

Visual Hierarchy with Figure-Ground Layout

Typography

Label Placement

FIT3179 Data Visualisation

Lecture Content

- Visual hierarchy with figure-ground using variation in type and colour.
 - Layout: arrangement of elements
 - Typography: Selection of typefaces (serif/sans serif, weight, kerning)
 - Type faces for showing quality and quantity
 - Label placement for point marks
-

Learning outcomes

- You can apply figure-ground to create a hierarchy between features to create visualisations that are easier to read, more captivating, easier to memorise, and look nicer.
 - You can arrange elements on your canvas to guide the user.
 - You are familiar with typographic vocabulary, concepts and principles.
 - You can select typefaces and vary type to express quantities and qualities.
 - You can place labels for points with a clear visual association
-

Visual Hierarchy with Figure-Ground

Visual Hierarchy

Graphical representation in which elements are ranked according to their importance.

Important elements are graphically

emphasized

and less important elements are

de-emphasized.



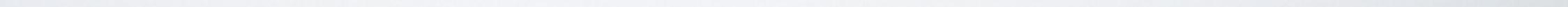
Figure-Ground

Figure-Ground

Visual depth for accentuating one object over another, based on the perception that one object stands in front of another and appears to be closer to the reader.

Figures: important objects, become objects of attention and standout from the background

Grounds: things less important, the background.



Figure

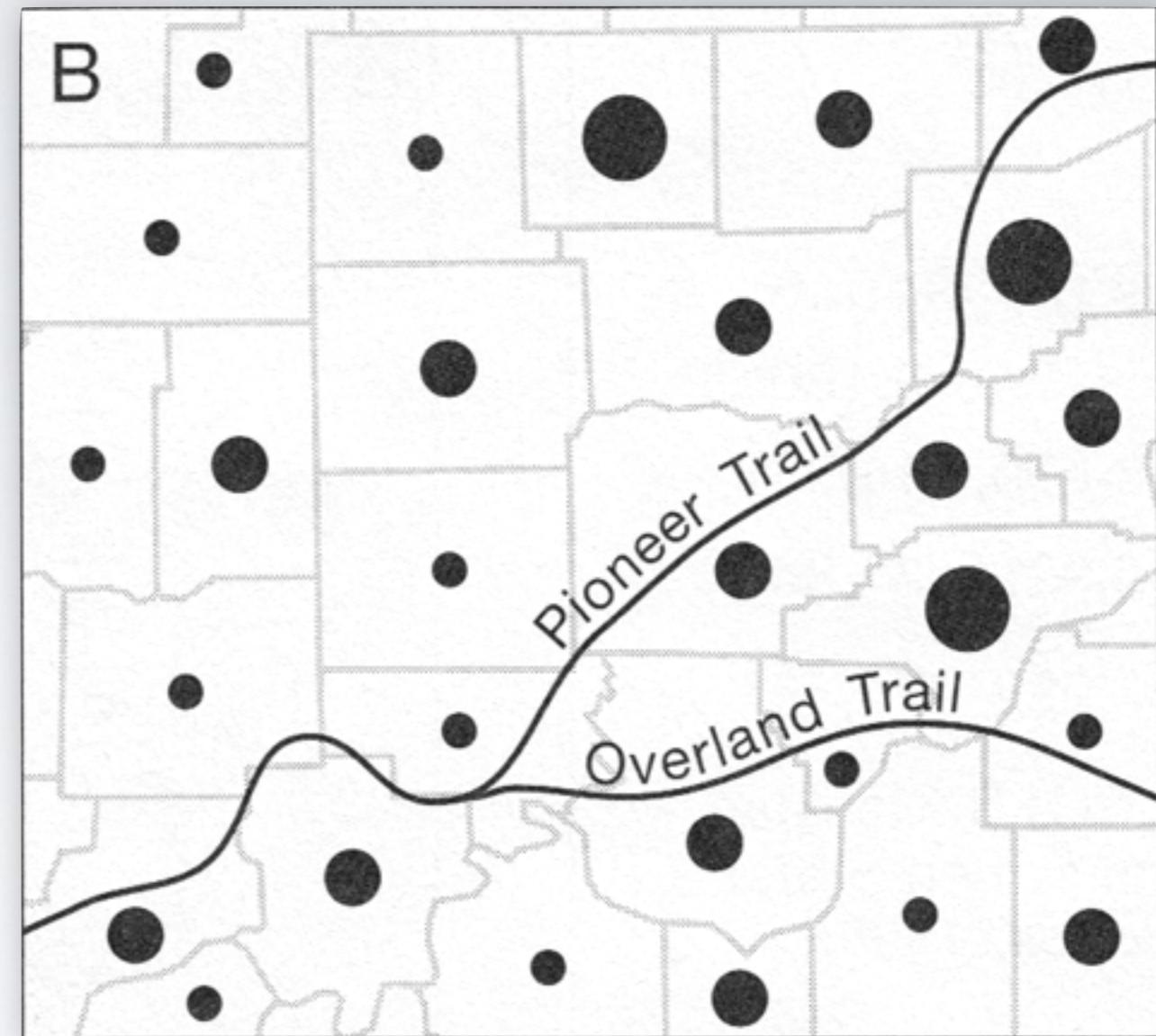
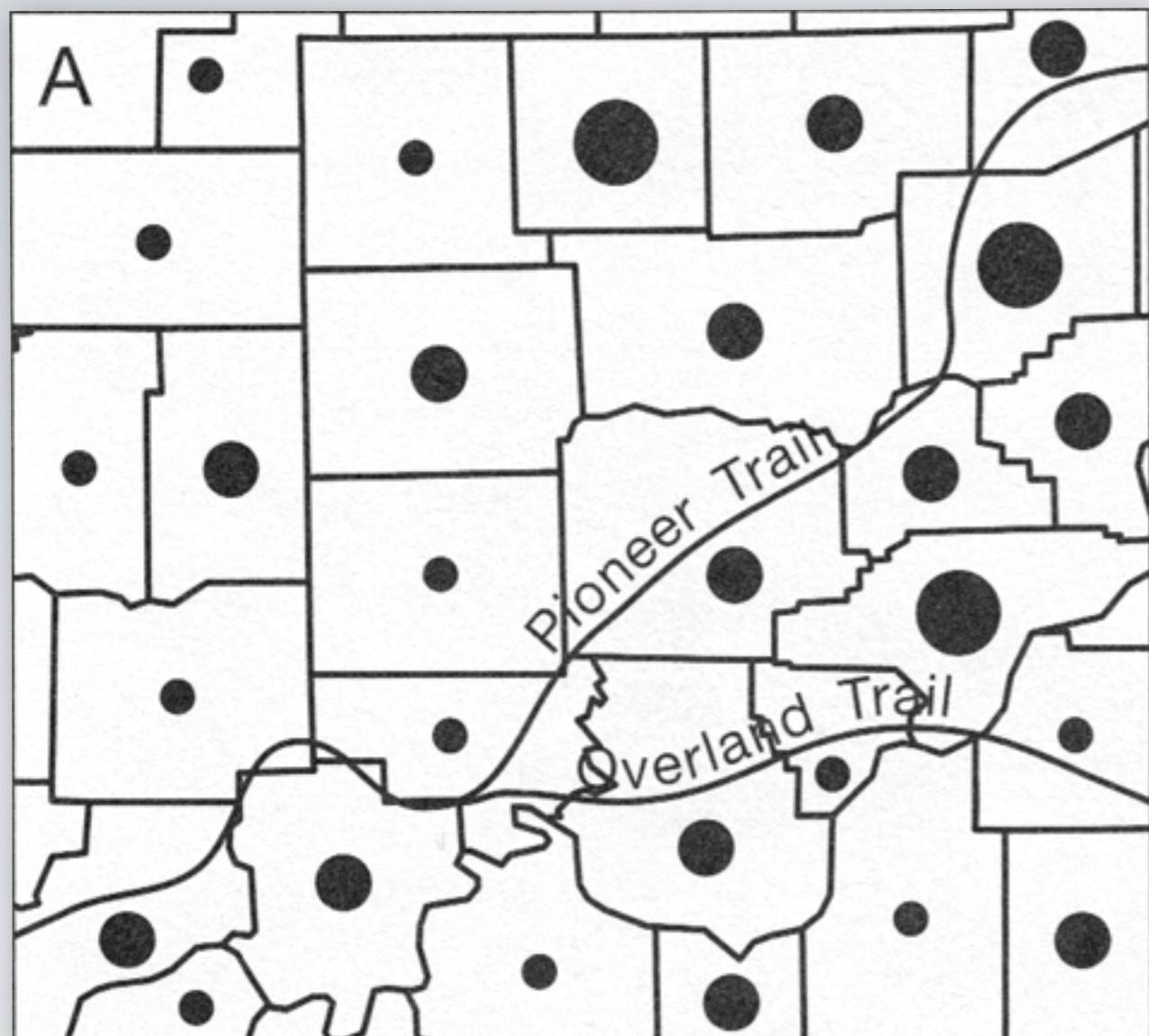
- Jump out!
- Most important elements
- Distinct shape, saturated colour
- Large or bold type
- Text is often a figure symbol (but not always)



Ground

- Fall back...
- Less important meaning
- Bright and desaturated colour
- Small or thin type

Figure: Dark circles, lines and labels.



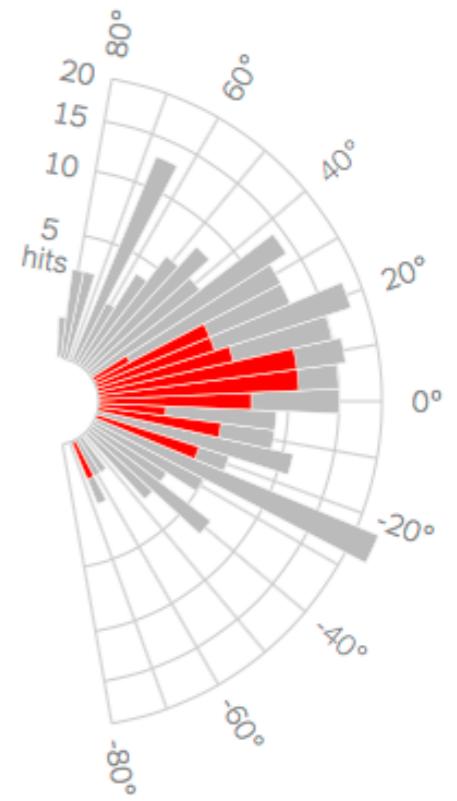
Ground: Bright grey boundaries.

Monthly spend



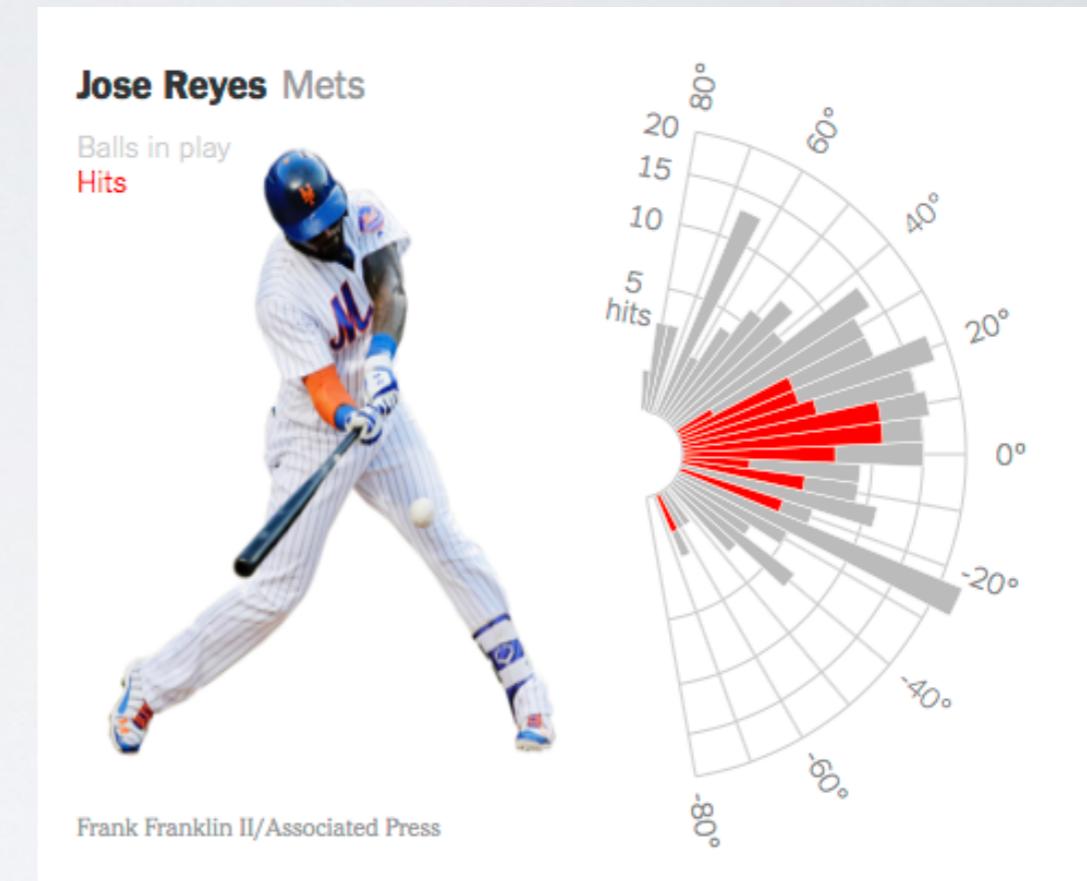
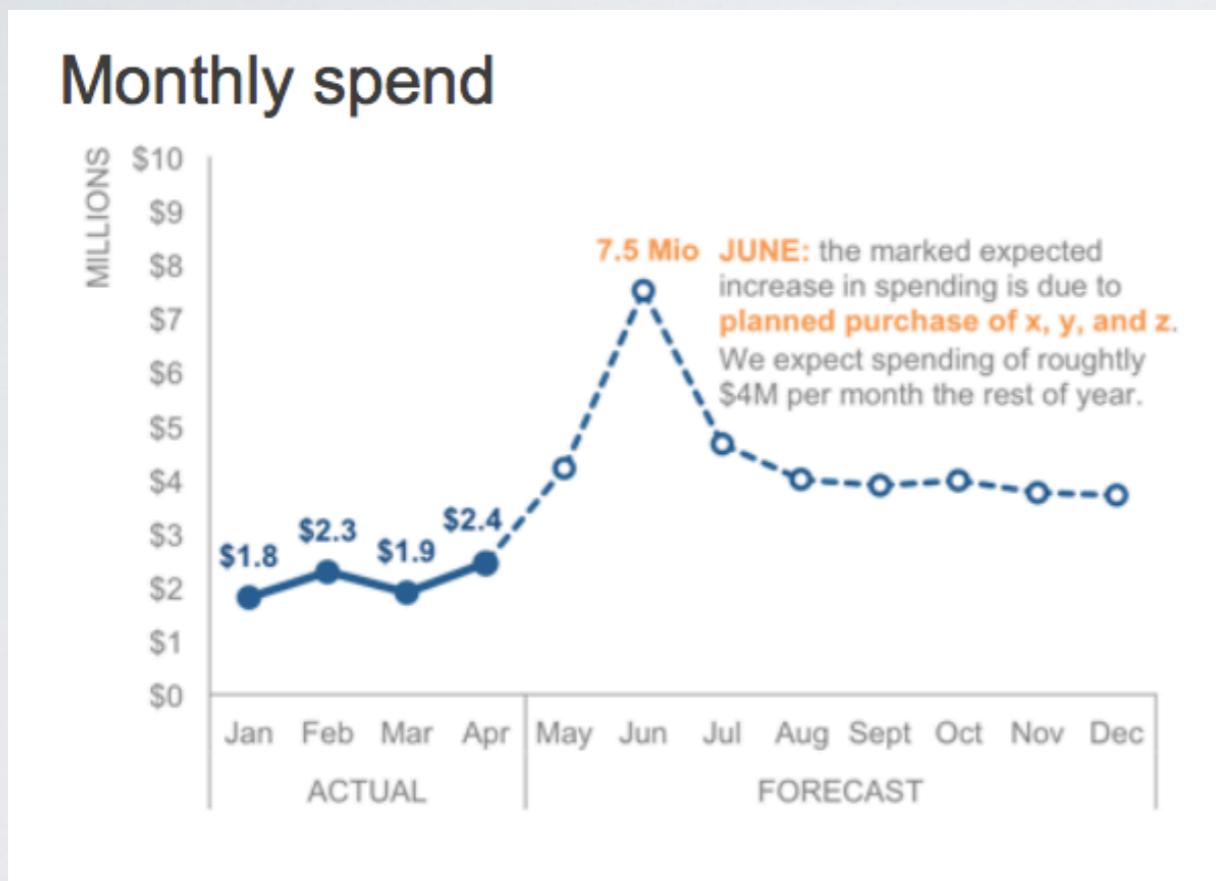
Jose Reyes Mets

