND then randomly assign these individuals to 2 or more groups (e.g., 'you have the power to make the groups' yourself!), then you have what is known as a true experiment.'

Random Assignment of Subjects to Experimenter-Formed Groups
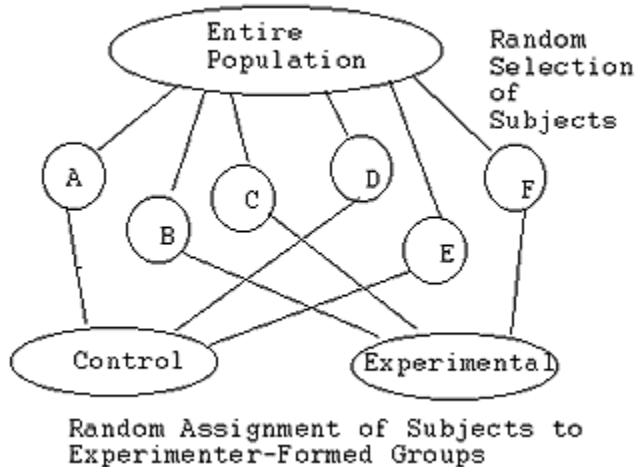
In the preceding scenario, the researcher first:

    1. Randomly selected subjects A through F from the larger population; AND

    2. Then randomly assigned these individuals to (experimenter-formed) groups. In our example, by coin-flipping or some other random procedure, Subjects A, D & E "landed" in the control group (e.g., the class that will get the traditional lecture), while Subjects B, C, & F "landed" in the experimental or treatment group (e.g., the researcher-formed class that will get the hands-on science instruction, say).

The two levels of "randomization" help to ensure good control of those pesky contaminating or confounding variables, don't they?! You're more likely to get a "good mix" on all those other factors when you can randomly draw your subjects and also randomly assign them to groups that you as the researcher have the "power" to form!

Ah...but ivory-tower research is one thing; real life quite another !

What if you get the OK to do your research within a school district, but the sup't. says, "Oh no! I can't let you be disrupting our bureaucratic organization here and "making your own 4th grade classrooms" for your study! That's way too disruptive! No, no, the best you can do is to randomly select INTACT existing 4th grade classrooms and then go ahead and use all the kids in those randomly drawn GROUPS instead!"

The True Experiment and Quasi-Experiment

Which brings us to the 2nd variant of "experimental designs:"

B. **Quasi-experimental - what you are 'randomly drawing' (selecting) is NOT INDIVIDUALS but INTACT (pre-existing) GROUPS**! These could be existing classrooms, clinics, vocational education centers, etc. In other words, you "lose" the power to "make your own groups" for your study!

123
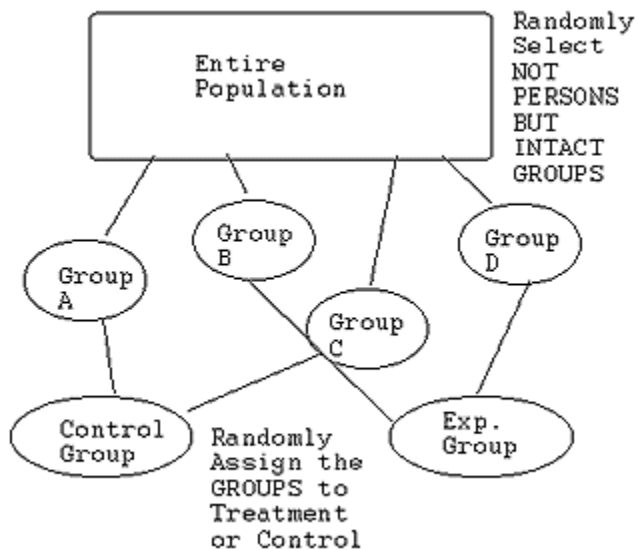
Here (for the quasi-experiment), you randomly draw intact groups (e.g., from all the 4th grades in the district, you draw 4 of them at random) and then flip a coin or use some other random procedure to assign the pre-existing 4th grades to either the "treatment" or "control" conditions. (In our example Grades A and C "land" in the traditional lecture method (control), while Grades B and D end up in the hands-on science instruction (e.g., the "treatment" or the "experimental" group).

Do you see how this is different from the "true" experiment? In the "true" experiment, you selected the children themselves (subjects) at random and then "had the power" to in essence "form" your own "4th grades" by assigning the individual kids themselves randomly to either the control or the experimental conditions.

Here, though, the 'best you can do' (again, often for practical reasons such as access to sites, permission, etc.) is draw not individual kids but the GROUPS themselves (pre-existing 4th grade classrooms) at random and then in step # 2 assigning NOT the INDIVIDUAL KIDS but rather the WHOLE GROUPS to either the treatment or control conditions.

Quasi-Experimental Design

See how **this one-step loss of randomization may mean a bit less control over those pesky contaminants**?! By forming your own groups you have a greater likelihood of "getting a good mix on all other stuff". But here, you've got to "live with the existing groups as is." And suppose that in the above scenario, 4th Grades B & D also happen (quite by accident, but welcome to 'real life!') to have a higher average I.Q. of 15 points than A & B! Now we've got a contaminant! Did the kids do better because of the hands-on science lesson -- or because of their inherently higher aptitude, intelligence or whatever?!

But at least we still have that last step: random assignment to either the experimental or control conditions!

Remember ... again...

1. For true experiments, we're randomly assigning individuals to treatment vs. control; and
2. For quasi-experiments, we're randomly assigning intact/pre-existing groups to treatment vs. control.

Well -- we lose that "random assignment" property in the 3rd "family" of group comparison design methodologies!

Ex post facto (also called "causal comparative") - really no 'random anything!' We identify some sort of outcome and wonder 'what makes it vary like that?' Could it be some pre-existing grouping? For instance, if we 'divided' or 'pile-sorted' the responses by gender, would that account for the difference we see?

Thus, there is no treatment either! Simply an attempt to see if a grouping that we had no prior control over seems to "make a difference" on some outcome(s)!

The keyword "difference" (by grouping) and no treatment would be the tip-off to an ex post facto or causal-comparative study design.

And -- regarding the grouping -- maybe this rather silly example will make the point! And help you to identify if you are in such a situation of "no-control-over-grouping:"

You wish to study whether preschoolers from single-parent homes are different in terms of emotional readiness for kindergarten than those of two-parent homes.

Now ... you couldn't go to prospective subjects' homes and say, "OK, now you've got to get divorced ... and YOU have to stay married ... 'cuz that's how you came up in the random assignment!"

I don't think so...!!! Same thing with "gender:" you took it "as is" (e.g., those subjects in essence 'self-selected into their gender grouping). You had no prior control over 'making' them 'be' one gender or the other but rather took those groups 'as is' and kind of pile-sorted some response(s) by gender to see if it 'made a difference' on some outcome! Indeed ... the *literal Latin translation of "ex post facto" is "after the fact."* This shows YOUR role in the 'grouping' process as the researcher! You didn't 'assign' them into any one group, randomly or otherwise. Instead, you came in "after the fact" and wished to see if that self-determined grouping made a difference on some outcome(s) that you are studying!

As you can imagine -- even bigger problems with contaminating variables! There is no randomization or control here!

Thus the name "causal comparative" is sort of a misnomer. You are indeed "comparing" two or more "pre-formed" groups on some outcome(s). But due to that *lack of randomization and control*, you can't really use this design to study "cause/effect" types of research questions or problem statements. There are generally *too many uncontrolled, unrandomized contaminating variables* that may have entered the picture to confidently make 'strong' cause/effect statements!

Nonetheless, given the circumstances, this type of design might be "the best you can do." Group differences on some outcome(s) might indeed be interesting to study even though you had little or no "control" in the situation.

To summarize, for the "group comparison" family of designs:

Kind of Study	Method of Forming Groups
Ex Post Facto (Causal Comparative)	Groups Formed
True Experiment	Random Assignment of Individual to "Researchr-Made" Groups
Quazi-Experiment	Random Assignment of Intact Groups

Case study design
It is a useful tool for investigating trends and specific situations in many scientific disciplines, especially social science, psychology, anthropology and ecology

Basically, a case study is an in depth study of a particular situation rather than a sweeping statistical survey. It is a method used to narrow down a very broad field of research into one easily researchable topic
Though it does not answer a question completely, it gives some indications and allows further elaboration and hypothesis creation on a subject.
The case study research design is also useful for testing whether scientific theories and models actually work in the real world. You may come out with a great computer model for describing how the ecosystem of a rock pool works but it is only by trying it out on a real life pool that you can see if it is a realistic simulation.
For psychologists, anthropologists and social scientists they have been regarded as a valid method of research for many years. Scientists are sometimes guilty of becoming bogged down in the general picture and it is sometimes important to understand specific cases and ensure a more holistic approach to research.

Its advantage, (case study research design) is that you can focus on specific and interesting cases. This may be an attempt to test a theory with a typical case or it can be a specific topic that is of interest. Research should be thorough and note taking should be meticulous and systematic. In a case study, you are deliberately trying to isolate a small study group, one individual case or one particular population.

For example, statistical analysis may have shown that birthrates in African countries are increasing. A case study on one or two specific countries becomes a powerful and focused tool for determining the social and economic pressures driving this

How To Design And Conduct A Case Study
It is best if you make yourself a short list of 4 or 5 bullet points that you are going to try and address during the study. If you make sure that all research refers back to these then you will not be far wrong.
With a case study, even more than a questionnaire or survey, it is important to be passive in your research. You are much more of an observer than an experimenter and you must remember that, even in a multi-subject case, each case must be treated individually and then cross case conclusions can be drawn

How To Analyze The Results
Analyzing results for a case study tends to be more opinion based than statistical methods. The usual idea is to try and collate your data into a manageable from and construct a narrative around it.
Use examples in your narrative whilst keeping things concise and interesting. It is useful to show some numerical data but remember that you are only trying to judge trends and not analyze every last piece of data. Constantly refer back to your bullet points so that you do not lose focus.
It is always a good idea to assume that a person reading your research may not possess a lot of knowledge of the subject so try to write accordingly.

In addition, unlike a scientific study which deals **with facts,** a case study is based on **opinion** and is very much designed to provoke reasoned debate. There really is no right or wrong answer in a case study.

Cross-sectional design
A research design where **subjects are assessed at a single time** in their lives, A cross sectional study is fast and can study a large number of patients at little cost or effort. Also, you don't have to worry about patients dropping out during the course of the study. This study is efficient at identifying association, but may have trouble deciding cause and effect. With data at only one time point, you don't know whether the chicken or the egg came first. Here are two examples of cross sectional designs
In Zureik et al (BMJ 2002 Aug 24;325(7361):411), a group of 1132 adults with asthma were given respiratory function tests to assess the severity of their asthma. They were also given skin prick tests to assess their sensitization to mold, pollen, dust mites, and cats. In this study, those patients with reactions to mold were much more likely to have severe asthma.

Types Of Research

Research can also be classified on the basis of its purpose its intended to achieve and examples of such researches include:

Evaluative research:

This is the study that focuses on whether an intervention was properly implemented and whether the intended outcomes of a given programme or project have been realized or not. (Mouton, 2001) Evaluation studies are both quantitative and qualitative in nature and it requires an understanding of the project objectives so that the performance of the project can be measured against the set objectives.

Predictive research
This type of research takes on several variables and tries to predict the likely outcome. It asks 'what if questions. Thus it is based on predictions which themselves grow out of repeated actions and events which have been studied. It is based on probability and can be used to predict the likelihood of an event occurring (Wisker, 2001)

Historical research
These are studies which attempt to reconstruct the past and chronology of events (mouton 2001) and aim at arriving at an accurate account of the past so as to gain a better understanding of the present and fore cast what the future is likely to be.

Historical research is also referred to as analytical research. Common methodological characteristics include a research topic that addresses past events, review of primary and secondary data, techniques of criticism for historical searches and evaluation of the information, and synthesis and explanation of findings. Historical studies attempt to provide information and understanding of past historical, legal, and policy

Meta-Analysis

Meta-analysis combines the results of studies being reviewed. It utilizes statistical techniques to estimate the strength of a given set of findings across many different studies. This allows the creation of a context from which future research can emerge and determine the reliability of a finding by examining results from many different studies. Researchers analyze the methods used in previous studies, and collectively quantify the findings of the studies. Meta-analysis findings form a basis for establishing new theories, models and concepts.

Thomas and Nelson (1990) detail the steps to meta-analysis:

1. Identification of the research problem.
2. Conduct of a literature review of identified studies to determine inclusion or exclusion.
3. A careful reading and evaluation to identify and code important study characteristics.
4. Calculation of effect size. Effect size is the mean of the experimental group minus the mean of the control group, divided by the standard deviation of the control group. The notion is to calculate the effect size across a number of studies to determine the relevance of the test, treatment, or method.
5. Reporting of the findings and conclusions.

Exploratory research:

These are studies intended to carry out preliminary investigation into relatively unknown areas of research (Terre Blanch and Durrheim). They employ open, flexible and inductive approach to research as they attempt to look for new insights into phenomena. They generate speculative insights, new questions and hypothesis. They ask both 'what and why 'questions (Wiker, 2001, and Mbaaga, 1990) and this type of research is more flexible.

Descriptive research

Descriptive reseach are designed to gain more information about a particular characteristic within a particular field of study. A descriptive study may be used to, develop theory, identify problems with current practice, justify current practice, make judgements or identify what others in similar situations may be doing. There is no manipulation of variables and no attempt to establish causality. They are qualitative in nature and produce descriptive data i.e they use people's own written and spoken words as well as observable behaviour to describe a phenomenon or event so that it can be understood better.

