



MONASH  
University

# FIT3179 Data Visualisation

Week 4 Workshop slides

Typography  
Layout



# Workshop Activities

- Typography:
  - Dotting the ‘i’s
  - Spot the intruders!
  - Who am I?
- Types of typefaces
- Visual hierarchy with typefaces
- Sightlines and layout
- Layout of an atlas page

Serif typefaces can be traced back to first lead type made for printing in the fifteenth century. Sans serif typefaces are widely used since the 1950s.

#### SERIF FONTS

Serifs are small strokes and other shapes attached to letter forms. Serif fonts have a classical look.

Bodoni 72

Serif type is considered traditional and sometimes old-fashioned. Serif type is used for printed books, magazines and newspapers. An example is this **Times New Roman**.

Didot and the contemporary Bodoni are elegant typefaces with high contrast between horizontal and vertical lines. They are used by fashion magazines, and cosmetic and luxury brands.

**Garamond** is a serif typeface for books with good readability. It looks smart and classic.

#### SANS SERIF FONTS

"Sans" means "without" in French, so sans serif fonts have no serifs. The letterforms are simple, even, and without decoration.

Frutiger

Most data visualisations use sans serif fonts, because they are considered clean and modern. An example is the **Frutiger** typeface used here.

**Helvetica** is a widely used typeface that is minimal and neutral. It influenced many derived typefaces, but long texts are not easy to read.

**Open Sans** has open glyph shapes and a large x-height, which results in good readability on screen and at small sizes.

Script and display typefaces are designed for titles, headlines and short sentences that should stand out. They can create a specific aesthetic, but their appearance must match the overall topic.

#### SCRIPT FONTS

Script fonts imitate handwritten letterforms. The styles vary from casual handwriting to formal calligraphic lettering.

Snell Roundhand

*Script fonts can be formal. They can be childish. They can be personal. Or they can invite to a party.*

**Blackletter**, also known as Gothic script, is a group of script typefaces developed in Western Europe. Today, blackletter is only used for decorative typesetting. For example, a number of newspapers, such as the **New York Times**, print their name on the masthead with a blackletter typeface. And, heavy metal bands like blackletter.

#### DISPLAY FONTS

Display fonts have eye-catching letterforms and are designed for large headings. They have poor legibility for long texts.

Impact

Display fonts exist in a wide variety of styles. For example, they can be **geometric**, **ABSTRACT**, or **playful**.

Display fonts can strongly influence the appearance of a visualisation and evoke different associations. For example, film posters use specific display fonts for **WESTERN**, **HORROR**, or **animated** films.

Display fonts often only have a single style and a single weight and a reduced set of glyphs.

# Serif Sans *Script* Display

# **Recap: Four types of typefaces (discussed in lecture notes and videos)**

 Search fonts

Sentence ▾ Type something

40px



Categories ▾

Language ▾

Font properties ▾

 Show only variable fonts (i)

- Serif
- Sans Serif
- Display
- Handwriting
- Monospace

Reset

before we knew  
it, we had left the  
ground.

12 styles

STIX Two Text Variable  
Tiro Typeworks, Ross Mills, John Hudson, Paul Hanslow

Almost before we knew  
it, we had left the  
ground.

Sort by: Trending



Atkinson Hyperlegible 4 styles  
Braille Institute, Applied Design Works, Elliott Scott, Megan Eiswerth, Linus Boman, Theodore Petrosky

Almost before we knew  
it, we had left the  
ground.

Georama  
Production Type

Variable

Almost before we knew  
it, we had left the  
ground.

Open Sans  
Steve Matteson

10 styles

Almost before we  
knew it, we had left  
the ground.

Noto Sans JP  
Google

6 styles

Almost before we  
knew it, we had left  
the ground.

Lato  
Łukasz Dziedzic

10 styles

Almost before we knew  
it, we had left the  
ground.

Style Script  
Robert Leuschke

1 style

Almost before we knew it, we had  
left the ground.

Montserrat 18 styles  
Julietta Ulanovsky, Sol Matas, Juan Pablo del Peral, Jacques Le Bailly

Almost before we  
knew it, we had left  
the ground.

Source Sans Pro  
Paul D. Hunt

12 styles

Almost before we knew  
it, we had left the  
ground.

