

PRASC

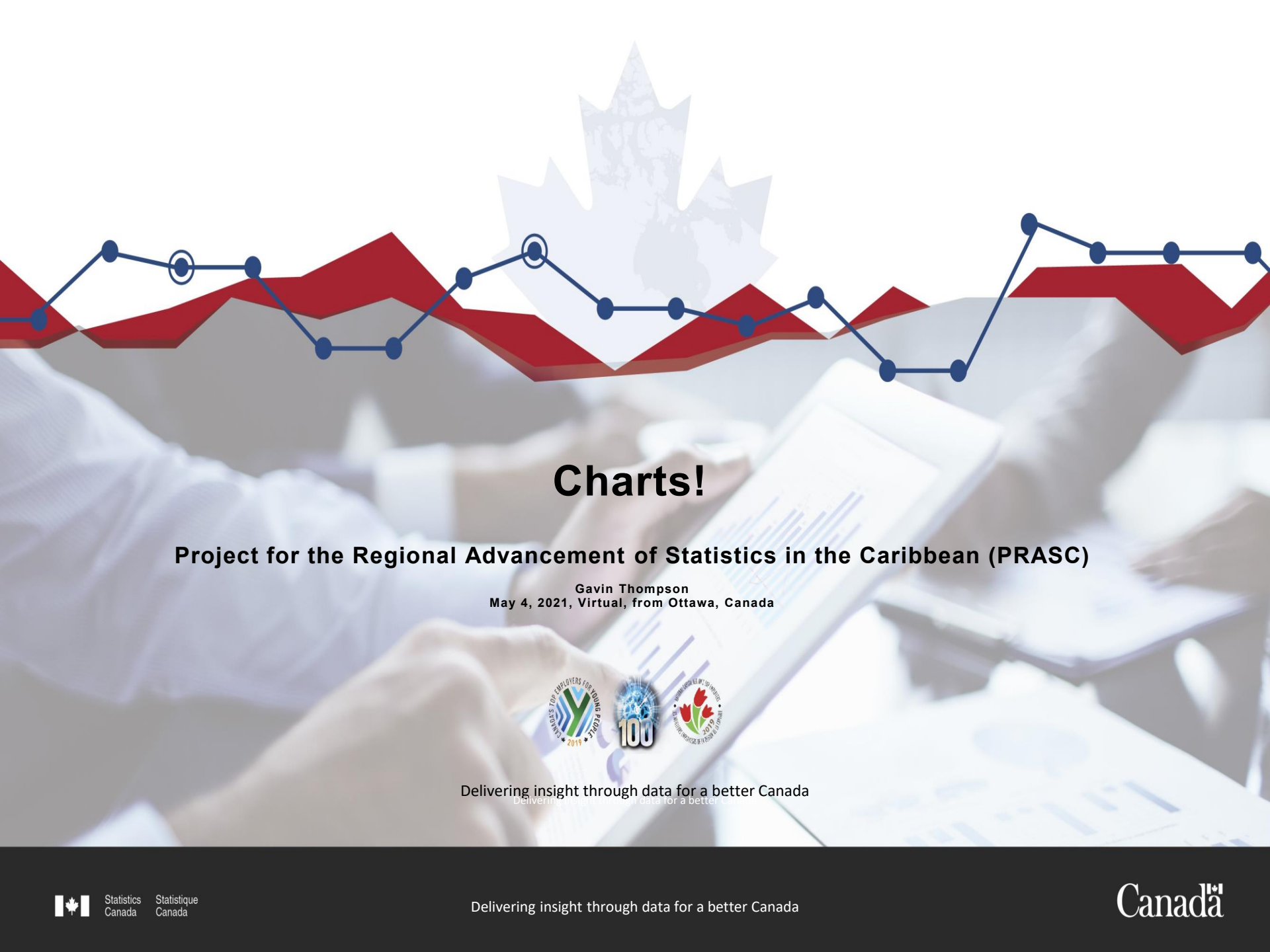


Project for the **Regional
Advancement of Statistics**
in the **Caribbean**

Projet régional pour
l'**avancement de la Statistique**
dans les **Caraïbes**

Funded by the
Government
of Canada

Canada



Charts!

Project for the Regional Advancement of Statistics in the Caribbean (PRASC)

Gavin Thompson
May 4, 2021, Virtual, from Ottawa, Canada



Delivering insight through data for a better Canada

Overview

- What is a chart?
- Why use charts?
- Types of charts
- What makes a good (and bad) chart
- Standards for publication

What is a chart?