- Descriptive research requires the clear   specification of...
  WHO, *WHAT*, *WHEN*, *WHERE*, *WHY*, and*HOW*
-- Before data collection can begin
- Exploratory research is very flexible; descriptive research is **MUCH** more rigid

 Causal research

This is a type of research that tries to find out the cause and effect of phenomenon (Leedy, 1997). The possibility of causal inference derives from the use of randomization techniques, experimental and comparative groups and repeated measures over time. Thus it aims at establishing cause-effect relationships between the research variables.

Other classification of research
It may also be categorized into the following
- Quantitative versus qualitative research
- Basic versus applied research
- Empirical and non empirical research

Qualitative and Quantitative Research
Quantitative research is:
"a formal, objective, systematic process in which numerical data are utilized to obtain information about the world" (Burns and Grove cited by Cormack 1991 p 140). There is massive use of mathematics, statistical tools and the samples are comparatively large.
In general, qualitative research generates rich, detailed and valid (process) data that contribute to in-depth understanding of the context. Quantitative research generates reliable population based and gereralizable data and is well suited to establishing cause-and-effect relationships

Quantitative research is research involving the use of structured questions where the response options have been predetermined and a large number of respondents is involved.
By definition, measurement must be objective, quantitative and statistically valid. Simply put, it's about numbers, objective hard data.

The sample size for a survey is calculated by statisticians using formulas to determine how large a sample size will be needed from a given population in order to achieve findings with an acceptable degree of accuracy. Generally, researchers seek sample sizes which yield findings with at least 95% confidence interval (which means that if you repeat the survey 100 times, 95 times out of a hundred, you would get the same response) and plus/minus 5 percentage points margin error. Many surveys are designed to produce smaller margin of error.

Qualitative Research is collecting, analyzing, and interpreting data by observing what people do and say. Whereas, quantitative research refers to counts and measures of things, qualitative research refers to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things.

Qualitative research is much more subjective than quantitative research and uses very different methods of collecting information, mainly individual, in-depth interviews and focus groups. The nature of this type of research is exploratory and open-ended. Small numbers of people are interviewed in-depth and/or a relatively small number of focus groups are conducted.

Participants are asked to respond to general questions and the interviewer or group moderator probes and explores their responses to identify and define people's perceptions, opinions and feelings about the topic or idea being discussed and to determine the degree of agreement that exists in the group. The quality of the finding from qualitative research is directly dependent upon the skills, experience and sensitive of the interviewer or group moderator.

This type of research is often less costly than surveys and is extremely effective in acquiring information about people's communications needs and their responses to and views about specific communications.

Basically, quantitative research is objective; qualitative is subjective. Quantitative research seeks explanatory laws; qualitative research aims at in-depth description. Qualitative research measures what it assumes to be a static reality in hopes of developing universal laws. Qualitative research is an exploration of what is assumed to be a dynamic reality. It does not claim that what is discovered in the process is universal, and thus, replicable. Common differences usually cited between these types of research include.

Characteristics of quantitative and qualitative research

Quantitative	Qualitative
Objective	Subjective
Research questions: How many? Strength of association?	Research questions: What? Why?
"Hard" science	"Soft" science
Literature review must be done early in study	Literature review may be done as study progresses or afterwards
Test theory	Develops theory
One reality: focus is concise and narrow	Multiple realities: focus is complex and broad
Facts are value-free and unbiased	Facts are value-laden and biased
Reduction, control, precision	Discovery, description, understanding, shared interpretation
Measurable	Interpretive
Mechanistic: parts equal the whole	Organismic: whole is greater than the parts
Report statistical analysis. Basic element of analysis is numbers	Report rich narrative, individual; interpretation. Basic element of analysis is words/ideas.
Researcher is separate	Researcher is part of process
Subjects	Participants

Context free	Context dependent
Hypothesis	Research questions
Reasoning is logistic and deductive	Reasoning is dialectic and inductive
Establishes relationships, causation	Describes meaning, discovery
Uses instruments	Uses communications and observation
Strives for generalization Generalizations leading to prediction, explanation, and understanding	Strives for uniqueness Patterns and theories developed for understanding
Highly controlled setting: experimental setting (outcome oriented)	Flexible approach: natural setting (process oriented)
Sample size: n	Sample size is not a concern; seeks "informal rich" sample
"Counts the beans"	Provides information as to "which beans are worth counting"

The decision of whether to choose a quantitative or a qualitative design is a philosophical question. Which methods to choose will depend on the nature of the project, the type of information needed the context of the study and the availability of recourses (time, money, and human).

It is important to keep in mind that these are two different philosophers, not necessarily polar opposites. In fact, elements of both designs can be used together in mixed-methods studies. Combining of qualitative and quantitative research is becoming more and more common.

Every method is different line of sight directed toward the same point, observing social and symbolic reality. The use of multiple lines of sight is called triangulation.
It is a combination of two types of research. It is also called pluralistic research.
Advantages of combining both types of research include:
1. research development (one approach is used to inform the other, such as using qualitative research to develop an instrument to be used in quantitative research)
2. Increased validity (confirmation of results by means of different data sources)
3. Complementarity (adding information, i.e. words to numbers and vice versa)
4. Creating new lines of thinking by the emergence of fresh perspectives and contradictions.

Barriers to integration include philosophical differences, cost, inadequate training and publication bias.

Qualitative data analysis

Qualitative analysis involves a continual interplay between theory and analysis. In analyzing qualitative data, we seek to discover patterns such as changes over time or possible causal links between variables.

Examples of approaches to discovery and explanations of such patterns are Grounded Theory Method (GTM), semiotics, and conversation analysis.

Qualitative researchers sometimes attempt to establish theories on a purely inductive basis. This approach begins with observations rather than hypothesis and seeks to discover patterns and develop theories.

Qualitative data Processing

The processing of qualitative data is as much art as science. Three key tools for preparing data for analysis *are coding, memoing*, and *concept mapping.*

Coding is classifying or categorizing individual pieces of data.

If you are testing hypothesis, then the codes could be suggested by the theory, in forms of variables. Open coding – codes are suggested by the researcher's examination and questioning of the data.

Example: 2 passages from Book Leviticus (Revised Standard version): religious bases for homophobia.

18:22 You shall not lie with male as with a woman, it is an abomination.

20:13 If a man lies with a male as with a woman, both of them have committed an abomination; they shall be put to death, their blood is upon them.

Homosexuality – key concept

Lying implies having sex

Male homosexuality

Prohibited behavior

Abomination

Put to Death

Male homosexuality is not the only abomination. Most of the abominations have to do with dietary rules and mishandling of ritual artifacts. **Thus, Dietary Rules and Ritual Artifacts are additional codes**.

Death penalty is broadly applied by Leviticus: everything from swearing to murder, including male homosexuality somewhere in between.

An extended analysis of prohibited behavior, short of abomination and death, and also turns up a lengthy list. Among them are slander, cursing the deaf, putting stumbling blocks in front of the blind people, and so forth.

Memoing writing memos or notes to yourself and others involved in the project.It is appropriate at several stages of data processing to capture code meaning, theoretical ideas, preliminary conclusions, and other thoughts that will be useful during analysis.

Concept mapping uses diagrams to explore relationships in the data graphically

Basic Research And Applied

Basic Research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.

Applied research is also an original investigation undertaken to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

Experimentaldevelopment is systematic work, drawing on existing knowledge gained from research and/or practical experience that is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed."

Content In The Proposal
What follows is more information about what is required in the various sections of your evolving research proposal.
I. **The Problem**. You should begin by stating what the problem is that you are going to research. You should give the reader an idea of the project you intend to undertake.

II. **Importance to the Discipline**. Not every topic is worth researching. What should guide your choice of a topic is that it is important and relevant to the field in which you are engaged. You must convince the reader that your topic is important. It is here that you need to integrate some theory that supports the need to investigate your topic.

III. **Literature Review**. Your review should follow the introduction of the problem and should include a logically organized review of the relevant literature. You should give a summary of the theory that guides your work, as well as discuss what others have found who have done the same or similar research. If you are proposing to replicate someone else's work, you should say why. For example, do you wish to extend the generalizability of their findings, or are you hoping to improve on their methodology? Tell why. There is no need for you to rediscover the wheel; therefore, be careful in your search of the literature.

List Questions/Hypotheses. Your review of the literature should lead you to your research questions. In other words, these questions should be a natural outgrowth of your review of others' work. State these questions concisely. Be clear about what you are going to try to prove or disprove. If the reader cannot understand what you are proposing, then you are not making a strong argument
Hypothesis: A statement that specifies how two or more measurable variables are related. e.g
(H1): Women are more likely than men to make impulse purchases of our brand.
(H2): Decreasing price by 10% will increase unit sales by 30%.
(H3): Adoption of our new product will be greater in Northern states than in Southern States.

IV. **Method of Research**. While there are various methods by which one can approach social research, there are certain parameters which must be taken into consideration and addressed in your proposal. If the parameter does not appear to be relevant to your proposed research, you must address why that may be the case. What follows below is a list of parameters which might be considered in the writing

of a research proposal. During the course of the semester, we will address these and other components of a research proposal.

A. **Operationalization of the Variables**: If your question is "Is job security related to job satisfaction?" you must tell what you mean by both job security and job satisfaction, and be very specific. Will these concepts be measures by a response to a question? What is that specific question? If you are asking more than one question to capture a concept, will you form a scale measure? What kind of scale measure? Each variable must have specific operations (hence, operationalization) attached to is so that the reader knows exactly how the variable will be measured in the proposed research.

B. **Design**: Specify what research design your study will take, and why. Is it an experimental design? Will you look at one group once or on several different occasions? Will you look at more than one group? Will you
be comparing different groups? Why? Will you use a case study approach?

C. **Sample**: How will you draw your sample? What is the method(s) you will employ? How many will be in your sample? Why? Will you use probability sampling or non-probability sampling? Why?

D. **Data Gathering Method**: How will you actually gather the data that measures your variables? Will you use a survey? Will you interview people? you use existing data? Which data? If you are using specific instruments,include copies of them in an appendix to the proposal. Will you use focus groups?

E. **Ethical Considerations**: What impact might your study have on your "subjects?" What risk, if any, might you impose on the population you study by conducting the research? What are some different ways in which
the findings of your research might be utilized by others? Are there any possible political uses and what might be some implications of those uses? How your findings might be utilized differently from your research intentions?

F. **Political Considerations** : To what political ends might the findings of your research be used? It is important to be aware that one's findings,regardless of what was hypothesized, can be put to political use. If the costs of political use outweigh the benefits of the research (which is also true of ethical considerations), one must question whether to conduct the proposed research

G. **Validity and Reliability**: How will you know if you are measuring what you say you are measuring? How will you know if your data is valid? What checks for validity will you provide? Are your measuring tools reliable? How will you know if they are reliable? What will you do that will convince the reader that you have addressed validity and reliability?

H. **Limitations to the Proposed Study**: You should tell the reader some of the limitations you foresee for your study. If you are using a specific sample and this limits generalizability, you should say so. If you are testing a group that might change the effectiveness of your measuring instrument, you need to address it.

Anything that might limit the knowledge gained,in any way, should be mentioned. None of us cond uct the perfect research project; therefore, it is important the we address possible limitations.

V. **Data Analysis**: How do you propose to analyze the data you would collect from this proposed research? If you posit a relationship between some of the variables, how will you determine if there really is a relationship? What statistical techniques might you use? While you are not actually going to do any statistical analysis at this point, you must have an idea of what types of analyses would be appropriate for both your variables and your research questions.

VI. **Reference List**: Any of the studies you cite in the literature review, or any other relevant works that you use in the proposal, must be included in a proper reference list. (See Writing Guidelines) Note that a reference list should include only those items actually referenced in the body of the paper. If you do not use it in the body of the paper, you should not include it inthe reference list.

VII. **Appendices:** You should attach a copy of any relevant supplemental materials, such as questionnaires, interview schedules, scoring keys (code sheets),.

Grading Points for Proposal Papers
Consider the following criteria used in grading to increase your skills in project proposal writing

GRADING: Stage 1 is worth 120 points. Stage 2 is worth 280 points and the next pages detail the grading criteria for each paper.

RESEARCH PROPOSAL –
STAGE 1 – EVALUATION SHEET
MECHANICS (10%) – 12 POINTS
1. Grammatical and spelling errors (possible 8 points): Average number of errors per page: 0 = 8 pts;
1 = 6 pts;
2-3 = 4 pts;
4-5 = 2 pts;
6-7 = 1 pts;
8 or more = 0 pts. _____

2. Follows required writing guidelines, including spacing, margins, and citation of sources. (4 points) _____

ORGANIZATION (30%) – 36 POINTS
1. Presents critical thought on the topic; i.e., does not merely provide Descriptions or lists. (12 points) _____
2. Shows evidence of careful, logical planning and presentation, with use of appropriate headings throughout proposal. (12 points) _____
3. Shows evidence of careful writing, with clear articulate use of language. (12 points) _____

CONTENT (60%) – 72 POINTS
1. Statement of the problem that clearly describes the topic that is being proposed for research. (10 points) _____
2. Demonstrates the importance of the topic for research and for the respective discipline. (10 points) _____
3. Integrates scholarly material and own ideas in the development and discussion of the topic. (25 points) _____
4. Uses scholarly references and shows a clear link to the existing professional literature and relevant theory. (12 points) _____
5. Poses appropriate and clear research questions/hypotheses. (15 pts

The following are the methods of data collection

Observation method
Observational research is used for studying nonverbal behaviors (gestures, activities, social groupings, etc).
Sommer & Sommer (1986) developed the list shown below to assist in observation research.
1. Specify the question(s) of interest (reason for doing the study).
2. Are the observational categories clearly described? What is being observed and why?
3. Design the measurement instruments (checklists, categories, coding systems, etc.).
4. Is the study designed so that it will be 'Valid (i.e., does it measure what it is supposed to measure, and does it have some generalizability)?
5. Train observers in the use of the instruments and how to conduct observational research.
6. Do a pilot test to (a) test the actual observation procedure and (b) check the reliability of the categories of observation using at least two independent observers.
7. Revise the procedure and instruments in light of the pilot test results. If substantial changes are made to the instrument, run another pilot test to make sure changes will work under the field conditions.
8. Collect, compile, and analyze the data and interpret results.

