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Transcript NameClassDate8.1 Trends in Human Population GrowthKey ConceptsTechnological advances, especially in agriculture and industry, changed the ways peoplelived and triggered remarkable increases in population size.In recent years the human population growth rate has decreased, but the population stillcontinues to grow.Demographers study the size, density, and distribution of human populations.Vocabulary PreviewDefine each vocabulary term in your own words. Then, write yourself a quick note onhow you will remember each. One term has been done for you.TermDefinitionHow I RememberIndustrialRevolutionInfant mortalityLifeexpectancyThe average number of years aperson is expected to liveGrowth rateDemography132Life expectancy tells how long a personis expected to live.NameClassDateReading StrategyAs you read the lesson, complete the main ideas and details chart.Main IdeasDetailsHistory of humanpopulation growthRecent trends in humanpopulation growthDescribing the humanpopulationHistory of Human Population GrowthFor Questions 13, complete each statement by writing the correct word or words.1. During the Industrial Revolution, many people moved from rural areas to2. Around the time of the Industrial Revolution, scientists came to understand that manydiseases are caused by.133NameClassDate3. Medical advances during the Industrial Revolution included the development of, which treat bacterial infections and,which can help to prevent or reduce severity of illnesses caused by both viruses andbacteria.4. Name three changes in agriculture that occurred during the Industrial Revolution.Recent Trends in Human Population GrowthFor Questions 59, write True if the statement is true. If the statement is false, replace theunderlined word to make the statement true. Write your changes on the line.5. Developments during the Industrial Revolution resulted inincreases in infant mortality.6. Developments during the Industrial Revolution resulted inincreases in life expectancy.7. For much of the twentieth century, the human population growthrate rose from year to year.8. Population growth rates differ greatly among different regions ofthe world.9. When the human population reaches carrying capacity, its growthrate will be negative.10. Name three environmental factors that limit human population growth.Describing the Human Population11. What types of predictions can be made using demographic data?12. Name three nations that have some of the highest levels of human population density.13. Why do regions with extreme climates, such as tundra and deserts, have low levels ofhuman population density?134Name14.ClassDateFill in the spider map with information about demography.The diagonal lines have been labeled with main topics related to demography. Add detailsabout the main topics on the horizontal lines.Answer the questions to test your knowledge of lesson concepts. You can check yourwork using the answers on the bottom of the page.15. Identify three developments that occurred during the Industrial Revolution thatcontributed to a rapid increase in human population growth.16. What will happen to the population growth rate when the human population reachescarrying capacity?17. What does a demographer study?135 Human population growth is a topic of great importance in todays world. Understanding the trends in population growth can help us make informed decisions about resource allocation, urban planning, and environmental conservation. In this article, we will explore the key trends in human population growth and their implications for the future. 1. Global Population GrowthThe global population has been steadily increasing over the past century. According to the United Nations, the worlds population is projected to reach 9.7 billion by 2050. This rapid growth is driven by factors such as improved healthcare, sanitation, and food security.Example: China and India are two countries with the largest populations in the world, contributing significantly to global population growth. One of the key trends in human population growth is urbanization. As more people move from rural areas to cities, urban populations are growing at an unprecedented rate. This trend has significant implications for infrastructure, transportation, and social services.Case Study: The rapid urbanization of cities like Lagos, Nigeria, has led to overcrowding, inadequate housing, and increased pollution.3. Aging PopulationAnother important trend in human population growth is the aging population. As life expectancy increases and birth rates decline in many countries, the proportion of elderly people is rising. This demographic shift has implications for healthcare, pension systems, and workforce dynamics.Statistics: In Japan, more than a quarter of the population is over 65 years old, leading to challenges in providing care for the elderly.4. Regional VariationsPopulation growth trends vary significantly by region. While some countries are experiencing rapid population growth, others are facing declining populations. Factors such as fertility rates, migration patterns, and government policies influence these regional variations.Example: In countries like Niger, high fertility rates contribute to rapid population growth, while in countries like Japan, low birth rates lead to population decline.5. Environmental ImpactThe growing human population has a significant impact on the environment. Increased demand for resources, deforestation, and pollution are some of the consequences of population growth. Addressing these environmental challenges is crucial for sustainable development.External Link: United Nations Sustainable Development Goals6. Implications for the FutureUnderstanding the trends in human population growth is essential for planning for the future. Policymakers, urban planners, and environmentalists must work together to