Palette Mosaic  
Shibuya Font

1 style

Almost before we  
knew it. we had  
left the ground.

Roboto Condensed  
Christian Robertson

6 styles

Almost before we knew it,  
we had left the ground.

# Activity 1: Typography

In your group, look at the three tasks on the printed sheets:

- **Dotting the ‘i’s**

Draw the missing dots such that the dots harmonise with the body of the i letters.

- **Spot the intruders!**

Mark the glyphs that do not belong to the Garamond typeface.

Hint: there is at least one glyph per line; look at the serifs.

- **Who am I?**

Connect the typeface with the corresponding description.

## DOTTING THE 'I'S

These six 'i's have lost their heads. Can you help us find their dots?

I ~ 1  
1 1 z

## SPOT THE INTRUDERS!

A B C D  
E F G H  
I J K L M  
N O P Q  
R S T U V  
W X Y Z

Seven letters from other typefaces have snuck into this alphabet, set in GARAMOND. Can you find them?

## WHO AM I?

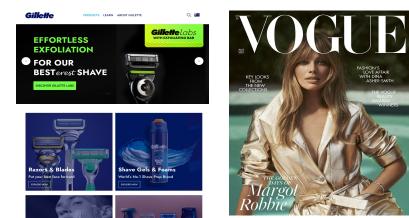
Match each typeface\* to its description.

- Bembo •
  - I look like handwriting.
- Fraktur •
  - My design is inspired by the letters typically produced by typewriters.
- Eames •
  - I am Swiss and often used in logos. I am a 'lineal' typeface.
- Colonel •
  - I was born in sixteenth-century Germany, but today I'm a favourite of hard rock bands!
- Courier •
  - I was inspired by the stencils\* printed on packing cases and army supplies.
- Mistral •
  - With my big, square serifs\* I am frequently used in the graphic design of posters for circuses or Western films.
- Helvetica •
  - Because of my sophisticated, delicate appearance, I am often found in fashion magazines.
- Didot •
  - I'm popular among paperback designers.

# Activity 2 – Types of Typefaces

In your group, look the assigned slide and answer these questions:

- What kind of typefaces are used? **Serif, sans serif, script, or display?**
- Why were these typefaces selected?



A

B

C

D

A



B



C

Gillette

PRODUCTS LEARN ABOUT GILLETTE

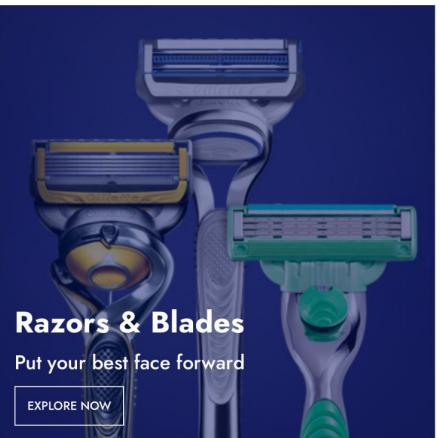


EFFORTLESS  
EXFOLIATION

FOR OUR  
BEST *erest* SHAVE

DISCOVER GILLETTE LABS

GilletteLabs  
WITH EXFOLIATING BAR



Razors & Blades

Put your best face forward

EXPLORE NOW



Shave Gels & Foams

World's No.1 Shave Prep Brand

EXPLORE NOW



D

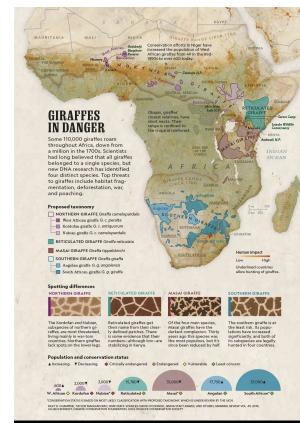
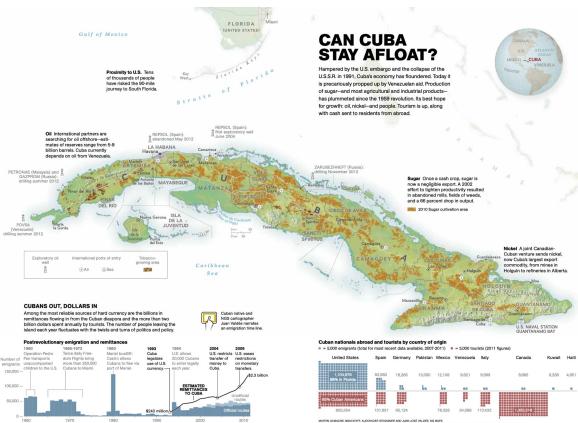