Casual observation is normally done like unstructured interviews. During the early stages of a research project, casual observation allows the researcher(s) to observe subjects prior to designing questionnaires and/or interview formats.

Types of Observation Studies
Ethnographies which are observations of groups
Grounded theory which uses multi-staged data collection Phenomenological studies which studying subjects over a period of time through developing relationships with them and reporting findings based on research "experiences".
Case studies which use various data to investigate the subject over time and by activity

Each research method has its strengths and weaknesses. When designing a research study it is important to decide what the outcome (data) the study will produce then select the best methodology to produce that desired information.

SURVEY: This is the method used to describe a method of gathering information from a sample of individuals in a population in order to learn something about the larger population from which the sample is drawn.

Types of surveys: descriptive statistics which is largely conducted by the government to obtain major descriptive information about the population and its density, the composition of the labor force, national health statistics etc.

Survey for social research: mainly used by social scientists to gather and a analyze information about the social and economic conditions of the population or segments of the population and leads to the better understanding of human beings in their social settings.

Market research survey: this is carried on by business in consumer market research to determine consumer needs and the effectiveness of marketing programs.

The Steps In A Survey Project

1. Establish the goals of the project or what you want to learn
2. Determine your sample –whom you will interview
3. Choose interviewing methodology-how you will interview
4. Create your questionnaire –what you ask
5. Pretest the questionnaire, if practical test the questions
6. conduct interviews and enter data
7. Analyse the data and produce the report

Interviews; this may be defined as a deliberate conversation between the interviewer and an informant conducted for the purpose of collecting information. It may take the form of face to face interview schedule or telephone survey by Mbaaga (Ibid.). it may be formal or informal interview

Formal interview: this type involves the pre determined list of questions that are asked to all the interviewees in the same order. They may be structured with standardized questions or semi-structured with some degree of flexibility and the more structured the interview, the easier it is to quantify the results.

Group Interview: (Focus Group Discussion) FGD

Richard Krueger (1988), describe the focus group as a special type of group in terms of purpose, size, composition, and procedures. A focus group is typically composed of seven to twelve participants who are unfamiliar with each other and conducted by a trained interviewer. These participants are selected because they have certain characteristics in common that relate to the topic of the focus group.

The researcher creates a permissive environment in the focus group that nurtures different perceptions and points of view, without pressuring participants to vote, plan, or reach consensus. The group discussion is conducted several times with similar types of participants to identify trends and patterns in perceptions. Careful and systematic analyses of the discussions provide clues and insights as to how a product, service, or opportunity is perceived.

A focus group can be defined as a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non threatening environment. It is conducted with approximately seven to twelve people by a skilled interviewer. The discussion is relaxed, comfortable, and often enjoyable for participants as they share their ideas and perceptions. Group members influence each other by responding to ideas and comments in the discussion.

Characteristics Of Focus Groups
Focus group interviews typically have four characteristics:
1. Identify the target market (people who possess certain characteristics);
2. Provide a short introduction and background on the issue to be discussed;
3. Have focus group members write their responses to the issue(s);
4. Facilitate group discussion;
5. Provide a summary of the focus group issues at the end of the meeting.

Other types of group processes used in human services (delphic, nominal, planning, therapeutic, sensitivity, or advisory) may have one or more of these features, but not in the same combination as those of focus group interviews.

Key Data Collection Techniques
Face to Face or personal interviews
Telephone interviews
Mail / postal interviews
E-mail interviews
Internet/ intranet (WEB PAGE)
How ever the above techniques may have advantages and disadvantages

The above techniques may be applied using a questionnaire,
Questionnaire: Is a predetermined written list of questions, which may be answered, by a subject or respondent.
The type of population, the nature of the research question and resources available determines the type of questionnaire to be used.

Planning the Survey
I. Hypotheses
- Descriptive hypotheses best answered by this method
- If you don't consider your hypotheses before writing your survey, you may be Overwhelmed with data and End up with data that doesn't address your concerns
- Good to go through several different scenarios of outcome from survey to see whether different outcomes would indeed have different implications for: Your

hypotheses and What action you will take (if survey is to address applied issue)

II. After determining precisely what you want to find out, determine who you want to ask
A. Defining your population
B. Determining whether to use the population or to sample
C. Types of samples
1. Convenience samples
2. Quota samples
3. Random samples: Allow you to use inferential statistics to determine how closely your results reflect their population
4. Stratified random samples: The advantage of random samples, but with a smaller sample and/or greater accuracy

III. Questionnaire, Interview, or Telephone Survey?
A. Issues to consider
1. Cost
2. Response rate
3. Honesty of responses
4. Standardization
B. The case for the telephone survey

IV. Format issues:
A. Format of questions
1. Dichotomous versus continuous
2. Fixed versus open-ended

B. Format of survey
1. Structured
2. Semi-structured
3. Unstructured

C. Why a novice might be better off with fixed alternative questions and a structured survey:
1. Data is easily coded
2. Structure may reduce investigator bias: Data on hypothesis-confirming bias (Snyder, 1984, Snyder, 1981, Snyder and Cantor, 1979)

V. Rules for asking good questions
A. Use words a third-grader would understand
B. Use words that won't be misinterpreted
C. Avoid personal questions
D. Make sure your sample has the information you seek
E. Avoid leading questions
F. Avoid questions loaded with social-desirability
G. Avoid double-barreled questions negation
H. Keep questions short and concise
I. Avoid negations barrel
J. Avoid irrelevant questions

K. Pretest the questions

VI. Analyzing survey data
A. Summarizing data
B. Summarizing interval data
C. Summarizing ordinal or nominal data
D. Using inferential statistics
1. Parameter estimation with interval data
2. Hypothesis testing with interval data
a. Relationships among more than two variables
b. More complicated procedures
E. Using inferential statistics with nominal data
1. Estimating overall percentages in population
2. Relationships between variables

A. Literature review
1. To avoid doing a study that has already been done
2. To learn from others' mistakes and successes

B. **Ethical concerns**
1. Assessing potential gain:
* Is it a test of theory?
* Does it address a practical problem?
* Does it open up new lines of inquiry?
* Be sure you're **not** trying to prove the null hypothesis or unwittingly replicating a study that has been done before.
* Peer review
2. Assessing potential harm:
* Are ethical principles compromised?
* Peer review
* Review by professor
* Review by ethics committee
* Practical concerns
Should scientific principles be used to study humans and other animals?
Only if:
A. The potential benefits exceed the potential harm.
B. The potential for harm has been minimized
II. Maximizing benefits
A. Getting a good, useful idea to test.
B. Providing a valid test of that idea. The study should have at least one of the following three types of validity. The type or types needed depend on the research question.

Documentary Analysis

This is also known as the study of documents where documents are the materials which contain the information we wish to study. It is important to note that all

studies begin by a review of related literature and certain documents; this may become a method of data collection if the research based on available documents.

Documents are divided into two broad categories namely primary (eye witness account written by people who experienced the particular event or behavior) and secondary documents (accounts written by those who were not present during the event but received the necessary information for compiling the documents by interviewing the eyewitnesses or reading the primary documents.

Primary documents may include things like letters, agendas, committee minutes, financial accounts and diaries. Secondary documents may include things like books, newspapers, journals articles etc.

Forms of documentary Analysis: Historical, Literature, Meta-Analysis Diaries and Content Analysis

Content Analysis
Content analysis systematically describes the form or content of written and/or spoken material. It is used to quantitatively studying mass media. The technique uses secondary data and is considered unobtrusive research.
The first step is to select the media to be studied and the research topic. Then develop a classification system to record the information. The techniques can use trained judges or a computer program can be used to sort the data to increase the reliability of the process.
Content analysis is a tedious process due to the requirement that each data source be analyzed along a number of dimensions. It may also be inductive (identifies themes and patterns) or deductive (quantifies frequencies of data). The results are descriptive, but will also indicate trends or issues of interest.

Experimental Designs
1. True Designs
2. Quasi Designs
3. Ex Post Facto Designs

True Designs - Five Basic Steps to Experimental Research Design
1. Survey the literature for current research related to your study.
2. Define the problem, formulate a hypothesis, define basic terms and variables, and operationalize variables.
3. Develop a research plan:
    a. Identify confounding/mediating variables that may contaminate the experiment, and develop methods to control or minimize them.
    b. Select a research design as seen already above
    c. Randomly select subjects and randomly assign them to groups.
    d. Validate all instruments used.
    e. Develop data collection procedures, conduct a pilot study, and refine the instrument.
    f. State the null and alternative hypotheses and set the statistical significance level of the study.

4. Conduct the research experiment(s).
5. Analyze all data, conduct appropriate statistical tests and report results.

Quasi Designs
The primary difference between true designs and quasi designs is that quasi designs do not use random assignment into treatment or control groups since this design is used in existing naturally occurring settings.
Groups are given pretests, then one group is given a treatment and then both groups are given a post-test. This creates a continuous question of internal and external validity, since the subjects are self-selected. The steps used in a quasi design are the same as true designs.

Ex Post Facto Designs
An ex post facto design will determine which variables discriminate between subject groups.
Steps in an Ex Post Facto Design
1. Formulate the research problem including identification of factors that may influence dependent variable(s).
2. Identify alternate hypotheses that may explain the relationships.
3. Identify and select subject groups.
4. Collect and analyze data
Ex post facto studies cannot prove causation, but may provide insight into understanding of phenomenon.

Data Analysis
The data collected in a given research can be analyzed either qualitatively or quantitatively depending on the nature of the data collected. In analysing the data,you need to develop skills in finding patterns in the data and to have the ability to isolate critical facts and information from other information that is not so important. Although the analysis depends on the type of data collected, how the data collected depends on the type analysis anticipated.

Qualitative Data Analysis

Its normally analyzed continuously during and after data collection (Mbaaga 1990). The analysis involves a pure description of events, places, people or objects. This will enable the reader to know what happened, what it was like from the participant's activities etc. In most cases qualitative analysis does not go beyond the measure of central tendency and measure of dispersion (mean, mode, median, range, and standard deviation)

Thus the analysis takes place simultaneously during and after the data collection (Merrian et al 1995), this enables the researcher to make adjustments, restructure and if possible examine emerging concepts not originally in the study design.
How ever NVivo 8 is a software package for analysis of qualitative data, such as transcripts of in-depth interviews, focus groups and field notes.

Quantitative Data Analysis

This type of data can be analyzed by use of statistical procedures after the researcher has measured the relevant variables. The first step in quantitative data analysis is to prepare the raw data and transform them into a data set in machine readable format (in a form that can be read by a computer

Raw data is a collection of unprocessed measurements such as pile of completed questionnaires, strings of numerical codes applied to written texts etc these are then transformed into ordered data set before they can be analysed. The data preparation process involves three important tasks namely;
- Coding
- Entering and
- creating

Coding where the data is grouped into certain categories and assigned specific codes and process involves translating verbal responses into numerical codes that facilitates data manipulation. Then after the data is coded it is entered into computer for analysis using the appropriate statistical package. How ever before the analysis, data has to be cleaned i;e the information has to be edited or cross checked for errors if good results are to be expected and Following data entry, some data manipulation is usually needed to manipulate the entered ("raw") data into structures that are suitable for analysis. Typically, data manipulation tasks include

- *Copying data*
- *Selecting subsets of the data*
- *Restructuring the data to make analysis easier*
- *Transforming data*
- *Merging data at different levels*

Copying data
To avoid confusing the entry and the management, we suggest that you copy the raw data to a second sheet. This is easily done in Excel by creating a new worksheet (Insert => Worksheet), using Edit => Copy to copy the original data to the clipboard, and then Edit => Paste Special (rather than Paste) and clicking the Paste Link button. This ensures that the data in the new sheet are linked to the original data, so that any subsequent changes to the original are reflected automatically in the copy.

It is a good idea to get into the habit of naming sheets. In general your analysis will be simpler to follow if you use more sheets, rather than putting all your information together in a few sheets. But you then need to give them meaningful names so you can easily find them and retrieve the information that you want.
Also, you can take advantage of Excel's facility for naming cells or areas of cells (Insert => Name => Define). This makes it much easier to refer to your data, rather than using cell addresses.

Selecting subsets of the data
It is often useful to look at subsets of the cases (rows) in your data, for example to concentrate on female subjects, or on cases that show abnormally large values for a

particular variable. Excel has some excellent filtering facilities for selecting rows of interest, in particular the automatic filter (Data => Filter => Autofilter). This allows you to display only those rows containing particular values of one or more variables. By using the Custom option, you can specify up to two specific criteria for each variable. All rows that do not meet the criteria are hidden from view (but are not deleted). More complex filtering can be achieved using the Advanced Filter facility (Data => Filter => Advanced Filter), but this is more difficult to use.

Restructuring data
It is often necessary to extract some of the data and convert them to a different structure. The most common requirement is to split a data column into several columns, one for each level of a factor (or combination of factors). For example, we may wish to separate data for males and females, so that we can process them separately or compare them.
We call this process "unstacking", since in list format the data for a variable are held in a single column for all levels of a factor (i.e. stacked on top of each other).

