

# Population and Migration Patterns and Processes

AP Human Geography

## Population Distribution and Density

People are spread very unevenly across Earth. **Population distribution** 人口分布 describes where people live; **population density** 人口密度 measures how crowded a place is. Most people cluster in a few favourable places: **mid-latitudes**, **low-lying land**, coasts, and river valleys with water and fertile soil.

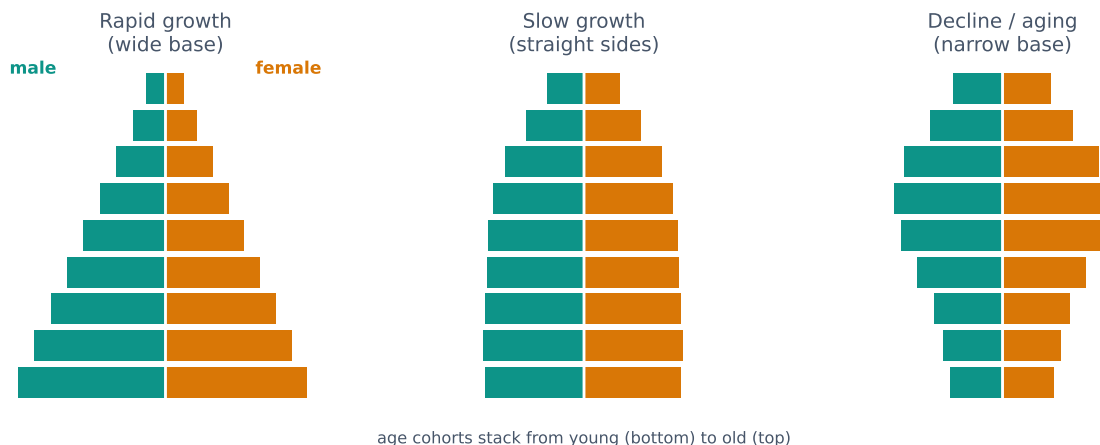
Geographers use three density measures:

- **Arithmetic density** 算术密度—total people  $\div$  total land area.
- **Physiological density** 生理密度—people  $\div$  area of **arable** (farmable) land; a better guide to pressure on food supply.
- **Agricultural density** 农业密度—farmers  $\div$  arable land; a low value suggests more efficient, mechanised farming.

Uneven distribution creates **consequences**: crowded regions strain housing, water, and services, while empty regions may struggle to provide roads and schools.

## Population Composition

**Population composition** 人口构成 is the make-up of a population by **age** and **sex**. It is shown on a **population pyramid** 人口金字塔—back-to-back bar charts of males and females in five-year **age cohorts** 年龄组.



*A wide base means rapid growth; straight sides mean slow growth; a narrow base means decline*

- A **wide base** means high birth rates and rapid growth (many young people).
- **Straight sides** mean slow, stable growth.
- A **narrow base** with a wide middle means an **aging**, shrinking population.

The **dependency ratio** 抚养比 compares dependents (under 15 and over 64) to the working-age population—a high ratio strains the workers who support them.

## Population Dynamics

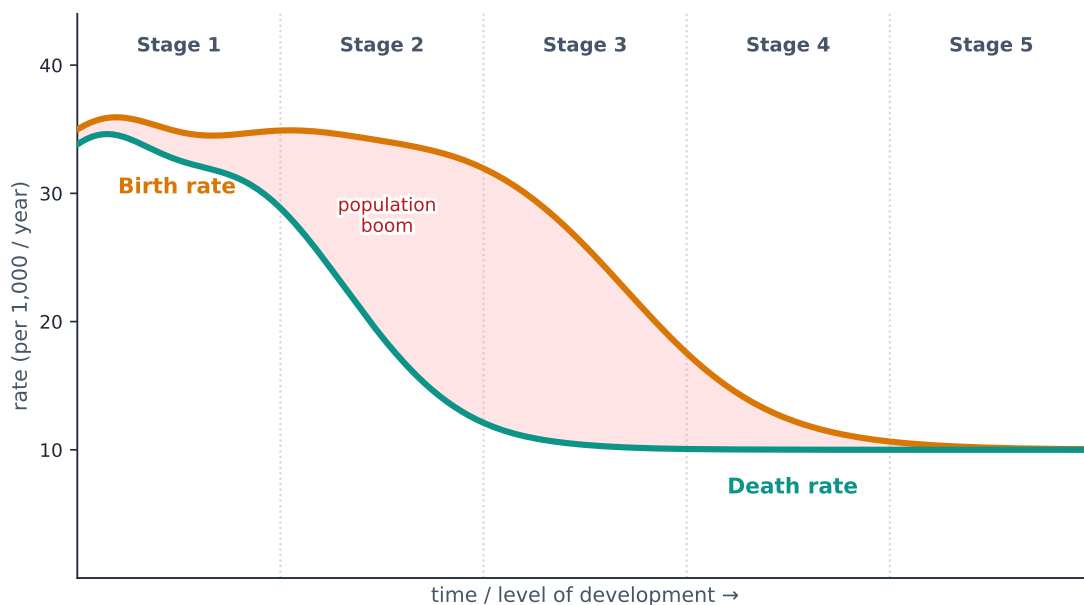
Populations change through births, deaths, and migration. Key rates (per 1,000 people per year):

- **Crude birth rate (CBR)** 粗出生率 and **crude death rate (CDR)** 粗死亡率.
- **Rate of natural increase (RNI)** 自然增长率 =  $(\text{CBR} - \text{CDR}) \div 10$ , as a percentage—it ignores migration.
- **Total fertility rate (TFR)** 总和生育率—average children per woman; about **2.1** is replacement level 更替水平.

