

The Human Population

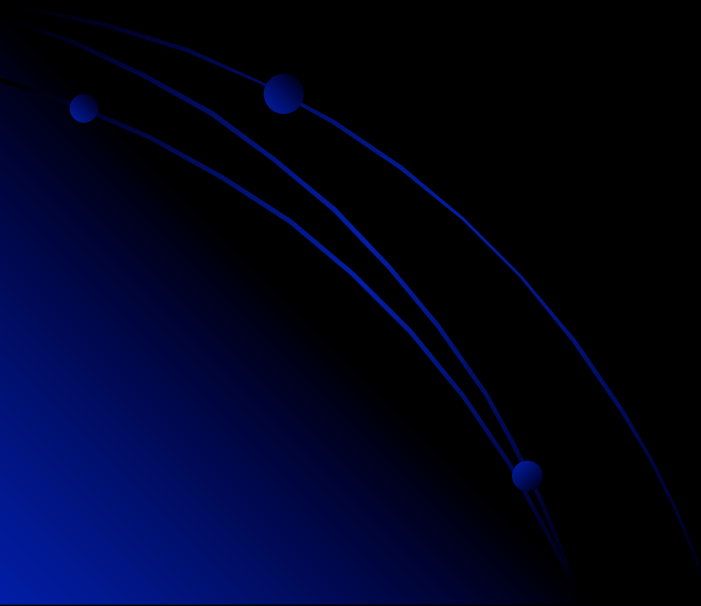
CHAPTER 12



Factors affecting Population Size

- Population change = (births + immigration – deaths + emigration)
- CRUDE BIRTH RATE – CBR – NUMBER OF LIVE BIRTHS / 1000 PEOPLE IN A POPULATION IN A GIVEN YEAR.
- CRUDE DEATH RATE – CDR – NUMBER OF DEATHS/1000 PEOPLE IN A GIVEN POPULATION IN A GIVEN YEAR.
- DEMOGRAPHY – STUDY OF HUMAN POPULATIONS