address the challenges posed by population growth. Sustainable development practices, investments in healthcare and education, and responsible resource management are key strategies for ensuring a prosperous future for all.7. ConclusionIn conclusion, the trends in human population growth have far-reaching implications for society, the economy, and the environment. By understanding these trends and taking proactive measures to address them, we can create a more sustainable and equitable world for future generations. It is crucial for individuals and governments to work together to ensure that population growth is managed responsibly and in a way that benefits all members of society. Placeholder opening page, but maybe we can duplicate the look of the SE chapter opener page by using the same fonts and colors (and maybe that Ch 14 icon?)In 1970, the average Chinese woman had about six children. Since 1979, China has used a system of rewards and punishments to enforce a one-child limit to slow population growth. In 2005, there were 32 million more males than females in China under the age of 20.Talk About It Is it ethical for governments to limit or encourage human population growth?Lesson 8.1 Trends in Human Population GrowthAs of 2010, the human population is 6.8 billion (and counting).As of December 1, 2016 the world population is 7.35 billion and counting. The US population is 325 million (and counting). Link to US and world population clockHuman Population Numbers as of 11/10/21Human Population Numbers as of 1/3/23History of Human Population GrowthAdvances in agriculture and industry have led to longer lifespans and remarkable population growth.Agriculture: Helped people meet their nutritional needs; increased free time to pursue crafts and tradingIndustry: Improved sanitation, medicine, and food productionDid You Know? Basic sanitation was rare even in the medical profession until 1861, when Dr. Ignaz Semmelweis discovered that doctors hand washing greatly reduced patient mortality.Lesson 8.1 Trends in Human Population GrowthInfant Mortality and Life ExpectancyPopulations are likely to grow when infant mortality is low and life expectancy is high.Infant mortality: Number of babies out of 1000 that die during their first year of lifeLife expectancy: Average number of years a person is expected to livePopulation growth rate describes the change in populations size during a given period of time.Lesson 8.1 Trends in Human Population GrowthRecent Trends in Human Population GrowthGrowth rate of human population has slowed from 2.1% to about 1.2% since the 1960s.Population growth rates vary by region. Some nations have negative population growth rates, meaning the population is getting smaller.Humans use technology to extend Earths carrying capacity for our species.Did You Know? To estimate how long it would take any population to double, divide 70 by its growth rate.Lesson 8.1 Trends in Human Population GrowthDemography: Describing the Human PopulationPopulation size: Number of peoplePopulation density: Number of people living per mi2 (or per km2)Population distribution: How people are distributed within an areaLesson 8.1 Trends in Human Population GrowthImage - (Creative Commons licensed)Geyser info source - National Park Service: 8.2 Predicting Population GrowthSome scientists predict that there will be 9 billion people on Earth by 2050, while others maintain that the population will be closer to 10.5 billion.Lesson 8.2 Predicting Population GrowthTotal fertility rate: Average number of children a female has during her lifeReplacement fertility rate: The total fertility rate for a nation that would keep its population stableFor most nations, a replacement fertility rate of 2.1% would keep population size stable. A greater rate would increase population size, a lesser rate would decrease it.Age structure describes the relative number of people within different age brackets in a population.A population of mostly young people tends to grow. A population of mostly old people tends to shrink. A population with equal numbers of young and old tends to remain stable in size.Lesson 8.2 Predicting Population GrowthDescribes the relative numbers of females and malesTypical sex ratio for humans is 1.00 females : 1.06 males. For every 100 females born, 106 males are born.Human activity such as migration can skew sex ratios.Lesson 8.2 Predicting Population GrowthThe Demographic TransitionModel that explains a populations change from high birthrates and death rates to low birthrates and death ratesPre-industrial stage: Both birthrates and death rates are high. Transitional stage: Birthrates are high but death rates are declining. Industrial stage: Birthrates start to decline; death rates stay low. Post-industrial stage: Both birthrates and death rates fall to low and stable levels. Demographic transitions are the result of economic growth and social changes.Did You Know? Over the past 50 years, worldwide average life expectancy has increased from 46 to 68 years. Demographic transitions are the result of economic growth and social changes.Social Factors and Population GrowthDeveloping nations: Higher fertility, infant mortality, and death rates Lower life expectancyLow per capita resource useDeveloped nations: Lower fertility, infant mortality, and death rates Higher life expectancyHigh per capita resource useLesson 8.2 Predicting Population GrowthDid You Know? On average, 1 American consumes as much natural resources as 5 Chinese or 13 Pakistanis.Lesson 8.3 People and Their EnvironmentsGlobally, the average ecological footprint is 2.3 hectares. The average American has an ecological footprint of 9.0 hectares. The environmental impact of humans depends on the way they live.Poorer societies tend to have smaller ecological footprints than affluent societies, but still strain the environment.Overwhelmed governments cant supply clean water or