The **doubling time** 倍增时间 (years for a population to double)  $70 \div \text{RNI}\%$ . Small changes in fertility have huge long-run effects.

## The Demographic Transition Model

The **Demographic Transition Model (DTM)** 人口转变模型 shows how birth and death rates change as a country develops, through **five stages**.



*Death rate falls first, then birth rate; the gap between them is the population boom*

1. **Stage 1**—high, fluctuating CBR and CDR; slow growth (pre-industrial).
2. **Stage 2**—CDR falls (better food, medicine, sanitation) while CBR stays high; population **booms**.
3. **Stage 3**—CBR falls (urbanisation, education, women in work); growth slows.
4. **Stage 4**—low CBR and CDR; population stable and large.
5. **Stage 5**—CBR falls **below** CDR; population declines and ages.

The linked **epidemiological transition** 流行病学转变 describes how the main causes of death shift from **infectious disease** to **chronic, degenerative disease** as a country moves through the DTM.

## Malthusian Theory

In 1798 **Thomas Malthus** argued that population grows **exponentially** 指数式 while food supply grows only **linearly** 线性, so population would outrun food and be checked by famine, disease, and war.

Critics say Malthus underestimated **technology**: the Green Revolution and modern farming raised food output enormously. **Neo-Malthusians** 新马尔萨斯主义者 update the worry to include water, energy, and other finite resources. The debate is a favourite exam prompt.

## Population Policies

Governments try to influence population growth with policies:

- **Pro-natalist** 鼓励生育 policies encourage births (cash bonuses, parental leave, child-care) where populations are aging or shrinking —e.g. France, Japan.
- **Anti-natalist** 限制生育 policies discourage births where growth is seen as too fast —e.g. India's family-planning campaigns.

Policies have **unintended consequences**: strong anti-natal policies can skew the sex ratio or speed up aging, which later needs a pro-natal response.

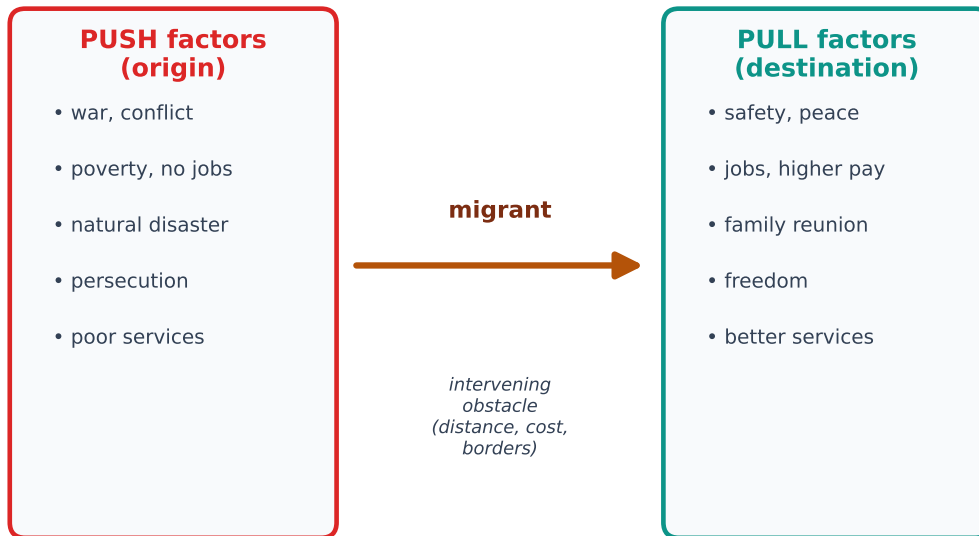
## Women, Aging, and Demographic Change

The status of **women** is one of the strongest drivers of fertility. As female **education** and **employment** rise, women marry later and have fewer children, so fertility falls —a key reason countries move through the DTM.

At the other end, **aging populations** 人口老龄化 (a rising share of over-65s) bring their own challenges: higher pension and healthcare costs, a shrinking workforce, and a rising dependency ratio. Countries respond with later retirement, immigration, or pro-natal policies.

## Causes and Types of Migration

**Migration** 迁移 is a permanent move to a new location. It is driven by **push factors** 推力 (reasons to leave: war, poverty, disaster) and **pull factors** 拉力 (reasons to arrive: jobs, safety, family).



*Migration decisions weigh push factors against pull factors, across an intervening obstacle*

- **Voluntary migration** 自愿迁移 is by choice, usually for economic reasons.
- **Forced migration** 强迫迁移 is against a person's will — **refugees** 难民 fleeing danger, or people displaced by disaster.
- **Ravenstein's laws** describe patterns: most migrants move short distances, in steps, and are drawn mainly by economic pull.

Migration can be **international** (between countries) or **internal** (within a country, such as rural-to-urban).

## Effects of Migration

Migration reshapes both the **origin** and the **destination**.

- The **destination** gains workers and cultural diversity but may face pressure on housing and services and social tension.
- The **origin** may lose skilled workers (a **brain drain** 人才外流) but gain **remittances** 侨汇—money migrants send home, a major income source for many countries.
- Migration changes the age and sex structure of both places, because migrants are often young working-age adults.

## Exam tips

- Compute  $RNI = (CBR - CDR) \div 10$  as a percent, and read doubling time as about  $70 \div RNI$ .
- Link a **population pyramid's** shape to fertility and the **DTM** stage—a wide base means Stage 2.

- Remember the **death rate** falls before the **birth rate**; that is why Stage 2 grows fastest.
- Separate **push** from **pull** and **forced** from **voluntary**; a **refugee** crosses a border, an **IDP** does not.
- Weigh migration effects: **remittances** help the origin, but **brain drain** and aging hurt it.