- ZERO POPULATION GROWTH – WHEN ALL FACTORS BALANCE AND THE POPULATION SIZE REMAINS STABLE



To determine population change or natural increase

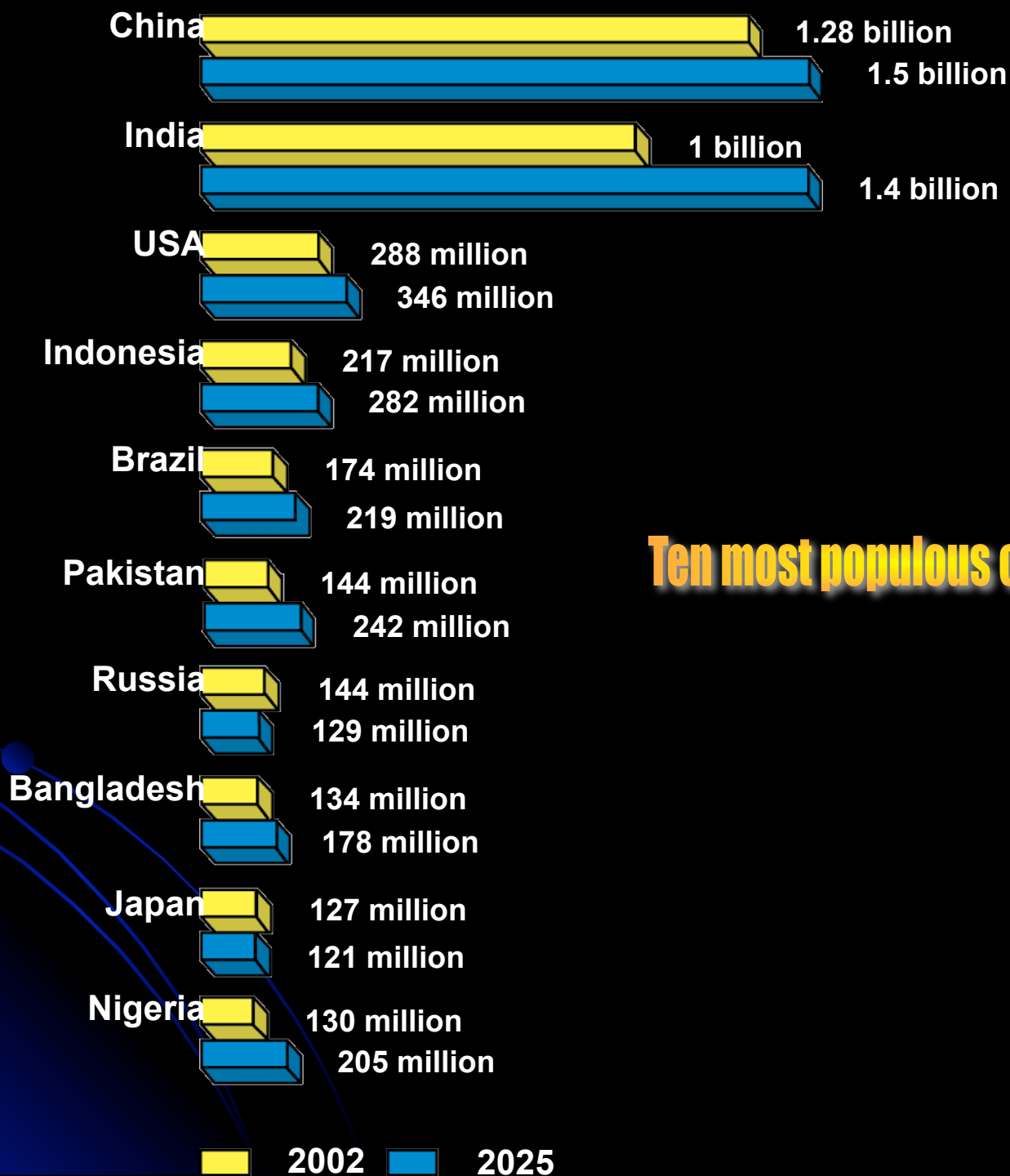
- Annual rate of population change =

$$\frac{\text{CBR} - \text{CDR}}{1000} \times 100 \text{ or}$$

1000 persons

$$\frac{\text{CBR} - \text{CDR}}{10}$$

To find doubling time divide % change into 70

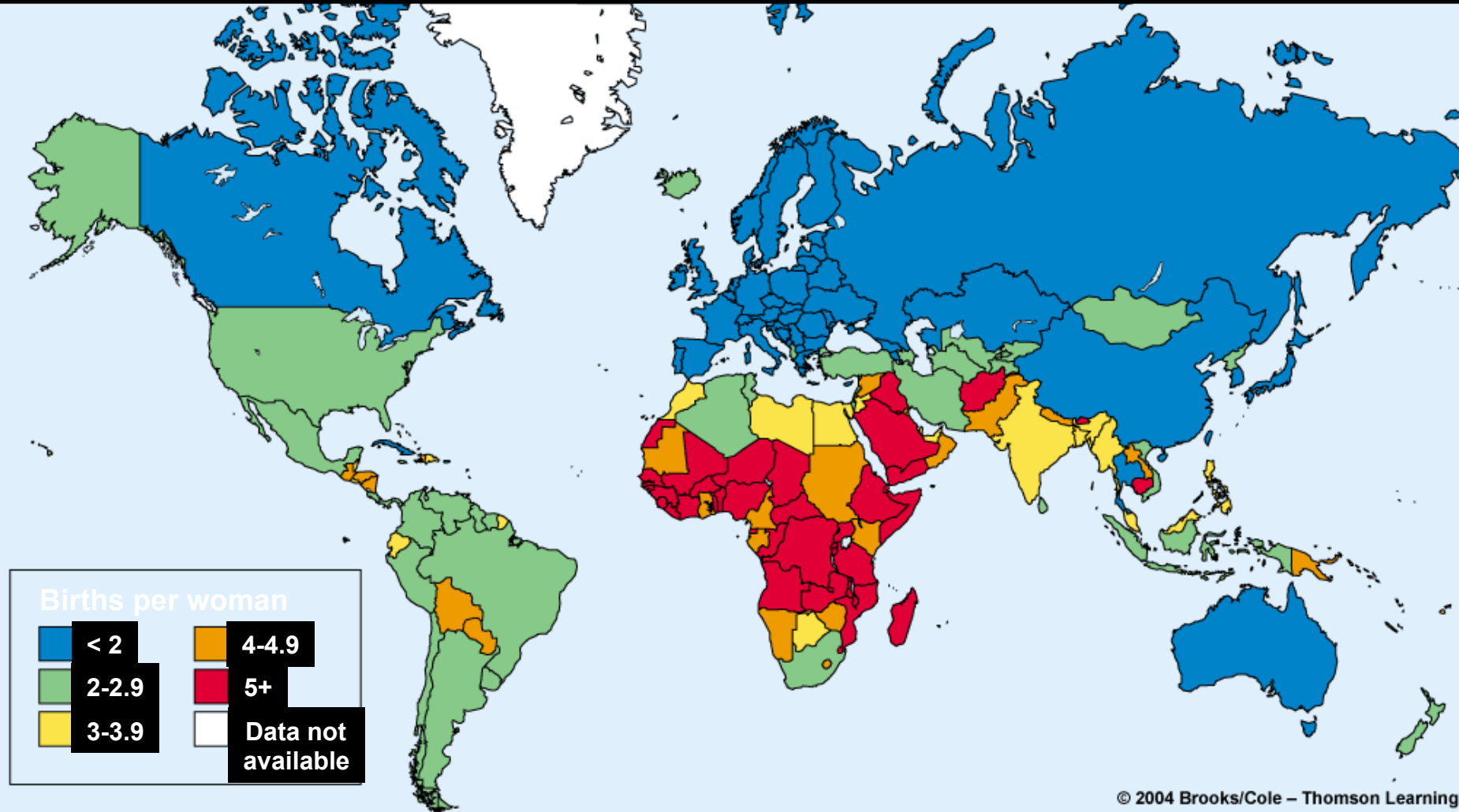


TYPES OF FERTILITY RATES

- REPLACEMENT LEVEL FERTILITY – NUMBER OF CHILDREN A COUPLE MUST HAVE TO REPLACE THEMSELVES
 - 2.1 IN DEVELOPED COUNTRIES
 - 2.5 IN SOME DEVELOPING COUNTRIES – MAINLY BECAUSE SO MANY FEMALES DIE BEFORE THEY REPRODUCE
- POPULATION MOMENTUM: IF REPLACEMENT LEVEL FERTILITY WAS REACHED WORLDWIDE THE POPULATION WOULD STILL INCREASE FOR 50-60 YEARS .

TFR