Transforming data
You will commonly need to perform some transformations of the original data (for example, taking logarithms or converting from grammes per plot to tonnes per hectare). This is easily achieved by adding a new column to a copy of the data, and using a suitable Excel formula to transform the data contained in an existing column. The need to add new columns to your data is one of the reasons that we recommend taking a copy of your original data.

Merging data at different levels
When you have data at multiple levels, you may wish to incorporate data about one level in the data at a more detailed level. For example, records about individuals may contain an indication of which household they belong to. You may wish to add some details about the households to the individual data.

This can be achieved using the Excel lookup function. For each column of household information that you want to incorporate, you should create a new column in the individual table and use lookup to extract the appropriate information from the household data for each individual.
The analysis can be done at three levels depending on the investigation of the study namely;

At univariate level of Analysis: frequency tables to provide an enumeration of activity of people that have pre-specified characteristic. Percentages can also be presented so as to show the distribution of people that have certain characteristics within the total population of the study.

Suitable aids to visualizing your data fall generally into the following categories:
Graphics, which give a picture of the structure of your data and the relationships within them
Tables, which enable you to compare values, frequency counts, etc between levels of factors. Other univariate descriptive statistics include measures central tendency

(e.g. mean, median, mode),deciles, quartiles and measures of dispersion(e.g. ,range, mean deviation, standard deviation, coefficient of variation).

At The Bivariate this involves making contingency tables between the dependent variable and the independent (explanatory variables). In order to establish relationship between the independent and the dependent variable Pearson -chi square test statistics can be used to measure the degree of association.

At multivariate can be used to carry out further investigation to establish the relative importance of the dependent variable.

NB programs we teach most statistical packages used in analysis like   SPSS, STATA

Difference between Research Proposal and Project Proposal

A research proposal	A project proposal
Exclusively written by academics and students in institutions of higher learning	Not restricted to academics
Review of related literature is emphasized	Literature review section is absent
Focuses on collecting data on a problem which will be analyzed for drawing conclusion and making recommendation	Makes use of the recommendations of a study to solve the problems of a given community
Bibliography and references are a must	Bibliography and reference may not be necessary
May be written and presented in chapters	Written and presented in sections
Proposals especially written by students may not necessarily be presented to seek financial assistance	The primary aim is to seek financial assistance
May not need a follow up action	Emphasizes a follow up action
Evaluation plan not necessary	Evaluation plan a must

The structure of a research report
- Title
- Table of content
- An abstract
- Chapter one: Background to the problem
- Chapter two: Literature review
- Chapter three: Methodology
- Chapter four : Results /findings of the study
- Chapter five: Discussion, Conclusion and Recommendations
- References
- Appendices
    - Timetable
    - Budget
    - Research instruments
    - Field photograps
    - Introduction letters
    - Any other important document

Appendix
WRITING UP RESEARCH
This is how method fits into your thesis:

▣	**Introduction**: introduction of research problem introduction of objectives introduction of how objectives will be achieved (methodology), optional introduction of main findings and conclusions, optional
▣	**Literature review**: review of previous work relating to research problem (to define, explain, justify) review of previous work relating to methodology (to define, explain, justify) review of previous work relating to results (particularly reliability, etc.) i.e identify weaknesses and success
▣	**Method** (how the results were achieved): explanation of how data was collected/generated · explanation of how data was analyzed explanation of methodological problems and their solutions or effects
▣	**Results and discussion**: presentation of results interpretation of results discussion of results (e.g. comparison with results in previous research, effects of methods used on the data obtained)
▣	**Conclusions**: has the research problem been "solved"? to what extent have the objectives been achieved? what has been learnt from the results? how can this knowledge be used? what are the shortcomings of the research, or the research methodology? etc.
▣	**analysis**: classes of data are collected and studies conducted to discern patterns and formulate principles that might guide future action
▣	**Case study**: the background, development, current conditions and environmental interactions of one or more individuals, groups, communities, businesses or institutions is observed, recorded and analyzed for stages of patterns in relation to internal and external influences.
▣	**Comparison**: two or more existing situations are studied to determine their similarities and differences.
▣	**Correlation-prediction**: statistically significant correlation coefficients between and among a number of factors are sought and interpreted.
▣	**Evaluation**: research to determine whether a program or project followed the prescribed procedures and achieved the stated outcomes.
▣	**Design-demonstration**: new systems or programs are constructed, tested and evaluated
▣	Experiment: one or more variables are manipulated and the results analyzed.
▣	**Survey-questionnaire**: behaviors, beliefs and observations of specific groups are identified, reported and interpreted.
▣	**Status**: a representative or selected sample of one or more phenomena is examined to determine its special characteristics.
▣	**Theoryconstruction**: an attempt to find or describe principles that explain how things work the way they do.
▣	**Trendanalysis**: predicting or forecasting the future direction of events
	Descriptive narration tells the story from beginning to end in chronological order, utilizing limited generalizations and synthesized facts.
	Interpretive analysis relates one event to another event. The event is studied and described within a broader con- text to add meaning and credibility to the data.

	For example, an examination of the development of a local jurisdiction's ability to dedicate land for parks may be related to the urbanization and loss of open space in our communities.
	Comparative analysis examines similarities and differences in events during different time periods-for example, the budget-cutting priorities and procedures of the Proposition 13 era of the early 1980s in parks and recreation as compared to the budget-cutting priorities and procedures of today
	Theoretical and philosophical analysis utilizes historical parallels, past trends, and sequences of events to suggest the past, present, and future of the topic being researched. Findings would be used to develop a theory . For example, an analysis of public recreation agency goals and objectives of previous eras can be used to describe the future in the context of social, political, economic, technological, and cultural changes in society.

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Course Name	: Information Technology

Course Description

This Course is built on the previous acquired knowledge of Computer applications through theoretical lecturers and laboratory sessions. The course explores systems development life cycle (SDLC), describing the data processing cycle, data processing, security issues & concerns in systems protection of its information, office automation, data base management system (DBMS)

Course Objectives

· To expose students to practical knowledge of developing information and database system for organizations and business firms.
· To enable understand how information and data is processed through an automated cycle.
· To help them develop skills in data entry and retrieval within different computer systems.

Course Content
Systems Development Life cycle (SDLC)

· Stages involved in the SDLC include; Problem identification, feasibility study, systems investigation, systems analysis, systems implementation, systems implementation, review and maintenance

Data Processing Cycle

· The input function
· The processing function
· The output function
· The storage function

Data processing operations

· Batch processing
· Real-time processing
· Features of a storage and retrieval system

Security issues/ concerns

· Risks to the computer users
· Risks to hardware
· Physical Access control
· Risks to storage media
· Risks to data
· Best password practice(BPP)
· Telecommunications dangers
· Encryption and other safety measures on telecommunication

Data Base Management systems (DBMS)

· Definition of DBMS
· DBMS structures
· Application program

· Elements of a DBMS
· Facilities offered by database management systems
· Benefits of a DBMS
· Designing a database
· Verification and validation checks

Office Automation
· Spread sheet
· Features of spread sheets
· Word processing
· Microsoft Access
· Internet

Mode of delivery Face to face lectures
Assessment
Coursework 40%
Exams 60%
Total Mark 100%

AFRICA POPULATION INSTITUTE MODULES
COMPUTER TECHNIQUES

CHAPTER FIVE

SYSTEMS DEVELOPMENT LIFE CYCLE (SDLC)

5:0 INTRODUCTION

Under this Chapter we shall look at the following:
♦ Feasibility study
♦ Systems investigation
♦ Systems analysis
♦ Systems design
♦ Systems implementation
♦ Review and maintenance

A company or an organisation of any sort will normally have a strategic plan.
This strategic plan could be probably increasing sales by say 30% in the next 5 years.

When such a plan is in place, departments in the organisation will also set their strategies, to ensure that they contribute as required to the overall strategic plan. These departments may include; Production, Marketing, Sales, IT, Human Resource, etc.

Definition
A strategy is a general statement of a business's long-term objectives and goals and the ways by which these will be achieved.

5:1 THE IT STRATEGY
This will always deal with the organisational needs from IT, the organisation's current use of IT and the potential opportunities that IT can bring.
During the evaluation of current use of IT in the organisation, Gaps (differences) can be identified. E.g. does the system meet the desired requirements, are users happy, is the system reliable, etc.

5:2 STAGES IN THE SYSTEMS DEVELOPMENT LIFE CYCLE

This is the cycle that any system, which can be used in an organisation, can be developed through. It is called a cycle because the stages involved in the development will always be continuous and repeat themselves in the same way.

The stages involved in the systems development life cycle include the following in their order
♦ Problem identification
♦ Feasibility study
♦ Systems investigation
♦ Systems analysis
♦ Systems design
♦ Systems implementation
♦ Review and maintenance

Definition

A system is a collection of activities and elements organised to accomplish a goal.

A computer information system (CIS) is a collection of hardware, software, people procedures and data that work together to provide information essential to running an organisation.
Life cycle -This implies t hat the system changes continually, in other words that, development of computer information system within an organisation is an ongoing activity.

PROBLEM IDENTIFICATION
The SDLC typically begins by identifying a problem or need. It involves a preliminary investigation of a proposed project to determine the need for a new information system.

An end user usually requests this or manger who wants something done that is not presently being done.

The exact problem or flow in the system should be known e.g. slowness resulting in the incompetence of the system, too heavy work than is manageable effectively by the system and areas of poor performance being identified by management which increase the level of indirect expenses.

Possible plans or suggestions with alternative arrangements to the present ones are then forwarded to management in a report - to decide whether to pursue the project further.

If so then management hands the terms of reference to the system analyst. Once the analyst get a go ahead, he conducts a feasibility study within the limits of the terms of reference.

FEASIBILITY STUDY
This is a forma study to decide what type of system can be developed which meets the needs of the organisation.

It involves a brief review of the existing system and the identification of a range of possible alternative solutions.

The systems analyst here will estimate the costs and benefits of the systems with greater accuracy.
The alternative that promises a significant return on the investment will be accepted.

Feasibility study comprises the following:
♦ Technical feasibility
♦ Operational feasibility
♦ Financial feasibility
♦ Economic feasibility
♦ Social feasibility or organisational feasibility

1. Technical feasibility
The requirements, as defined in the feasibility study, must be technically achievable. This means that any proposed solution must be capable of being implemented using available hard ware, soft ware and other equipment.

2. Financial feasibility
The certified public accountant will have an in depth role to play at this stage in proceedings. The economic contribution of the whole system must be assessed.

At this level, the cost-benefit analysis will be carried out on all the possible

alternatives, to identify the one with best returns.

There are three principal methods of evaluating a capital project

i) Payback Period
This method of investment appraisal calculates the length of time a project will take to recoup the initial investment - that is, how long a project will take to pay for itself. The method is based on cash flows.

ii) Accounting Rate of Return
This method, also called return on investment, calculates the profits that will be earned by a project and expresses this as a percentage of the capital invested in the project. The higher the rate of return, the higher a project is ranked. This method is based on accounting results rather than cash flows.

iii) Discounted Cash Flow (DCF)
This method can be sub divided into two

♦Net Present Value (NPV)
This considers all relevant cash flows associated with a project over the whole of its life and adjusts those occurring in future years to 'present value' by discounting at a rate called the 'cost of capital'.

♦ Internal rate of return (IRR)
This involves comparing the rate of return expected from the project calculated On a discounted cash flow basis with the rate used as the cost of capital. Projects with an IRR higher than the cost of capital are worth undertaking.

3. Organisational feasibility
The culture of the organisation, its structure, working practices, behavioural patterns and social systems need to be considered.

After the outlined project specifications are prepared these are presented to users who, with the assistance of technical staff will evaluate each option and make a final choice.

The results of this are included in a feasibility report.

SYSTEMS INVESTIGATION
The systems investigation is a detailed fact finding exercise about the area under consideration.

The following will be considered here by the project team;
♦Determine the inputs, outputs, processing methods and volumes of the current system
♦Examining controls, staffing and costs and also reviews the organisational structure.
♦Also considers the expected growth of the organisation and its future requirements.

The stages involved in this phase of systems development are as follows:

a) Fact finding by means of questionnaires, interviews, observation, reading handbooks, manuals, organisational charts.
b) Fact recording using flow charts, decision tables, narrative descriptions, etc.
c) Evaluation, assessing the strengths and weaknesses of the existing system.

Methods used in obtaining facts about the existing system:

♦Interviews

If interviews are conducted effectively, they allow the interviewer to provide information as well as obtain it. This method is the most appropriate for senior management, as other approaches may not be appropriate at executive levels.

♦Questionnaires

The use of questionnaires may be useful whenever a limited amount of information is required from a large number of individuals, or where the
organisation is decentralised with many 'separate entity' locations. Questions are normally set in such a way that each one is equal to another and the evaluation is done by simply adding the number of 'yes' and 'no'.

♦Observation

Here the investigator simply observes/watches the procedures as they occur. The problem here is that people normally tend to behave abnormally especially if they know that they are being watched.

♦Document Review

The systems analyst must investigate the document that are used in the system., e.g. organisational charts, procedures mammals and standard operational forms.

The overriding risk is that staff do not follow documented policies and procedure or that these documents have not been properly updated, so this method is best used within other techniques.

SYSTEM ANALYSIS

At this phase, a full documentation of the current system, oftenly using data flow diagrams is done. The ways in which the system can be changed to improve it are then considered, and diagrams are redrawn to reflect the required system.

