Population growth and population policy: Is Population a Problem?

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Prepared as part of an education project of the Global Health Education Consortium and collaborating partners.
Learning objectives

1. Outline past changes in population growth and future population projections.
2. Describe key terms to understand population and demographic studies.
3. Describe demographic theoretical models of population change and provide key case studies.
4. Describe the impact of population change on:
   - Education
   - Health
   - Food and water
   - Economic growth
5. Describe barriers women face in getting family planning.
6. Explain policies that make reproductive choices available to women and men.
Current Population Situation
Why do people talk about a population explosion?

It took the human species:
300,000 years to reach first billion
130 years to add second billion
30 years to add third billion
15 years to add fourth billion
12 years to add the fifth and sixth billion
How many people are we talking about?

- The world adds one million more births than deaths every 110 hours or about every four and a half days.
- India adds one million more births than deaths every 21 days.
- One million people move to urban areas every month.
Where has population growth been most rapid?

Population Growth Rate (r)

Percent growth:
• 1%
• 2%
• 3%

Doubling time:
• 70 years = 12 billion by 2080
• 35 years = 12 billion by 2045
• 23 years = 12 billion by 2035
What are population projections?

“The calculation of the number of people we can expect to be alive at a future date, given the number now alive and given reasonable assumptions about age-specific mortality and fertility rations and migration.”

- John R. Weeks

Some notes about population projections

• Projections are ‘what if’ statements. They are not predictions.
• Many of the parents who will have children in the next 50 years are already born and projections for global population in 2050 vary between 7.4 and 10.6 billion depending on their fertility.
• The further we look ahead the more wide the upper and lower bounds of population projections become.
• It is important to understand the assumptions made my demographers when making projections.
Total Fertility Rate

Total fertility rate (TFR) is the average number of children that would be born per woman if all women lived to the end of their childbearing years and meanwhile bore children according to a given set of age specific fertility rates.
Total fertility rate
Fertility Trends, 1950-2005: Selected Developing Regions

- Latin America & the Caribbean
- Sub-Saharan Africa
- Asia
- Northern Africa
Very small changes in family size have a marked impact on long-term population projections

A difference on average family size of one child can mean the difference between an unsustainable 36 billion people in 2300 and a smaller population than exists today.
Figure 6. Estimated world population: 1950-2000, and projections: 2000-2300

Children per woman:
- High: 2.35
- Medium: 2.05
- Low: 1.85

See Notes
What is the Demographic Transition?

The process by which a country moves from high birth and high death rates to low birth and low death rates with population growth in the interim.

Adapted from John R. Weeks

Demographic Transition

<table>
<thead>
<tr>
<th>Birth Rate</th>
<th>Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

![Graph showing the transition of birth and death rates over time.](image)
What are Population Pyramids?

Population Pyramids are a visual representation of a population broken down by age and sex.
How to read a population pyramid:

- **Males** on the left
- **Females** on the right

Length of bar represents population at that age (e.g., 20-24)

Source: U.S. Census Bureau, International Data Base.

Some population pyramids use percent of population, other use number population in thousands or millions.
Demographic Transition displayed by Population Pyramids

Algeria

Iran

Thailand
Algeria 1987, 2005, 2050

Broad based population pyramid—many children and high fertility

Aging population, lower death rates and lower birth rates

falling family size—fewer children

Source: U.S. Census Bureau, International Data Base.
Iran 2000, 2025, 2050

Large number of children.

More people of working age, fewer children.

Lower death rate, low birth rate.

Source: U.S. Census Bureau, International Data Base.
Thailand 1990, 2025, 2050

Reducing fertility - still significant numbers of young people

Large working age population

Aging population

Source: U.S. Census Bureau, International Data Base.
What is Population Momentum?

The tendency for population growth to continue beyond the time that replacement-level fertility has been achieved.

Why does this happen?
When a country has more girls entering their reproductive years than women leaving their reproductive years, there are more girls waiting to become mothers than women ending child bearing.

What does population momentum look like?