- Provides a visual presentation of the data
- Charts can show a large amount of information in a way that is easy for people to process
- Charts show the relationships among sets of values

Choosing the right chart

- The goal of a chart is to help “tell the story” of the data
- The wrong chart type can:
 - confuse the user
 - mislead the user

Things to think about...

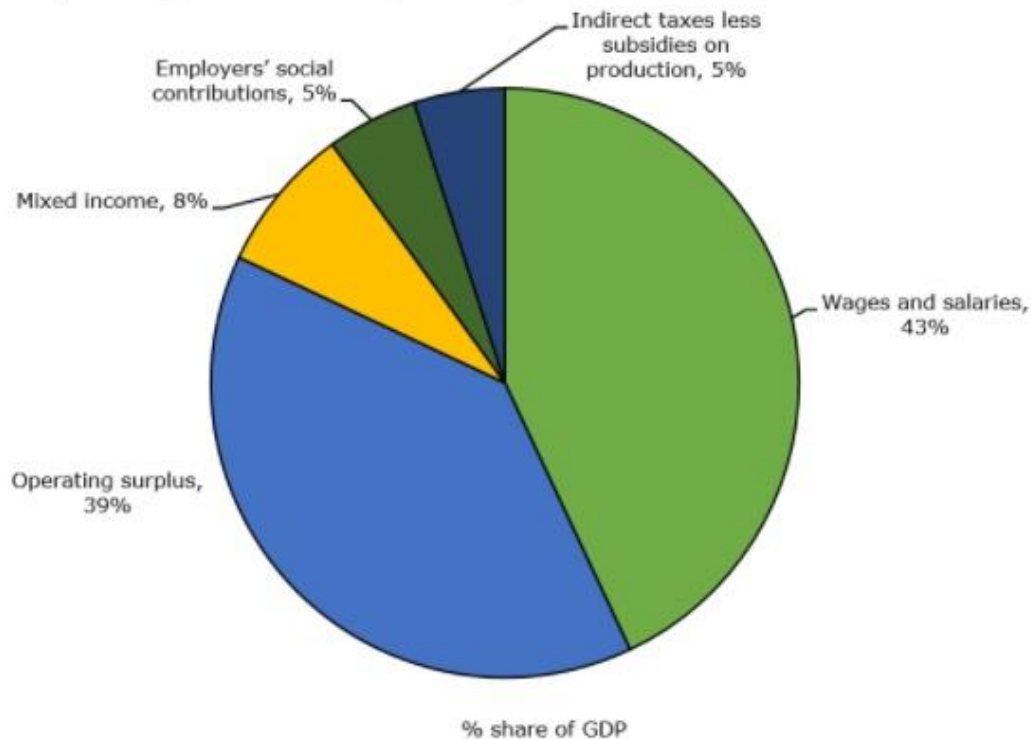
- How will the data be used?
- Who is the target audience?
- What is the best way to map out the information?

Types of charts

- Pie-charts
 - relation of parts to the whole
 - compares categories to each other
- Column and Bar graphs
 - compare and emphasize magnitude
 - show time series over few periods
- Line graphs
 - show time series over many periods

Pie Charts (in French – Camembert!)

Chart 1
Metropolitan gross domestic product (GDP)



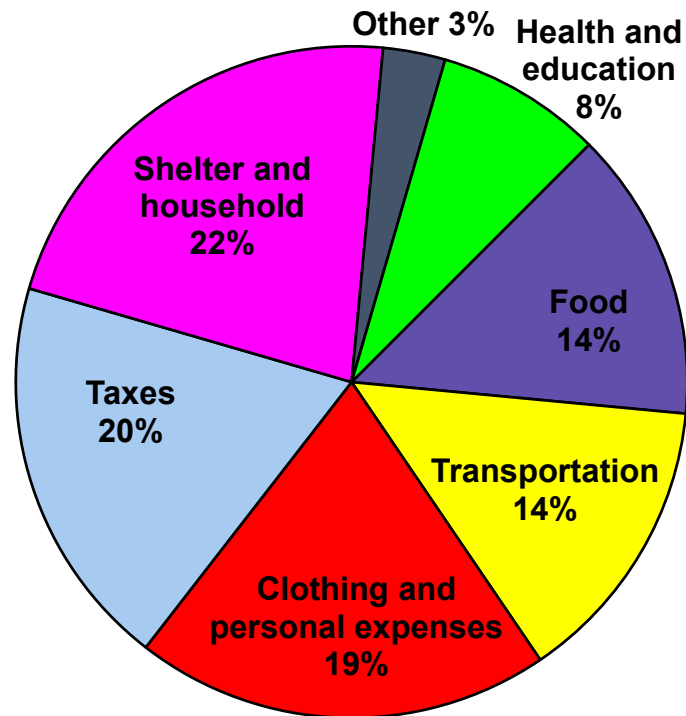
*Measuring the Economy,
Region by Region*
Statistics Canada Blog
Jan 30 2017

Source: Statistics Canada, Industry Accounts Division.