Definition

A data flow diagram is a recording of the ways in which data is processed, without bothering with the equipment used.

SYSTEMS DESIGN

This involves the detailed systems specification draw up.
The selection of the suitable hardware, software and any required human - computer interface is done at this level.

Hard ware

In general terms, the choice of computer hardware will depend on the following factors:

♦User requirements - will the hardware suite in with the user's requirements.
♦Power - the computer power should be sufficient for the current and future requirements.
♦Reliability - there should be a low expected 'break down' rate. Back-up facilities should be available.
♦Simplicity - simple systems are probably best for small organisations.
♦Ease of communication - the system (hard ware and soft ware) should be able to communicate well with the user.
♦Flexibility - the hardware should be able to meet new requirements as they emerge, especially more powerful CPUs.

◆Cost - it must be affordable.

Soft ware
There are several points to consider while choosing a suitable package. They include the following:
◆**User requirements**
Does the package fit the user's particular requirements? E.g. report production, anticipated volume of data, etc.
◆Processing times
Is the processing times fast enough?
◆Documentation
The documentation should be full and clear to the user e.g. the manuals should easily be understood.
◆Controls - what controls are included in the package e.g. pass words, data validation checks, spell checks, etc.
◆Compatibility - will the package run on the user's computer?
◆Support and maintenance - what support and maintenance services will the software supplier provide?
◆User friendliness
Is the package easy to use? E.g. with means and clear on-screen prompts for the Key board operator.
◆Cost
Comparative costs of different packages should be a low priority. The company
Should obtain what it needs for efficient operation. Off-the-shelf packages are a
little cheaper that tailor made packages (bespoke).

A key question regarding software is whether to develop a system specially or buy what is already available (off-the-shelf)

Bespoke Packages
These are designed and written either 'in-house' by the IS department or externally by a software house. They are normally developed according to the customer specifications.

Off-the shelf packages
These are packages that are developed and sold to lots of users and intended to handle the most common user requirements.

Advantages of bespoke packages include:
i) The company owns the software and may be able to sell it to other potential users.
ii) The company can be able to do things with its software that competitors cannot do with theirs.
iii) It is likely that the package will be able to do all that is required it to do both now and in the future.

Disadvantages
a) The soft ware may not work at all.
b) There may be long delay before the soft ware is ready.
c) The cost is relatively high compared to off-the-shelf packages.

Advantages of using off-the shelf packages
a) It is available now and ready for use.
b) It is almost certainly cheaper than a specially commissioned product.
c) Expected high quality because software specialist writes them.

d) The software manufacturer will continually update a successful package, and so the version that a customer buys should be up-to-date.
e) Other users will have used the package already, and a well established package should be error-free.
f) These packages (good) are usually well-documented with easy to follow user manuals.

Disadvantages
a) A computer user gets a standardised solution to a data processing task. This may not well suite in the individual user's particular needs.
b) The user is dependent on the supplier for maintenance of the package.

c) There is always no competitive advantage as the competitors can use the same package.

Systems prototypes are likely to be developed here.

Definition
A prototype is a diagrammatic representation of the actual proposed system. It includes the number of hardware required, its configuration, information flow, staff, etc.

SYSTEMS INSTALLATION AND IMPLEMENTATION

Under this phase, the following stages are normally followed;

a) Installation of hardware and software
b) Testing
c) Staff training and production of documentation
d) Conversion of files and database creation
e) Change over

The items/stages in the list above do not necessarily happen in a set chronological order, and some can be done at the same time - for example staff training and system testing can be part of the same operation.

Installation of equipment
Installing a mainframe computer or a large network is a major operation that is carried out by the manufacturer/supplier.

Installation of a PC and other peripheral equipment will need a little bit of planning.

♦They should not be put in small, hot rooms since they generate some heat.
♦Large desks may be advisable, to accommodate a screen and keyboard and leave some free desk space for the officer worker to use.
♦There should be plenty of power sockets-enough to meet future needs as t h e system grows, not just immediate needs.
♦If noisy printers are being purchased, it may be advisable to locate these in a separate printer room to cut down the noise for office workers.
♦There should be a telephone near the computer, for communicating with the dealer that provides systems support and advice if there is a problem.
♦The cabling for network connections should consider possible future changes in office key out or in system requirements.

After the installation of hardware, then software can be installed too. The can be done very fast there days since software is available on CD-ROMs and DVDs.

Back up copies of the software may also be got.

Testing
Programs must be thoroughly tested as they are being written and the whole system should also be thoroughly checked before implementation, otherwise there is a danger that the new system will go live with faults that might prove costly.
'Test data' is normally used here.
Test data is fed into the computer/new system and the results from the new system are compared with the already existing/pre-determined results from the old system.
Any deviations can be used to make decisions as to whether the system has passed or failed the test.

Training and documentation
Staff training in the use of information technology is as important as the technology itself. There is no use in having it if people don't know hoe to use it. This can be done through, lectures, discussion meetings, handbooks, trials/tests, internal company magazines, courses, manuals, etc.

Conversion of files
This means converting existing files into a format suitable for the new system.
Large organisations may use conversion software to change over:

Once the new system has been fully and satisfactorily tested, the change over can be made. This may be according to one of four approaches.
♦ Direct change over
♦Parallel running
♦Pilot tests
♦ 'Phased' or 'Stayed' implementation

Direct change over
This is the method of changeover in which the old system is completely replaced by the new system in one move.

This may be unavoidable where the two systems are substantially different, or where extra staff to over seed parallel running are unobtainable.

It is very cheap, but very risky as well and it is best used in business slack periods e.g. Christmas, holidays, etc.

Parallel running
This is a form of changeover where by the old and new systems are run in parallel for a period of time, both processing current data and enabling cross checking to be done.

It is a bit safe (less risky), but if the two systems are different, then cross-checking may be hard or impossible. Also, there is a delay in the cultural implementation of the new system and also a need for more staff to run the two system - an indication of high expenses.

Pilot Operation

This may involve a complete logical part of the whole system being chosen and run as a unit on the new system. If that is shown to be working well, the remaining parts are then transferred.

Gradually the whole system can be transferred in this piece meal fashion.
This method is cheaper and easier to control than parallel running, and provides a greater degree of safety than does a direct change over.

Phased Implementation
This involves a parallel running or direct change over done to a system of a particular section, say a branch of a company.

This method is suitable for very large projects and/or those where distinct parts of the system are geographically dispersed.

At this phase/stage (systems installation) of the SDLC, the internal auditors role is usually very important, especially during the testing of the new system.

This is because the facts he obtains at the testing stage can be used in future evaluation of the system and any audits that may be carried out.

A reference can always be made to the facts generated by the auditor at the testing stage to ensure there are no illegal amendments to the system.

SYSTEMS MAINTENANCE AND REVIEW

Maintenance
This is geared towards keeping the system running smoothly and achieving the intended goals.

There are three types of maintenance activities,
♦ Corrective maintenance
♦ Perfective maintenance
♦ Adaptive maintenance

Corrective maintenance
Is carried out when there is a systems failure of some kind, for example in processing or in an implementation procedure. Its objective is to ensure that systems remain operational.

Perfective maintenance
Is carried out in order to perfect the software, or to improve software so that the processing inefficiencies are eliminated and performance is enhanced.

Adaptive maintenance
Is carried out to take account of anticipated changes in the processing environment. E.g. the new taxation legislation might require change to be made to payroll software.

Post Implementation Review
This is devoted to uncovering problems in the system so as they can be fine tuned. Also it reviews t he activities involving methods used in developing the system. It is of two steps:

♦ **Development review**

Here the problems that arose during the development phases of the life cycle are analysed. Major discussions focus on expenditure and the period taken to complete the new system. Positive or negative variances in the expenditures are analysed. Mistakes resulting to negative variances are noted and are unlikely to be repeated in the future like wise positive variances.

Also mistakes that led to the delay are noted and avoided in the future.

♦ **Implementation Review**
This step investigates the specific successes and problems of system operations. These activities take some time after systems implementation say 1½ years. It is intended to ensure that the system meets the desired goals it was implemented for.

In summary still, the systems development life cycle follows these stages and it is very examinable.
1. Problem identification
2. Feasibility study
3. Systems investigation - detailed
4. Systems analysis
5. Systems design
6. Systems implementation
7. Systems maintenance and review

Question:
a) In the SDLC, which stage go you think directly involves a certified public accountant like you, and what would you be required for?
b) Describe for methods of system change over.
c) Distinguish between off-the shelf and bespoke software.
d) What is feasibility study?

CHAPTER SIX

THE DATA PROCESSING CYCLE

6:0 INTRODUCTION
Under this Chapter we shall look at the following:
♦Processing cycle
♦ Processing operations
♦Storage and retrieval systems
♦Classification of files

6:1 DATA PROCESSING CYCLE
Data processing, whether it is done manually or by computer, follows a cycle of input, process, output and storage.

Data processing is the acquisition, arrangement, storage and maintenance of data. The use of the computer is just to speed up and allow the use of complicated models compared to other methods.

A cycle refers to a sequence of activities performed in order, that produces expected dependable results.

The DP Cycle

INPUT → PROCESSING → OUTPUT

STORAGE
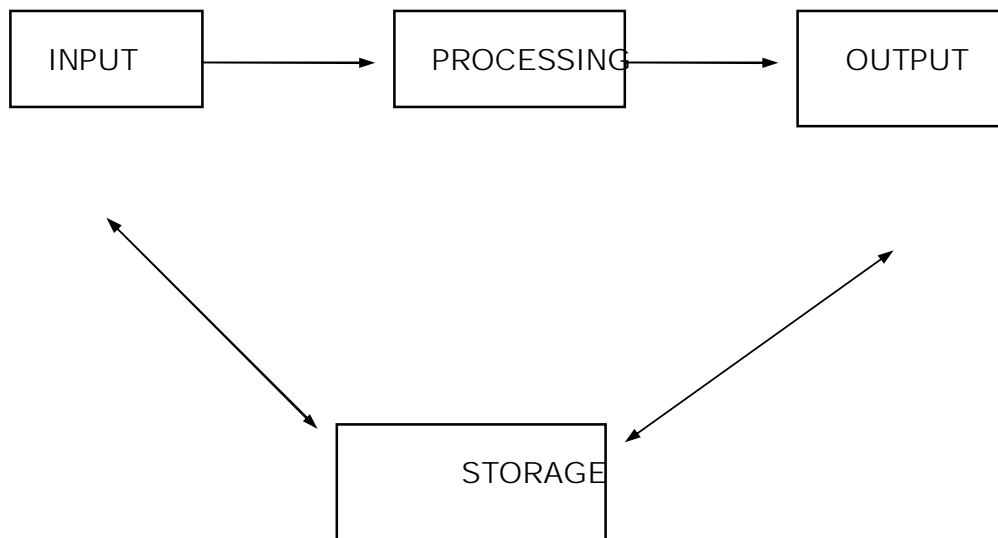
The input function;
This involves gathering/collecting needed data items and entering the items into the information system for processing. This is done by the computer input devices.

Inputs can come from multiple sources. The quality, accuracy and completeness of data will affect the quality of the resulting information.

The processing function
This involves any method for using, handling, processing operations transforms transform data into meaningful information.

Processing creates new information which in turn is returned to files for updating and, or communicated to people.

The output information
Output delivers the results of processing i.e. information which can in turn be communicated to the people known as users of computers or information. This is normally done by the output devices.

The storage information
An information system needs a massive supply of data records and files. In this sense, storage is a vital part of an information system. The storage function also involves updating files to incorporate processed data. Storage can be done into the various types of storage peripherals that you already know.

6:2 DATA PROCESSING OPERATIONS

Files are used to store data and information that will be needed again in future or for the current use.
A file is a collection of records with similar characteristics.

The main types of data processing operations involving files are file updating, file maintenance and file enquiry or file interrogation.

Both manual and computer data processing can be divided into two broad types:
♦Batch processing
♦Real-time processing

Batch Processing
This is the processing as a group of a number of transactions of a similar kind which have been entered over a period of time to a computer system. Data is entered first, and then gets processed at a go as a group.

E.g. you may enter all the names into the system and then command it to arrange them in alphabetical order.

Transaction is any updating work on a database file. This can include entry of a new record, amending a record, deleting a record, etc.

Real-time processing
This is the continual receiving and rapid processing of data so as to be able or more less instantly to feed back the results of that input to the source of the data.

Real-time processing uses an 'on-line' computer system to interrogate or update files as requested rather than batching such requests together for subsequent processing.

On-line
On-line refers to a machine, which is under the direct control of the principal central processor for that hardware configuration.

Modern computers such as PCs are on-line by definition and likewise PCs in a network have permanent access to the server.

6:3 FEATURES OF A STORAGE AND RETRIEVAL SYSTEM

Whatever form documents and recorded information take, if they are to be of any use, they must be kept in a suitable way so that:
a) Authorised people can get to the information they require quickly and easily;
b) Information can be added to, updated and deleted as necessary;
c) Information is safe from fire loss or handling damage as long as it is required;
d) Accessibility, flexibility and security are achieved as cheaply as possible.

Classification of Files
Accessibility is a key point. When information is filed, it has to be filed in such a way that its users know where it is and how to retrieve it later when it is needed.

This means having different files for different types of information, and then holding each file in a particular order. Information might be divided into categories and then held in a particular order within each category.

There are various ways in which information can be grouped together, or classified.
a) By name (for example correspondence relating to a particular person)
b) By geography (for example all documents relating to a particular country, area or city).
c) By subject matter (for example all document relating to a particular contract, transaction or problem).
d) By date (for example all invoices for a certain month or year).
e) By department (for example profits or costs for each department or employee of each department).