# Activity 3: Visual Hierarchy with Typography

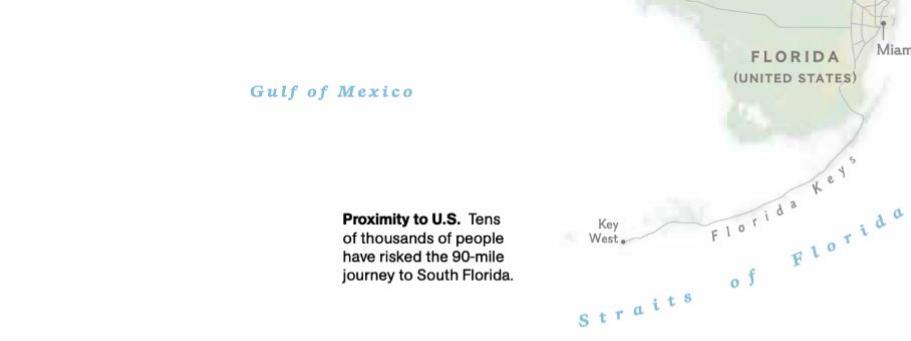
In your group, answer these questions:

- What kind of **typefaces** are used? Serif, sans serif, script, or display?
- How are weight, style, font size and colour varied to create a **visual hierarchy**?

A



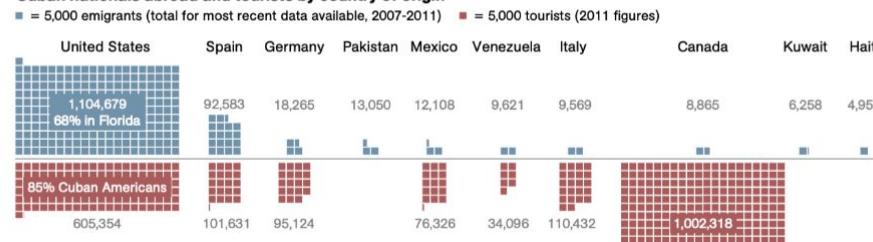
B



# CAN CUBA STAY AFLOAT?

Hampered by the U.S. embargo and the collapse of the U.S.S.R. in 1991, Cuba's economy has floundered. Today it is precariously propped up by Venezuelan aid. Production of sugar—and most agricultural and industrial products—has plummeted since the 1959 revolution. Its best hope for growth: oil, nickel—and people. Tourism is up, along with cash sent to residents from abroad.