Balls in play
Hits



Frank Franklin II/Associated Press

Figure:
Typeface with bigger weight, saturated/black colour, bold lines/red bars.



Ground:
Smaller typeface, grey colour.

The Storm's Impact in Puerto Rico



Around San Juan

About 600 people took refuge in **Roberto Clemente Coliseum** in San Juan, the capital and the largest city in Puerto Rico. The storm ripped off parts of the roof, and it forced people to the second and third floors of the stadium. In nearby **Cataño**, the town's mayor told a radio station that 80 percent of the zinc-roofed homes in the Juana Matos neighborhood were destroyed.

Along the Río de la Plata

Five spillways of **La Plata dam** were opened in advance of the storm in an attempt to avoid overflow and flooding. Still, La Plata river swelled to more than 11 feet above flood stage near **Toa Alta** and **Comerío** on Wednesday morning, and flash flood warnings were issued in **Naranjito**, **Dorado** and **Toa Baja**, other municipalities near the river.

In the Southeast

The storm made landfall at **Yabucoa**, where more than 34,000 people live, shortly after 6 a.m. Eastern. In **Guayama**, Reuters reported that storm waters turned streets into fast-running rivers carrying wind-downed debris.

Figure: Saturated colours and black labels for hurricane path and impacted towns.



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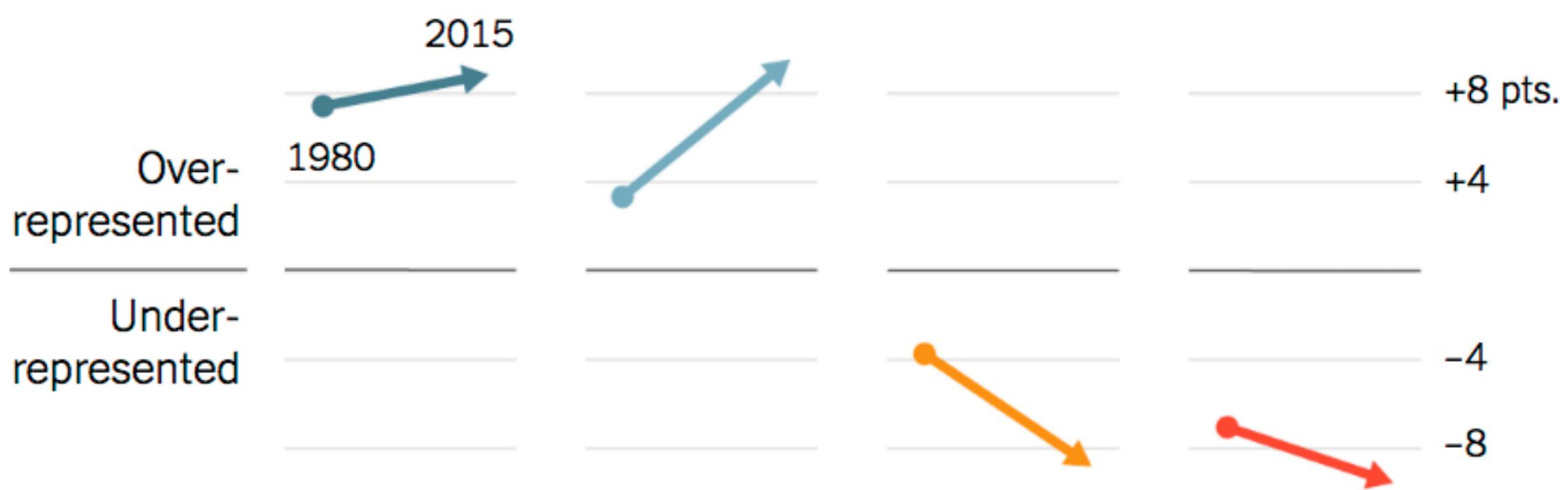
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Ground: Bright grey map, desaturated roads & rivers, labels in grey and light weight.



Whites

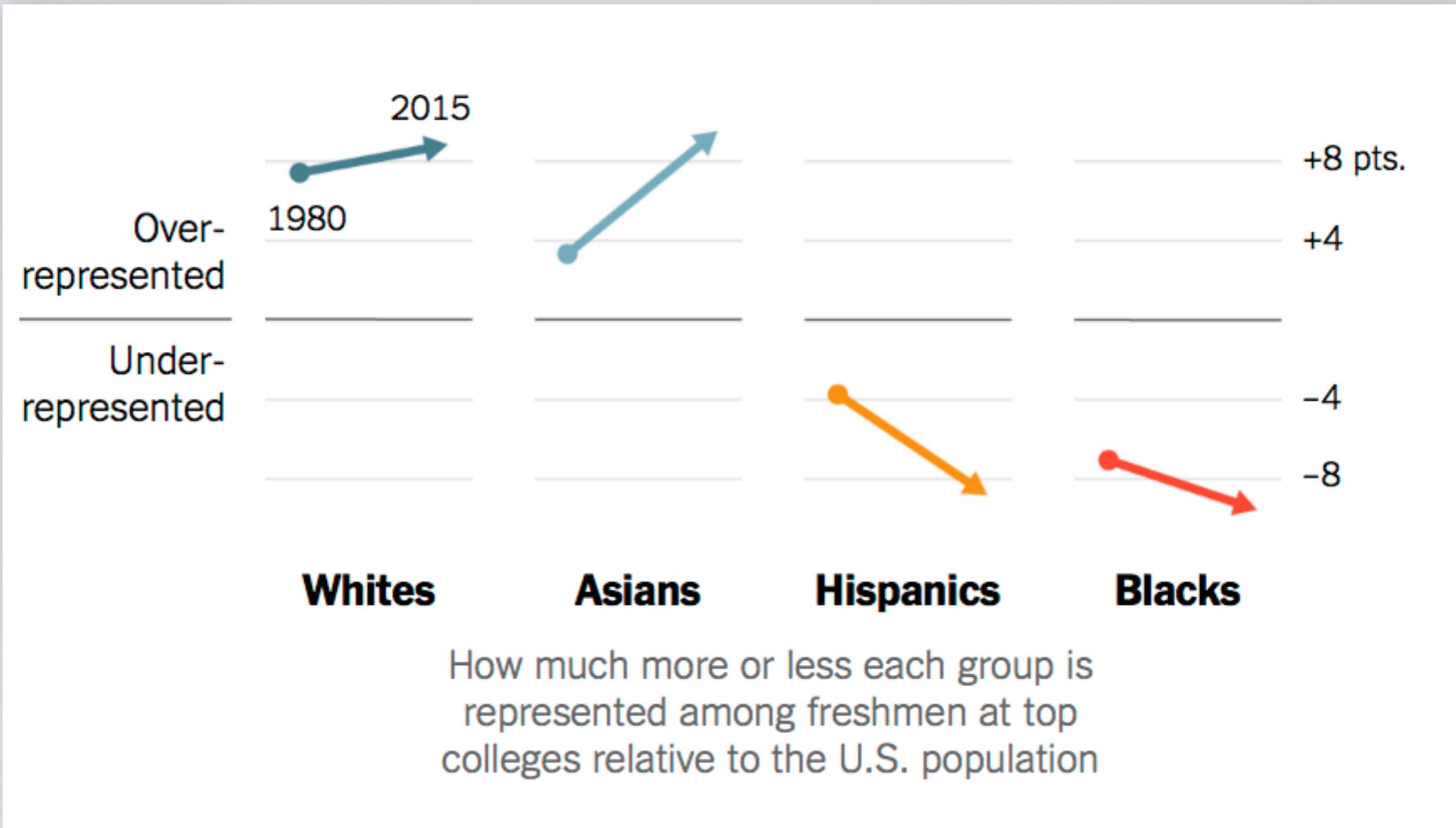
Asians

Hispanics

Blacks

How much more or less each group is represented among freshmen at top colleges relative to the U.S. population

Figure: Arrows with saturated colour, bold and large type.



Ground: Bright grey reference lines, small labels, grey text.

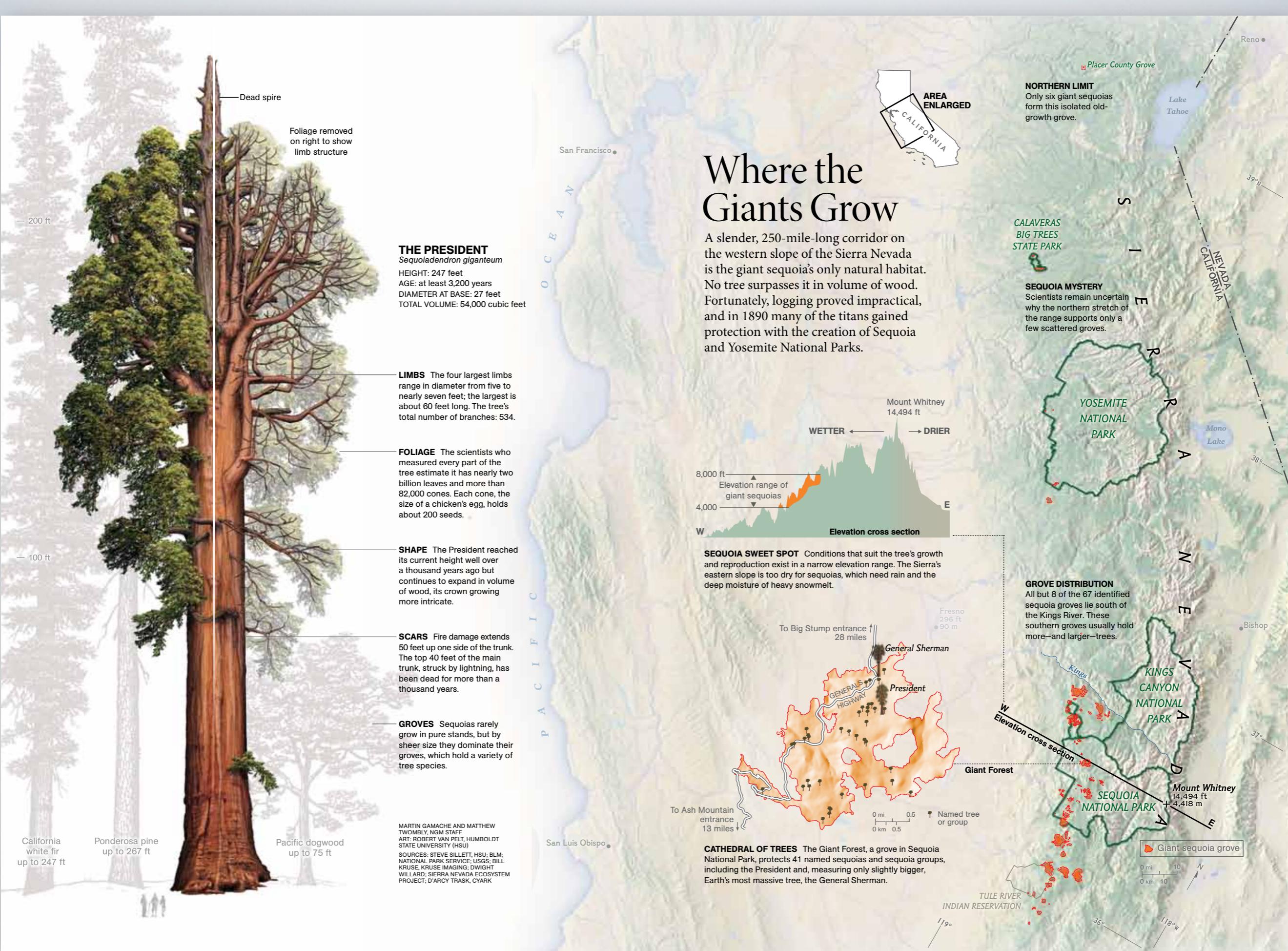
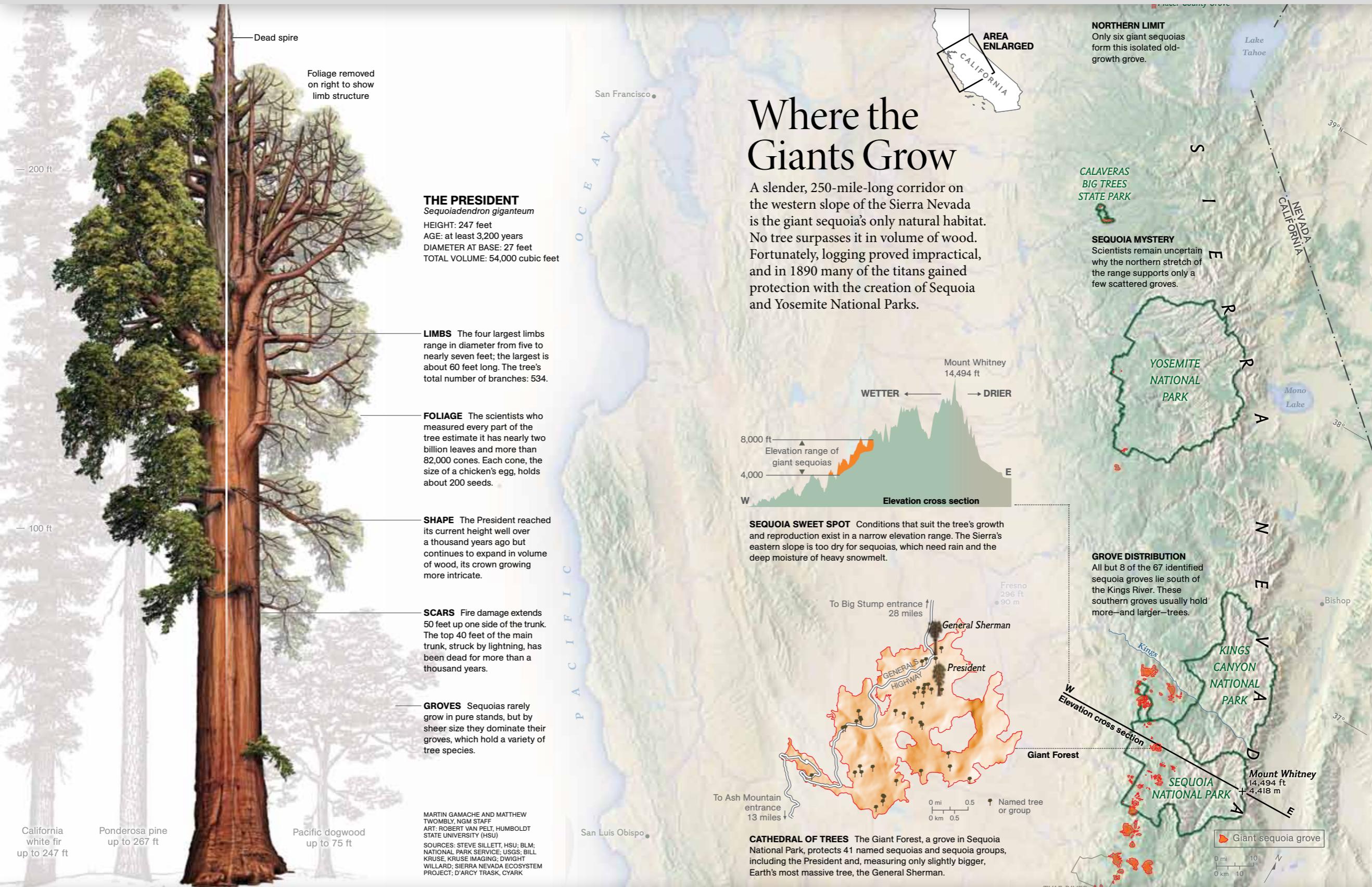