Once broad classifications are established, the material can be put into a sequence which will make individual items easier to retrieve.

Again there are various systems for arranging files
a) Alphabetical order - for example customers listed in name order
b) Numerical order - for example invoices listed in numerical order of invoice numbers.
c) Alpha-numerical (A1, A2, A3, B1, B2, and so on).
d) Chronological order -f or example letters within a subject file listed by the date they were written.

CHAPTER SEVEN

SECURITY ISSUES
7:0 INTRODUCTION
Under this topic we shall look at the following,
♦ Risks to the computer user
♦ Risks to hardware
♦ Physical access control
♦ Controls over personnel
♦ Risks to storage media
♦ Risks to data
♦ Back-up procedures
♦ Telecommunication risks

A computer system consists not only of hardware, software, data and procedures but also of people.

Because of people, computer systems may be used for both good and bad purposes.

7:1 RISKS TO THE COMPUTER USER

If you have ever worked for long periods at a computer, you may have experienced some discomfort. This might have been caused by your use of the screen or the keyboard.

The VDU
If the screen is too bright, it can cause eyestrain. There are two ways of dealing with the problem. The first is to turn down the brightness; all monitors have a brightness and a contrast switch.
The second is to fit some kind of anti glare filter. All VDUs must have a swivel and tilt capability.

The physical health matters related to computer that have received the most attention recently are the following:-

1. Eye strain and headache
VDUs require using the eyes at close range for a long time, this can create eye strain, headaches and double vision.

And this is normally when the screen is too bright. To avoid this, take a 15 minute break every hour or two. Turn the brightness down.

Use of special anti-glare screen coatings and glare filters. Keep everything
You are
focusing on at about the same distance e.g. the screen, key board, document holder containing your work.

Clean the screen of dust from time to time.

2. Back on neck pain
Many people work at VDU screens and key boards that are in improper positions resulting in back and neck pain.

To avoid such problems;
♦Make sure the equipment is adjustable. Your chair should be adjustable for height and angle and should have good back support.
♦The table on which the monitor stands should be adjustable.
♦The monitor should be detachable.
♦ Document holders should be adjustable.

3. Electro magnetic fields effects
Like many household appliances, VDUs generate invisible electro magnetic fields (EMF) emissions which can pass through the human body.

Recommendations include;
♦Use of low emission monitors.
♦Computer users should sit 2 feet or more from screens and at least 3 feet from neighbouring terminals, as the strongest fields are emitted from the sides and back sides of terminals.
♦Use of glare filters which also reduce the emissions getting to an individual from the screen.

Repetitive Strain Injury (RSI)

Data entry operators in some companies may make as many keystrokes a day as possible. Some have fallen victim to a disorder known as RSI. This name is given to this disorder, which results from fast repetitive work that can cause neck, wrist, hand and arm pains.

Avoidance of RSI includes;
- Taking short rest breaks
- Getting plenty of sleep and exercise
- Loosing weight, sitting straight
- Learning stress management techniques

Other computer health risks include:
- Injury from electric shock

7:2 RISKS TO HARDWARE
Threats to hardware security are computer crimes including virus, electronic break-ins and natural, etc. Keeping information private in part depends on keeping computer systems safe from criminal acts, natural hazards and other threats.

Physical Threats

Fire and Flood
Fire is the most serious hazard to computer systems. Destruction of data can be even more costly than the destruction of hardware.

A fire safety plan is an essential feature of security procedures. It includes;

- Site preparation - appropriate building materials, fire doors, etc.
- Detection - e.g. smoke detectors
- Extinguishing - e.g. sprinklers
- Training staff in observing fire safety procedures e.g. the smoking in computer rooms

Water is a serious hazard. Flooding and water damage are often encountered following fire fighting activities else where in a building.

This problem can be countered by water proof ceiling and floors together with provision of adequate drainage. In some areas, floods are a natural hazards and therefore basements are generally not regarded as appropriate sites for computers.

Weather
The weather may be a threat. Wind, rain and storms can all cause substantial damage to buildings. Lightning and electrical storms pose an additional threat, as they can play havoc with power supply, causing power failures and power surges.

One way of combating this is by the use of un interrupted (protected) power supplies (UPS) Power failure may be solved by obtaining a separate generator.

Theft
Office break-ins are common. This can be combated by use of burglar proof windows and doors, etc.

7:3 PHYSICAL ACCESS CONTROL

The way to minimise many of the risks discussed in the above section is to introduce a series of physical access controls, to prevent intruders getting near the computer equipment or storage media. Methods of controlling human access include:

♦ Personnel (Security guards)
♦ Mechanical devices (e.g. keys, whose issues is recorded)
♦ Electronic identification devices (e.g. card-swipe systems, where a card is passed through a reader.

Personal identification numbers (PINs)

In some systems, the user might have a special PIN, which identifies him or her to the system. According to what the user's PIN is, the user will be allowed access to certain data and parts of the system but forbidden access to other parts.

Door locks

Connectional door locks are of value in certain circumstances, particularly where users are only required to pass through the door a couple of times a day. If the number of people using the door increases and the frequency of use is high, it will be difficult to persuade staff to lock the door every time they pass through it.

The major difficulty with this is the fact of key control. And the solution would be installing a combination door lock. This is where a numbered keypad is located outside the door and access allowed only after the correct 'code', or sequence of digits has been entered.

This will be effective if users keep the combination secret and the combination is changed frequently.

Card Entry Systems

This is a more sophisticated means of control than the use of locks, as cards can be programmed to allow access to certain parts of a building only, between certain times.

Security guards

These can be deployed at each entrance in the building to restrict access as may be required.

Video Surveillance

These (video cameras) are normally placed in certain strategic areas say corners, corridors, inside the rooms, etc. to cover any moving object. They are normally connected to a certain surveillance room of several TVs and a person to see the moving objects on TV.

7:4 CONTROL OVER PERSONNEL

Personnel Selection

The personnel who are to operate in the IT departments need to be fully scrutinised at the recruitment state and after recruitment, they need to be managed properly.

Controls related to personnel include the following:
i) Checks and balances so that a security violation must pass through several steps before being implemented.
ii) Segregation of duties (division of responsibilities)
iii)Job rotation so that employees change jobs at random intervals.

iv) Enforced vocations
v) Access to information granted not on rank in the management hierarchy or precedent, but on a need-to-know basis.
vi)Careful selection of personnel especially those to work in the IT departments.

Fraud
Computer frauds come from disgruntled employees, organised crime and hackers.
Networks make certain types of fraud easier; this is because many people/employees can have access to the computer system.

Two types of fraud can be identified

i)Single large-scale funds - usually the stealing of large amounts of money.
ii)Small-scale, but long-term frauds.

Examples of methods of fraud are given below:
i) Creation of fictitious supplier accounts and submission of false invoices, usually for services rather than goods, so that payments are sent to the fictitious supplier.
ii) Corruption and bribery, particularly where individuals are in a position of authority as regards making decisions or suppliers or selecting between tenders.
iii) Misappropriation of incoming cheques from bonafide customers.
iv) Theft of portable fixed assets.
v) Giving unauthorised discounts to customers.
i)   Fictitious staff on the pay roll.

These frauds do not all involve computers in the commission, but many could be detected by appropriate use of computer controls, perusal of exception reports, analysis of expenditure ratios and the like.

7:5 RISKS TO STORAGE MEDIA

Handling floppy disks, CDs and tapes
Floppy disks and CDs should be handled with care just as you would treat a valuable CD with care.

i)They break when you bend them or you run them over with the castors of your chair.
ii) Spilling hot drinks over them and leaving them on sunny windows sills will damage them.
i)   CDs should particularly be protected from dust, scratches and finger prints.
ii) For floppies write on the label before you stick it on to the disk and write only with a felt tip pen, never a ball point.
iii) Floppies are affected by magnets sot hey should be kept far from magnets.

Tapes can be snipped with scissors, or get knotted up, and they can also be damaged by magnets and heat and liquid. Treat them with the same care you would give to your favourite audio/video tape.

7:6 RISKS TO DATA

Risks to data can be in the form of deliberate or accidental:
i))Destruction (or alteration)
ii)Theft
iii) Unauthorised disclosure

There are therefore two types of controls used to restrict access.

♦ Physical access controls (analysed earlier)
♦ Logical access control

Basically logical access control consists of a password system. Data destruction can be protected against by taking back-ups and the risk of alteration of data minimised by a variety of basic precautions.

Passwords

Passwords are a set of characters, which may be allocated to a person, a terminal or a facility, which are required to be keyed into the system before further access is permitted.

Passwords can be applied to data files, program files and parts of a program.

i) One password may be required to read a file, but another to write new data to it.
ii) The terminal user can be restricted to the use of certain files and programs
(e.g. in a banking system, junior grades of staff are only allowed to access certain routine programs).

In order to access a system the user needs first to enter a string of characters. If what is entered matches a password issued to an authorised user or valid for that particular terminal the system permits access. Otherwise the system shuts down and may record the attempted unauthorised access.

Disadvantages of passwords

i) By experimenting with possible passwords, an unauthorised person can gain access to a program or file by guessing the correct passwords. This can usually be easy especially where users pick on to use obvious password like their names, etc.
ii) Some one authorised to access a data or program file may fell an unauthorised person what the password is, perhaps through carelessness.
iii) Many password systems come with standard passwords as part of the system. It is always better not to use such standard systems.
i) Passwords can be left in the open and any one gains access to them.

7:7 BEST PASSWORD PRACTICE (BPP)
These are points that have to be observed by computer users to whom passwords have been allocated.

♦ Keep your password secret - don't reveal it to anyone.
♦ Do not write it down as any body may come across it.
♦ Change your password regularly.
♦ Change and use your password discretely - some body can watch the movement of fingers to determine the password.
♦ Do not use obvious pass words e.g. your name, etc.
♦ Change your password if you suspect that any one else knows it.

7:8 TELECOMMUNICATIONS DANGERS

When data is transmitted over a network or telecommunications link (especially the internet) there are numerous security dangers.

a) i)Corruptions such as viruses on or single computer can spread through the network to all of the organisation's computers.
b) Staff can do damage through their own computer to data stored on other computers. E.g. transferring a file of the same name to the colleague's which may cause an over write.
c) Disaffected employees have much greater potential to do deliberate damage to valuable corporate data or systems.
d) If the organisation is linked to an external network, persons outside the company (hackers) may be able to get into the company's internal network, either to steal data, or to damage the system.
Systems can have firewalls - these are used to prevent a particular network from intrusion from any other network e.g. a company network and the Internet.
e) Employees may down load inaccurate information or imperfect or virus-ridden software from an external network.
f) Information transmitted from one part of an organisation to another may be intercepted. Data can be encrypted (scrambled) in an attempt to make it meaning less to those who are not entitled for it.
g) The communications link it self may break down or distort data.

Encryption and other safety measures on telecommunication
♦Encryption involves scrambling the data at one end of the line, transmitting the scrambled data, and unscrambling it at the receivers end to the line.

Authentication
This involves adding an extra field to a record, with the contents of this field
Derived from the remainder of the record by applying an algorithm that has
previously been agreed between the senders and recipients of data.

Dial-back security
This operates by requiring the person wanting access to the network to dial into
it and identify themselves first. The system then dials the person back on their
authorised number before allowing them access.

Hacking
A hacker is a person who attempts to invade the privacy of a system. There are normally skilled programmers, and have been known to crack system passwords with consummate ease.

CHAPTER EIGHT

DATA BASE MANAGEMENT SYSTEMS

8:0 INTRODUCTION

Under this Chapter we shall look at the following:
♦ Data base management system (DBMS) structures
♦ Designing a data base
♦ Verification and validation checks

8:1 DBMS STRUCTURES

Data within databases (or most other computerised filing systems) is organised in a specific hierarchy. The aim of the organisation method is to provide generally accepted and workable method of storing and accessing data in computer files. The basic concepts to be understood are as follows.

♦ **Database** -stores information about the organisation within individual files
♦ **File** - information concerning one aspect of the organisation, such as details of debtors.
♦ **Record** - all the detailed information about one person or item within a file. E.g. in a debtors file, there will be information about the debtor.
♦ **Field** - one item of data e.g. within the debtor's record this could be the debtor name.
♦ **Byte** - one character
♦ **Bit** - the smallest unit of computer storage - one area of memory, which can hold the value 0 or 1.
♦ **Entry set/type** – Group of similar objects of concern to an organisation for which it maintains data transactions, courses, employees, students, non academic staff etc.
Meta data – is data used to define other data

Attributes – Characteristics of object category.
Entity- Basic units used in modelling.
Modelling – Some basic common functions.
Database – Collection of related files
Key - Single attribute
Primary key – unique entity identifier
Supper Key – Additional attributes to a primary key
Candidate Key – 2 or more attributes uniquely identifying an entity set
Secondary Key- An attributes/combination of attributes that may not be candidate keys but classifies the entity set
Meta data – Using data to describe/define data
External View of data – Highest level of application
Global view of data – lowest level of actual data storage

Naïve user
♦ Not aware of DB (Database systems)
♦ Responds by processing a coded Key
♦ Then operations are very limited

On-Line User
♦ Communicate with database directly via a user interface and application programme

- ♦Aware of database system (DBS)
- ♦Use data manipulation language
- ♦Need additional help like merits

There are three basic database structures having different levels of sophistication hierarchical databases, network databases and relational databases.

As hierarchical and network data bases are rare these days, we shall confine on describing the relational model.

Relations Database
The concepts behind relational databases were developed by EF Codd of IBM.

The data is stored in tables, which are derived by a mathematical form of analysis on the sources of data for the system e.g. input screens, reports.