adequate sewage treatment.Poverty often leads to land overuse.Deforestation, flooding, disease, and habitat loss can become common, as land is cleared for farming.Lesson 8.3 People and Their EnvironmentsCurrently, the richest 20% of the worlds people use 86% of its resources.As developing nations such as China continue to develop, new environmental problems will emerge, as the need for and use of resources increases.Resource availability affects quality of life.Lesson 8.3 People and Their EnvironmentsDid You Know? Globally, 1.4 billion people live on less than \$1.25 per day, and another 2.6 billion live on less than \$2 per day.Burning of fossil fuels creates a haze of pollution over the eastern coast of China.Negative impacts: Has enabled resource exploitation Has resulted in pollution, biodiversity loss, and climate changesPositive impacts:Enables longer, healthier, more comfortable livesTechnologies such as recycling can help reduce environmental impact.Renewable energy technology can produce cheap, clean energy.Lesson 8.3 People and Their Environments1 Lesson 8.1 Trends in Human Population GrowthAs of 2010, the human population is 6.8 billion (and counting). 2 Objectives Describe how technology advances have contributed to human population growth. Explain recent trends in population growth. Identify characteristics of human population that are studied by demographers. 3 History of Human Population GrowthLesson 8.1 Trends in Human Population Growth History of Human Population Growth Advances in agriculture and industry have led to longer lifespans and remarkable population growth. Agriculture: Helped people meet their nutritional needs; increased free time to pursue crafts and trading Industry: Improved sanitation, medicine, and food production Did You Know? Basic sanitation was rare even in the medical profession until 1861, when Dr. Ignaz Semmelweis discovered that doctors hand washing greatly reduced patient mortality. 4 How did the Industrial Revolution Help Populations Grow? Sanitation Discovered that disease was linked to spread of germs Living conditions in cities became cleaner Mass production of soap and cotton clothes Medical Technology Ability to mass produce medical instruments and medicines Changes in Agriculture Possible to plant and harvest foods in mass quantities Pesticides developed Synthetic fertilizers developed 5 Review: Infant Mortality and Life Expectancy Lesson 8.1 Trends in Human Population Growth Review: Infant Mortality and Life Expectancy Populations are likely to grow when infant mortality is low and life expectancy is high. Infant mortality: Number of babies out of 1000 that die during their first year of life Life expectancy: Average number of years a person is expected to live Population growth rate describes the change in populations size during a given period of time. 6 Recent Trends in Human Population Growth Lesson 8.1 Trends in Human Population Growth Recent Trends in Human Population Growth Growth rate of human population has slowed from 2.1% to about 1.2% since the 1960s. Population growth rates vary by region. Some nations have negative population growth rates, meaning the population is getting smaller. Humans use technology to extend Earths carrying capacity for our species. Did You Know? To estimate how long it would take any population to double, divide 70 by its growth rate. 7 What Happens When Humans Reach Carrying Capacity? At some point environmental factors will limit human population growth. = Carrying Capacity! At this time, human population will neither increase nor decrease. Growth rate will be zero. Scientists do not know how large the human population size will be before its growth rate drops to zero but this is inevitable. 8 Describing the Human Population Lesson 8.1 Trends in Human Population Growth Describing the Human Population Population size: Number of people; constantly changing Population density: Number of people living per mi2 (or per km2); high in tropical climates, low in extreme climates; denser in cities, spread thinly in rural areas Population distribution: How people are spread within an area; humans are clumped leading to certain areas bearing more of the environmental impact than others. Image - (Creative Commons licensed) Geyser info source - National Park Service: 9 Lesson 8.2 Predicting Population Growth Some scientists predict that there will be 9 billion people on Earth by 2050, while others maintain that the population will be closer to 10.5 billion. 10 Objectives Describe total fertility rates and replacement fertility. Explain how the age structure and sex ratio of a population define its potential for growth. Describe the demographic transition. Discuss social factors that affect population growth. 11 Lesson 8.2 Predicting Population Growth Fertility Rate Total fertility rate: Average number of children a female has during her life Historically people used to have more children because few survived childhood, help needed on family farm, and parents relied on children to take care of them in their old age Nowadays, people feel they can better provide for smaller families 12 Fertility Rate Replacement fertility rate: The total fertility rate for a nation that would keep its population stable Differs from nation to nation depending on death rate For most nations, a replacement fertility rate of 2.1% would keep population size stable. A greater rate would increase population size; a lesser rate would decrease it. 13 Review: Age Structure Pyramids Lesson 8.2 Predicting Population Growth Review: Age Structure Pyramids Age structure describes the relative number of people within different age brackets in a population. A population of mostly young people tends to grow. A population of mostly old people tends to shrink. A population with equal numbers of young and old tends to remain stable in size. 14 Review: Sex Ratio Describes the relative numbers of females and males Lesson 8.2 Predicting Population Growth Review: Sex Ratio Describes the relative numbers of females and males Typical sex ratio for humans is 1.00 females : 1.06 males. For every 100 females born, 106 males are born. Human activity such as migration can skew sex ratios. 