- TOTAL FERTILITY RATE – ESTIMATE OF THE AVERAGE NUMBER OF CHILDREN A WOMAN WILL HAVE DURING HER CHILDBEARING YEARS
 - AGES 14 – 49
 - IF SHE BEARS THEM AT THE SAME RATE AS WOMEN DID THIS YEAR.
- IN 2002 AVERAGE TFR WAS 2.8 CHILDREN/WOMAN
 - 1.6 IN DEVELOPED COUNTRIES
 - 3.1 IN DEVELOPING (DOWN FROM 6.5 IN 1950)



Total fertility rates in 2002

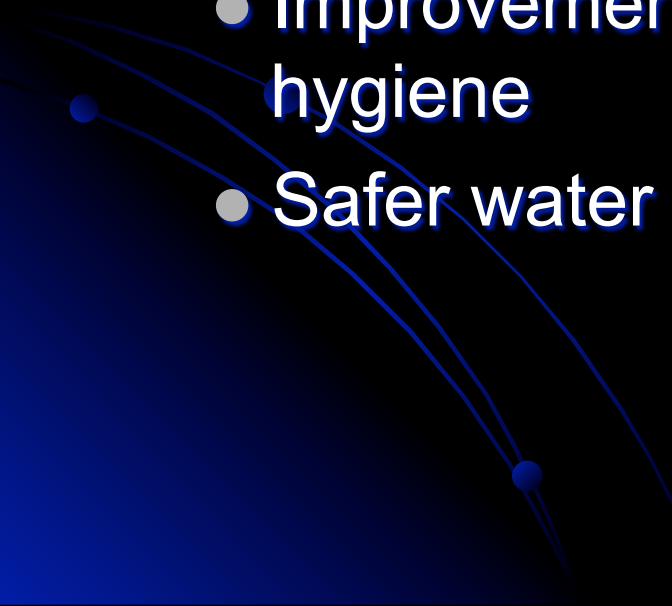
Changes in fertility rates in U.S.

- 1900 – 76 million
- 2002 – 288 million
- Peak of baby boom after WWII, 3.7 children/woman
- BABY BOOM – HIGH BIRTH RATES AFTER WORLD WAR II
- Now is at or below replacement level fertility
- Still growing faster than other developed countries (1.2%/year)
 - More births than deaths, immigration, illegal immigrants
- ECHO BOOM – 1977-80
 - PEOPLE BORN DURING BABY BOOM ARE HAVING CHILDREN.

