

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.



A packed pedestrian crossing in Tokyo: cities pull people into a tiny area, giving an extremely high population density

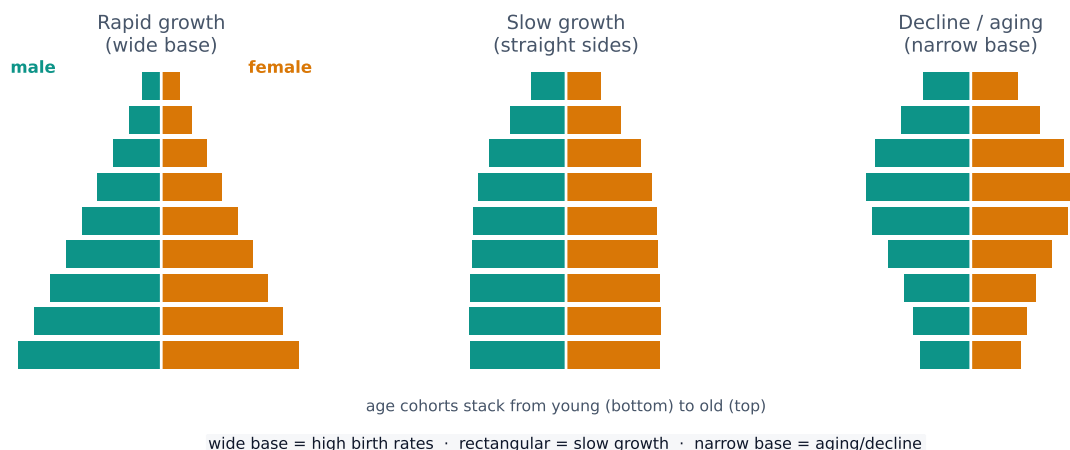
Geographers use three density measures:

- **Arithmetic density** 算术密度 — $\text{total people} \div \text{total land area}$.
- **Physiological density** 生理密度 — $\text{people} \div \text{area of arable (farmable) land}$; a better guide to pressure on food supply.
- **Agricultural density** 农业密度 — $\text{farmers} \div \text{arable land}$; 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):

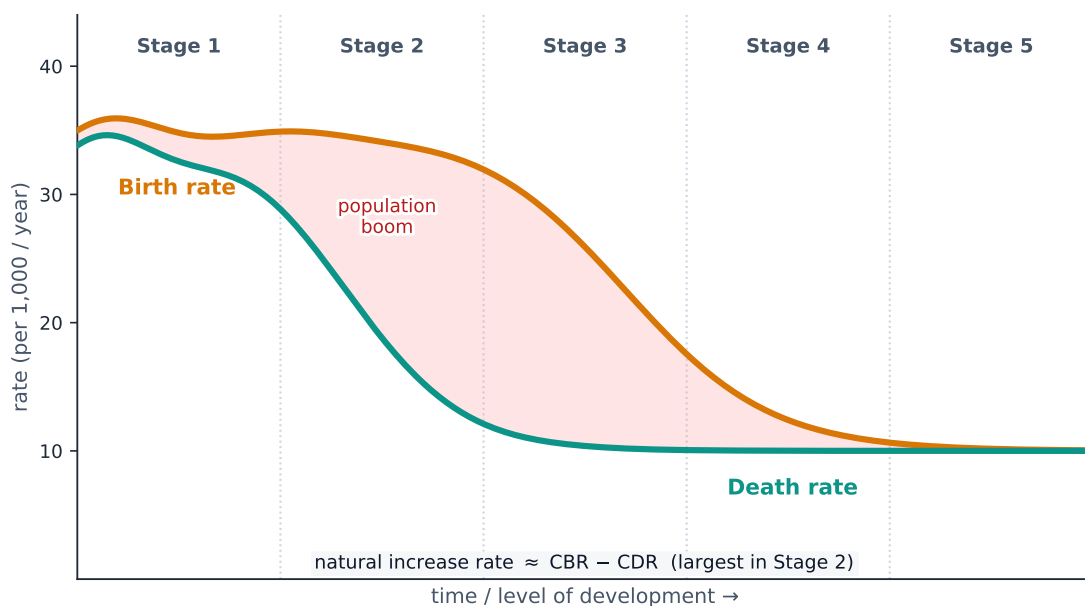
- **Crude birth rate (CBR)** 粗出生率 and **crude death rate (CDR)** 粗死亡率.
- **Rate of natural increase (RNI)** 自然增长率 = $(\text{CBR} - \text{CDR}) \div 10$, as a percentage — it ignores migration.
- **Total fertility rate (TFR)** 总和生育率 — average children per woman; about **2.1** is **replacement level**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

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

Worked example (a real AP exam question). “Explain ONE reason why the rate of natural increase (RNI) in urban areas may vary significantly from RNI in rural areas in the same country.” (2023) A full-mark answer: “In cities the cost of living — housing, schooling, childcare — is higher, so urban families tend to have fewer children. Fewer births lower the crude birth rate, so the urban RNI falls below the rural RNI, where children still help with farm work.” Notice the shape: the command word **Explain** wants a cause-and-effect chain, so you must name the reason **and** follow it all the way to the RNI. A bare fact — “cities are expensive” — earns zero.

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, childcare) 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.

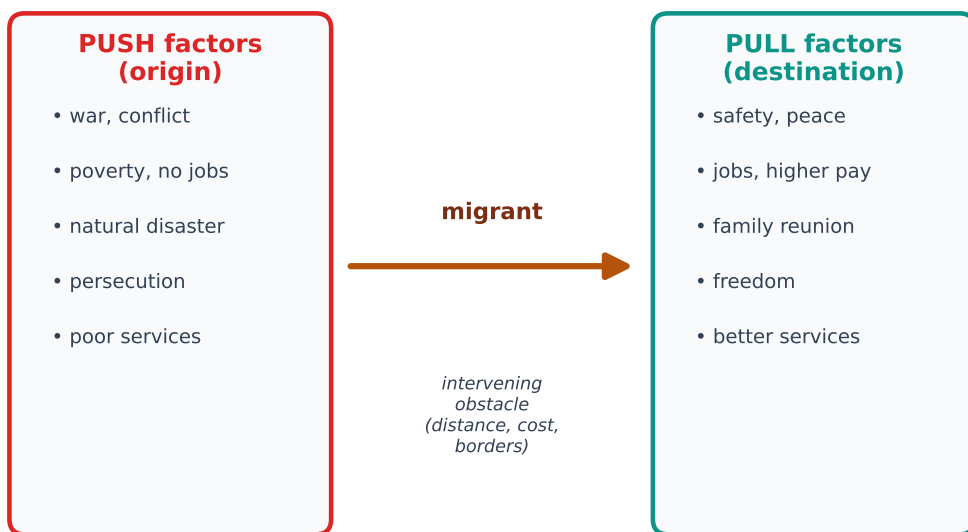
Women, Aging, and Demographic Change

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).



AP HuG · U2 · migration push and pull factors

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).



Immigrants arriving in a new city: migration redistributes population and reshapes places

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.



New arrivals reshape cities: migration changes labour markets, culture and demographics in destination places

Exam tips

- Compute $\text{RNI} = (\text{CBR} - \text{CDR}) \div 10$ as a percent, and read doubling time as about $70 \div \text{RNI}$.
- 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.