15 The Demographic Transition Lesson 8.2 Predicting Population Growth The Demographic Transition Model that explains a populations change from high birthrates and death rates to low birthrates and death rates Pre-industrial stage: Birthrates and death rates are high. Transitional stage: Birthrates are high but death rates are declining. Industrial stage: Birthrates start to decline; death rates stay low. Post-industrial stage: Both birthrates and death rates fall to low and stable levels. Demographic transitions are the result of economic growth and social changes. Did You Know? Over the past 50 years, worldwide average life expectancy has increased from 46 to 68 years. 16 Social Factors and Population Growth Population Size affected by: Poverty, wealth, education Developing Nation: Moderate/low income Includes Mexico, China, Africa, South America, etc. Developed Nation: High-income Includes United States, Canada, Australia More people live in developing nations than in developed nations 17 Social Factors and Population Growth Lesson 8.2 Predicting Population Growth Social Factors and Population Growth Developing nations: Higher fertility, infant mortality, and death rates Lower life expectancy Low per capita resource use Developed nations: Lower fertility, infant mortality, and death rates Higher life expectancy High per capita resource use Did You Know? On average, 1 American consumes as much natural resources as 5 Chinese or 13 Pakistanis. 18 Developing Nations: National Policies On a whole, population growth of developing nations exceeds that of developed nations Many developing nations have programs to control population growth Thailand education based approach to family planning Programs involve economic incentives, education, free contraception, reproductive healthcare 19 Developing Nations: Empowering Women Better educational opportunities for women are closely tied to declining fertility rates For population growth to stabilize, women need to achieve equal education and power with men Over 2/3 of worlds people who can not read are women 60% of those living in poverty are women 20 Developed Nations Wealth and rate of resource use are unevenly distributed around the world People in developed nations use far more resources than those in developing nations Addition of 1 American has the same impact as the addition of 5 Chinese or 13 Pakistanis As nations become industrialized, resource consumption rises 21 Lesson 8.3 People and Their Environments Globally, the average ecological footprint is 2.3 hectares. The average American has an ecological footprint of 9.0 hectares. 22 Objectives Describe how humans impact their environments Discuss the negative and positive impacts of technology 23 Why? We need to understand how growing population and human action impact environment. An Ecological Footprint is the amount of land needed to provide a person with the resources he/she consume and to handle his/her waste- this will vary depending on where a person lives. The industrial revolution had positive effects on peoples lives but also increased resource consumption and pollution 24 Impacts of Population Affluent Societies More money = more resource consumption Low population growth rate but large ecological footprint Addition of person in affluent society has greater impact on environment than addition of a person in a poorer society 25 Impacts of Population Poorer Societies Overwhelmed governments: cannot provide infrastructure to protect people and environment such as adequate sewage treatment because population is growing faster than the economy Land Overuse: poverty forces people to engage in environmentally harmful activities just to survive such as heavily farming land to the point that soil is destroyed. Land Clearing: ever increasing need for farmland deforestation flooding problems damage, lost crops, disease poverty increased also leads to emerging disease and species extinction 26 Lesson 8.3 People and Their Environments The Wealth Gap Currently, the richest 20% of the worlds people use 86% of its resources. Many of these resources are imported from developing nations, leaving them with fewer resources to support their own population Did You Know? Globally, 1.4 billion people live on less than \$1.25 per day, and another 2.6 billion live on less than \$2 per day. Burning of fossil fuels creates a haze of pollution over the eastern coast of China. 27 When Developing Nations Develop As developing nations such as China continue to develop, new environmental problems will emerge, as the need for and use of resources increases. People are purchasing more food which forces the westward expansion of agriculture Water ways are drying up due to over-pumping of water for irrigation Urban pollution Congestion threats from increasing amount of cars 28 Quality of Life How well an individual lives Having reliable food and water and space to live Feeling of safety, access to healthcare and education, available time for recreation The impact human populations have on the environment not only affects ecosystems but also the quality of life 29 Impacts of Technology Negative impacts: Positive impacts: Lesson 8.3 People and Their Environments Impacts of Technology Negative impacts: Has enabled resource exploitation Has resulted in pollution, biodiversity loss, and climate changes Positive impacts: Enables longer, healthier, more comfortable lives Technologies such as recycling can help reduce environmental impact. Renewable energy technology can produce cheap, clean energy. Solar water pump

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