Factors affecting Birth and Fertility rates

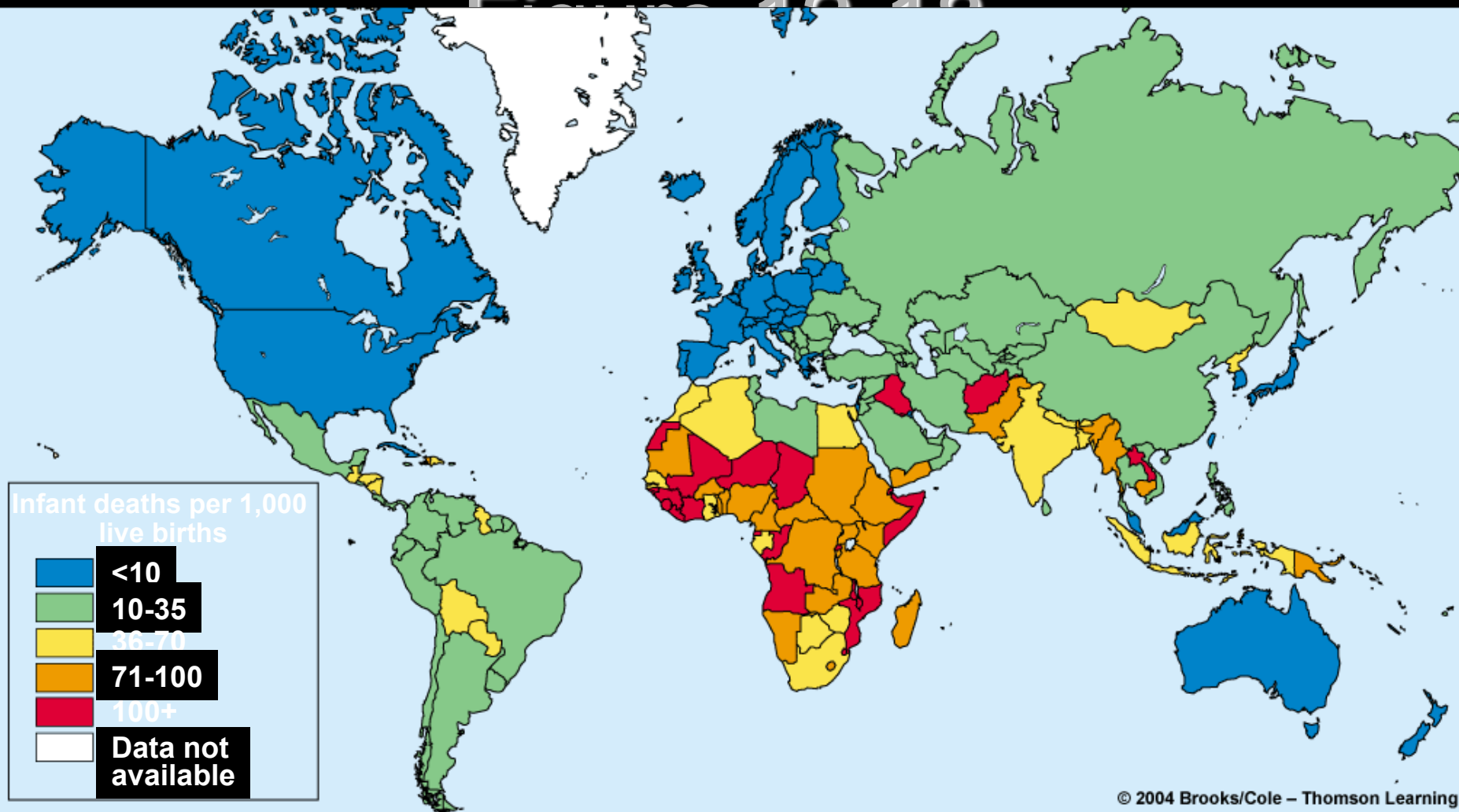
- Need for children in the labor force
- Urbanization – better family planning etc.
- Cost of educating and raising children
- Educational and employment opportunities for women
- Infant mortality rate
- Average age at marriage
- Availability of pension plans
- Availability of legal abortions
- Availability of reliable birth control methods
- Religious beliefs, traditions, and cultural norms

Factors affecting death rates

- People living longer due to:
 - Increased food supplies
 - Better nutrition
 - Improvement in health care
 - Improvement in sanitation and personal hygiene
 - Safer water supplies
- 

Useful indicators of overall health of a country

1. **LIFE EXPECTANCY** - average number of years a newborn infant can expect to live
 - Globally is now 67 years
2. **INFANT MORTALITY RATE**- number of babies/1000 born who die before their first birthday.
 - **PROBABLY THE SINGLE MOST IMPORTANT MEASURE OF A SOCIETY'S QUALITY OF LIFE!!!**