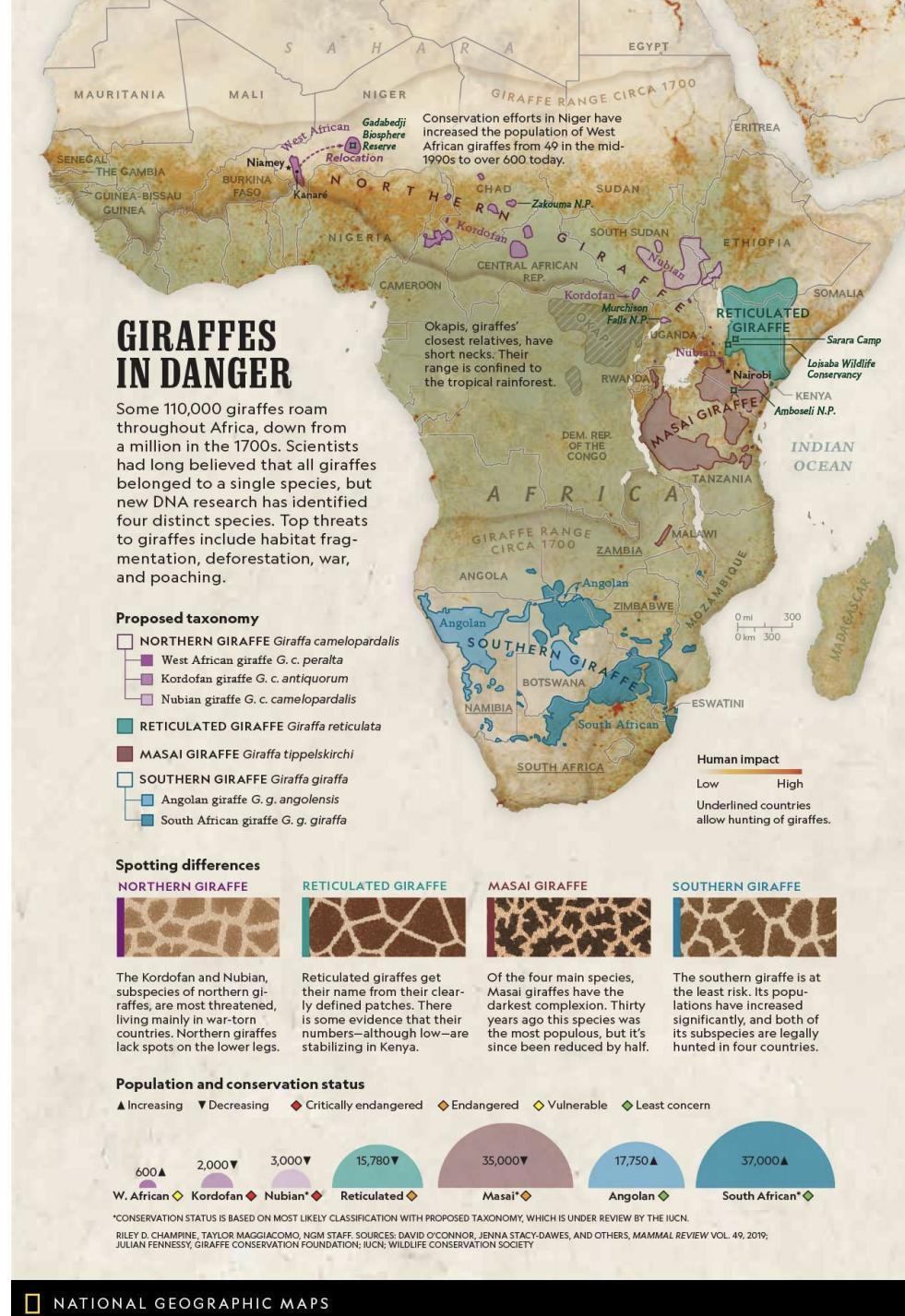
Cuban nationals abroad and tourists by country of origin



MARTIN GAMACHE, NGM STAFF; ALEXANDER STEGMAIER AND JUAN JOSÉ VALDÉS, NG MAPS  
SOURCES: CUBAN NATIONAL STATISTICS OFFICE; FAO; U.S. CENSUS; U.S. CUSTOMS AND BORDER PROTECTION; UN STATISTICS DIVISION; DEVELOPMENT RESEARCH CENTRE ON MIGRATION, GLOBALISATION AND POVERTY; MIGRATION POLICY INSTITUTE; EMILIO MORALES AND JOSE SCHAPACI, HAVANA CONSULTING GROUP; ARCH RITTER, CARLETON UNIVERSITY; JORGE R. PINON, UNIVERSITY OF TEXAS AT AUSTIN; MODIS LAND COVER, NASA LP DAAC



B



# Activity 4: Sightlines and Layout

In your group, look at the assigned visualisation:

- Draw the **sightlines**.
- Draw the **borders** of the layout columns.
- Mark how elements are **aligned with columns**.
- How are **symmetry, balance, and white space** used?



August 25, 2020

**THE AGE**  
INDEPENDENT. ALWAYS.

MENU SUBSCRIBE 0

MELBOURNE POLITICS BUSINESS WORLD LIFE CULTURE SPORT

## TOP STORIES

### COVID-19 IN AUSTRALIA

148 New cases (Aug 25)

4204 Active cases

View full Australia and global data

Data updated 10:23am on Aug 25, 2020

### LIVE CORONAVIRUS PANDEMIC

'Won't be 12 months': State-of-emergency doubts as case tally rises by 148

The latest figures - 148 new COVID cases and eight more deaths - come as Justice Party leader Derryn Hinch says his crossbenchers will not support a year-long extension to emergency powers. This can be done, but it won't be 12 months.