Figure: High-contrast and saturated images and diagrams.



Ground: Low-contrast and desaturated images (trees) and map (where irrelevant).

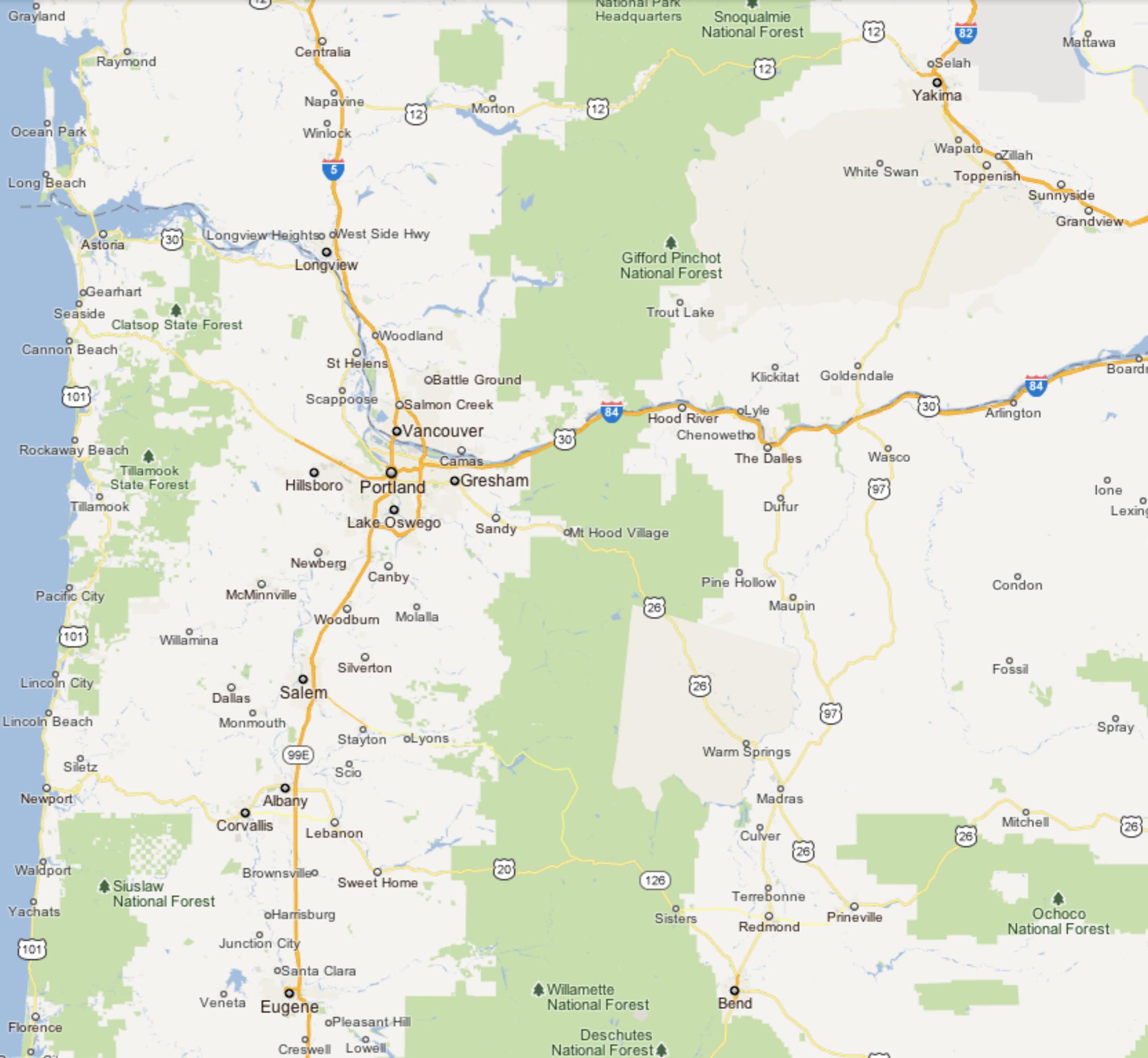
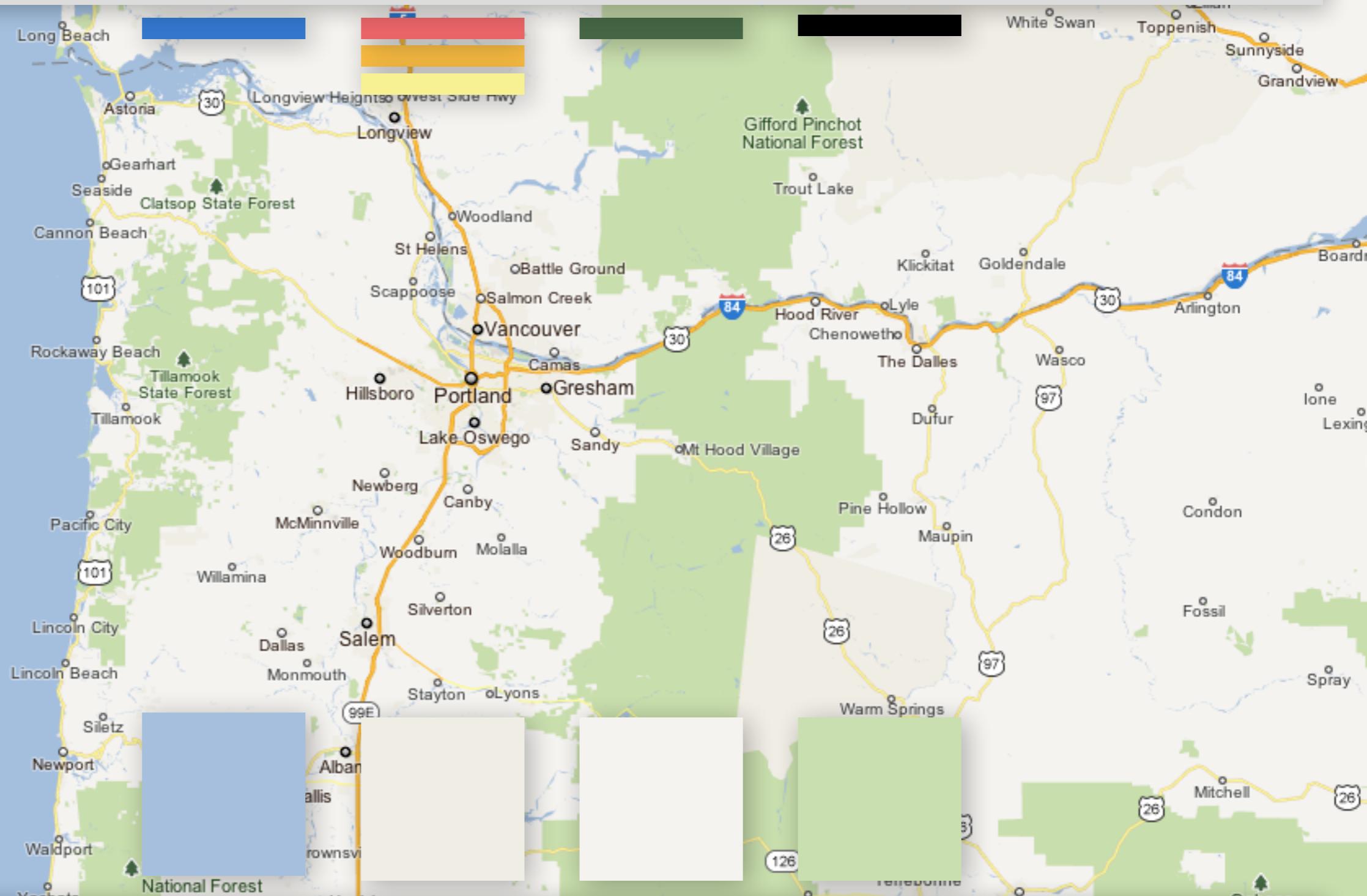


Figure:

Dark and/or saturated colours for points, lines and labels in the foreground.



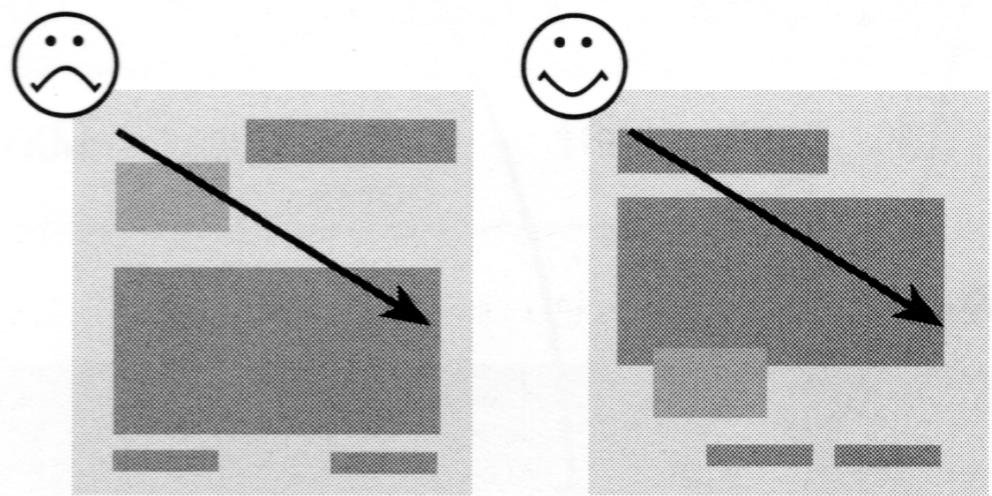
Ground:

Bright and desaturated colours for areas in the background.