Pie Charts...

- Are primarily used to illustrate how different parts make up the whole - designed to visualize how a whole is divided into various parts – usually represents a percentage distribution
- Work best if there are no more than 5 to 7 categories
- Visually allows comparison of different categories to each other
- Need to have mutually exclusive (distinct) categories (won't work when questions are “Mark all that apply”)

Example of a good pie chart



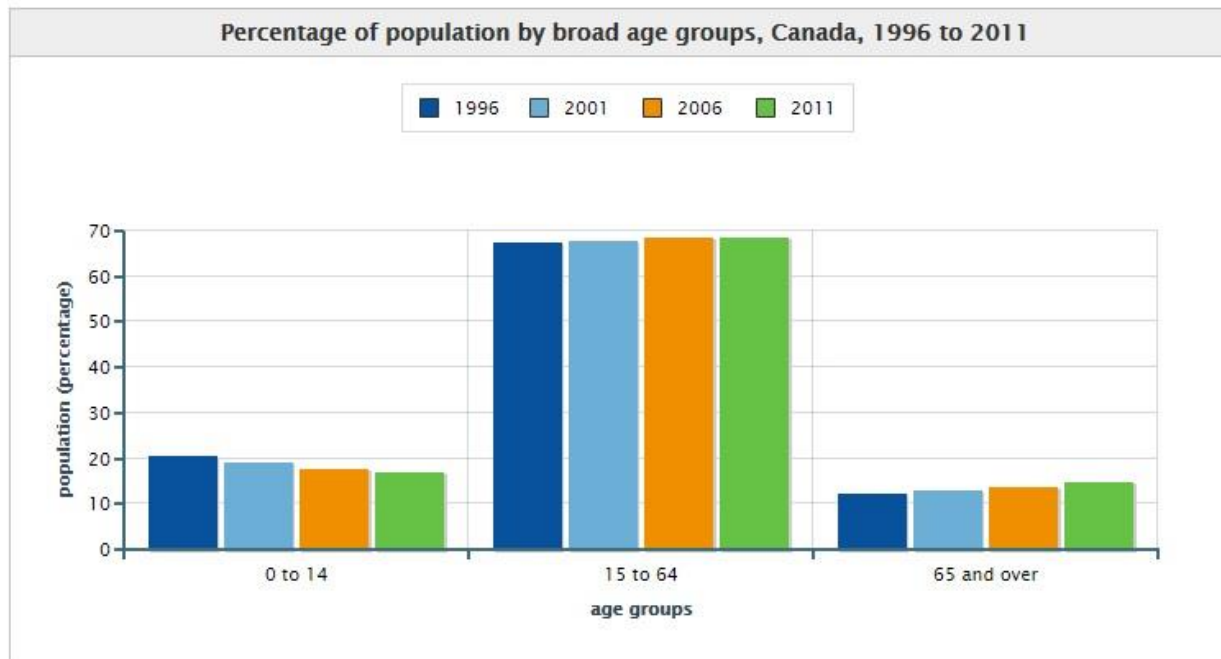
Avoid 3-D pie charts



Bar Charts

Figure 2.1 Percentage of population by broad age groups, Canada, 1996 to 2011

[Figure 2.1 description](#)



Bar Charts

- Are used for comparing differences between a small number of categories or time periods
- Bar charts can also be “stacked” to show multiple choices for one category - for example questions about level of satisfaction
- The data are put into separate bars or columns