INFANT MORTALITY RATES IN 2002

U.S. infant mortality rates

- Kept high because:
 - Inadequate health care for poor women
 - Drug addictions during pregnancy and for babies after birth
 - High birth rate among teenagers
 - Their babies tend to have low birth weights



POPULATION AGE STRUCTURE

- AGE STRUCTURE: THE PROPORTION OF THE POPULATION (OR EACH SEX) AT EACH AGE LEVEL.
- PLOT THE PERCENTAGES OR NUMBER OF MALES AND FEMALES IN THE TOTAL POPULATION IN EACH OF THREE AGE CATEGORIES:
 - PREREPRODUCTIVE – 0 -14
 - REPRODUCTIVE – 15 – 44
 - POSTREPRODUCTIVE – AGES 45 AND UP

DEPENDENCY RATIO

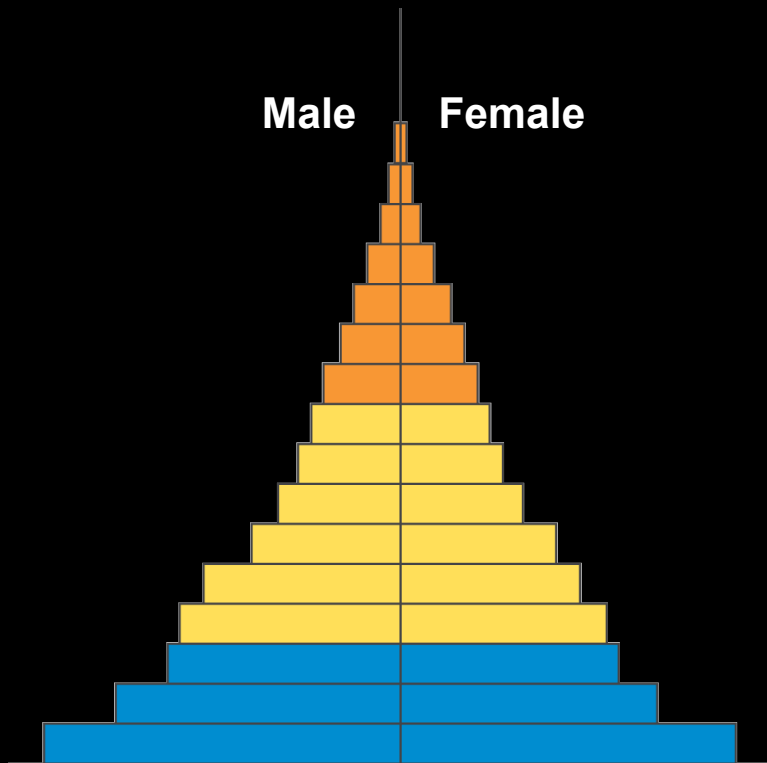
- THE NUMBER OF PEOPLE BELOW 15 AND ABOVE 65 WHO ARE DEPENDENT ON THE REMAINDER OF THE POPULATION FOR THEIR SUPPORT – contribute little to the economy



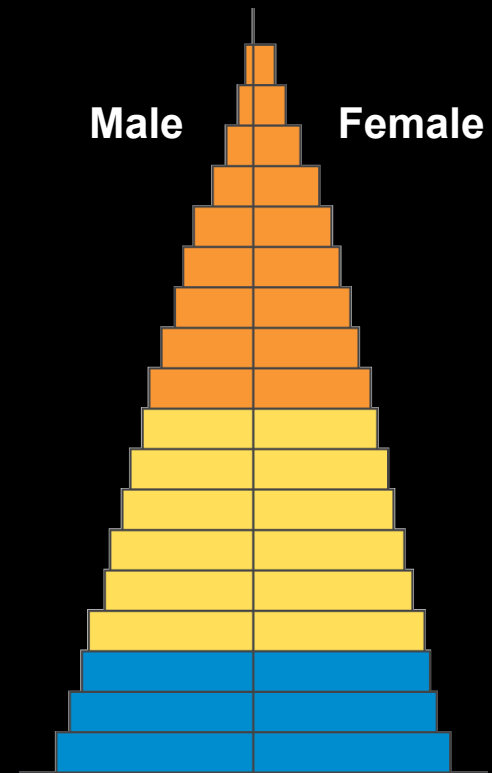
- Take a CENSUS – a count of the population



- Any country with a wide base has many people below the age of 15 has a built-in momentum to increase its population unless death rates rise greatly.
- This rises even if the woman has only one or two children.
- In 2002 – 30% of the people on earth were under 15 years old!!!