When a country has a broad-based population pyramid, there are more girls entering their fertile years than women leaving the fertile years.

Large numbers of girls about to enter their childbearing years.

Source: U.S. Census Bureau, International Data Base.
What are the consequences of population momentum?
A twenty year delay in reaching replacement level fertility (the average number of children sufficient to replace both parents in the population) can make a difference of over 200 million in the final stable population of Pakistan.
Population Summit of the World’s Scientific Academies. 1993

“In our judgment, humanity’s ability to deal successfully with its social, economic, and environmental problems will require the achievement of zero population growth within the lifetime of our children.”
High fertility and increasing population impacts…

- Education
- Health
- Food and water
- Ecology
- Economic growth
Population’s Impact on EDUCATION
Smaller families improve educational attainment of mothers and children

• Children in large households have less primary and secondary education.
• Smaller families invest more in children’s education

WORLD HEALTH ORGANIZATION:
“Women’s ability to control their fertility is the first and most important step to full empowerment and gender equality.”

The developing world needs 2,000,000 more teachers each year just to cope with rapid population growth
Higher Contraceptive Use: Higher Proportion of Girls in Secondary Schools

The International Council on Management of Population Programmes (ICOMP)
Rural Thailand: Percentage of children in school at age 12 by family size and income, adjusted for other socio-economic variables

Population’s Impact on HEALTH
“The promotion and availability of family planning . . represents one of the most significant public health success stories of the past century. . . . family planning decreases maternal and child mortality, empowers women, reduces poverty, and it lessens stress on the natural and political environment.”

High fertility and high child mortality are strongly associated (2005)

*Child Mortality is defined as: Child death before 5 years
Birth Spacing

The ability of women to space their births improves the health and survival of both the baby and mother.

Ideal birth spacing is between 36 and 60 months.
Birth spacing increases child survival

Infant Mortality

Adj. Relative Odds Ratio

Duration of Preceding Birth Interval (months)

Annual Number of Under Five Deaths with Existing Birth Intervals and Minimum Intervals of 24 and 36 months
Less Developed Countries

1,931,000 deaths averted

Additional 945,000 deaths averted

If no births occurred before 36 months of a preceding birth, then worldwide:

- Infant Mortality Rate would drop 24%.
- Under Five Mortality Rate would drop 35%.
- Deaths to children under five years of age would fall by 2,875,000 annually.
- Global Total Fertility Rate would fall by 1
  (Remember impact of small changes in TFR)

Reducing unintended pregnancies would improve women’s health

From 1995 to 2000 there were 1.2 billion pregnancies:

- **337 million** were unintended (28%)
- **251 million** of these pregnancies ended in abortion (74%)
- **88 million** of the these pregnancies were carried to term (26%)

- **687,000 maternal deaths after unintended pregnancies in 6 years**
- **441,000 maternal deaths from unsafe abortion**
- **246,000 maternal deaths related to pregnancy and delivery**

Population’s Impact on WATER and FOOD
“Per capita demand for water globally is estimated to exceed the available sources by about 2050”

- Sir David King, Chief Scientific Advisor to UK Government
Demand for water is increasing in all ten countries of the Nile basin.

- Nile already severely depleted by the time it reaches the Mediterranean.
- Population of Nile basin set to double by 2050.
Egypt
2006: 75 million
2050: 126 million

Sudan
2006: 41 million
2050: 84 million

Ethiopia
1900: 5 million
2006: 75 million
2050: 145 million

Uganda
2006: 28 million
2050: 130 million

266 Million additional people from 2006 and 2050
Food

• High-fertility countries such as Ethiopia, Malawi, Rwanda and Burundi are experiencing the ongoing subdivision of subsistence farm plots.

• Hunger and reduced plot size drives subsistence farmers to plough step hills and overgraze fragile rangelands.