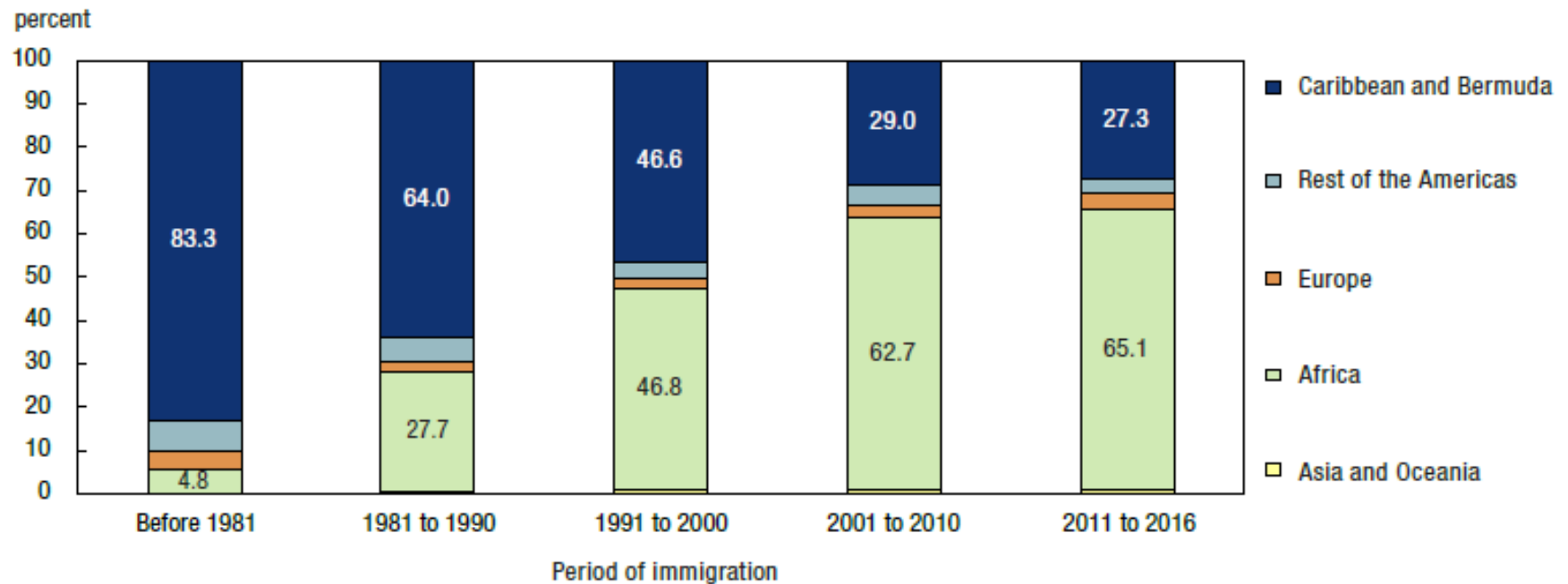
Bar Charts – Good Practices

- A good scale is incredibly important – a poorly chosen scale can mislead the reader
- Avoid using too many bars
- Never use 3-D charts
- Cite your sources
- Use proper labeling and titles

