# The Ultimate AP® Human Geography Unit 1 Cheat Sheet



## 1.1 Maps: Types & Patterns

### Reference vs. Thematic

**Reference map**: shows where things are (borders, roads, rivers, cities) → navigation & location. Types: political, physical, road, plat (property lines), topographic.
**Thematic map**: shows the spatial pattern of 1 topic or variable (data → map), e.g., income, religion, birth rate.

| Type | Shows | Example |
|---|---|---|
| Choropleth | Shade by unit | % voting/state |
| Dot density | 1 dot = X items | Farms in Iowa |
| Grad. symbol | Size = amount | City pop. |
| Isoline | Line = equal val. | Elev., temp. |
| Cartogram | Area ∝ data | GDP by country |
| Flow-line | Arrow width=vol. | Migration |

**Choropleth trap**: big units look dominant; map rates (per capita), not raw totals. One color hides variation inside a unit.

### Spatial Patterns on Maps

**Absolute vs. relative distance**: miles/km vs. time, cost, connectivity (e.g., 2 hrs by train, $300 flight).
**Absolute vs. relative direction**: cardinal (N, S, E, W) vs. perceived ("out West," "Down Under," "up north").
**Clustering**: features grouped close (tech firms in Silicon Valley). **Dispersal**: spread out (Great Plains farmsteads).
**Elevation**: height above sea level (contour lines).

### Maps Are Selective

**Every map** = mapmaker's choices: what to include, colors, projection, scale, borders → maps can persuade or mislead.
**Map elements**: title, legend/key, scale, north arrow, source, date → check all before reading a stimulus.

⚠ A thematic map shows WHERE, not WHY. Pattern ≠ cause; you supply the process that explains it.

✓ Map stimulus: name map type → describe pattern (clustered/dispersed + where) → explain w/ a process.

## 1.1 Projections & Map Scale

### Map Projections

**Projection**: 3D globe → flat map. ALL projections distort ≥1 of **shape, area, distance, direction**; choose by purpose.

| Projection | Keeps | Distorts |
|---|---|---|
| Mercator | Shape, direction | Area near poles |
| Gall-Peters | Area | Shape (stretch) |
| Goode | Area, shape | Cut-up oceans |
| Robinson | Compromise | All, a little |
| Azimuthal | Dir. from center | Edges |

**Mercator**: conformal; straight line = constant compass bearing → sea navigation. Greenland looks ≈ Africa (really ~1/14 its size); high latitudes greatly inflated.
**Equal-area** (Gall-Peters, Goode): true relative size → fair for comparing country data (density, land use).
**Azimuthal (polar)**: centered on a point → true direction from center; used for polar air routes, UN emblem.
**Conic**: cone-shaped; good for mid-latitude areas (e.g., US maps); distortion ↑ away from center lines.

### Map Scale (Cartographic)

**Map scale**: map distance : Earth distance. 3 forms: **fraction** (1:24,000), **written** (1 in = 1 mi), **graphic** (bar).

| Large scale | Small scale |
|---|---|
| 1:24,000 | 1:50,000,000 |
| Small area shown | Large area shown |
| High detail | Low detail |
| City street map | World map |

**Graphic (bar) scale** stays true if the map is resized, copied or zoomed in; fraction & written scales don't.

⚠ Large scale = ZOOMED IN (small area, big fraction, e.g., 1:5,000). The most-flipped term in Unit 1.

✓ Pick projection by purpose: navigation → Mercator; compare sizes or country data → equal-area.

## 1.2 Geographic Data

### How Data Is Collected

**Quantitative** (numbers): census, surveys, satellite imagery, GPS points → patterns, rates, change over time.
**Qualitative** (descriptions): field observation, interviews, travel narratives, media reports, policy docs, photos, landscape analysis → meaning, perception, "why."

| Source | Type | Best for |
|---|---|---|
| Census | Quant. | Pop., housing |
| Survey | Quant./qual. | Habits, views |
| Field obs. | Qual. | Local land use |
| Interview | Qual. | Lived experience |
| Satellite img. | Quant. | Land cover Δ |
| Policy doc. | Qual. | Gov't intent |

### Geospatial Technologies

**GIS** (Geographic Information Systems): stores & layers spatial data → overlay maps to find relationships (flood zones + housing; income + clinics; crime + lighting).
**GPS** (Global Positioning System): satellites fix absolute location (lat/long) → navigation, tracking, field mapping.
**Remote sensing**: data gathered from a distance (satellites, planes, drones) → tracks deforestation, sprawl, crop health, disaster damage & ice loss over many years.
**Online mapping**: Google Earth, crowd-sourced maps (OpenStreetMap), apps → anyone can make & share maps.

