

Population and Migration

AP Human Geography • Unit 2

AP Human Geography



Population and Migration

What we will cover

- 1 Distribution & density
- 2 Composition
- 3 Dynamics & the DTM
- 4 Malthus & policies
- 5 Women & aging
- 6 Migration causes
- 7 Migration effects

1 Where people live

Population and Migration

Where people live

Distribution and density

- People cluster where climate, water, and soil are favourable.
- **Arithmetic density** 算术密度 = people per land;
physiological density 生理密度 = people per farmland.
- **Carrying capacity** 环境承载力: the population an area's resources can support.



People cluster where resources allow

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Where people live

Uneven distribution has consequences at both ends

crowded regions	strain housing, water, sanitation and services
empty regions	struggle to justify roads, schools and clinics for so few people
why people cluster	low-lying, fertile, temperate and coastal land – around two-thirds of humanity lives within 500 km of a coast
why they do not	deserts, high mountains, dense rainforest and polar regions are all sparsely settled

The physical factors set where settlement is *possible*; economic and political ones decide where it actually happens.

Population and Migration

Where people live

Three density measures, three different questions

arithmetic density 算术密度	total people ÷ total land – how crowded, in the plainest sense
physiological density 生理密度	people ÷ arable land – pressure on the land that actually feeds them
agricultural density 农业密度	farmers ÷ arable land – a <i>low</i> value suggests efficient, mechanised farming
distribution vs density 人口分布 vs 人口密度	distribution says <i>where</i> people are; density says <i>how crowded</i> it is there

Egypt has a modest arithmetic density and an enormous physiological one, because almost all of it is desert. That contrast is the standard exam item.

Population and Migration ↳Where people live	Population and Migration ↳Where people live
Distribution, density and the rates	Population composition
Population distribution Population distribution is <i>where</i> people are – clustered on coasts and rivers, sparse in deserts and at altitude.	■ A population pyramid 人口金字塔 shows age and sex structure. ■ A wide base = high fertility; a narrow base = low fertility, aging. ■ Dependency ratio 抚养比 compares dependents to the working-age group.
Population density Population density is how many per unit area. Arithmetic density divides by all land, physiological density by <i>arable</i> land, and agricultural density by farmers.	
CDR and TFR The crude death rate (CDR) is deaths per thousand per year; the total fertility rate (TFR) is the average number of children per woman over her life.	
Growth shape A population growing by a fixed <i>number</i> each year grows linearly; one growing by a fixed <i>percentage</i> grows exponentially – which is why doubling time falls so fast.	
Physiological density is the more useful figure for pressure on resources: Egypt's arithmetic density hides that almost everyone lives along one river.	

Population and Migration ↳Where people live	Population and Migration ↳Where people live
Reading a population pyramid	A wide base means rapid growth; straight
what it is back-to-back bar charts of age cohorts 年龄组, males left and females right	Rapid growth (wide base) Slow growth (straight sides) Decline / aging (narrow base) age cohorts stack from young (bottom) to old (top) wide base = high birth rates · rectangular = slow growth · narrow base = aging/decline
population composition 人口构成 the make-up of a population by age and sex	
wide base high crude birth rate 粗出生率 (CBR) – rapid growth, a young population	
narrow base, thick middle low birth rate, an aging population, a shrinking workforce ahead	
dependency ratio 抚养比 the under-15s and over-64s divided by the working-age group	
The shape forecasts the next fifty years of schools, jobs and pensions. That is why every population question eventually returns to the pyramid.	A wide base means rapid growth; straight sides mean slow growth; a narrow base means decline

2 Growth and theory	Population and Migration └─Growth and theory
	Population dynamics
■ CBR 粗出生率 and CDR 粗死亡率 give RNI 自然增长率 = $(\text{CBR} - \text{CDR}) / 10 \%$. ■ TFR 总和生育率 near 2.1 is replacement level. ■ Doubling time $\approx 70 \div \text{RNI}$.	
births CBR popu- lation RNI = CBR – CDR deaths CDR births in, deaths out; the gap is growth	

Worked example – rates to doubling time

Nigeria: CBR = 37, CDR = 12 (per 1000). Find the RNI and the doubling time.

$$\text{RNI} = \frac{37 - 12}{10} = 2.5\% \text{ per year}$$
$$\text{doubling time} \approx \frac{70}{2.5} = 28 \text{ years}$$

Divide by 10: CBR and CDR are per 1000, but RNI is a percent. Skip that step and you report 25% – a century of growth in one year.

The Demographic Transition Model

- Stage 1 high/high; Stage 2 death falls (fast growth); Stage 3 birth falls; Stage 4 low/low; Stage 5 decline.
- The death rate falls before the birth rate.
- Limitation: based on Europe; ignores migration and policy.

The model, and the ageing it ends in

The DTM

The demographic transition model (DTM) runs in stages: high birth and death rates, then death rates fall, then birth rates follow, then both are low.

Where growth happens

The gap between the two curves is the natural increase – widest in stage 2, closed again in stage 4.

Aging populations

Stage 4 and 5 countries have **aging populations**: a narrow-based pyramid, a rising dependency ratio, and pressure on pensions and healthcare.

Voluntary migration

Voluntary migration is a choice made on push and pull factors; forced migration is not, and the two need different policy answers.

The DTM describes what happened in Europe. Using it as a prediction elsewhere is the standard evaluation point.