Stacked Bar Chart

Chart 7

Region of birth of Black immigrants by period of immigration, Canada, 2016

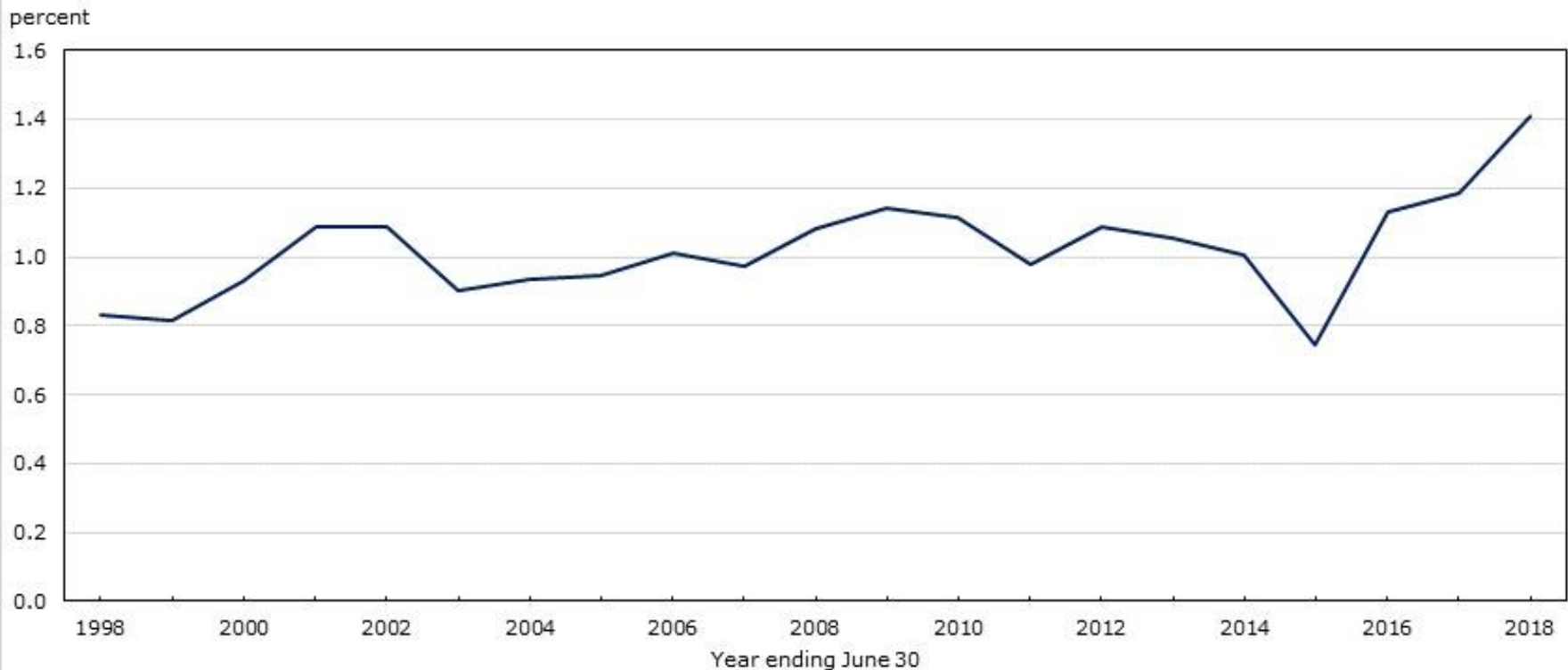


Source: Statistics Canada, Census of Population, 2016.