### Data Limits

**Bias & gaps**: undercounts (homeless, rural, undocumented), old data (census every 10 yrs), small samples, funders.

⚠ GPS = finds location. GIS = analyzes layered data. Remote sensing = collects images. Don't swap them.

✓ FRQ "limitation of the data": name who/what is missing, the scale, or the date the data was collected.

## 1.3 The Power of Geographic Data

### Who Uses Geographic Data

| User | Example use | Data |
|---|---|---|
| Individuals | Route, home pick | GPS, apps |
| Businesses | Store site choice | GIS, census |
| Gov'ts | Redistricting | Census |
| NGOs | Aid targeting | Remote sensing |
| Planners | Zoning, transit | GIS layers |

**Governments**: US census → apportions House seats, redraws districts, allocates federal $ to places.
**Businesses**: market analysis (where customers live, income, traffic counts) → site new stores, plan delivery routes.
**Organizations/NGOs**: map disease outbreaks, refugee camps, food insecurity → send aid where need is greatest.
**Individuals**: navigation apps, ride-share, real-estate & school searches, fitness & package tracking, weather.

### Analyzing Relationships

**Spatial analysis**: compare data among places → reveal patterns. John Snow mapped 1854 London cholera deaths → traced them to the Broad St. water pump.
**Map overlay**: combine layers (income + grocery stores) → find food deserts, environmental injustice.

### Power & Ethics

**Data = power**: who collects & maps data shapes decisions; maps can include or exclude (1930s HOLC **redlining** maps).
**Privacy**: phone location tracking, data sales to advertisers & surveillance cameras raise ethical concerns.
**Data at all scales**: same tools used by a family, a firm, a city, a nation, the UN → decisions at each scale.

⚠ Data informs decisions; it doesn't make them. Tie data → a specific decision → the scale it happens at.

✓ Strong FRQ example: census data → reapportionment → states gain or lose House seats & electoral votes.

## 1.4 Spatial Concepts

### Location & Place

**Absolute location**: exact spot on Earth's grid (lat/long), e.g., 40.7°N, 74.0°W = NYC; it never changes over time.
**Relative location**: position vs. other places ("NE of Philadelphia"). Shifts w/ new connections.
**Site**: physical traits of a place (landforms, water, climate).
**Situation**: place's location vs. other places & networks.
**Place**: point w/ unique human & physical traits → **sense of place** (meaning people attach to it). **Space**: area between places; how things are arranged within it.
**Toponym**: place name; reveals history & power (St. Petersburg → Leningrad → St. Petersburg).

### Distance & Interaction

**Distance decay**: interaction ↓ as distance ↑ (fewer visits, calls, trade & migrants exchanged w/ far places).
**Time-space compression**: transport & comms tech (jets, internet) shrink relative distance → weakens distance decay.
**Flows**: movement of people, goods, money & info between places (migration, trade, remittances, data).
**Connectivity/accessibility**: how linked a place is to others; hubs gain flows, isolated places lose them.

### Distribution

| Pattern | Arrangement | Example |
|---|---|---|
| Clustered | Close together | Shops at exits |
| Dispersed | Spread out | Farmsteads |
| Linear | Along a line | Towns on a rail |

**Density**: # per unit area. **Concentration**: how spread out (clustered vs. dispersed). The 2 can differ.

⚠ Time-space compression does NOT shrink absolute distance; only relative distance (time/cost).

✓ Explaining a flow: name the link (tech, trade route) → say how it weakens or alters distance decay there.

## 1.5 Human–Environment Interaction

### Nature & Society

**Human–environment interaction**: people use, adapt to, & modify env.; env. limits & shapes human activity.
**Natural resources**: renewable (solar, wind, timber) vs. nonrenewable (oil, coal, minerals). **Land use**: how land is used (farm, urban, industry, recreation).
**Sustainability**: meet present needs w/o harming future generations' ability to meet their own needs.
**Env. impacts vary by scale**: local (polluted river), regional (acid rain), global (climate change, ozone).