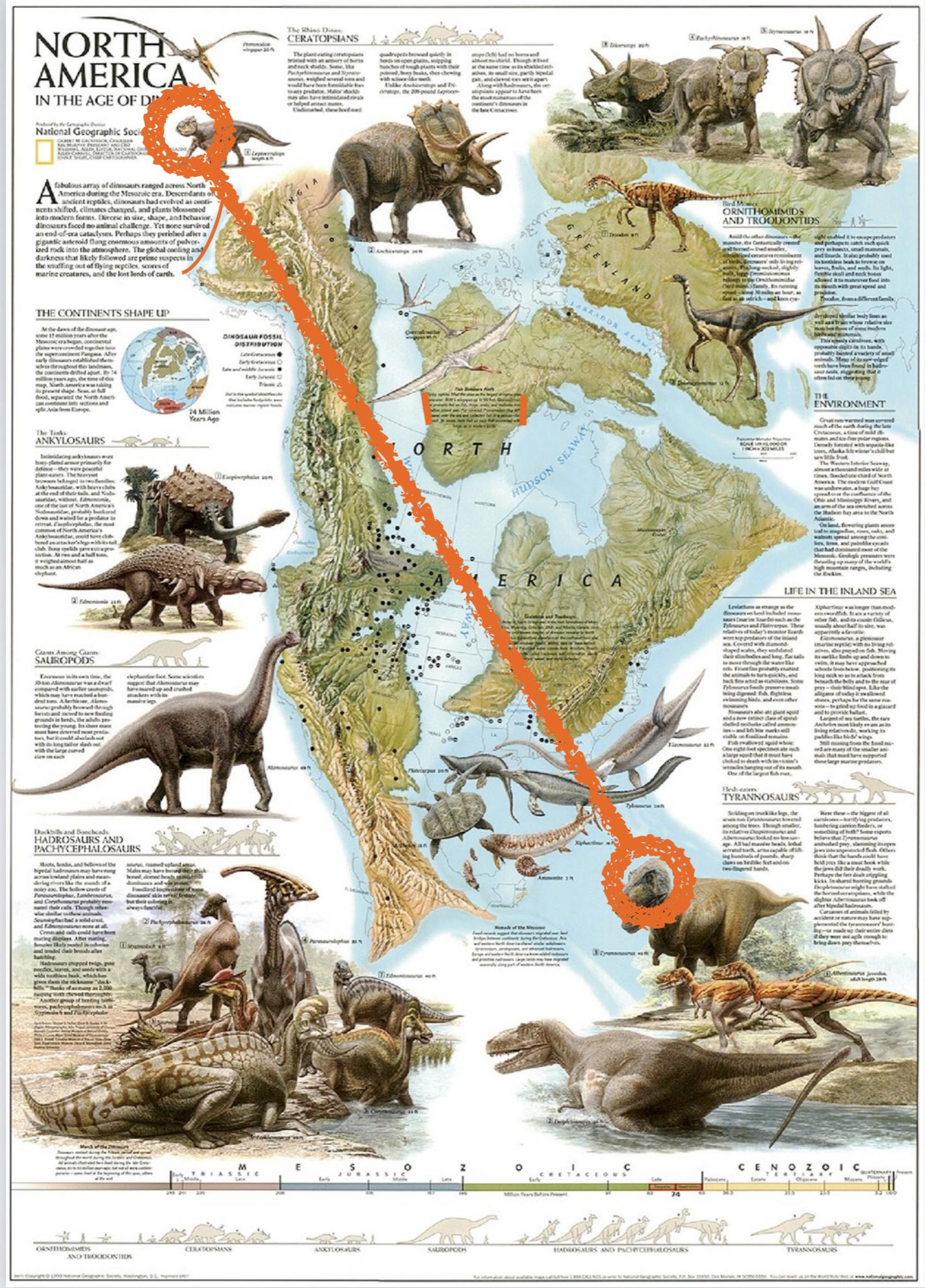
Layout

Viewing Path

Try assuming that reading a map follows a **path**, like reading a page in a book, from the upper left to the lower right. Arrange map pieces so that those that should be seen first are in the upper left of the map – unless, of course, your language reads from right to left.

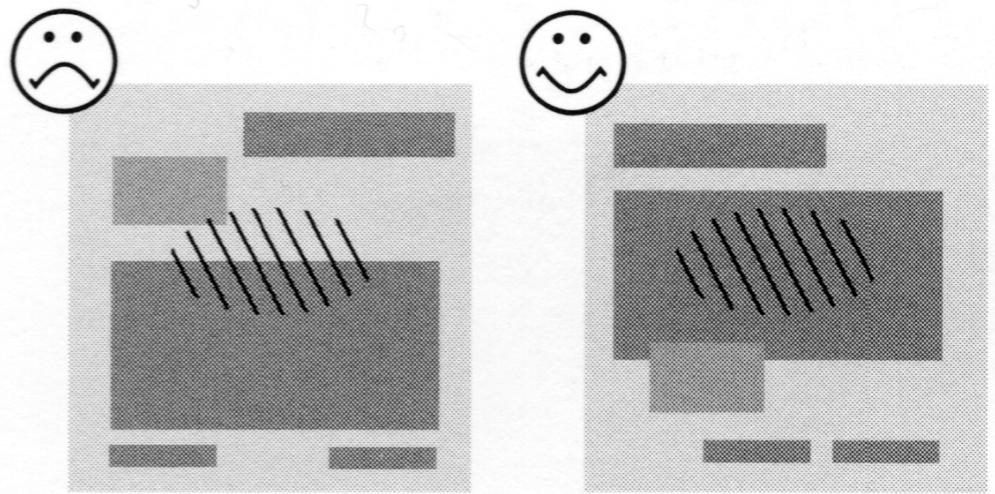


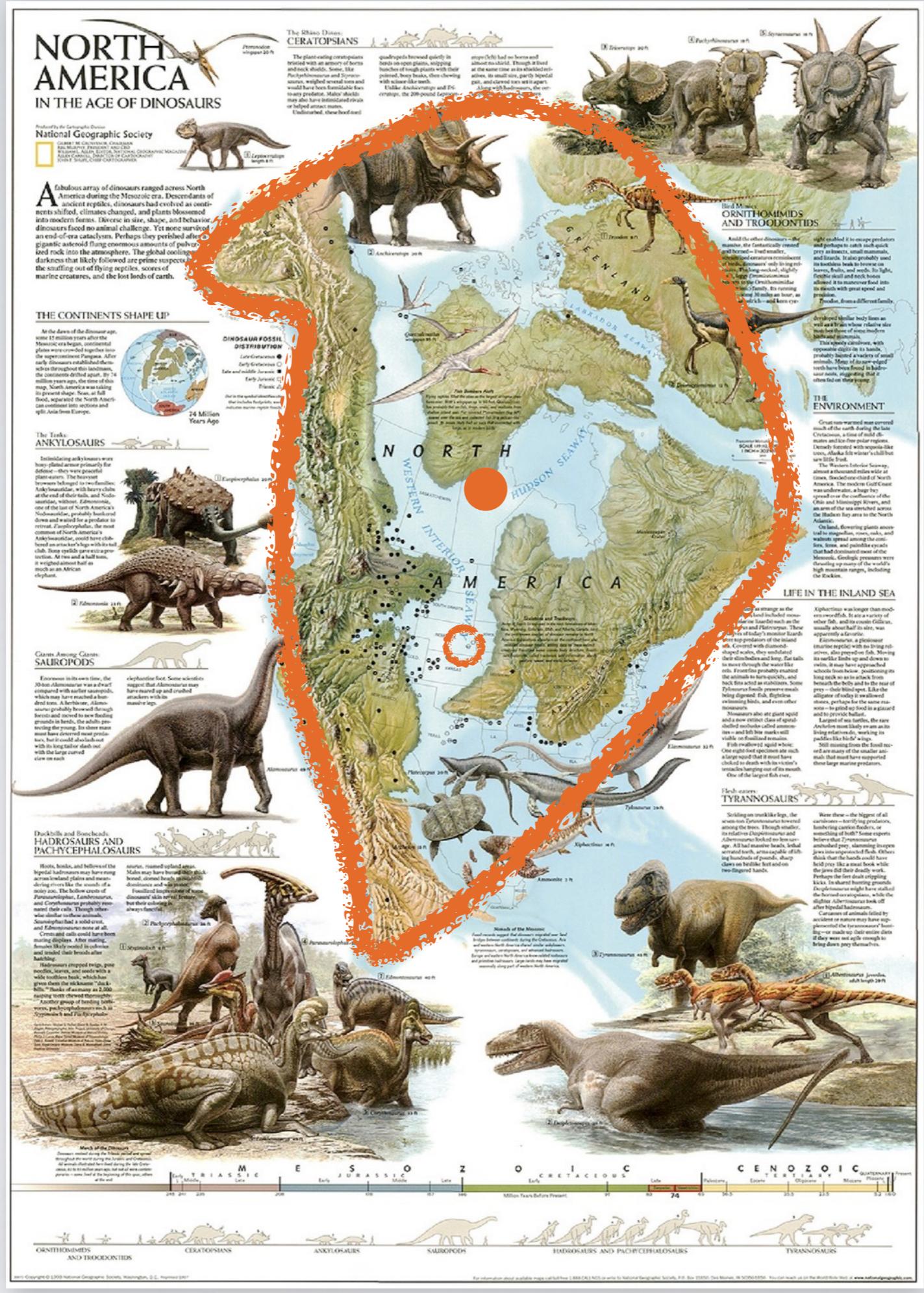




Visual Center

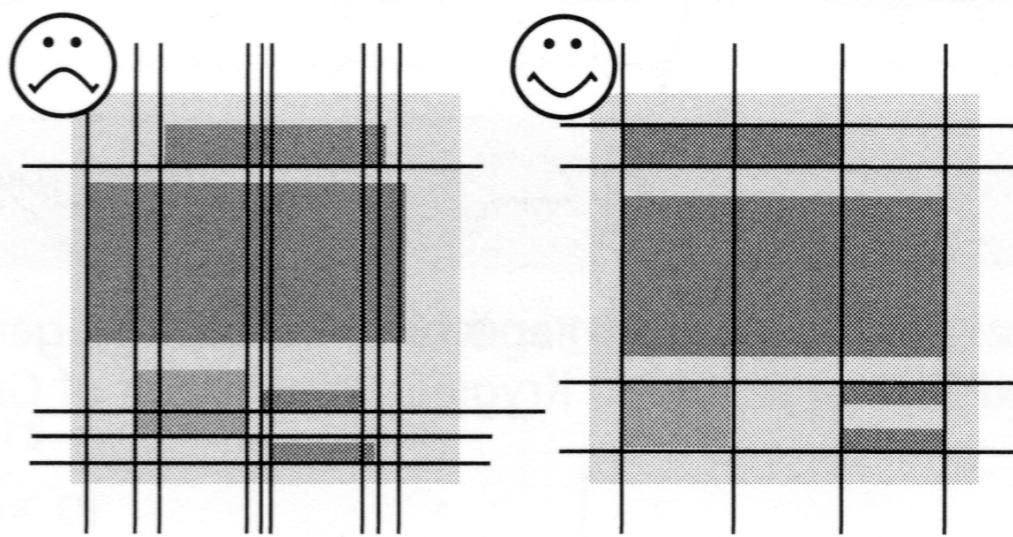
The **visual center** of a map is slightly above the actual center. Centering implies importance. Try positioning map pieces so that the most important are near the visual center of the map. The map reader may focus near this center and assume the elements there are most important.





Sight Lines

Sight-lines are invisible horizontal or vertical lines that touch the top, bottom, or sides of map elements. Minimizing the number of sight-lines reduces disjointedness and stabilizes and enhances map layout. This allows your map's readers to focus on the map's subject.





Inside
‘She was
the living
definition
of soul’
Dorian Lynskey
Pages 4–5

‘Her music
was the
soundtrack
to the
resistance’
Daphne A Brooks
C/P Film Music

The Guardian

**Aretha
Franklin**
1942–2018

Ex-CIA boss says Trump denial of Russia collusion is ‘hogwash’

Ben Jacobs
Washington

Donald Trump was dragged into a fresh crisis yesterday as he launched another attack on his security establishment and a former director of the CIA dismissed his many denials of collusion with Russia during the 2016 election as “hogwash”.

In a clear escalation of the president’s battle with those who have

held the most trypted positions in the FBI and CIA, John Brennan – who led the CIA from 2013 to 2017 – also accused the president of revoking his security clearance as part of a “desperate” attempt to interfere with the special counsel Robert Mueller’s investigation.

A statement from Trump said he had taken the step due to Brennan’s “erratic conduct and behaviour”. But the president has also conceded a link between his move against

Brennan and the Russia inquiry. The accusations follow months of fierce criticism of Trump by Brennan, who was CIA director during the Obama administration. The official immediately responded to his criticisms.

In an article for the New York Times published yesterday, Brennan described the revocation of his clearance as politically motivated and “an attempt to scare into silence others who might dare to challenge him”. “Mr Trump’s claim of no collusion

with Russians, in private, respects,” he wrote, adding: “It is critically important that the special counsel, Robert Mueller, and his team of investigators be allowed to complete their work without interference – from Mr Trump or anyone else – so that all Americans can get the answers they so rightly deserve.”