• As agricultural resources come under pressure from increased population, competition also rises for shared food resources such as fish, wild animals and wild plants, since they become important as food sources.
Change in number of people with insufficient food between 1990 and 2002 (Millions)

- Eastern Asia: -47
- South Eastern Asia: -12
- Latin America: -7
- North Africa: +1
- Western Africa: +7
- Southern Asia: +15
- Sub-Saharan Africa: +34

Ethiopian population

1984 - 42 million
2006 - 75 million
2006 - 8 million reliant upon permanent food aid

What will happen in 2050?

Ethiopia population 1900-2050

Population in millions

Ethiopia population 1900-2050

- 1900: 5 million
- 1950: 12 million
- 1970: 23 million
- 1980: 33 million
- 1990: 52 million
- 2000: 64 million
- 2025: 108 million
- 2050: 145 million
Population Summit of the World’s Scientific Academies 1993

“Humanity is approaching a crisis point with respect to the interlocking issues of population, environment and development.”
Population’s Impact on ECONOMIC GROWTH
Economics of Population

• With the exception of a few oil-rich states, no country has risen from poverty while still maintaining high average fertility.
• Conversely, many countries that lowered their birth rates, such as South Korea, have also greatly reduced poverty.
Economics of Population

• Lower birth rates are a necessary, but not sufficient condition for a developing country to escape from poverty.
• Most economists focusing on population acknowledge the links between slower population growth and economic development can be complex and that development is not an automatic benefit of slower population growth.
• However lower fertility does create the opportunity for a “demographic dividend.”
What is a Demographic Dividend?

When fertility decreases with the demographic transition there is less proportion of the population who depend on the working population for support.

Young and old require intensive investments for health, education and care.

This allows the larger working population to support the economy, save money and improve the economy. Prime age adults supply labor and savings.

→ The more working age population and less children/old people, the potential for more ECONOMIC GROWTH.
Demographic dividend in action

In developing countries where the birth rate has fallen, between 25% and 40% of economic growth is attributable to the demographic change.
Impact of high fertility

• In regions with high fertility (like sub-Saharan Africa) there is an increasing number of people in poverty. **Even if the percentage of people in poverty is declining** within a region because of development, there is often still a **net increase in people in poverty**.

• In regions with rapid fertility decline (like Asia) there is often economic growth and reducing poverty.
Even though the % of people living in poverty has gone down, actual numbers of people living in poverty has increased.

- **1990**
  - Total population in Sub-Saharan Africa: 505.2 million
  - Population in Sub-Saharan Africa in poverty: 225.3 million (45%)
  - 3.5% fewer people living in extreme poverty

- **2004**
  - 61.4 million more people living in extreme poverty
  - Total population in Sub-Saharan Africa: 697.6 million
  - Population in Sub-Saharan Africa in poverty: 286.7 million (41%)

(Number of people in poverty)
Change in number of people living below US$1 per day 1987-1998

- East Asia and Pacific
  - East Asia and Pacific (Excluding China)
  - South Asia
  - Eastern Europe and Central Asia
  - Latin America and the Caribbean
  - Middle East and North Africa
  - Sub-Saharan Africa

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-200 -150 -100 -50 0 50 100
The Role of Policy in Population and Fertility
Challenges in researching policy and population

The role of policy in population and fertility is a volatile and much debated topic: Unfortunately, researchers can’t do a randomized control trial to study the impact of policies on fertility. Instead researchers are stuck with historical controls and country comparisons.
Challenges in researching policy and population continued

To complicate matters further, access to family planning comes along with other social and economic changes including globalization, change in access to the media, and shifts in the status of women. These factors make it very difficult to establish causality in fertility changes.