5 minutes ago by Kate Rose

### CORONAVIRUS PANDEMIC

Premier turns to social media to defend plans to extend state of emergency

Premier Daniel Andrews has used social media to explain and defend his plans to extend Victoria's state of emergency by 12 months amid fierce, mounting backlash.

57 minutes ago by Marissa Calligeros

### BREAKING EARNINGS SEASON

'Utterly derailed': Owner of Noni B, Rivers to close up to 500 stores as pandemic bites

Fashion retailer Mosaic Brands has swung to a \$212 million loss and will close

9 minutes ago by Farrah Tomazin and Chris Zappone



### OPINION CORONAVIRUS PANDEMIC

Epidemic curves can have long tails. So how can Victoria drive the coronavirus out?

by Catherine Bennett



### LIVE US VOTES 2020

Trump jnr, Nikki Haley at Republican Convention, day 1

Donald Trump will be nominated for a second term on the first day of the Republican National Convention.

9 minutes ago by Farrah Tomazin and Chris Zappone

### OPINION POLITICAL UNREST

This is breathtaking to those familiar with Thailand

Tens of thousands of Thais are risking jail to demand King Vajiralongkorn be deprived of his powers and privileges.

by Peter Hartcher



## CAN CUBA STAY AFLOAT?

Hemmed in by the U.S. embargo and the collapse of the U.S.S.R. in 1991, Cuba's economy foundered. Then it turned to sugar to prop up its broken economy. Oil, sugar—and most agricultural and industrial products—has plummeted since the 1959 revolution. Its best hope for growth: oil, nickel—and people. Tourism is up, along with cash sent to residents from abroad.



Sugar Once a cash crop, sugar is now a negligible export. A 2002 effort to tighten prices resulted in a massive price drop, falling 90 percent, and a 66 percent drop in output.

2010 Sugar cultivation area

Nickel A poor Canadian-Cuban venture sends nickel, now Cuba's largest export after sugar, to smelters in Holguin to refineries in Alberta.

U.S. NAVAL STATION GUANTANAMO BAY

Cuba's nationalized industries

U.S. stations

U.S. naval station

U.S. bases

U.S. military

U.S. ports

U.S. ships

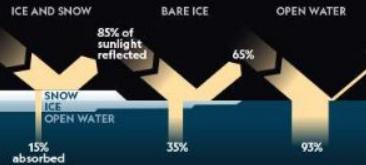
U.S. planes

U.S. tanks

## TODAY'S WARMING

### A VICIOUS CYCLE

Snow and ice reflect most incoming light, but open water is less reflective, so it absorbs more heat. More melting causes more open water, a feedback loop that leads to even more warming.



### IT'S ALREADY WARMER

The Earth's average surface temperature has risen 1°C (1.8°F) since the 1880s. But the Arctic has warmed more than twice as fast—the past five years have been the hottest on record.



### IT'S ALREADY GREENER

The tundra is one of the fastest warming ecosystems on Earth. Shrubs are growing taller and spreading north—an early sign of a greener Arctic.



## TOMORROW'S ICELESS SUMMER

An iceless Bering Sea  
By mid-century this sea will be open most of the year. Algae that grow on ice—and support a food web extending to fish and whales—will be gone.

Northern Sea Route  
This well-established corridor will be completely ice free for several months each year. In 2017 a vessel traversed the passage without an icebreaker for the first time.

Northwest Passage  
Nineteenth-century explorers searched for it in vain, and many died in the attempt. By mid-century the passage will be open at least five weeks of the year.

Unfrozen pastimes  
Lakes that once supported ice fishing and other recreation will be without ice. In summers they could see increased algal blooms.

End of the ice nursery  
Young sea ice that once drifted to the pole no longer forms in the shallow seas along Russia's northern coast. In 2018 only a fraction reached mid-ocean.

"Ice free," defined  
Scientists call the Arctic ice free when less than a million square kilometers (36,000 square miles) of summer ice remain. Last to go: the ice off Canada and Greenland.