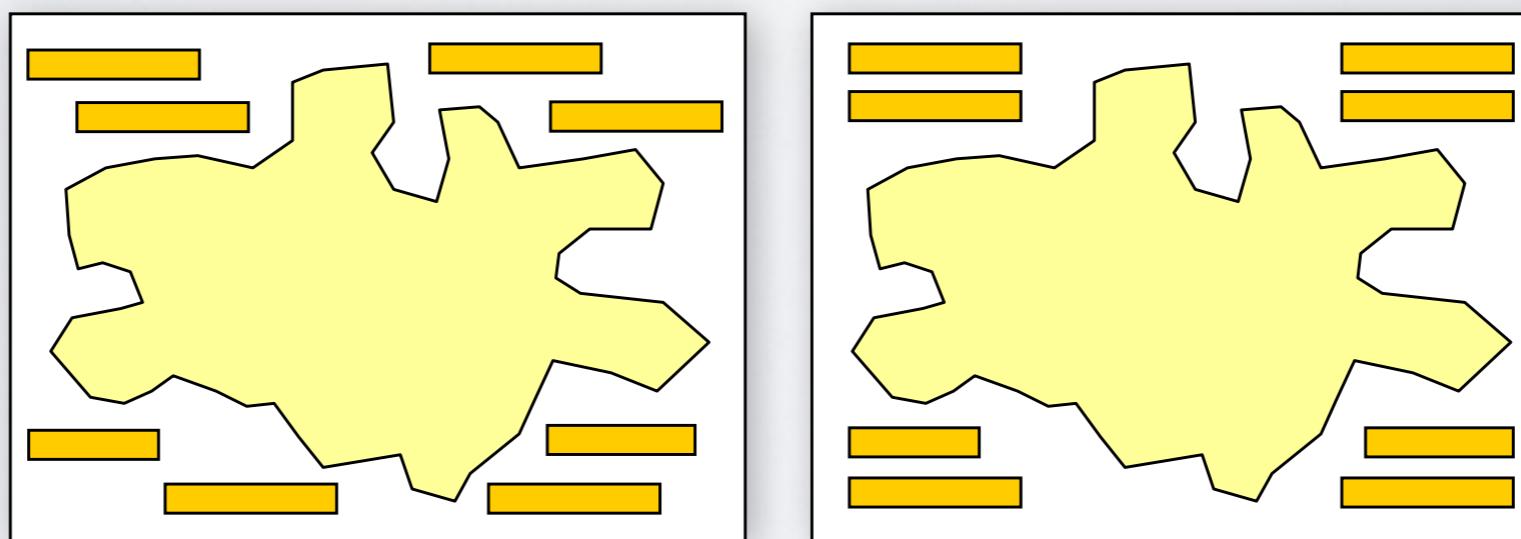
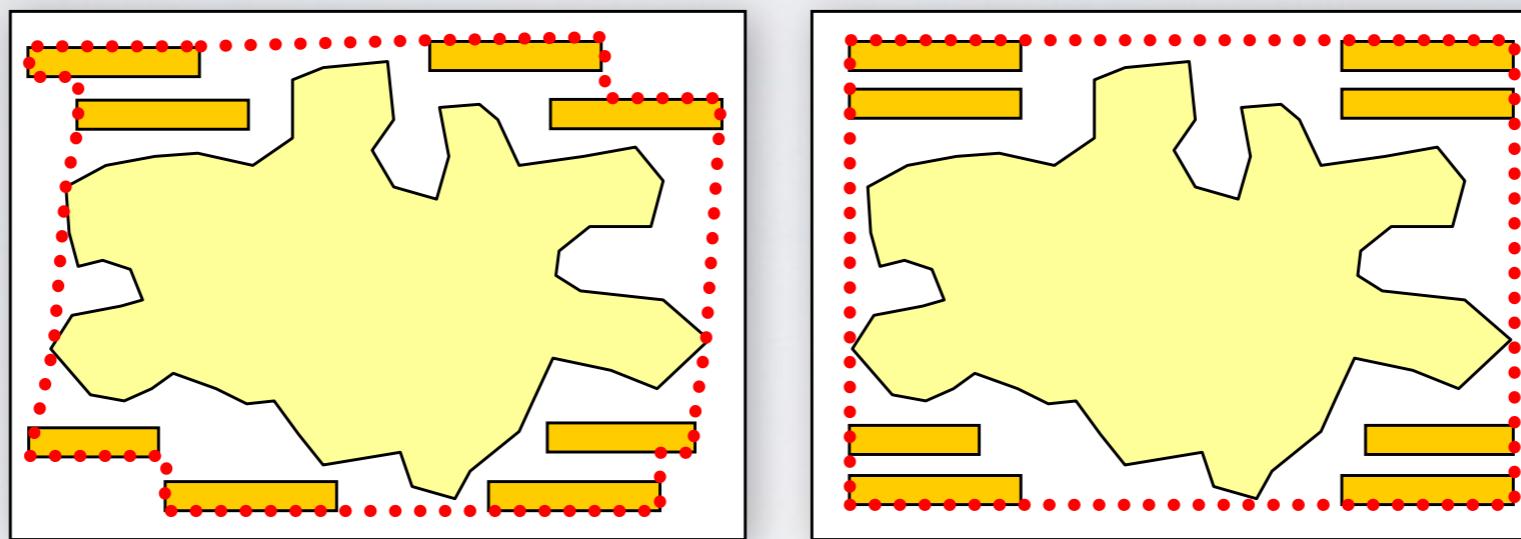
Former CIA directors and other top national security officials are typically allowed to keep their security clearances

Gary Younge
The speech that Jeremy Corbyn needs to make

Journal Page 14

Chris Clarke
<https://twitter.com/chrisclarkecc/status/1030427288096186368>

Alignment with Invisible Frame



ICE CALVING

ANTARCTICA

Calving occurs when a portion of ice breaks away from the main mass of a glacier. Calving is the process that forms icebergs.

Calving events can be the size of a softball to the size of Connecticut, and maybe even bigger. In the last 30 years, monitoring of calving events has gotten much better, with scientists using satellites to track and even measure the newly formed icebergs.



ICE CALVING

ANTARCTICA

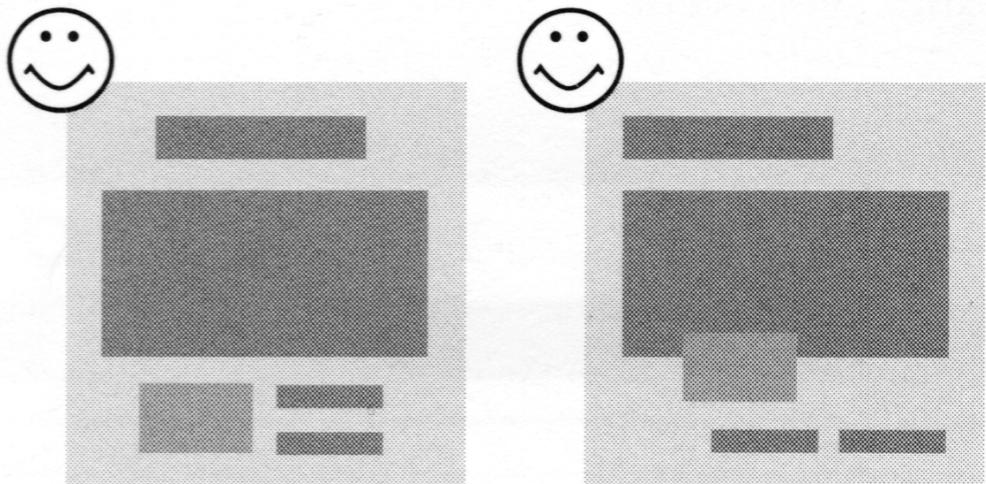
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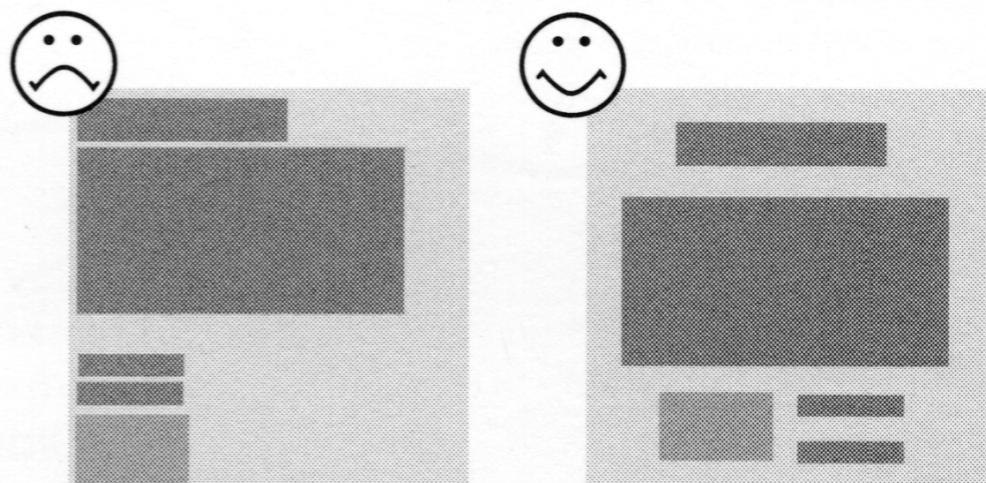


Symmetry and Balance

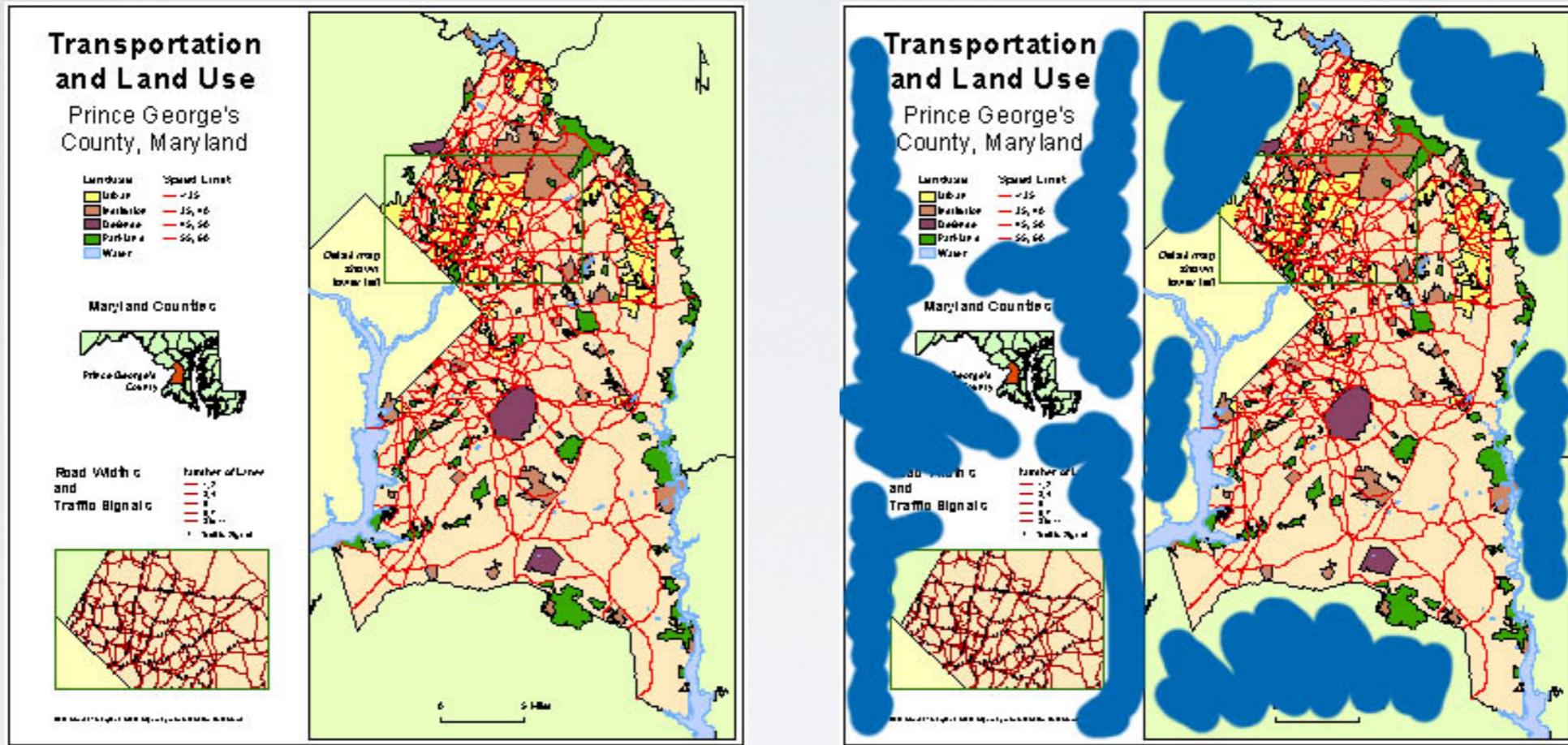
Symmetry can be thought of as balance around a central vertical axis. Symmetrical balance (left) feels traditional, conservative, and cautious. Asymmetry (right) depends on off-center weights and balances. It typically feels modern, progressive, complex, and more creative.



Balance can be assessed when all your map pieces are in place. Map pieces vary in weight: some seem heavier, others lighter. Does your arrangement seem off-balance? Unless you want to suggest a lack of balance to your readers, rearrange your map pieces for better balance.

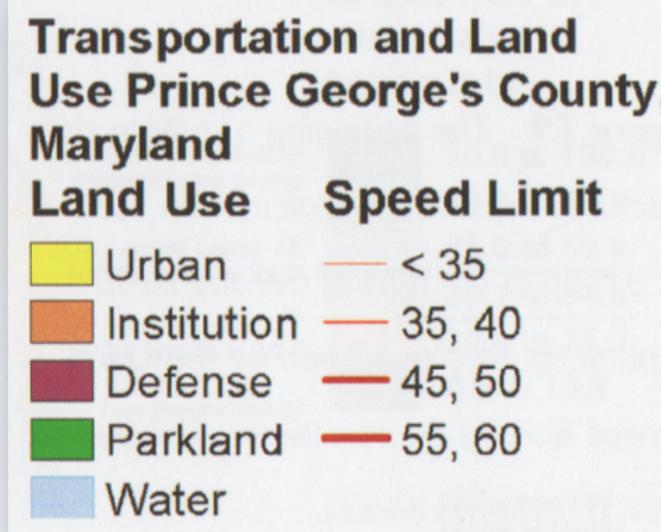


Balance with White Space



White space is a useful visual element.
There is no need to completely fill space.
Use empty space as a design element.

Visual Hierarchy with Layout



Transportation and Land Use
Prince George's County, Maryland

Land use	Speed limit
Urban	< 35
Institution	35, 40
Defense	45, 50
Parkland	55, 60
Water	

Typography

Type Family, Typeface, Font, Glyph



Type Family Typeface Font

Type Family, Typeface, Font, Glyph

- Type family: variations of a single typeface (standard, bold, condensed, italic...)
- Typeface: a set of letters and numbers with a unique design
- Font: a subset of a typeface, including all letters and numbers of a specific size. Font is often used to mean typeface.
- Glyph: an element of writing ("the shape of a character")

a ᄁ Ü Ø 貝

Serif

Times, Garamond and Bodoni are serif typefaces.

Serifs are traditional and antiquated.

Print newspapers use serif typefaces.

Rather not for diagrams and maps.