HOWEVER, we do know that fertility has never reached replacement level without access to family planning and abortion.
Population Policy Approaches

Countries have brought down their fertility by three main approaches:

1. Some large countries had national policies to lead to smaller families in voluntary ways.
2. Some countries used incentives or quotas to encourage or force the use of birth control or sterilization.
3. Some countries had no official government policy on family size, but through easy access to family planning the country had important changes in fertility.
Examples of Successful National Population Policies

Taiwan

Iran
Taiwan: “Remember this is a small island”

• Economic planners recognized population growth would be detrimental to development.
• One of the first and most successful family planning programs.
• Unprecedented decline Taiwan’s natural population increase rate from 3% to 1.9% in 10 years.
• Preferred family size dropped from 4 in 1965 to 2.9 in 1976.
Taiwan

- Used voucher system to subsidize contraception for poor people using private sector.
- Started with women who self identified as not wanting any more children.
- Once initial clients were satisfied the program moved onto outreach with younger wives with fewer children.
- Used community outreach model and post-partum mailings that offered family planning services.
- Continually researched the program and incorporated research into program plans.
- Did extensive outreach including in teacher training schools, the military and factories.
Iran

- In 1986 Economic planners recognized population growth would be detrimental to development.
- Opened their own pill and condom factories.
- Citizens must take a class on family planning before getting marriage license.
- Outreach went into villages with local village health workers.
- Female and male sterilization are free.
- All methods are available.
Impact of Iran’s family planning program

TFR in Iran dropped from 6 in 1989 to 3.5 in 1994

Sources: World Bank and 1997 data from the Ministry of Health and Medical Education, Iran.
Posters from Iran’s Family Planning Program

“Fewer children, better education.”

“Less population, more opportunities, prosperous future.”

“Better life with fewer children: Girl or boy, two is enough.”
A condom factory in Iran
Lessons from national family planning programs

- Governments and economic planners must recognize rapid population growth as a problem.
- There is often a pent-up demand for family planning.
- A variety of methods works best. A menu of family planning options including safe abortion, short term methods and voluntarily sterilization allow women to choose what works best for them.
- “Task shifting,” or allowing lower level health workers to deliver healthcare, is a powerful tool to increase access to family planning.
Examples of countries using incentives or coercion to encourage or force the use of birth control or sterilization

China
India in the 1970s
China and its one child policy

- Leadership understood the country would not escape poverty without slowing population growth.
- A ‘one-child’ policy was introduced in 1979. It was implemented among the Communist party members first, and largely limited to cities.
- Government had ‘target’ number of births and a few local leaders imposed coercive sterilizations and abortions.
- As a result of rapid fertility decline, China lifted over 300 million people out of abject poverty.
- If China, like South Korea, had attempted universal family planning earlier, the ‘one-child’ policy would not have been needed.
- When the UNFPA helped China relax the ‘one-child’ policy in several parts of China covering 35 million people, the fertility remained low.
Consequences of the One Child Policy

• Some physical abuses.
• Sex ratio changed with increasing numbers of boys (For example there were 115.6 boy children born to 100 girl children in 1995)
• Aging population today.
• Rapid economic growth – China benefited from the demographic dividend.
• Increased education.
• Some have argued that there is greater equality for women.
India

• Following independence (August 15th, 1947) India established the first national family planning program in the world.
• By the late 1960s, many Indian policy makers believed that the high rate of population growth was the greatest obstacle to economic development.
• The family planning program emphasized IUDs and sterilization with less emphasis on temporary methods.
India’s policies

- India's family planning program was part of a larger political vision for the country.
- Government established quotas encouraged providers to promote long term methods, leading to unethical use of incentives, especially among vulnerable groups.
- Resistance grew to family planning policies particularly when specific groups were targeted—this led to a political crisis.
- The scandal tarnished public perception of family planning in India and the world.
- Important lesson: Indian policy makers used “incentives” because they did not believe poor & illiterate people would adopt family planning. Their mistake was not understanding the power of voluntary family planning.
Countries with no official government policy on family size, but with easy access to family planning

Italy
Ireland
Italy

• In 1971 a ban restricting information relating to birth control was abolished.
• Abortion on request became legal in 1978.
• Once family planning and abortion were accessible the differences in family size between the north (traditionally smaller families) and the south (traditionally larger families) went away.
• Church fought this change intensely.
Ireland

- Never had official family planning program.
- Church condemned modern contraception.
- Abortion was and is illegal, but is easily obtained in England.
- Many contraceptive laws were struck down in the early 1970s and by 1979 pharmacists were able to sell contraceptives, but with restrictions.
- In 1960 TFR of 4 now 1.9 in 2007.
Lesson about Easy Access