Line Chart

Chart 1.1
Population growth rate, 1997/1998 to 2017/2018, Canada

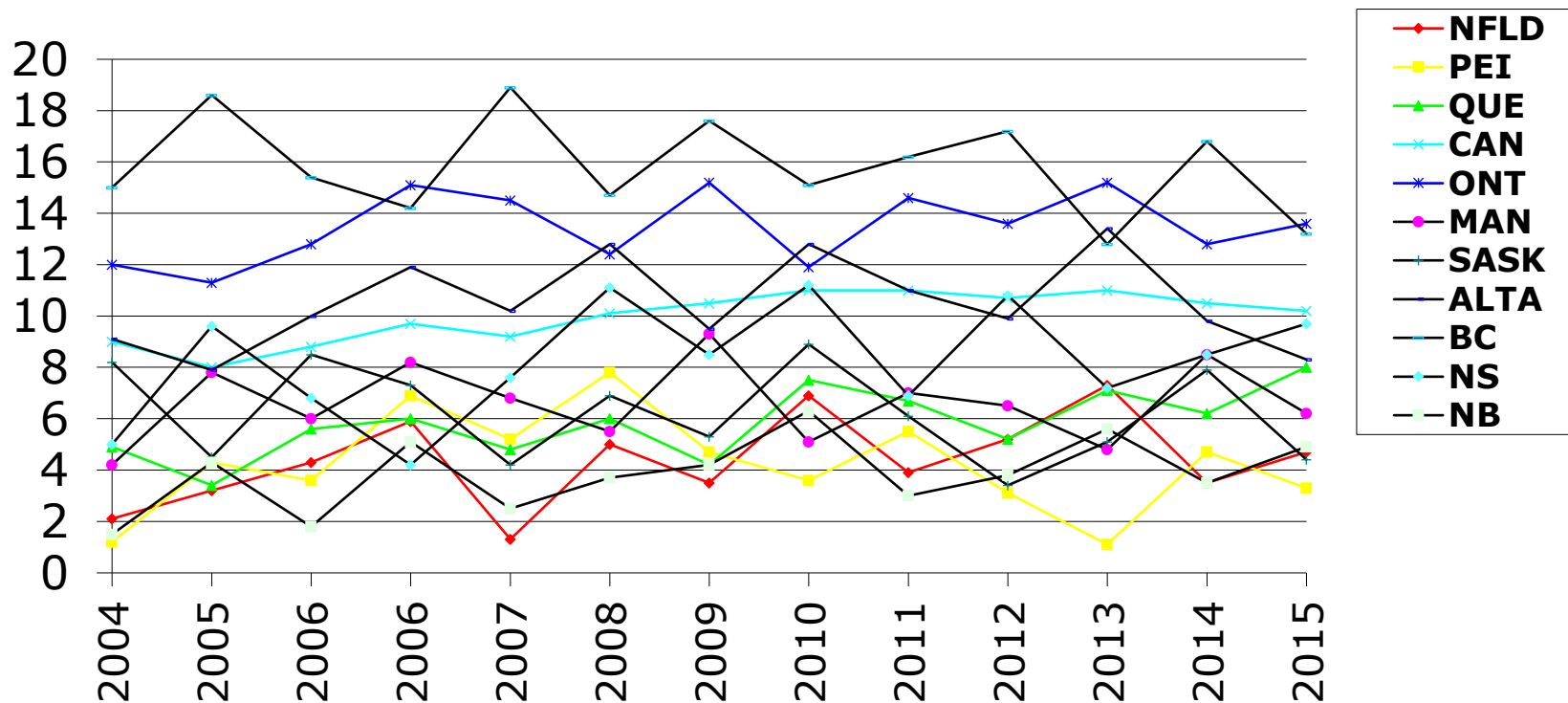


Source: Statistics Canada, Demography Division

Line Charts

- Avoid using too many different categories
- Scale is also important in line graphs
- Cite your sources
- Use proper labeling and titles

Not too much on one graph!



Visual Guide to Chart Formatting

Width: min 22.5 cm; max 30 cm; **Height:** Start at 11 cm increase as needed.

Y-axis title:
Align with the y-axis labels
Verdana, 8 point
Text in lowercase

Y-axis labels:
Verdana, 8 point
Number format only, even for percentages
\$ or % not used

Tick marks on y-axis:
Required
Inside the plot area
Not used if gridlines touch the y-axis

X-axis labels:
Verdana, 8 point

Legend:
Bottom of chart
Verdana, 8 point

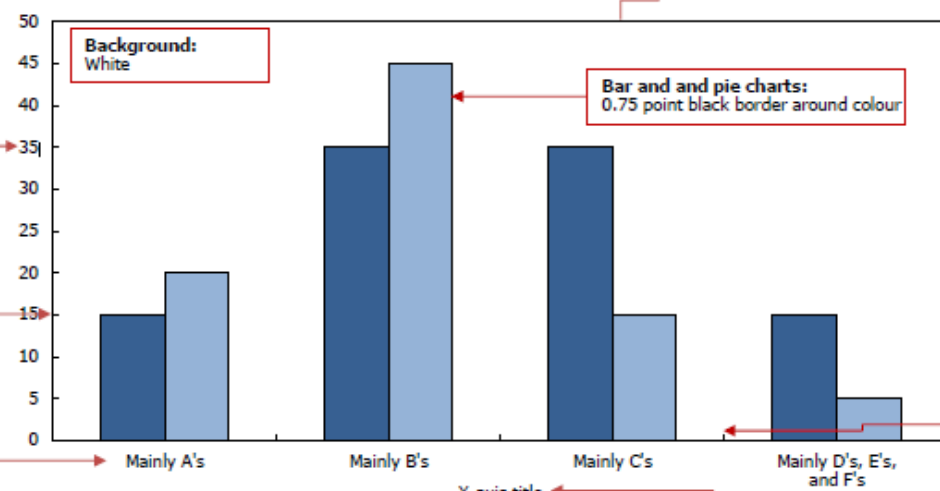
In the plot area:
Verdana, 8 point
Must have enough space to avoid clutter

Chart number
Chart title

Chart number and title:
Flush to the top left corner
Verdana, 11 point, bold

Plot area:
0.75 point black line

For pie charts:
No border



Legend 1
■ Legend 1

Legend 2
■ Legend 2

Order of symbols:
See page 12 in the formatting guide

Chart notes:
Flush left
Verdana, 8 point
This is the order for the chart notes
Placed in the same textbox at the bottom of the chart area

Error bars:
Black
Background colour must be light enough to have contrast with the error bar

X-axis title:
Optional
Verdana, 8 point
Sentence case

Tick marks on x-axis:
When required, inside the plot area
Not required for bar/column charts

Data labels (if used):
At end of bar
Verdana, 8 point

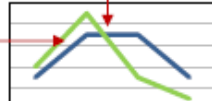
Inside the bar
Verdana, 8 point
Black if bar colour is light
White if bar colour is dark

Chart colours:
There must have sufficient contrast between the colours.