Sans serif

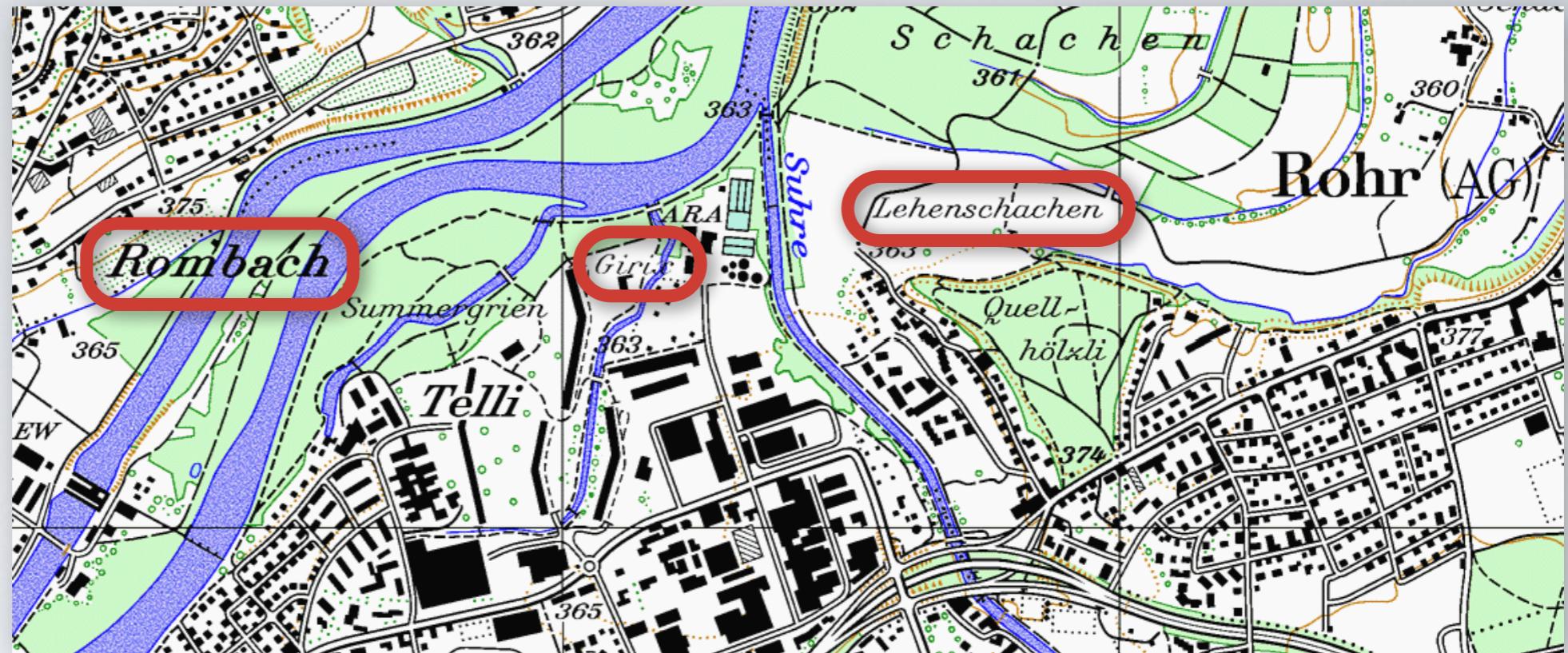
Helvetica, Myriad, Arial, Univers, and Frutiger are sans serif typefaces.

Sans serifs are modern and new.

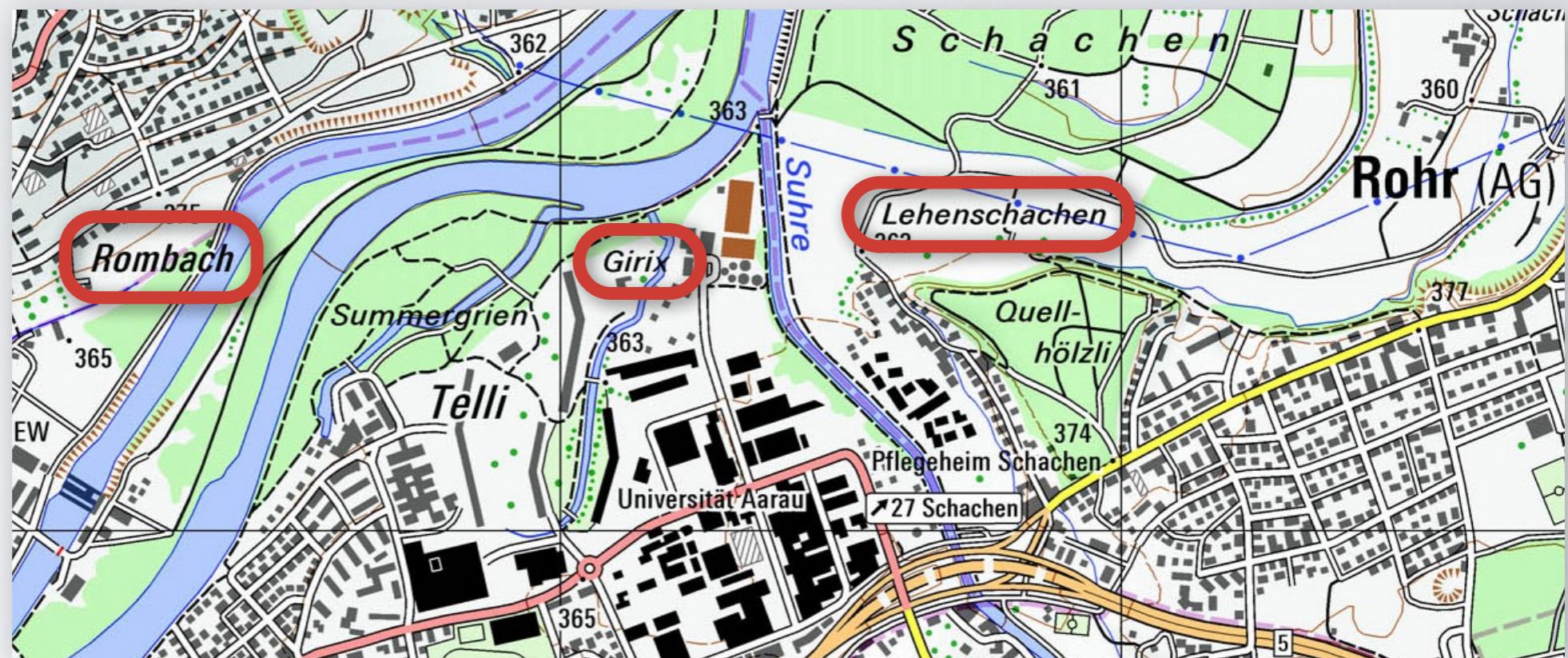
Individual words (as on diagrams and maps) tend to be easier to read.



serif



sans serif



Sans serif is often easier to read on diagrams and maps.

Typefaces

- Generally use sans serif: Open Sans (by Google, free), Myriad, Frutiger (expensive), Lucida Grande, Lucida Sans, Univers (expensive), Helvetica
- Avoid Comic, **no impact, no handwriting, not this, NOT THAT, and no fixed width type** for general purpose information visualisation...
... unless you are visualising superhero comics, western saloons, or the decline of typewriters.

Type Weight

More important

Bold
Heavy
Black

Medium

Less important

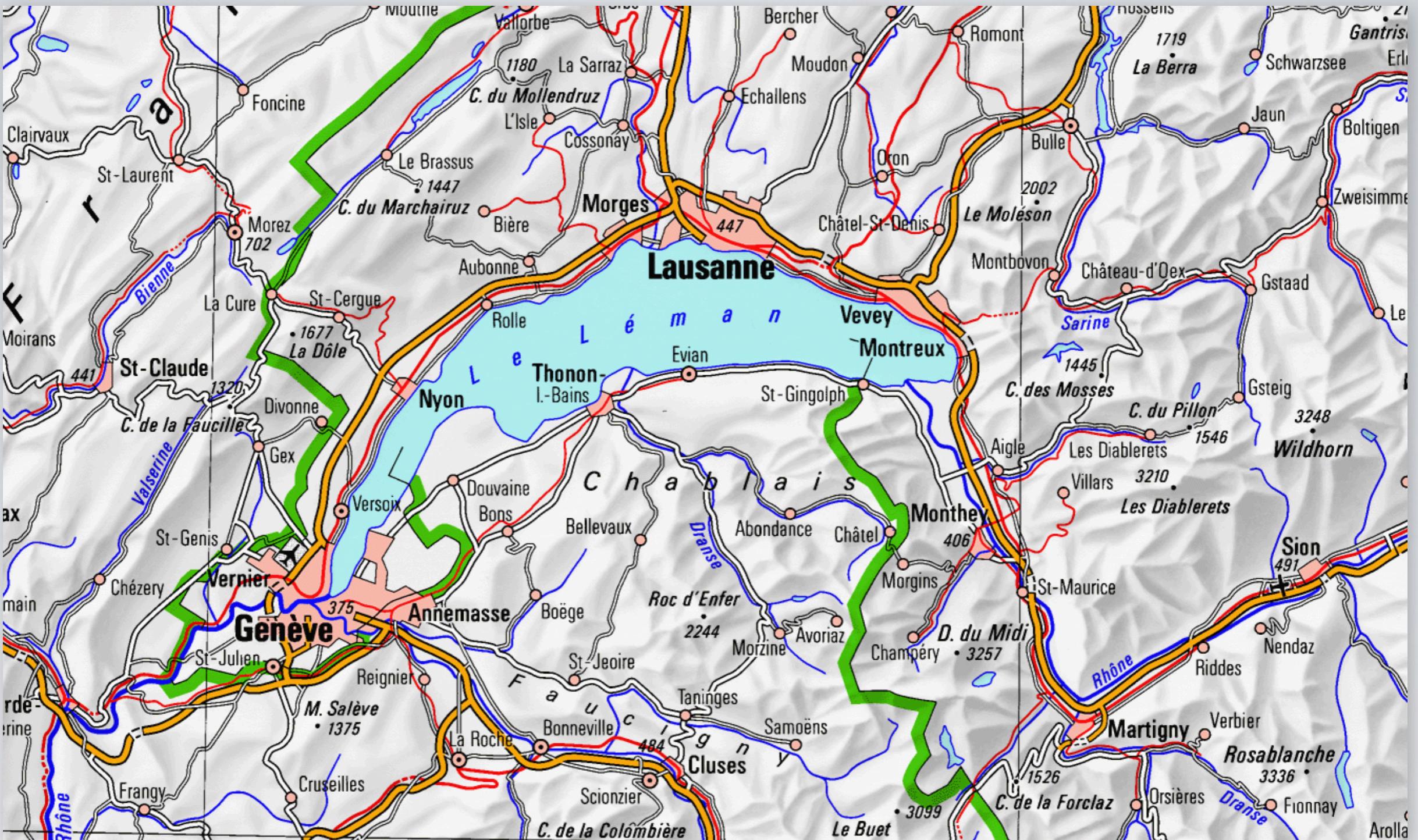
Regular
Normal

Light
Thin

Abc **Abc** **Abc** Abc Abc Abc Abc Abc
Abc **Abc** **Abc** *Abc* *Abc* *Abc* *Abc* *Abc*

Quantity or Quality?

Size	Large	Intermediate	Small	Tiny
Weight	Bold	Medium	Regular	Light
Italic		<i>Italic</i>	Regular	
Case		UPPER CASE	Mixed Case	
Colour		Blue	Black	



Cossonay

Morges

Lausanne

Vary type size and weight for quantities.



Vary typeface, case colour, italic/regular for qualities.

Monthly spend



Vary size, weight, colour, italic/regular to highlight important information.

Typefaces

- Generally use a single type family, but vary weight, size, case, italic/regular, and colour to create a visual hierarchy / figure-ground.
 - If you really need, use a maximum of 2 type families, but make sure they go well together (this is difficult to get right!). Generally combine one serif and one sans serif type family.
-

Kerning

Kerning adjusts spacing between glyphs.
Should be applied automatically by software.
Visualisation software sometimes has poor kerning.