If contraceptives and abortion are easily accessible, countries can experience significant declines in their fertility levels even without an official family planning policy.
Policies that make reproductive choices available to women and men
The Problem

Easy access to contraception is not available for most women and men around the world. Therefore, the barriers to family planning rather than fertility preferences can play a significant role in fertility levels in many countries.
Around the world couples face many barriers to fertility regulation including:

**Medicalization of contraception:**
- Unnecessary rules about prescription status for oral contraceptives.
- Unnecessary requirements that women have expensive tests and pelvic exams before receiving contraceptives (for example in Senegal the tests to get oral contraceptives cost the equivalent of 5 months income).

**Miseducation and misconceptions about contraception:**
- Misconceptions about risks of contraceptives.
- Misinformation about how contraceptives work.

**Limited access to contraception:**
- The cost of contraceptives is not affordable by the poor.
- Unnecessary rules about who can receive oral contraceptive such as minimum number of children a woman has already had, or that a woman must be menstruating.
- Limited access to sterilization, for example in many countries to be sterilized a woman’s age times the number of children she has had must equal or be more then 120 (i.e. if she is 30 she must have 4 kids)
- Limited method options (for example, women may have access to sterilization, but not reversible methods, or access to pills but not injectables)
- Rules limiting the advertisement of family planning.
- Excluding young unmarried females are excluded from services.
- Cultural constraints- some traditional values do not support giving women options.
What Works: Lessons for Policy Makers

• Programs that bring family planning services to people in their daily lives rather than requiring them to come to centralized location (see the next slide) improve access.

• Task shifting of family planning increases access Removing requirements that family planning only be done by doctors and nurses can make programs more accessible and cost effective.
  Ex. Taking the pill off prescription or allowing community health workers to give Depo Provera shots.

• Providing a mix of methods to women so they have access the methods that work best for them.
  Ex. not just having IUDs or sterilization so but also reversible methods so women can space their births.

• Legalizing safe abortion.
This family planning clinic in Kenya is almost as big as the hotel: it is an example of over-emphasis on a medical framework, an inappropriate use of resources and probably cultural insensitivity.

How not to do family planning
This community based family planning worker is selling pills in the floating market in Bangkok bring the services to women.

How to do family planning
Want to know more about....

The demographic transition
The role of wealth in fertility
What variables impact fertility?
Then check out:
Module 102 Demographic transition and its causes:
what reduces fertility
Credits

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The Global Health Education Consortium gratefully acknowledges the support provided for developing these teaching modules from:

**Margaret Kendrick Blodgett Foundation**  
**The Josiah Macy, Jr. Foundation**

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Supplementary Notes
According to the UN World Population Prospects: The 2006 Revision the world population will likely increase to 9.2 billion by 2050. Population in less developed regions will increase from 5.4 billion in 2007 to 7.0 billion in 2050, while the population in developed regions will remain largely unchanged. The total increase in population from 2007 to 2050, 2.5 billion people, is the same as the total population of the world in 2050.
It is important to understand the assumptions made by demographers when making projections. For example, when calculating the projections for future population growth used in slide 5, UN demographers assumed that fertility would fall from 2.55 children per woman today to slightly over 2 children per woman in 2050. They note, however, if fertility does not decrease and instead remain about where it is now then there would be 1.6 billion additional people not accounted for in the original estimate.

Another example: when estimating the final stable population of the Philippines assumptions about how long it will take to reach replacement fertility greatly affect the final outcome. If replacement fertility is reached by 2010 there will be a final population of about 150 million. If, however, replacement fertility is not reached until 2050 the final population will be well more the 250 million. In this case a simple change in assumptions made by a demographer when making a projection has a major impact on the outcome.

(Calculations for the Philippines by Carl Haub Senior Demographer, population Reference Bureau)
The purpose of this hypothetical projection is to show that very small changes in family size can have a significant impact on global population.