Rapid Growth
Guatemala
Nigeria
Saudi Arabia

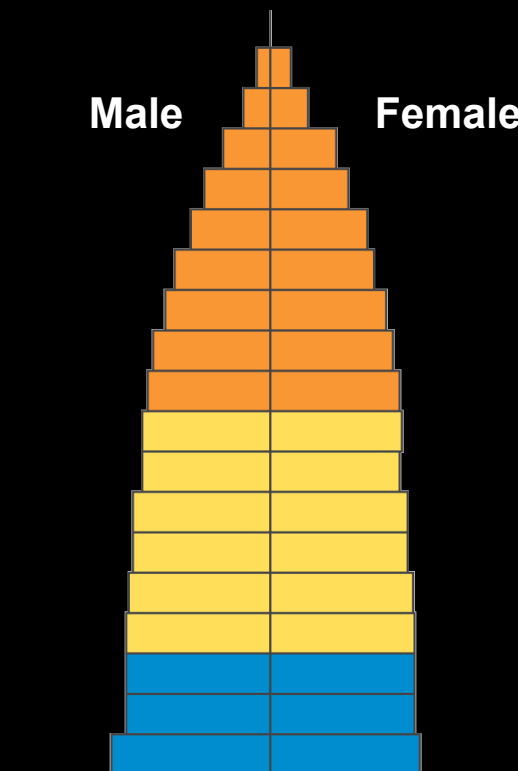


Slow Growth
United States
Australia
Canada

 Ages 0-14

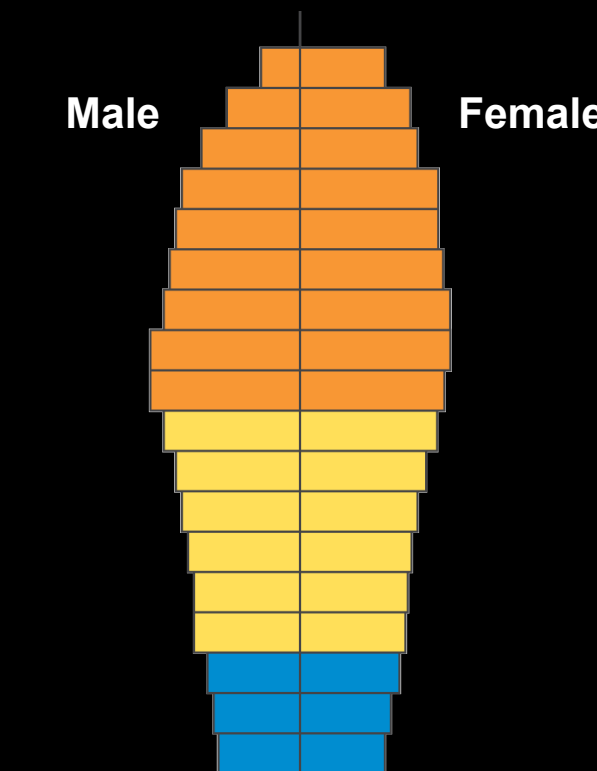
 Ages 15-44

 Ages 45-85+



Zero Growth

Spain
Austria
Greece



Negative Growth

Germany
Bulgaria
Sweden



Ages 0-14



Ages 15-44



Ages 45-85+

USES OF AGE-STRUCTURE DIAGRAMS

- CAN TELL HOW MANY PEOPLE WILL BE IN THE DEPENDENCY RATIO WHICH MAY RAISE INCOME TAXES, SOCIAL SECURITY, ETC.
- BABY BUST GENERATION
(GENERATION X – born between 1965 & 1976) will have to support the baby boom generation.


Effects of Population Decline from reduced fertility

- As age structure changes and the percentage of people over 60 increases more and more countries will have population declines:
- If rapid can lead to problems:
 - A sharp rise in older people who need medical care, Social Security, and other public services
 - Labor shortages unless you are willing to allow immigrants into the country.