Colour blindness prevents some people from distinguishing between red and green or between blue and green. These colours can be used but not with the same contrast (i.e., brightness).

Gridlines:
If used, no tick marks on the axis they touch
Colour is White, Background 1, 15% Darker

Line chart:
Line thickness is 1.5 point



In conclusion...

- Information presented should be clear to the reader
- A good graph will tell the data story
- Graphs should compliment the message you are trying to project
- Graphs should be clear and not be used in a way which can mislead people
- Choose the appropriate graph type
- Keep it simple!

HOW CAN WE
DELIVER
INSIGHT
THROUGH DATA
FOR A BETTER
CANADA...



IF WE'RE
NOT FULLY
CONNECTING
WITH OUR
PEOPLE?

Easy.

Visual products.

Why?

THEY WORK!



To give you some perspective...

We process visuals **60,000** times faster than text

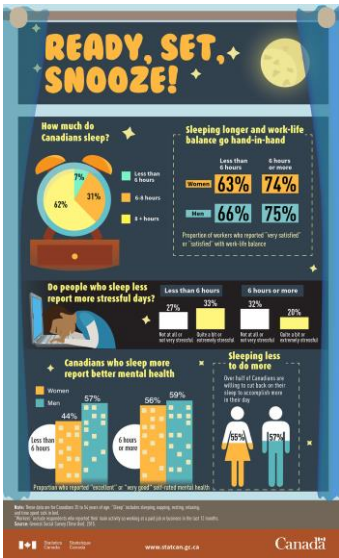
Visuals are **30** times more likely to be read

People remember **80%** what they see and do, and only retain **20%** what they read.

Infographics are shared **3X** more than other posts on social media.

Visual Products take many forms...

Infographics



Social media posts/infobites

According to the #2016Census, there were a total of **5,816,420 families with children in Canada.**

#FamilyDay2019

Statistics Canada / Statistique Canada

Videos and GIFs



Recently, we took it a step further..

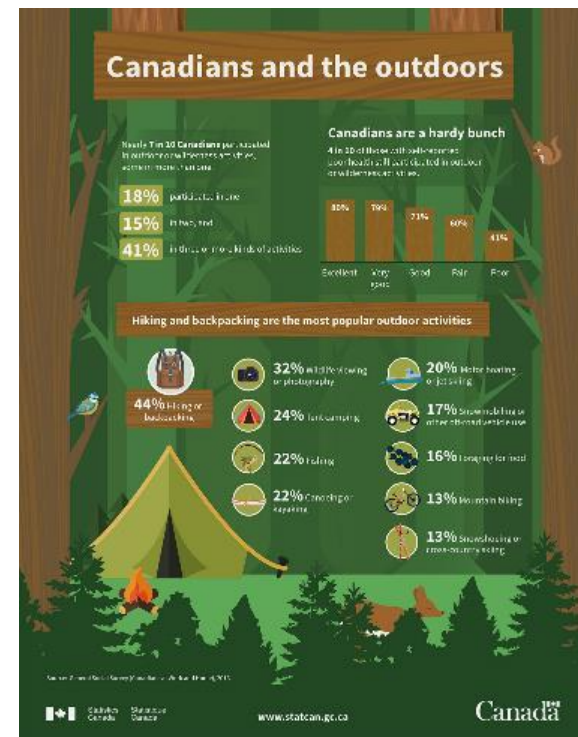


WHAT IS AN INFOGRAPHIC?

- Portmanteau of 'information' and 'graphic'
- Visual representation of data or information
- Compelling images simplify complicated content
- Data is clear, compact, and shareable.

WHAT MAKES A GOOD INFOGRAPHIC?