AV Wa

No kerning

AV Wa

Kerning applied

A|V

No kerning



A|V

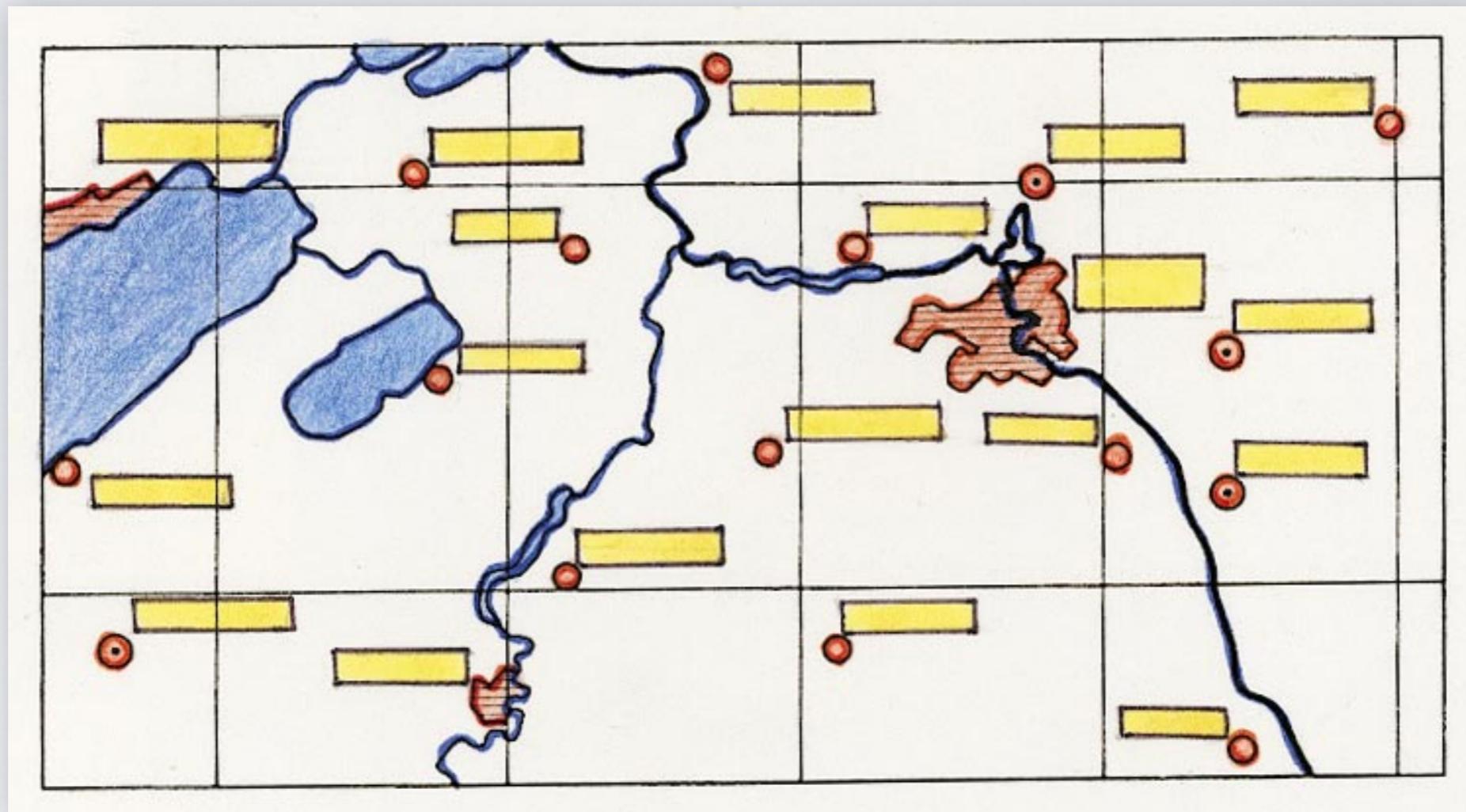
Kerning applied

Label Placement

Type Placement Principles for Best Readability

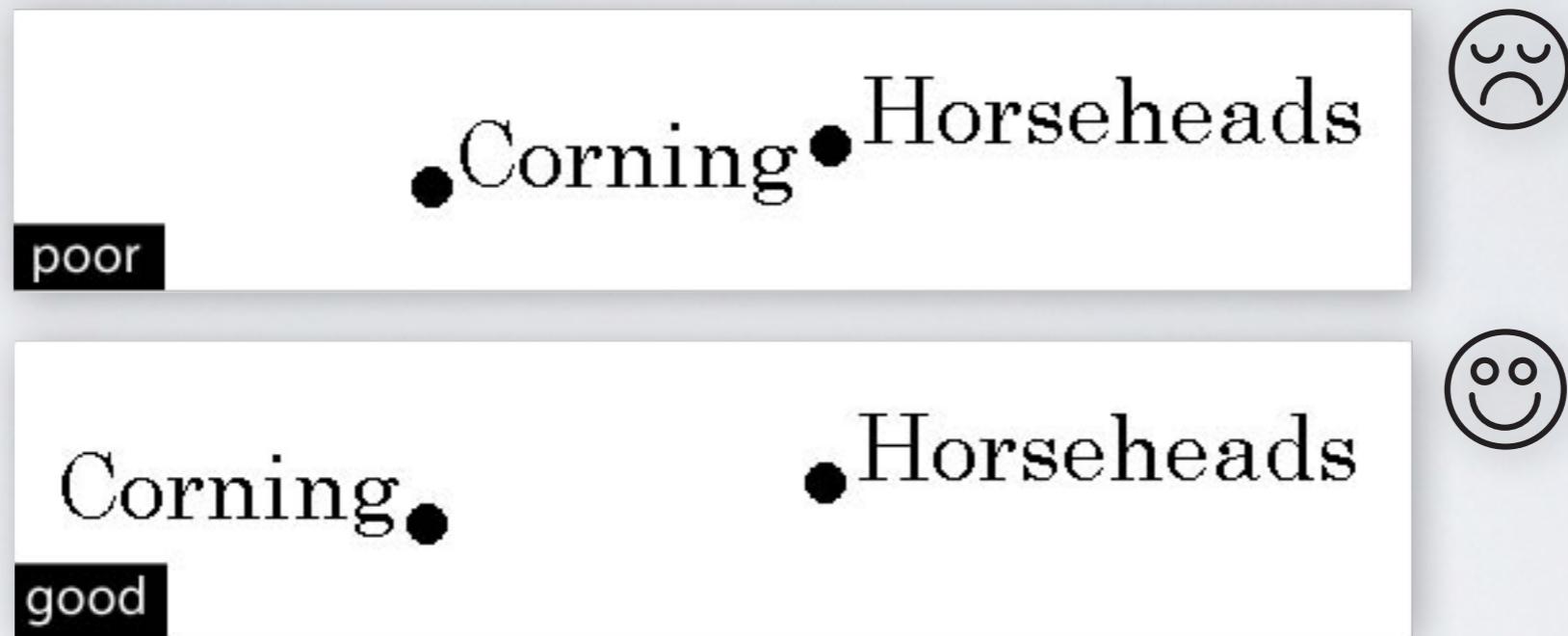
- 1.No overlapping labels.
 - 2.Labels must be at visual top level.
 - 3.Labels must not cover important diagram or map features
 - 4.Clear visual association between label and labeled feature
-

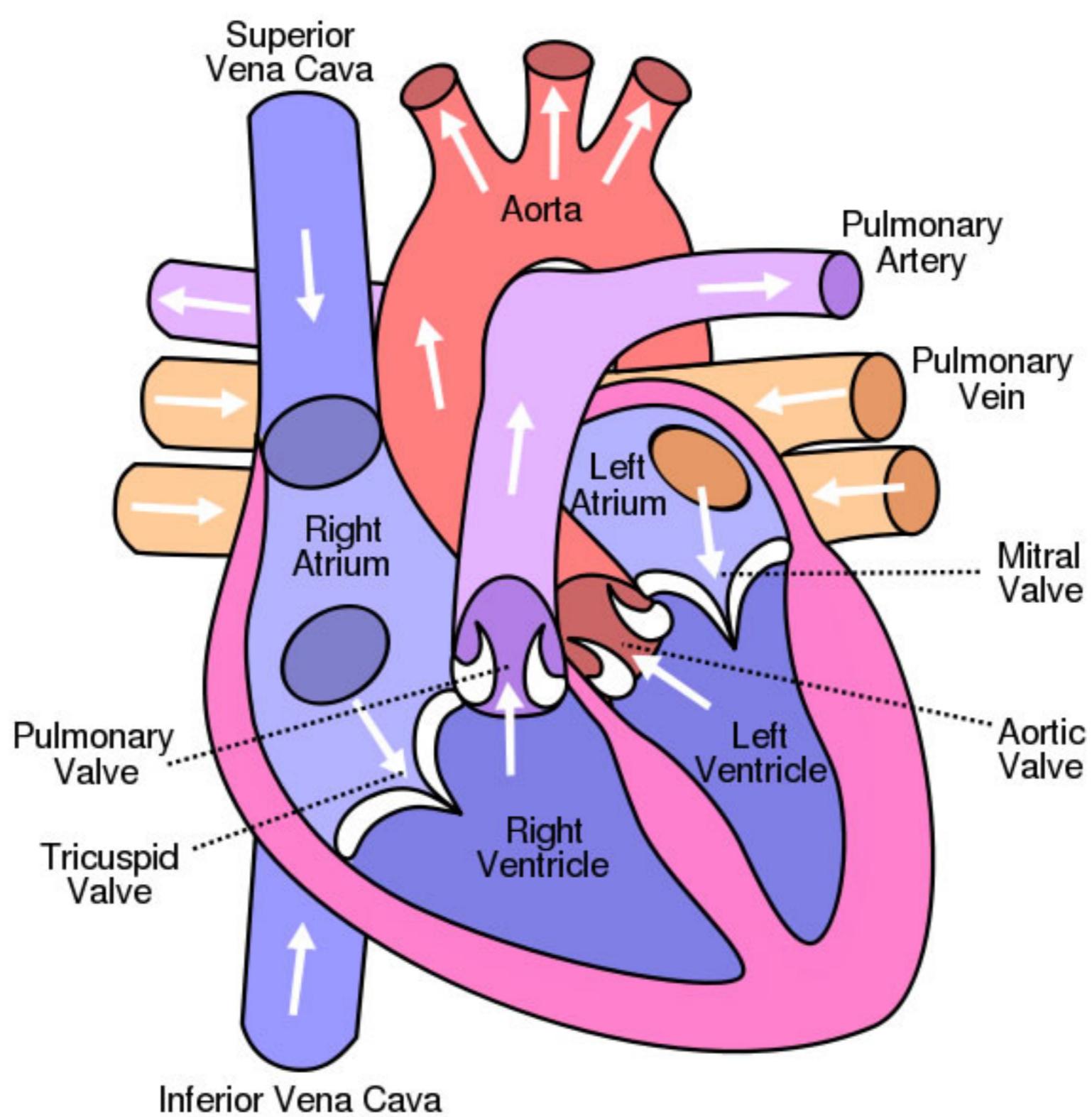
Label Placement Preference



No overlapping labels. Place top right of point if possible.

Clear Visual Association





And you will read this last

**You will read
this first**

And then you will read this

Then this one

Nutrition Facts

8 servings per container

Serving size 2/3 cup (55g)

Amount per serving

Calories 230

% Daily Value*

Total Fat 8g **10%**

Saturated Fat 1g **5%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 160mg **7%**

Total Carbohydrate 37g **13%**

Dietary Fiber 4g **14%**

Total Sugars 12g

Includes 10g Added Sugars **20%**

Protein 3g

Vitamin D 2mcg **10%**

Calcium 260mg **20%**

Iron 8mg **45%**

Potassium 235mg **6%**

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.



Carrier

QANTAS AIRWAYS

Name

MASON/KEITH MR

From

MELBOURNE

Terminal 1

Service Information

FF GOLD ONEWORLD SAPH

odpu 5000 pts melsyd

To

SYDNEY

Terminal 3

Business.