In a relational database, data is split between different two-dimensional tables, which are linked together via a set of unique keys

Commercially available relational databases include IBM's DB2 and Oracle. Ms Access is also a relational database.

APPLICATION PROGRAMME.
- ♦Are professional programmers
- ♦Develop application programme user interface utilised by
- ♦The naïve & online users
- ♦Are programme written in general purpose programming language e.g. Assembler, COBOL, Fortran, Pascal etc.

DATA BASE MANAGEMENT SYSTEMS

Definition:
A database is a file (or files) of data so structured that many applications can use the file and update it, but which do not themselves constrain the file design or its contents.

This is of major benefits to the organisation including data sharing between applications.

DBMS
This is specialist software used to create and maintain a database.

Organisations collect and use vast amounts of data. One method of storing and accessing this data is to place it within one large store and use a DBMS to effectively control that data.

The DBMS is normally located between the main database of the organisation and the different applications that want to access and use that data.

Elements of a DBMS
A DBMS comprises three separate sections i.e.

a) Data Definition Language (DDL)
b) Data Manipulation Language (DML)
c) Data Dictionary

DDL is used to specify the content and structure of the database. The DDL defines the form of each item of data in the database so that the data can be accessed and used by the various application programs accessing the database.

Entry set/Type – Group of similar objects of concerned to an organisation for which it maintains e.g. data transactions, courses, employee, students, non-academic staff etc.

♦ Defines the conceptual scheme
♦ Curves details how to implement the conceptual scheme and stores data

DML is a specialist language used to manipulate data within the database. The DML is a fourth generation language.
♦ Involves retrieval of data from the database
♦ Inserts raw data into the database

The Data Dictionary is a program used to store and organise the data in the database. The dictionary stores key information about the data, such as who uses the data, what the access rights to data are and who owns the data and is therefore responsible for updating it. Deletes and modifies existing data.

Facilities offered by database management systems

The DBMS will offer the following facilities:
a) The ability to add, amend and delete records
b) The ability to retrieve data
c) The ability to present data in different formats and combinations as required
d) The ability to control access to records by means of passwords and other security procedures
e) The ability to allow the database to evolve without requiring modification to applications programs
f) The ability to recover from systems break down and avoid data loss
g) The ability to record transactions and identify redundant data.

8:2 DATABASE ADMINISTRATORS (DBA)

Centralised control of data base under one controller that is sole administrator.
The DBA's work can be split into strategic and organisational activities.

a) Strategic Tasks
(i) Working with strategic management to help define the organisation's present and future needs.
(ii) Choosing suitable file structure for data storage.
(iii) Analysing the data required for each application.
(iv) Preparation of a data model.
(v) Preparation, modifying and maintenance of a data dictionary.
(vi) Defining hardware needs and plan for any change and internal levels.
(vii) Administrator of internal and external view of data (3 levels)
(viii) Specifies conceptual view of various users and applications
(ix) Defines and implements the internal level and storage structure
(x) Controls changes to external Global
(xi) Custodian and controller of database structure
(xii) Defines mapping between levels structures
(xiii) Okays users of the database and their dismissal.
(xiv) Fore sees the maintenance and preservation of the integrity of the database
(xv) Defines procedures to receive and recover the database system

b) Organisational Tasks
(i) Ensuring data integrity by implementing and controlling database procedures.
(ii) Production of operating manuals.
(iii)Provision of training for users and applications programmers on a regular basis.
(iv)Assessing the ongoing performance of the database.

Benefits/advantage of database filing systems
There are basically three major benefits from database filing system; i.e. integrity, independence and integration.

Integrity
Database integrity means that data is kept secure and that amendments are only made as effectively authorised by the DBMS.

Independence
The principle of independence relates the splitting of data away fro the programs that use that data.

Making this split ensures that;
♦Applications can be written and amended independently of the data they use, and
♦Amendments can be made to the data without having to amend all the different applications that use the data.

Integration
This refers to the maintenance of data in one location rather than spreading and possibly duplicating, that data around the organisation in separate individual databases.

8:3 BENEFITS OF A DATABASE MANAGEMENT SYSTEM (DBMS)

a) Integration of data needs
Data should be shared between the different applications using it. This can
mean That different applications using the DBMS can access the same data at
the same time.
b) Data security
Data should be accessible only to those authorised to see it, and should be
capable of modification only under controlled conditions.
c) Flexibility
The DBMS should allow for different uses with a range of applications.
d) Minimum redundancy
Duplication of data should be kept to a minimum. This achieves the benefit of
reduced space and avoids inconsistent data.
e) Evolutionary capability
The DBMS must be capable of evolving to adapt to changing organisational
Needs without requiring extensive modifications to application programs.

8:4 DESIGNING A DATABASE
Where an organisation uses a central database, it is crucial that the database operates effectively. This requires adequate hard ware, software and personnel, but most importantly it needs a well-designed database.

The main stages in design and use of a database are as follows;
a) Analysis of information needs

b) Logical design of the database
c) Physical design and set up of the data base
d) Data entry and upkeep
e) Data retrieval and reporting
f) Monitoring and maintenance

Analysis of information needs
In order to identify the information needs of the organisation, a fundamental understanding of its objectives is necessary.

a) The business plans of the company provide the basis of this understanding, identifying the organisation's critical success factors (CFS) and the information that is needed for these factors to be achieved.
b) An information audit will be carried out to identify the needs of particular users and groups of users.

Logical design of the database
a) The information gathering process will help to determine the data required on the database for existing and foreseeable future applications. This list of data is recorded in the data dictionary.
b) The rules relating different items of data together are determined.
c) The analyst will then determine the rules relating particular application to items in the database.

Physical design and set up of the organisation
The rules that have been specified are then programmed to support the database management system. This procedure is so specialised that it may require a special Data Description Language (DDL).

Data entry and upkeep
a) Data is added (or appended) to the database. Its integrity is ensured by validation and verification checks.
b) Existing data may be changed (or amended). This process will also be subject to validation and verification (see later in next section).
c) Existing data may be deleted from the database. This is normally a two-stage process, i.e. making and then physically deleting - this ensures that only intended data is deleted.
d) A specialised language called a Data Manipulation Language (DML) may be used to carry out the processes of addition, amendment and deletion.

Data Retrieval and Reporting
Most database systems provide a wide variety of ways in which data may be accessed and analysed.

a) Individual records may be retrieved and inspected.
b) Items may be retrieved according to a set of specific parameters.
c) Data may be sorted or indexed on any field or combination of fields. This makes lists and other outputs easier to use.
d) Simple summarises and calculations can be carried out on the data contained in the database.
e) Report generators are supplied with many databases management packages. This enables users to summarise and report data quickly and in an easily digested format.
f) A specialised language called a Structured Query Language or SQL may be used to retrieval and report information.

8:5 VERIFICATION AND VALIDATION CHECKS

The verification and validation checks have been designed to deal with the common human errors as regards data entry. This is in databases, accounting systems, spreadsheets, etc. So this means that these checks do not only apply to databases but also to accounting systems, word processors, spreadsheets, etc.

Verification is the process of ensuring that the data that has been input is the same as the data on the source document.

Validation is the process of ensuring that the data that has been input has a value that is possible for that kind of data. For example there is no month with 33 days.

Data Verification

The most common method of verification is encouraging staff to look for errors e.g. if data is input using a key board, it will be shown on the screen and visual checks on the data can be made.

Validation Checks

When a validation check identifies an error, the record concerned will probably be rejected and processed no further without correction. Rejection reports or massages will be displayed on a VDU screen.
Some of the data validation checks are outlined below:

♦**Range Checks**
These are designed to ensure that the data in a certain record field lies within predetermined limits e.g. day of a month can be from 1 to 31 not 0 or beyond 31.

♦**Limit Checks**
These check that data is not above or below a certain value.

♦**Existence Checks**
These are checks to ensure that the data is valid within a particular system. E.g. Checking items in stock.

♦**Format Checks**
These help to ensure that the format (and size) of the data in a field is correct.
E.g. check that the formal is all numeric or alphabetic, etc.

♦**Consistency checks**
These involves checking that data in one field is consistent with data in another field. For example, in a payroll system, there might be a check that if the employee is a Grade C worker, he or she must belong to department 5,6 or 9.

♦**Completeness Checks**
A check can be made to ensure that all records have been processed.

♦**Check digits**
This check is used to detect especially transposition errors.
Transposition errors are those that arise when correct digits in a figure, e.g. 123,907, are unintentionary interchanged, e.g. 132, 907.

CHAPTER NINE

OFFICE AUTOMATION

9:0 INTRODUCTION
Under this Chapter we shall look at the following:

♦Spreadsheet
♦Word Processing, DTP and Graphics
♦Communication
♦The Internet

Office automation tries to analyse the application programs that are normally used in offices and office communication.

9:1 SPREAD SHEET

A spreadsheet is a general-purpose software package for modelling. The name is derived from its likeness to a spreadsheet of paper divided into rows and columns.

♦A spreadsheet program can help you manage personal and business cash flow analysis and forecasting. General ledger, stock records, profit projections, sales projections, etc.
♦You can use the spreadsheet to perform calculations, analyse data and present information.
♦You can store large collections of information i.e. a mailing or product list.
♦Spreadsheets program include tools for organising, managing, storing and retrieving data- through a bigger control over a list stored on your computer would need a Database program.

Features of Spreadsheets
Cell is one box in a spreadsheet.
Column is a vertical line of boxes or cells. Each column is identified by a unique letter e.g. a,b,c, aa, ab, aaa, aab, etc).
Row is a horizontal lie of boxes of cells. Each row is identified by a different number (e.g. 1,2,3,11,12,13,111,112, etc).

Active cell (Current cell)
This identifies the location of each cell in a spreadsheet. It consists of a column letter followed by a row number.

Formula
In a spreadsheet, a formula helps you calculate and analyse data. When entering formulas cell references or cell addresses are used. E.g. [+D2+D4] instead of typing in the actual data whenever possible.

Calculations
Spreadsheet programs perform calculations using the following.
* - multiply, + - Add, - - Subtract, /- divide, / exponents.

Automatic Recalculation
Spreadsheets have a facility where by if you change a number used in a formula, all the other figures affected by the formula will change automatically displaying the new results.

This feature is so useful if you want to evaluate possible scenarios. E.g. how differently interest rates affect your mortgage payments.

Using parenthesis [   ]

In a formula, a spreadsheet program will calculate the data inside the parentheses then with those outside it. E .g. +A1 * [B6/B7] + A5.

Copying a Formula
After entering a formula in a spreadsheet, you can save time by copying a formula to other cells. The spreadsheet program will automatically change the cell references in the new formula for you.

Functions
A function is a ready-to-use formula that helps you to perform calculations e.g. sum, Average, Maximum, Minimum, etc.

Examples:
♦SUM [D1: D4] calculates the sum of the numbers in addresses D1 to D4.
♦AVERAGE [A6: A10] calculates the average value of the lists of numbers in addresses A6 to A10.
♦MAXIMUM[A2; A7] finds the largest value in the lists of numbers in addresses A2 to A7.

Facilities offered by a spreadsheet.

Editing
Data can easily be copied for moved from one part of the spread sheet to another using a mouse and cut and paste or drag and drop facilities.

♦Column width, row height can also be changed.
♦Rows and columns can be inserted and most operations can be reversed.

♦Modern spreadsheets can help you complete a series, e.g. type 'Monday' - it will type the rest up to Sunday.

Formatting a Spread sheet
This involves changing font (type style), number appearance, boarders, shading and colour. Data alignment centre left or right, etc. You can format the entire spreadsheet or a specified range of cells.

Charts and graphics
Most spreadsheets contain graphic and chart facilities which enable you illustrate data using a suitable chart type.

Sorting
Data can be sorted alphabetically or numerically.

File commands
Opening, naming, saving, printing and closing the spreadsheet file are the key tasks.

Potential problems/disadvantages of spreadsheets

Spreadsheets are immensely popular and can be used for a very wide range of modelling tasks. However, because they are essentially single - user packages and because each one is designed from scratch. There are risks in their use.

a) Although users are some times trained in how to use a spread sheet, they are rarely trained in spread sheet discipline or best practice. This means that spread sheets may be badly designed, increasing the risk of errors or inefficiency.
E.g. a user may put a second large table immediately below the first, rather than diagonally offset. If he or she then deletes a column of data from the first table, then data may be unintentionally lost from the second one as well.
b) Users are unlikely to document the workings of their spreadsheet, as they consider it 'obvious'. This makes it difficult for other staff to understand use or modify the model.
c) The lack of proper audit trail can be a disadvantage. Because the user works with a spreadsheet in memory (RAM), only saving it at certain intervals, it is unlikely that a record of the intermediate stages will be maintained, even if output from the intermediate stages is important.

9:2 WORD PROCESSING
WORD PROCESSORS
Word processing is the processing of text information. Typically word processing soft ware may be used for production of standard documents.

Features of a word processor
The following are some of the features of a typical word processor.

(i) Adding headers and footers
(ii) Inserting footnotes
(iii) Using different characters fonts in a variety of services.
(iv) Changing texts to bold italic, underlined, double underlined, etc.
(v) Spell checking - for spelling errors and in some programs checking for
grammatical errors.
Some word processors especially modern one have additional features not available in older word processor e.g.
(i) Adding lines or boxes in a variety of width and style.
(ii) Inserting digitised photos and artwork.
(iii) Creating charts and tables with newly entered data or by linking to data that already exists in a data file.
(iv) Drug and drop editing.
(v) Creating a table of contents or index automatically.
(vi) Main merging - where automatic formats for different types of letter may exist.
(vii) Importing data from other -programs like spreadsheets.
(viii) Compatibility - where major packages are very similar and highly compatible e.g. a WordPerfect file may be opened, edited and saved in Ms Word.