Remaining summer 2036 sea ice

QUEEN ELIZABETH ISLANDS  
NORTHWEST PASSAGE  
Baffin Bay

R U S S I A

NORTHERN SEA ROUTE  
Laptev Sea  
Kara Sea

F R A N Z J O S E F L A N D (R U S S I A)

E s t i m a t e d o i l a n d g a s b a s i n s

M e d i a n S e p t e m b e r i c e e x t e n t , 1 9 8 1 – 2 0 1 0

B a r e n t s S e a

S V A L B A R D (N O R W A Y)

N a t u r a l w e a l t h

J A N M A Y E N (N O R W A Y)

N o r w e g i a n S e a

I C E L A N D

G R E E N L A N D (D E N M A R K)

V I C T O R I A I S L A N D

N O R T H W E S T P A S S A G E

B a f f i n I s l a n d

H u d s o n B a y

A T T L A N T I C O C E A N

Arctic ice, average  
September extent  
in millions of square miles

1979  
2.72

2018  
1.82

2036  
0.28

2050  
0.23

A DOWNWARD TREND  
Sea ice extent fluctuates naturally, but the trend is unmistakable: The Arctic Ocean will be ice free in summer by mid-century.

## 2036: LAST SUMMER ICE

By mid-century if not sooner, Arctic summers are expected to be hot enough to melt most of the sea ice that forms in winter. Here's what that looks like, based on a model suggesting it will first happen in 2036: The ocean is navigable except for a remnant of ice along the northern Canadian islands and Greenland. Much of the surrounding land is green. One of the world's least developed regions now offers new fishing grounds and better access to huge deposits of gas, oil, and minerals.

JASON TREAT AND RYAN WILLIAMS, NGM STAFF  
MAP BY JEFFREY HARRIS; SOURCES: NATIONAL SNOW AND ICE DATA CENTER; ALEXANDRA JAHN, UNIVERSITY OF COLORADO BOULDER; COMMUNITY EARTH SYSTEM MODEL; SCOTT GOETZ AND LOGAN BERNER, NORTHERN ARIZONA UNIVERSITY; NATHAN LENSSON, COLUMBIA UNIVERSITY; IHS MARKIT; ARILD MOE, PRIDT OF Nansen INSTITUTE

## TOP STORIES

 Melbourne  11.1°  
 Possible shower  5° / 14°


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5 minutes ago by Kate Rose



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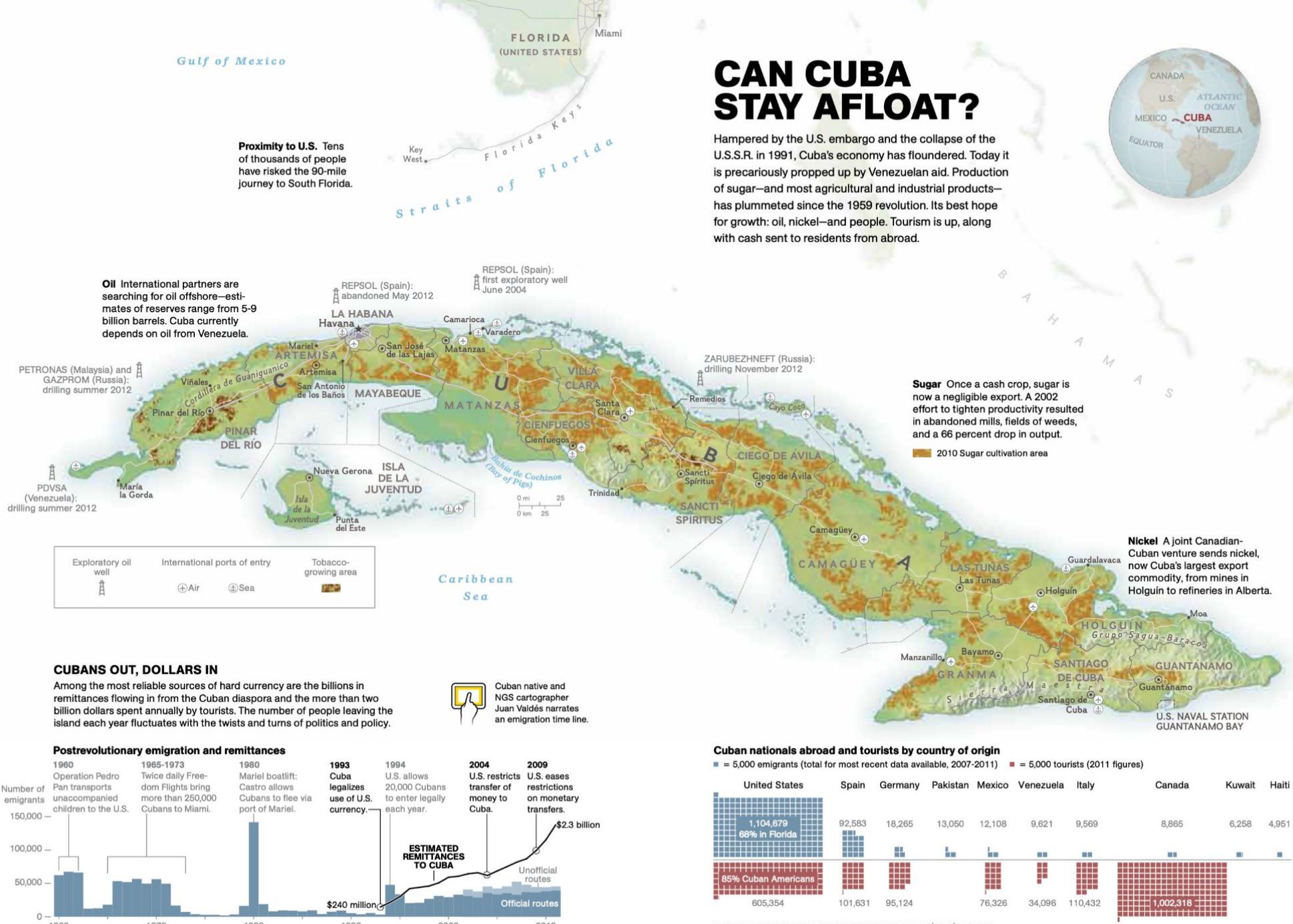
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# Activity 5: Layout