The epidemiological transition runs alongside the DTM

what it describes

how the **main causes of death** change as a country moves through the DTM 人口转变模型

early stages

infectious disease 传染病 and famine – plague, cholera, malnutrition

later stages

chronic, degenerative disease 慢性退行性疾病 – heart disease, cancer, stroke

why the shift

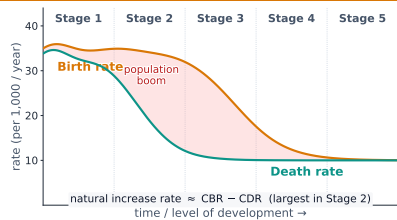
clean water, sanitation, vaccination and better nutrition remove the early killers, so people live long enough to meet the later ones

a possible new stage

the re-emergence of infectious disease through resistance and global travel

The CDR 粗死亡率 falls **before** the CBR 粗出生率 does. That lag is the gap in the DTM where the population grows fastest.

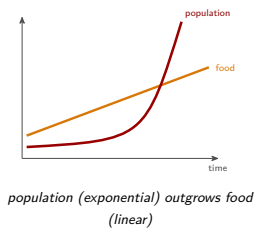
Death rate falls first



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

Malthus and population policies

- **Malthus** 马尔萨斯: population outgrows food – underestimated technology.
- **Pro-natalist** 鼓励生育 policies encourage births; **anti-natalist** 限制生育 discourage them.
- Strict anti-natalist policy can skew the sex ratio and age the population.



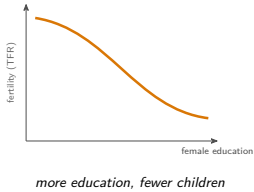
Malthus, his critics, and the two kinds of policy

Malthus	population grows geometrically , food only arithmetically , so famine must follow
the critics	he underestimated technology – the Green Revolution and modern farming raised output enormously
neo-Malthusians 新马尔萨斯主义者	update the argument to all resources, not just food: water, energy, climate
pro-natalist 鼓励生育	encourage births – cash bonuses, parental leave, childcare (France, Japan)
anti-natalist 限制生育	discourage them – China’s one-child policy, family-planning campaigns

Policies have **unintended consequences**: a strong anti-natal policy can skew the sex ratio and speed up aging, which then needs a pro-natal answer a generation later.

Women and aging

- Female education and employment lower fertility.
- Aging (low fertility + long life) raises the **elderly dependency ratio** 老年抚养比.
- Responses: raise retirement age, encourage immigration.



3 Migration

Causes of migration

- Push factors** 推力 drive people away; **pull factors** 拉力 attract them.
- Intervening obstacles** 阻碍因素 block a move; **intervening opportunities** 中介机会 divert it.
- Forced** 被迫迁移 migration gives no choice; **voluntary** 自愿迁移 is chosen.



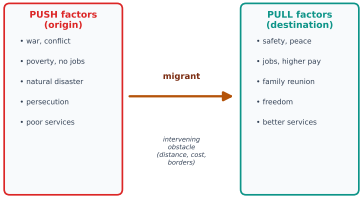
Push, pull, and the choice to move

The vocabulary every migration question uses

push and pull	push factors drive people out (conflict, drought, no work); pull factors draw them in (jobs, safety, family)
international 国际 vs internal 国内	between countries, or within one – most often rural-to-urban
voluntary 自愿 vs forced 强迫	a choice, or none: refugees, asylum seekers, internally displaced people
Ravenstein’s laws 拉文斯坦法则	most migrants move short distances , in steps , and are drawn mainly by economic pull
intervening obstacle 中间障碍	anything that blocks the move – a border, a mountain range, the cost of the journey

Naming the type before you explain it is what earns the mark. “Forced international migration” says more in three words than a paragraph of description.

Causes and Types of Migration



AP HUG : U2 : migration push and pull factors

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

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Effects of migration

■ **Remittances** 侨汇 raise income in the origin country.

■ **Brain drain** 人才流失: loss of skilled workers weakens the origin.

■ Origin ages; destination gains young workers.



Migration reshapes origin and destination

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↳ Migration

Migration changes both ends, in opposite ways

the destination

gains workers and cultural diversity; may face pressure on housing and services, and social tension

the origin

may lose skilled workers – a **brain drain** 人才外流 – but gains **remittances** 侨汇, money sent home, a major income source for many countries

both structures shift

migrants are usually **young working-age adults**, so the origin ages and the destination's pyramid bulges in the middle

and the sex ratio

where migration is male-dominated, both places are left unbalanced

Answer effects in **pairs**, origin and destination, and say who gains and who loses at each. A one-sided answer caps the mark.

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Key points

The **DTM** tracks births/deaths across five stages

TFR 2.1 = replacement; below it, population falls

Migration = **push** + **pull**, forced or voluntary

Migration brings **remittances** but **brain drain**

Population and Migration

↳ Migration

Worked example – the command word is the 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.” (real AP question)

“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.”

Explain wants a **cause-and-effect chain**: name the reason and follow it all the way to the **RNI**. A bare fact – “cities are expensive” – earns **zero**.

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Exam tips

■ Compute **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.

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Recap

Unit 2 – key takeaways

1 RNI

$(\text{CBR} - \text{CDR}) \div 10$; doubling $\approx 70 \div \text{RNI}$

3 Migration

push/pull; forced/voluntary;
refugee vs IDP

2 Pyramid

wide base $\Rightarrow$ Stage 2; death rate
falls first

4 Effects

remittances help origin; brain
drain and aging hurt

Check yourself

- 1 In which DTM stage does the death rate fall while births stay high?
- 2 What did Malthus predict, and why was he wrong?
- 3 A wide pyramid base means what?
- 4 Push or pull: a famine at home?

Answers 1. stage 2 – so population grows fastest 2. food would outrun supply; technology raised yields 3. high birth rate, a young population 4. push