9:3 DESK TOP PUBLISHING (DTP)
DTP is the use of office computers to implement computerised typesetting and composition systems. They can be used for producing master pages for a book, newspapers, leaflets, etc.

Graphics (Computer Graphics)
Another use of computers is the production of information in the form of pictures, diagrams or graphs. A widely used office package is corel draw.

9: 4MICROSOFT ACCESS
This is used to design data bases and create management reports.

9:5 COMMUNICATION

Under this topic, we shall see how telecommunication hardware is used in office work.

Telex
Telex is a service which enables users to transmit and receive printed message over a telephone line. Users have to be telex subscribers, with their own telex equipment and code number in order to send or receive messages.
Telex services started in the 1930's
Data transmission speeds are very slow with Telex as compared to other methods telecommunication and only restricted set of characters can be used in messages.

Fax (or Facsimile)
This involves the transmission of messages by a data link of exact duplicate copies of documents. The original is fed into the fax machine, which reads it and converts it into electronic form so it can be transmitted over the telephone.

It is printed by the recipient fax machine.
The latest fax machines can also be used to scan data into a PC, as printers for PC output and as photocopies.

Electronic Mail (E-mail)
The term 'electronic mail' or 'e-mail', is used to describe various systems of sending data or messages electronically via a telephone or data network and a central computer, without the need to post letters or place memos in pigeon-holes, etc.

E-mail has the following advantages
a) Speed E-mail is far faster than post or fax. It is a particular time saver when communicating with people over seas.

b) Economy (no need for stamps, envelopes, etc) it is far cheaper than fax or post.
c) Efficiency. Messages are prepared once but can be sent to thousands of employees at the touch of a button.
d) Security. Access can be restricted by the use of passwords.

Voice Mail
Voice mail systems enable the caller's message to be recorded at the recipient's voice mail box. It requires a telephone, and no keying or typing is necessary.
A voice mail message is basically a spoken memo.

THE INTERNET
The Internet is the name given to the technology that allows any computer with a telecommunications link to exchange information with any other suitably equipped computer.

Also Internet refers to the international network.

Web sites/page
As you are no doubt aware, most companies of any size now have a 'site' on the Net.
A site is a collection of screens providing information in multi media form (text, graphics and often sound and video), any of which can be viewed simply by clicking the appropriate button, word or image on the screen.

Internet Service Providers (ISPs)

Connection to the Internet is made via an Internet Service Provider (ISP). The user is registered as an Internet subscriber and pays a small monthly fee together with local telephone call charges. Examples of ISPs include American On-line (AOL), Spacenet in Uganda, Uganda Telecoms, etc.

Browsers and Search Engines
Browsers
These are programs that are used to run the internet. Example is Netscape Navigator.

Search Engine
These are used to guide the users surfing the net examples include, Yahoo! Aita Vista.

Uniform resource locator (Website address) (URL)

Each web page has a unique address called the uniform resource locator (URL)

All you need is type in the URL for the website you want to visit and enter.
An example of URL could be like http!//w.w.w.TBC.co.ug.

URL Element	Explanation
http!//	Hyper text transfer protocol, the portico used on the world-wide web for the exchange of documents produced in what is known as 'hyper text mark-up language (HTML). The forward slashes after the colon introduce the 'host name' such as www.
www	This stands for World Wide Web. As noted before, to put it simply the web (via its use of HTML), is what makes the internet user-friendly.
TBC	This is the domain name of the organisation or individual whose site is located at this URL.
Co	This part of the VRL indicates the type of the organisation concerned. The Internet actually spans many different physical networks around the world including commercial (Com or Co), schools (ac or edu) and other research networks (org, net) military (mil) net works, and government networks.
Ug	As you can possibly guess, this indicates that the organisation is located in Uganda commercial use of the Internet.

Marketing

Organisations used the Internet to provide information about their own products and services. Customers simply log on to the appropriate website and get to know the latest products on the market and so many other things.

Sales

Interactive electronic purchasing is possible with the Internet, the customer simply provides details of her/his credit card on the internet along with the order. This facility is not yet very common here in Uganda but its very attractive in Europe and America.

Distribution

The Internet can be used to get certain products directly into people's homes. Any thing that can be converted into digital form can simply be up loaded on to the seller's site and then down loaded onto the customer's PC at home. The Internet thus offers huge opportunities to producers of text, graphics/video and sound-based products. Much computer soft ware is now distributed in this way.

Other uses of the Internet

Entertainment
A variety of quality games are available on the net.

Information
On the net you can have access to information of any subject imaginable e.g. newspapers, magazines, job listings, airline schedules, college prospectus, movies, etc.

Discussion group
You can join discussion groups on the net to meet people with similar interests. You can ask questions, discuss problems and read interesting stories.

E-mail
Exchanging email is the most popular feature on the Internet. You can exchange e-mail on computers around the world.

Problems with the Internet
Being owned by no one, there are no clear guidelines on how the internet should develop. Today you can find the good, bad and different items on the net e.g. Bible preaching and phonography.

Employees of an organisation may spend so much time on the net surfing useless sites - thus wasting the organisation's useful time.

Lack of security on the Internet is another problem. This is especially with the e-mails - information such as credit card details is not communicated comfortably.

Cost is another major problem. You need a relatively high quality PCs, which are expensive; in addition, connection fees, access time fee and web site designing fees are also high.

With much less powerful equipment e.g. a slow modern and a slow processor, gaining access to useful information becomes slow and quiet painful.

Getting connected to the Internet

You need specific equipment and program to connect to the Internet.

1. Computer - any type of computer, which is relatively strong.
2. Programs - you need special programs to use the Internet e.g. e-mail programs, etc.
3. Modems - you need a modem to connect to the Internet. A modem of at least 14,400 bps is recommended.
4. Telephone line.

Other forms of the Internet

Intranets
This is an internal Internet, available to individuals with in a specific organisation.

The intranet is used to provide a relatively quick and easy method of providing and information sharing system in an organisation.

Extranets
This is an extension of the intranet where some third party access is allowed to the internal web sites.

Uses and benefits of the intranets
Allowing access to databases, no matter where they are located with in the organisation.

This helps to support the obtaining and sharing of information between worker throughout an organisation as well as minimise the need to keep the data in more than one place.

An intranet will allow the creation of on-line catalogues, handbooks, and directories that can be accessed and up dated as necessary e.g. an internal telephone directory for an organisation of say 100,000 employees world wide will change on a daily basis as a new staff are hired and existing staff leave.

Intranet will save the organisation costs in terms of printing and distributing the paper based manuals and handbooks etc.

Some intranets can be linked to legacy system allowing older corporate data to be obtained and analysed along side more recent transaction data.

Information is provided in a more user-friendly format, which helps encourage the use of the internet.

Training costs are limited because users will already be familiar with browser technology from using the Internet.

Uses and Benefits of the Extranets
They provide on-line information for customers and suppliers provide 'added value' to the products and services provided by the organisation.

Allowing authorised buyers of the organisations' products access to information about those products to help them decide which product is appropriate for a specific use.

Linking with existing EDI (Electronic Data Interchange) applications to provide full stock control, procurement and payment systems.
Full Meanings of the words as applied in information technology/system

LIST OF ABBREVIATIONS

ABBREVIATION   **ABBREVIATION IN FULL**

4.GL   Fourth Generation Language

ALU	Arithmetic Logic Unit
AOL	America on Line
AS II	America National Standard Code for Inform date Interchange
ATM	Automated Teller Machine
BASIC	Beginners All Purpose Symbolic Codes
BIOS	Basic Input – Output System
BIT	Binary Digit
BTM	Business Teller Machine
CD	Compact Disk
CIS	Computer Information System
CLS	Clear Screen
COBOL	Common Business Oriented Language
CPU	Central Processing Unit
CU	Control Unit
DBMS	Database Management System
DDL	Data Definition Language
DEEP BLUE	Computers are modern computers that are an IBM computer programmed to play Chess with the world class champion, Garry Kasorok. Programmed to make 1 million moves in a second, which defected the world chess champion in the world.
DEL	Delete
Dir	Directory
Disk Drives	Media where computer programme files reside e.g., Hard disks, floppy Disks, CD-ROM, Magnetic tapes etc.
DML	Data Manipulation Language
DOS	Disk Operating System
DPC	Desktop Personal Computer
Drives	External storage medium storage capacity more than floppy and less then hard disk drive, designed with letters D…E.
DTP	Desk top Publishing
DVD	Digital Video Disk
E-mail	Electronic Mail
EMF	Electronic Magnetic Fields
EPOS	Electronic Point of Scale
EWN	Enterprise Wide Network – Any Private Network connects all of organization CPS no matter what they run or where they are located.
Expansion Slots	are access slots on the C.P.U where new computer cards can be fixed when upgrading (expanding) a computer. When adding another floppy drive, adding a CD ROM Drive a higher memory chip.
Floppy Disks Drives.	External storage medium, less storage capacity than Hard disks drive designed with letters
FORTAN	Formula Transaction
GB	Byte
GUI	Graphical User Interface - medium through user interacts with a CP
Hard Disk Drive	Internal Storage mechanism stores most computer applications. Capacity 100MB designed work letters

HLL	High Level Language
IBM	International Business Machine
ILL	Intermediate Level Language
INTERNET	International Network
IRR	Internal Rate of Return
ISP	Internet Service Provider – Provides Internet to users who register at 15 P using other dial to dedicated access.
IT	Information Technology
KB	Kilo Bytes
KIPS	Kilo Instructions Per Second - its Speed
KISS	Keep it small Simple
LAN	Local Area Network
LLL	Low Level Language
MAN	Metropolitan Area Net - Work
MB	Mega Byte
MICR	Magnetic Ink Character Recognition
MIPS	Millions Instructions per Second
MODEM	Modulation Demolecular
MS DOS	Micro Soft Disk Operating System
Ms Excel	Micro soft Excel
MULT	Multiply
NPV	Net Present Value
NT	Net Work
OCR	Optical character Recognition
OS	Operating System
OUR	Optical Work Reading
PC	Personal Computer
PIN	Personal Identification Number
Ports	Are connections (sockets) on the C.P.U which a computer components (Device) like a printer, mouse, modern etc. Can be connected.
RAM	Random Access Memory
ROM	Read only Memory
SAN	Storage Area Network
SDLC	System Development Life Cycle
SSDM	Special Standard System Development management maintenance
SSM	Special Standard System Management/maintenance
SQL	Structured Query Language
SUB	Subtract
TCP/IP	Transmission Control Protocol/internet Protocol system used to transfer information from one computer to another.
UPS	Uninterrupted Power Supply
URL	Uniform Resource Locater
VAN	Value Added Network
VDU	Visual Display Unit
W.W.W	World Wide Website
Web Server	Software that delivers web pages and contains of web sites.

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AFRICA POPULATION INSTITUTE COURSE WORK

DEMOGRAHY
PAPER CODES: **APDPH 302, APDSW 301**

1. a) Discuss the common causes and consequences of Rural-urban migration in your country.
   b) How can rural – urban migration be controlled
   c) Explain the processes through Populations can change

2. a) How do you understand the term gerontology as used in <u>aging</u>by humans?
   b) Describe any five (5) theories that you know about an aging population.
   c) Demonstrate the population equation as used in demography

3. a) Clearly elaborate how is legal death different from premature burial?
   b) Examine the causes and effects of death in sub-Saharan countries.
   c) With illustrations, Cleary talk about demographic transition

MANAGEMENT OF WELFARE SERVICES
PAPER CODES: **APDIR 302, APDPA 301**

1. a) Discuss the main elements of social market economy.
b) Give a critic on welfare States.

2. a) Distinguish between Social democracy and Social responsibility.
b) Why have developing countries failed to provide welfare services to their citizens.

3. a)Explain the major aspects of current social assistance program.
b) Explain the welfare reform policies that would exist in the urban change sites.

URBAN SOCIOLOGY
PAPER CODES: **APDSW 3O3**

1. a) Distinguish between urban sociology and sociology of space
   b) Account for the development and rise of urban sociology

2. a) Discuss the evolution of Urban sociology
   b) Distinguish between community saved and community liberated

3. a) Discuss the methods, techniques of urban anthropology
   b) Renaissance means the rebirth of Knowledge, what are the lessons learnt from renaissance Europe?

RESEARCH METHODS
PAPER CODES: **APD(FA 303, PH 303, HR 302, IR 304, PA 304, LPS 303, SW 304, BA 303, PM 303)**

1. a) Research and experimental development comprise creative work undertaken on a systematic basis in order to increase the stock on knowledge;
Explain the different types of variables used in research.
b) Using relevant examples, explain the difference between discrete and continuous variables

2. a) Descriptive research are designed to gain more information about a particular characteristic within a particular field of study
   b) Explain how it is different from exploratory research
  c) What is the difference between a research proposal and a project proposal?

3. a) With some form of detail, illustrate the structure of a research report
   b) Examine the different forms of experimental designs
   c) Assess the different levels of data analysis

INFORMATION TECHNOLOGY
PAPER CODES: **APD --- 305**

1. Information technology always deals with organizational need
Examine the stages involved in the systems development life cycle

2. File are used to store data and information that will be needed again in future or for the current use
        a) Explain the different data processing operation
        b) What are the features of storage and retrieval systems?

3a) with relevant examples, Analyse the different forms of security issues as used in information technology
     b) A spread sheet is a general purpose software package for modelling
        i) Explain the different applications of spread sheet
        ii) What are features of a word processor?