- Fix the **layout and typography** of an atlas page for an ebook.
- Select the **number of layout columns**.
- Choose a **typeface** that is easy to read and appropriate for the topic.
- Create a **clear visual hierarchy** with **typography** for the title, optional subtitle and main text. Vary size, style, colour, line length, leading, etc. of text for best readability and visual hierarchy.
- Guide the reader's eye along a **viewing path**, starting from the top-left.
- Create a **balanced layout**.
- Align elements along **sight lines** and an invisible outer frame.
- Use **white space** to group and separate elements.
- Add **titles** and **labels**; structure the **text**.

This column is too wide and leading (the space between adjacent lines) is much too small. This results in a block of text with extremely poor readability. The amount of required leading depends on the vertical extent of the glyphs of a typeface and the number of words on a line. With too little leading (as with this text), the lower end of descenders of characters like y, p, or q can intersect with the upper end of ascenders of characters like f, l, or k. For legible text, this must be avoided. Also, if a line is too long (as with this text), the reader's eye has to travel a long distance from the end of the current line to the beginning of the next line, and it is likely that the reader continues on the wrong line. Additional leading increases readability by reducing the chance of this happening. So how many words should there be on a line to make it easy for the reader's eye to jump from one line to the next line? Adjusting the width of a text block such that there are between seven and ten words on a line generally results in good readability. In general, a longer line with many words requires more leading than a short line with few words.

This text is set with the same 9-point typeface as the text above, but the column is much narrower. This increases readability, but leading has not been sufficiently increased. Overall, readability of this short text is still poor.

This text is set with the same 9-point typeface and the same column width as the text above, but the leading has been extended considerably. This results in a block of text that is easy to read. One line of text has approximately seven to ten words. As a rule of thumb, a row should have about 60 characters.

This text is set with the same 9-point font and leading as the text above, but it is grey instead of black. This reduces the contrast with the background and makes it quite difficult to read, especially on a background that reduces contrast.

Certain color combinations can be unpleasant to the eye and are difficult to read, for example this

Center-aligned text is difficult to read across multiple lines. Left-aligned text should be preferred for text that spans multiple lines, because left alignment simplifies navigating from line to line and often results in a more balanced design.

Justified text, such as this paragraph, adjusts word-spacing and optionally letter spacing so that words align with the left and right margins. Justified text can result in irregular white space between words, especially when a line contains only a few words. Justified text does not increase the readability of text, but can help create a balanced layout.