Flight Date Boarding

QF 444 08SEP 1510

Seat Class

4K

BUSINESS

SEQ NBR

182

Gate

ETKT



Flight Date

QF 444 08SEP

Name

MASON/KEITH MR

Seat

4K

BUSINESS

From

MEL

Carrier

QANTAS

To SEQ NBR

SYD

182



Please be at the boarding gate
well ahead of departure time



qantas.com



E35

E43

2

13

San Gottardo	86 km
San Bernardino	58 km
Bellinzona	11 km
Locarno	26 km

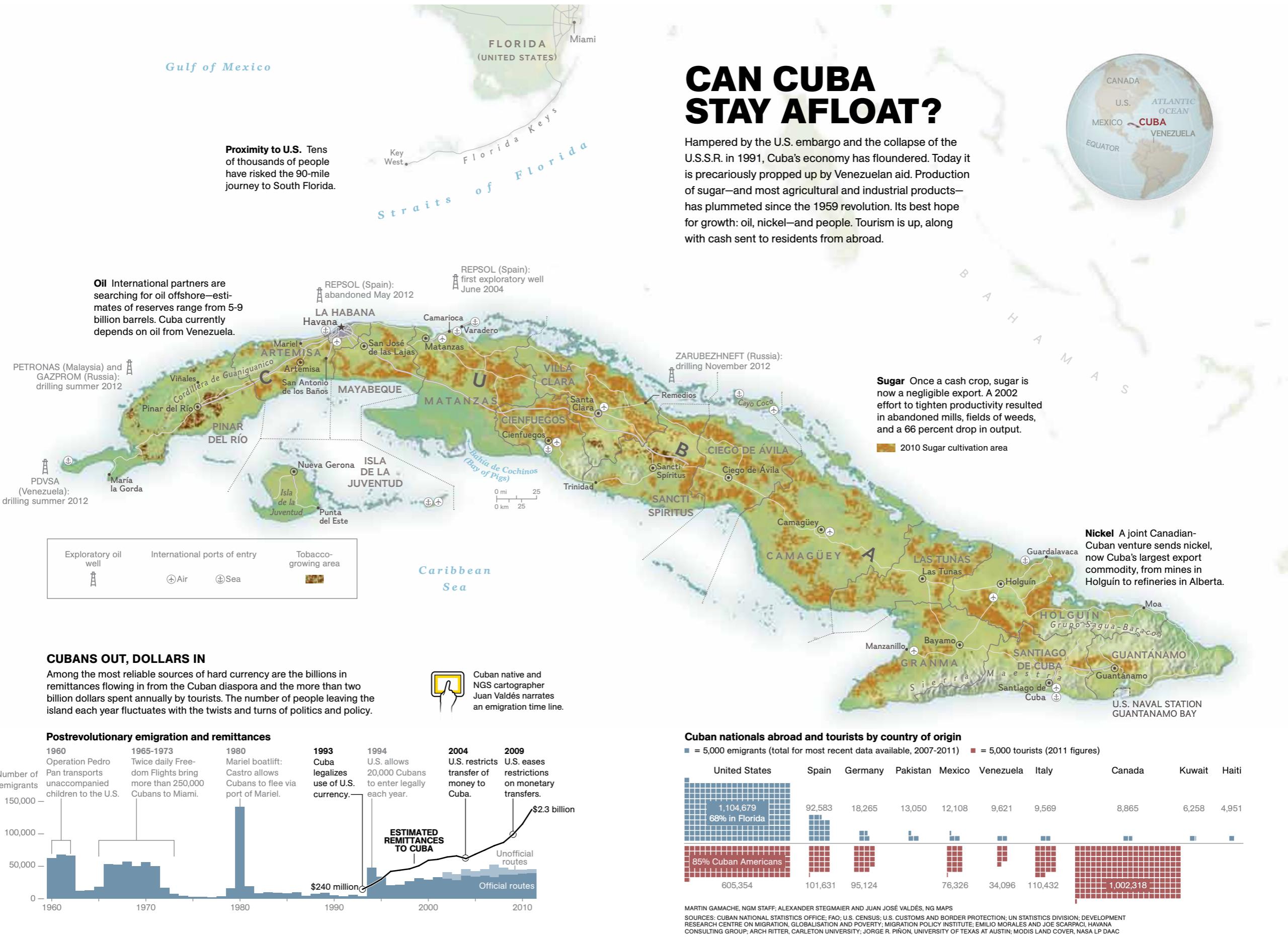
Radio
RSI

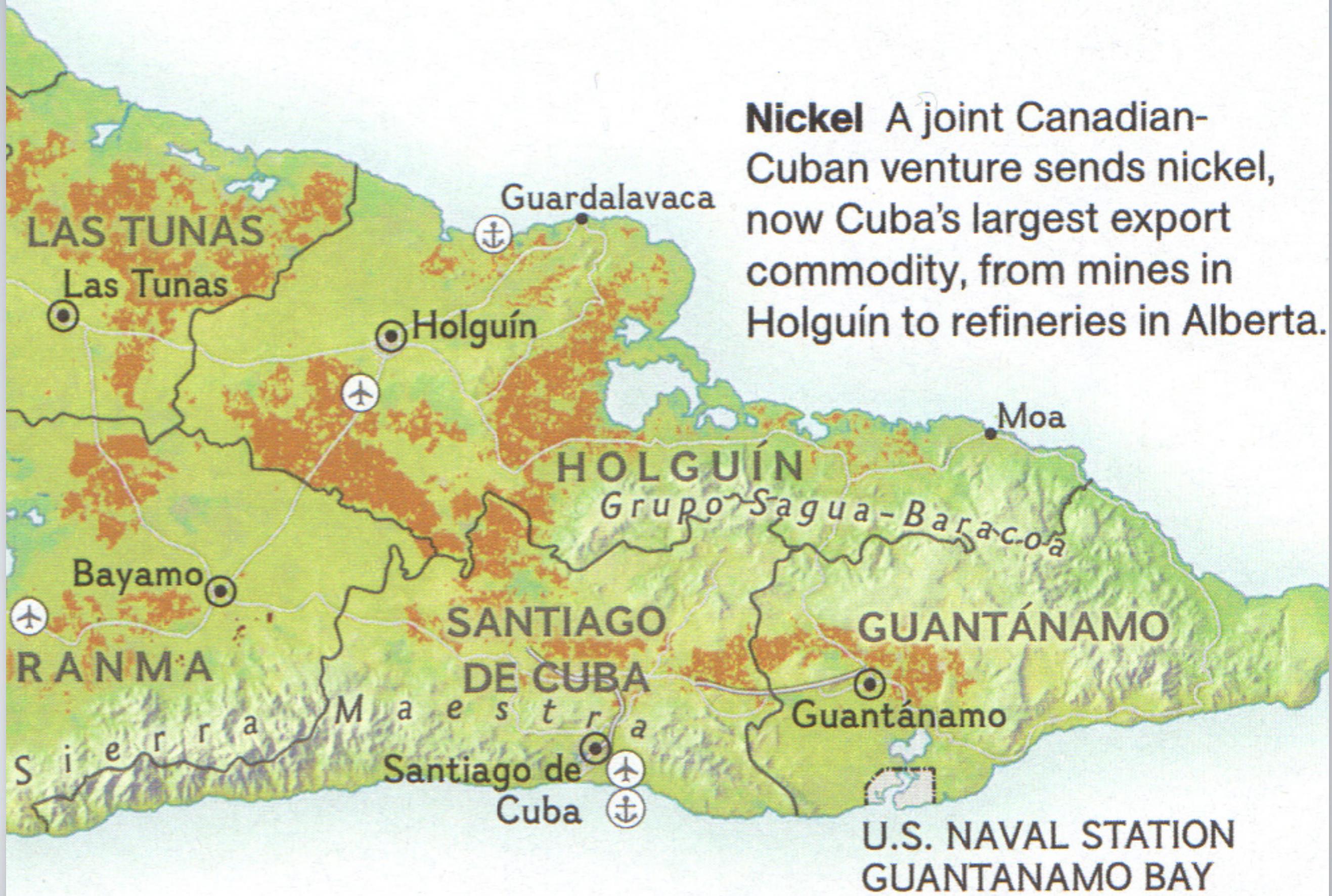
96,1

SOS

AS1744 typeface, based on the US Highway Gothic typeface







Nickel A joint Canadian-Cuban venture sends nickel, now Cuba's largest export commodity, from mines in Holguín to refineries in Alberta.

Oil International partners are searching for oil offshore—estimates of reserves range from 5-9 billion barrels. Cuba currently depends on oil from Venezuela.

PETRONAS (Malaysia) and GAZPROM (Russia): drilling summer 2012

PDVSA (Venezuela): drilling summer 2012

REPSOL (Spain): abandoned May 2012

REPSOL
first exp.
June 2008



Exploratory oil well



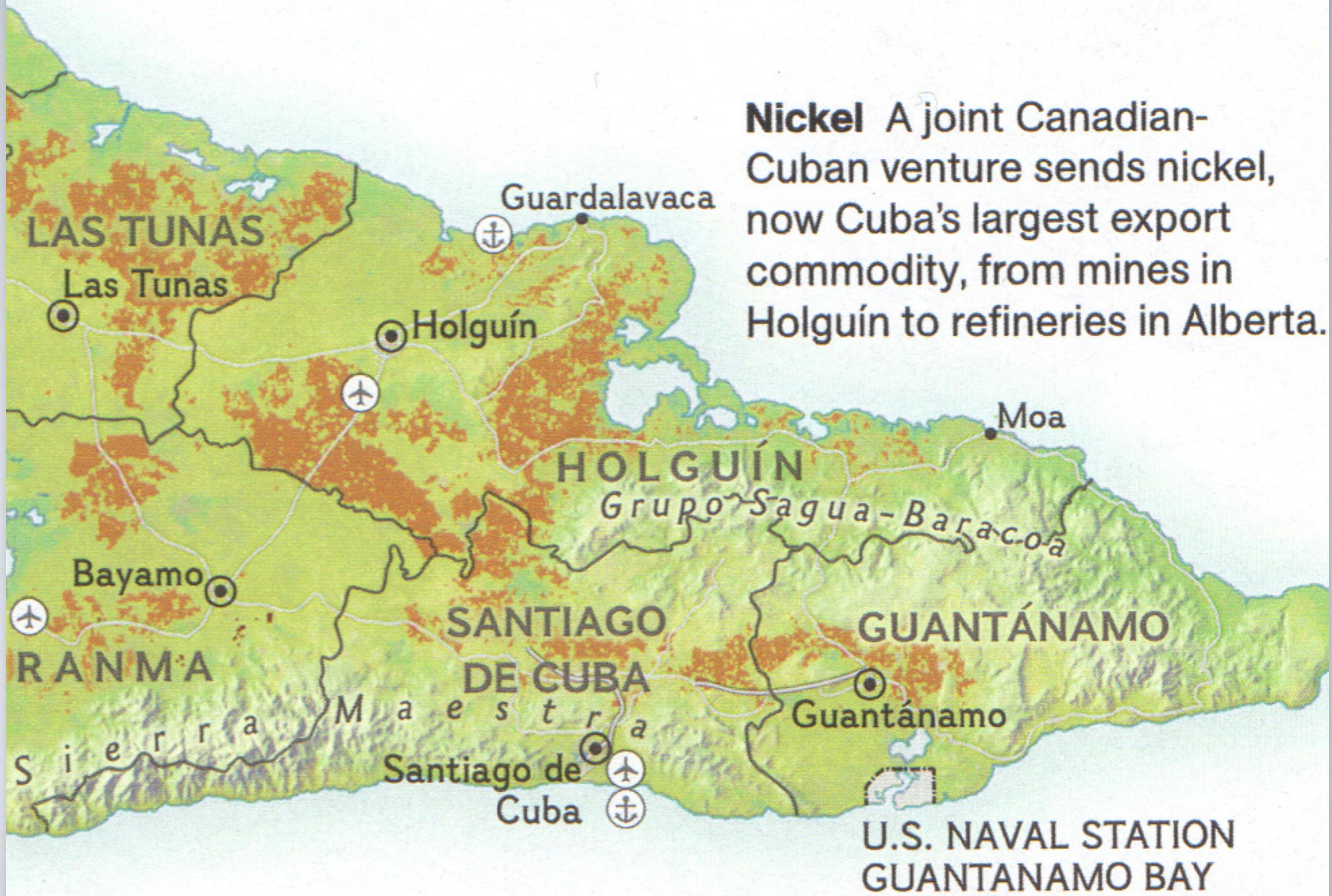
International ports of entry



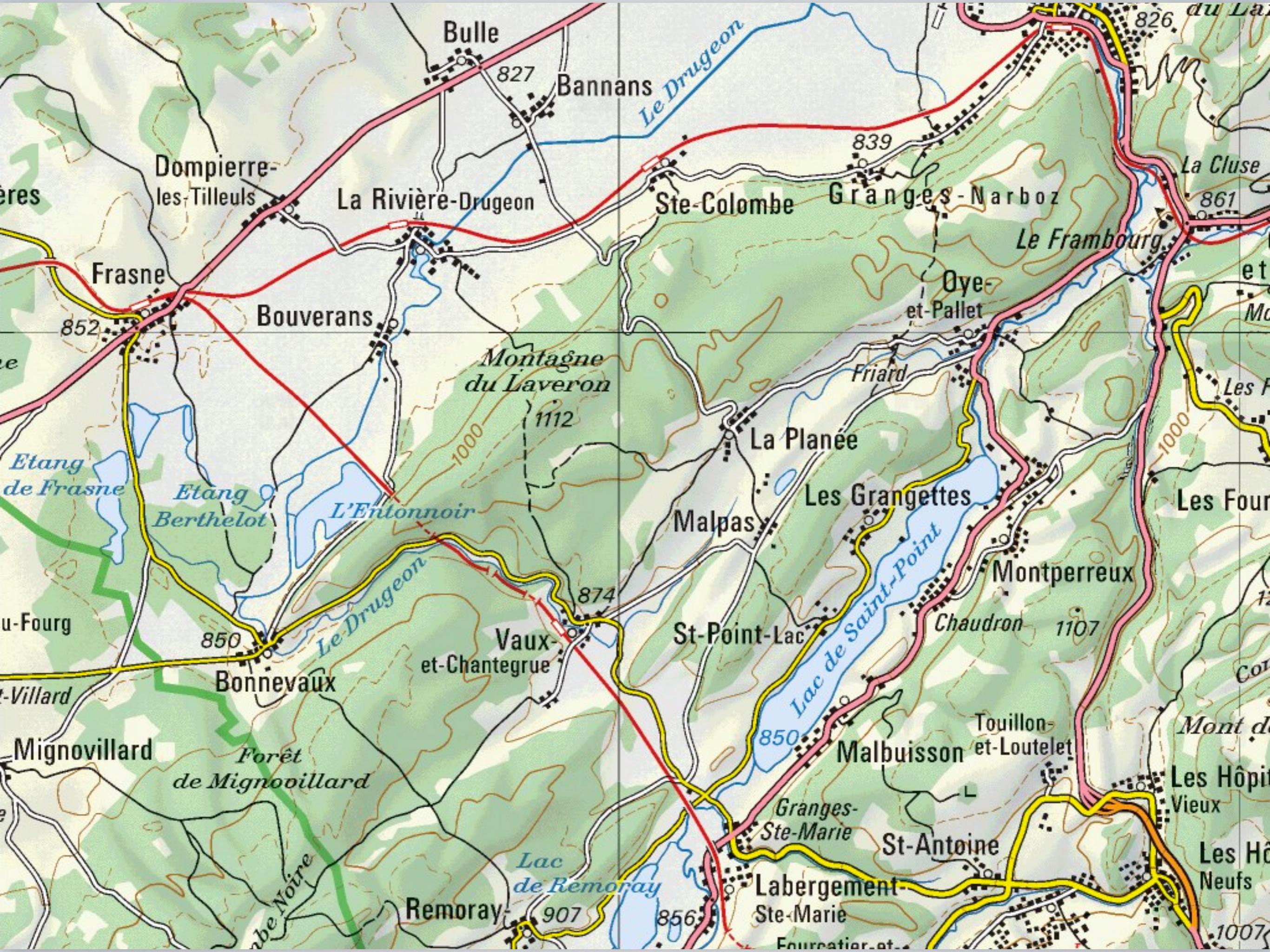
Tobacco-growing area

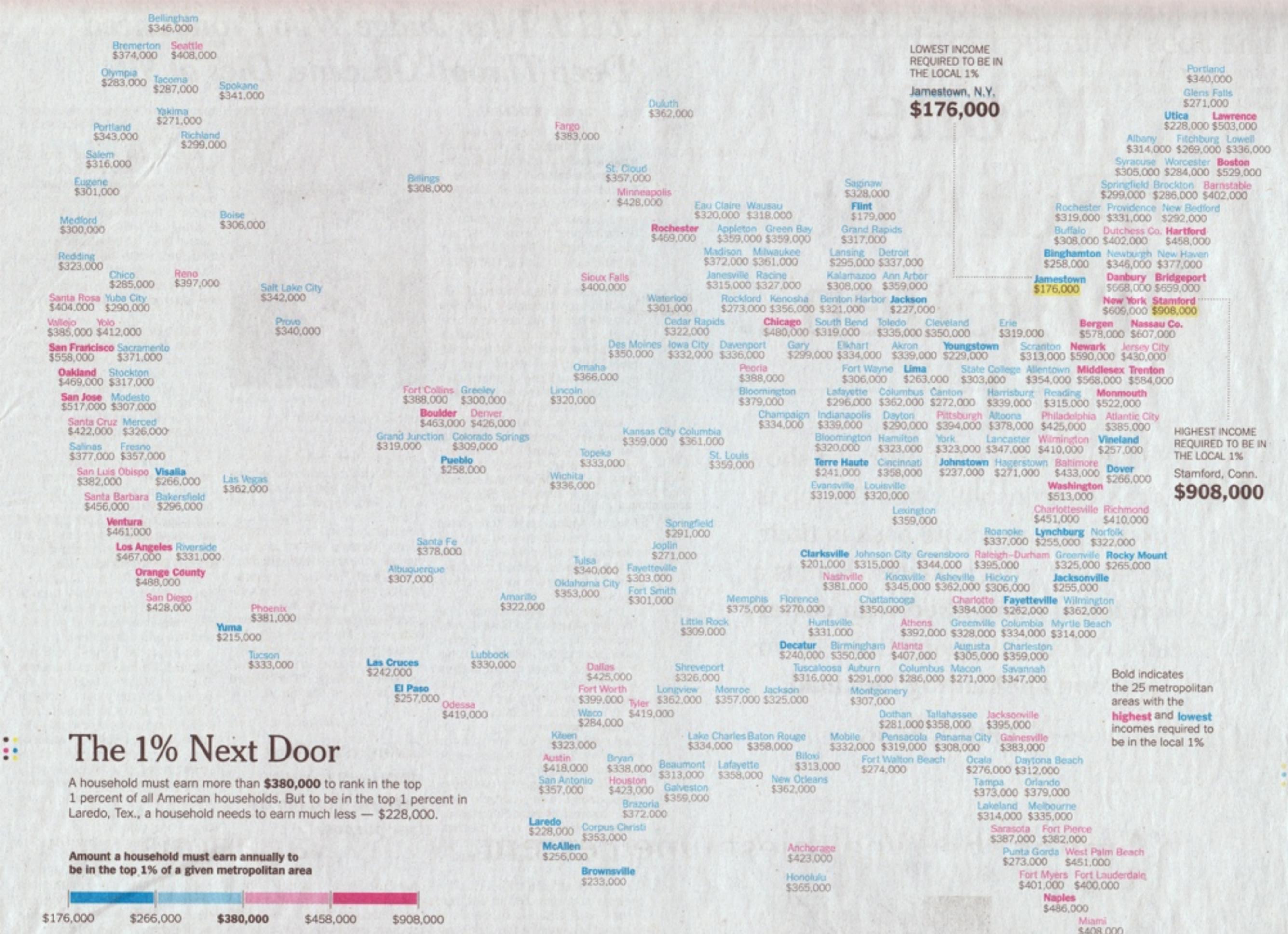


Caribbean Sea



Nickel A joint Canadian-Cuban venture sends nickel, now Cuba's largest export commodity, from mines in Holguín to refineries in Alberta.





The 1% Next Door

A household must earn more than **\$380,000** to rank in the top 1 percent of all American households. But to be in the top 1 percent in Laredo, Tex., a household needs to earn much less — \$228,000.

Amount a household must earn annually to be in the top 1% of a given metropolitan area

