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

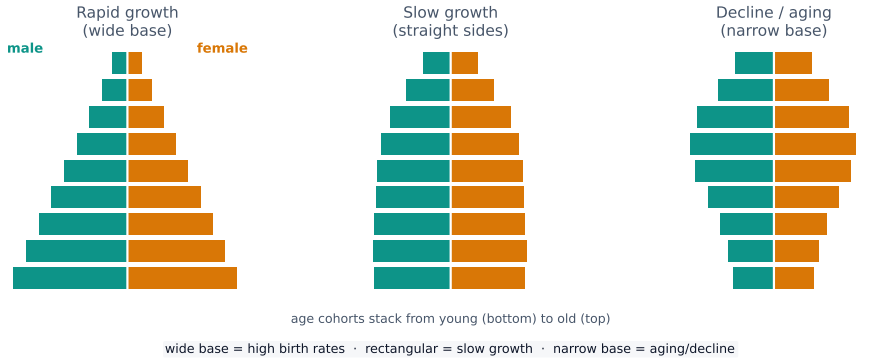
Geographers use three density measures:

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

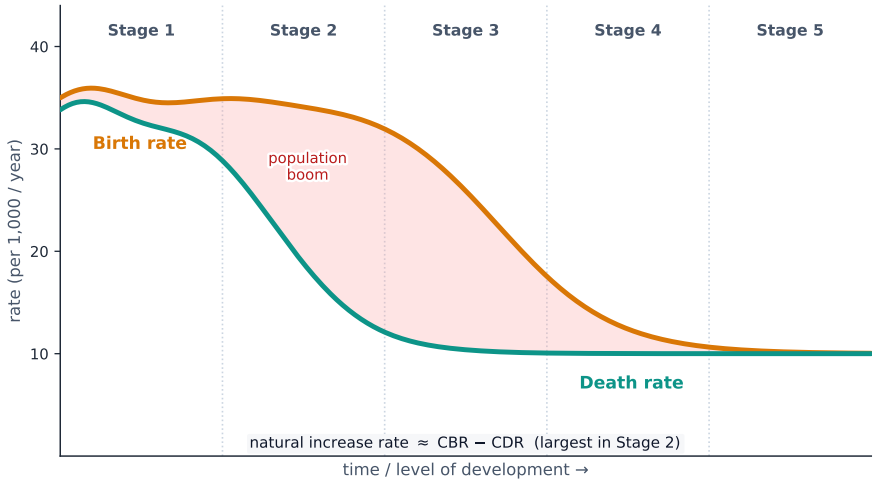
- **Crude birth rate (CBR)** 粗出生率 and **crude death rate (CDR)** 粗死亡率.
- **Rate of natural increase (RNI)** 自然增长率 = (CBR − CDR) ÷ 10, as a percentage — it ignores migration.
- **Total fertility rate (TFR)** 总和生育率 — average children per woman; about **2.1** is **replacement level** 更替水平.

The **doubling time** 倍增时间 (years for a population to double) ≈ 70 ÷ 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.

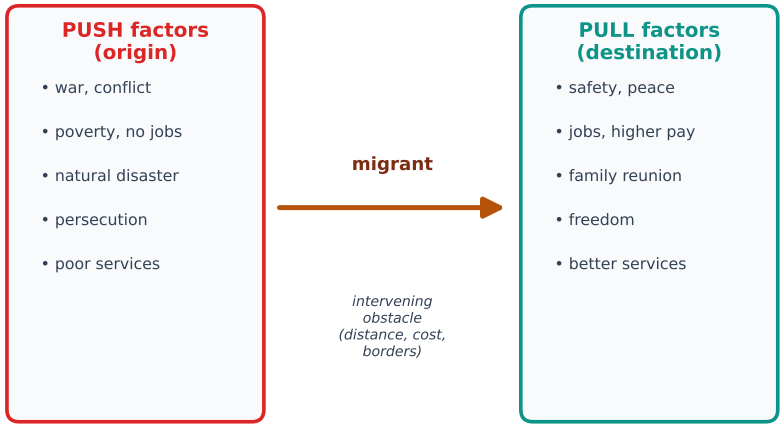
Women, Aging, and Demographic Change

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).



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 **RNI = (CBR − CDR) ÷ 10** as a percent, and read doubling time as about **70 ÷ 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.