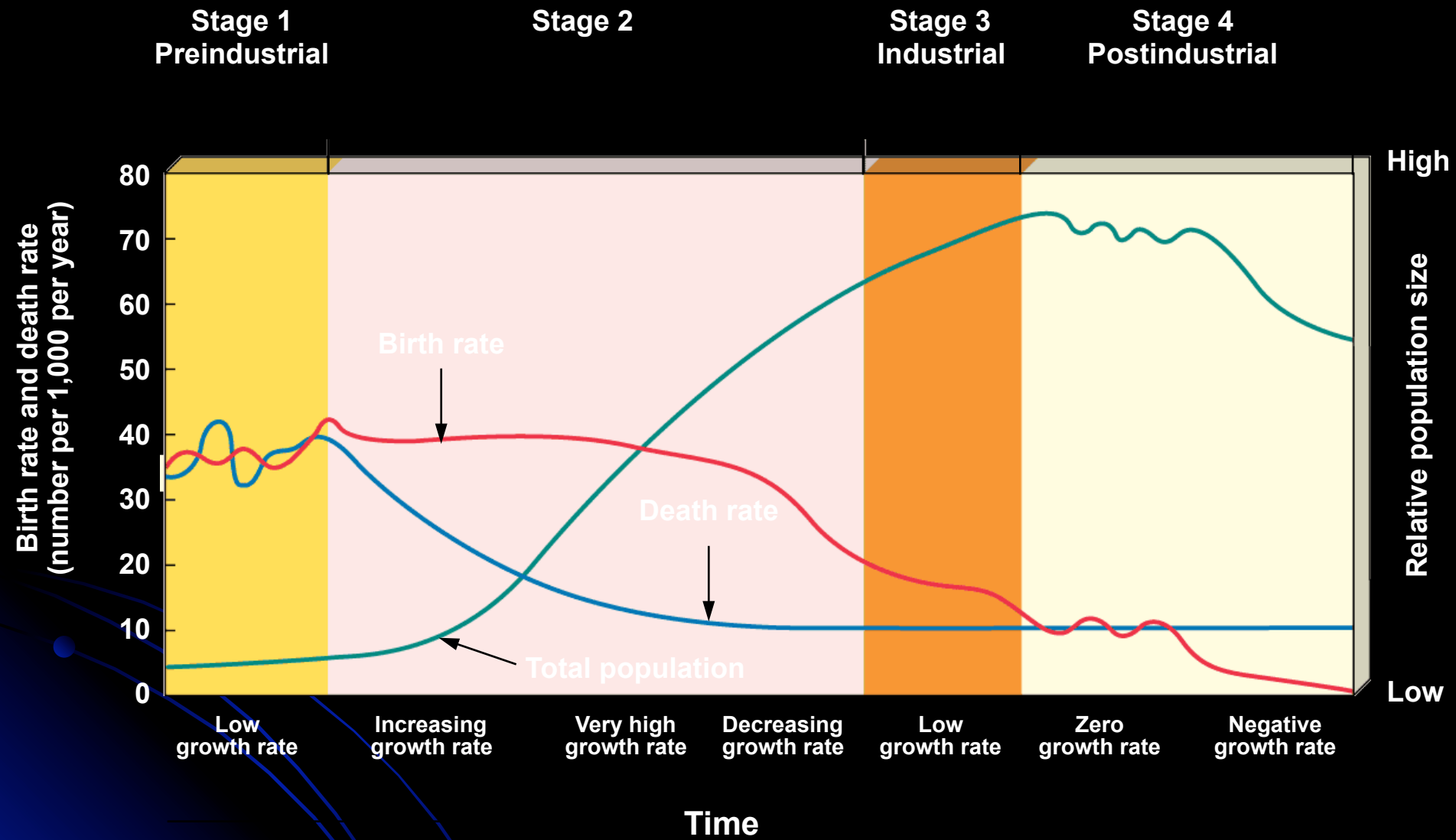
Effects of population decline from a rise in death rates

- HIV/AIDS – kills 6000 people/day – expected to double in the next decade
- This will:
 - Lower life expectancy
 - Lose a country's productive young adult workers
 - Cause a rise in the number of orphans
 - Cause a decline in food production due to a lack of workers.