### Two Theories

| Env. determinism | Possibilism |
|---|---|
| Env. dictates culture | Env. limits; people adapt |
| Humans passive | Humans active (tech) |
| Rejected; tied to racism | Accepted in modern geo. |

**Environmental determinism**: physical env. (climate) causes cultural traits. Justified colonialism → rejected.
**Possibilism**: env. sets limits & options; culture & tech decide outcome (Dutch polders, Andean terraces, desert irrigation).
**Key example**: Dutch polders = possibilism in action.
**Why it matters**: same desert → diff. outcomes (Las Vegas, Dubai vs. herding) b/c of culture, tech, capital.

### Human Impacts

**Modifications**: dams, terraces, irrigation, deforestation, urban heat islands. Harm: Aral Sea shrank from cotton irrigation. Help: reforestation, wetland restoration.
**Cultural ecology**: study of how a culture & its local env. interact & shape each other over long periods.

⚠ Never argue env. determinism as correct on an FRQ — use possibilism + human choice/tech.

✓ Show both directions: env. limits humans AND humans change env. (possibilism + impacts).

## 1.6 Scales of Analysis

### Scale of Analysis

**Scale of analysis**: level at which data is grouped & studied: **global, regional, national, local** (state, city, neighborhood).
**Key idea**: patterns & processes look diff. at diff. scales → changing scale reveals or hides variation.

| Scale | Unit | Shows |
|---|---|---|
| Global | Countries | Core vs. periph. |
| Regional | World regions | Bloc-wide trends |
| National | States/provs. | Internal gaps |
| Local | Counties, cities | Fine detail |

**Example**: country's avg. income looks high (national) but county data shows poor rural pockets (local).
**Example**: world pop. growth slowing (global) but fast in Niger (national); US pop. shifting to Sun Belt (regional).
**Example**: % urban is high in Brazil (national scale) but low in parts of the Amazon (local, state scale).

### Map Scale ≠ Scale of Analysis

**Map (cartographic) scale**: ratio map : Earth distance. **Scale of analysis**: level of data grouping. Different ideas!
**Tip**: large map scale often pairs w/ local analysis; small map scale w/ global. Still not the same concept.

### Linking Scales

**Multi-scale thinking**: local event ← global process (Ohio factory closes ← global outsourcing).
**Aggregation trap**: averages over big units hide inequality; finer units → more detail but more noise & privacy limits.
**Scale & policy**: issue framed locally (zoning) vs. nationally (laws) vs. globally (treaties) → diff. solutions.

⚠ "Scale" on an FRQ usually = scale of ANALYSIS, not map scale. Read the prompt carefully first.

✓ "Explain how scale affects interpretation": contrast what data shows at 2 scales + why it differs.

## 1.7 Regional Analysis

### Types of Regions

| Type | Defined by | Example |
|---|---|---|
| Formal | Shared trait | Corn Belt |
| Functional | Node + flows | Metro commute |
| Perceptual | People's ideas | "The South" |

**Formal (uniform)**: ≥1 measurable trait shared throughout (language, climate, crop), e.g., French-speaking Quebec.
**Functional (nodal)**: centered on a node, tied by flows (commuting, TV market, airline hub). Pull ↓ w/ distance.
**Perceptual (vernacular)**: mental image; borders vary by person (Midwest, Dixie, "Middle East").
**Same place, 3 regions**: Chicago is in Corn Belt Illinois (formal), its commuter metro (functional) & the "Midwest" (perceptual), all at the very same time.

### Boundaries & Debates

**Regional boundaries**: transitional (fade gradually), contested, overlapping. A place sits in many regions at once.
**Any scale**: regions exist from neighborhood → state → multi-country (EU) → global (Global North/South).
**Contested regions**: is Mexico in North America or Latin America? Depends on criterion (physical vs. cultural).
**Regionalization**: geographers group places by chosen criteria → regions are tools, not natural facts.

### Unit 1 on the Exam

**FRQ task verbs**: identify, describe, explain, compare. 3 FRQs: Q1 no stimulus, Q2 1 stimulus, Q3 2 stimuli; 7 pts each.
**Unit 1 skills**: read maps & data, compare scales, define regions → used on stimulus Qs in every unit.

⚠ Functional region = defined by connections/flows, NOT a shared trait. Classic MCQ trap; Q: node?

✓ Unit 1 terms (scale, region, distance decay) appear in EVERY unit's FRQs. Use them by name.