The Demographic Transition

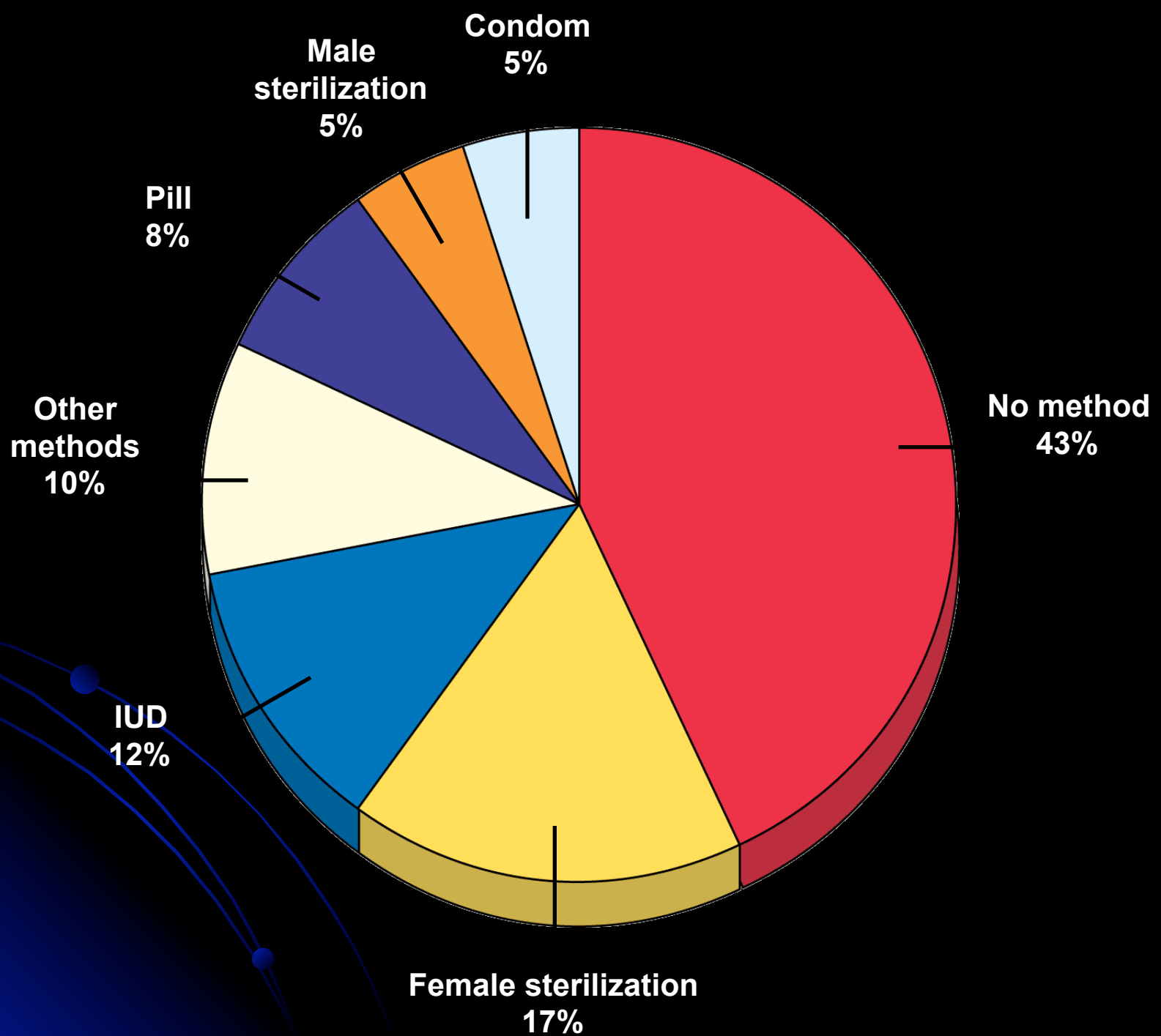
- A hypothesis concerning population change that results from a country becoming industrialized
 - Four stages:
 - PREINDUSTRIAL: little population growth, harsh living conditions, high birth rate and high death rate.
 - TRANSITIONAL: industrialization begins, food production and health care improves, death rates drop, birth rates remain high. **POPULATION GROWS RAPIDLY!**
- 

- **INDUSTRIAL** : birth rates drop and eventually approach death rates, population growth slows but continues.
 - Most developed countries are in this stage
- **POSTINDUSTRIAL**: birth rates further decline, equal death rates, ZPG. Then death rate falls below birth rate and total population size decreases. 38 countries (mostly in Europe) are in this phase.



Family Planning

- Provides educational and clinical services that help couples choose how many children to have and when to have them.
- Information provided on:
 - Birth spacing
 - Birth control
 - Health care for pregnant women and infants



Empowering women

- Women have fewer and healthier children when they:
 - Have access to education and paying jobs outside the home
 - Live in societies in which their rights are not suppressed.
- Women make up 70% of world's poor and two-thirds of the more than 876 million adults who cannot read and write.

Economic rewards and penalties to reduce birth rates

- About 20 countries offer small payments to people who agree to use contraceptives or be sterilized
- Some countries (China) penalize couples who have more than one or two children
 - Raise taxes
 - Charge other fees
 - Eliminate income tax deductions
 - May lose health care benefits, food allotments and job options
- These work best if they encourage rather than coerce people to have fewer children.