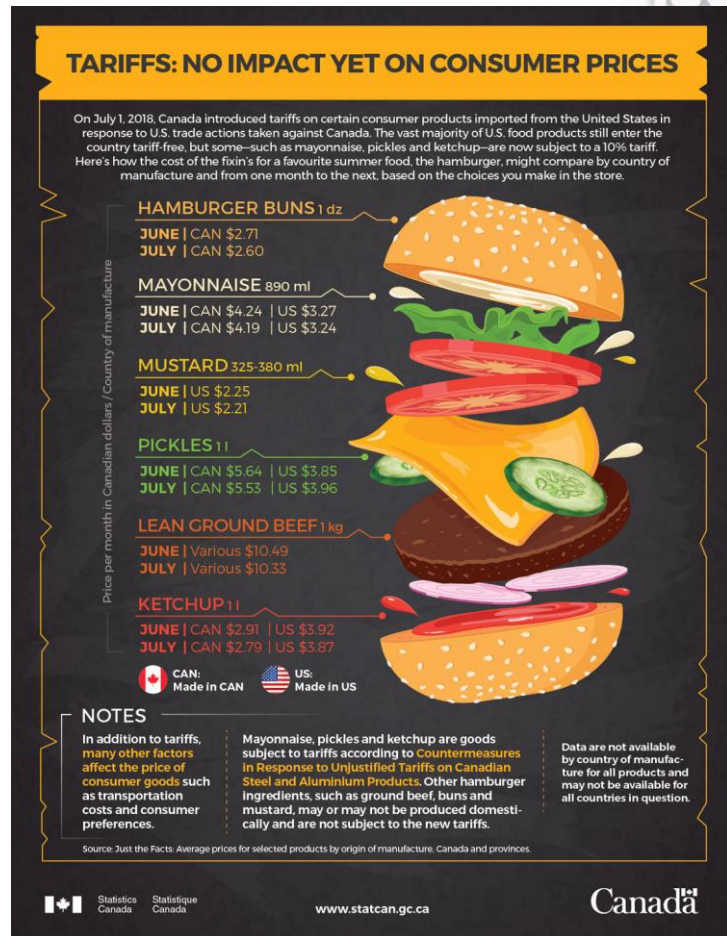
- Appetizer plate: piques the reader's interest and give them a sample of the complete report



<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018005-eng.htm>

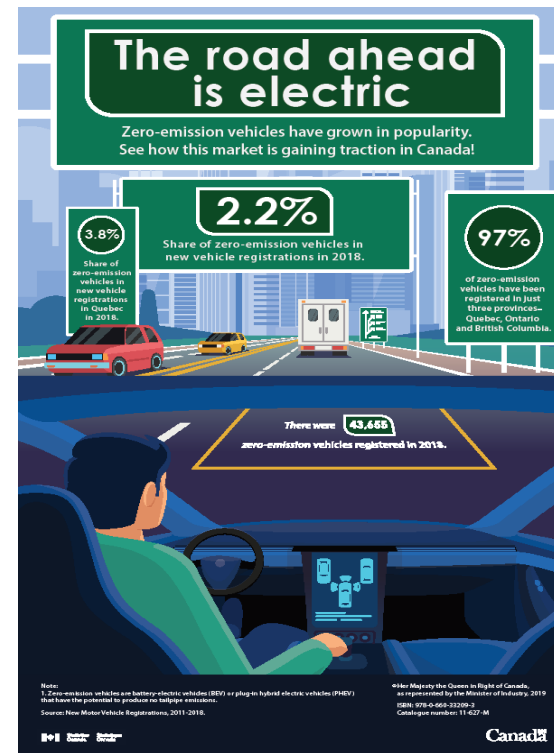
Infographics are our bread and butter...or in this case, our bun, beef, tomatoes, and whatever else you like on your burger.

- Combination of 'information' and 'graphic'
- Visual representation of data or information
- Compelling images simplify complicated content.
- Digestible, get it?
- Data is clear, compact, and shareable
- BTW, notice anything wrong here?



TELL A STORY

- Your infographic should tell one complete and coherent story. The data points, the text, and the visual elements that you choose to include should all work together to present that narrative.
- It's tempting to include as much information as possible, but less is more. Just pique their interest.
- You want to have some negative space.
- Keep it to 4-5 data points and between 200-250 words.



TITLES

You want a title that is short and snappy (ideally 5-6 words only), though factual and suitable to your subject matter. It should support your story and give the readers a clear idea of what to expect. The title cannot be identical to the name of your survey.

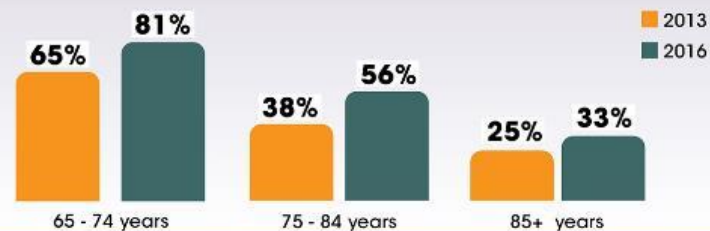
Examples

- **Seniors online**
- **Family Matters: Long-lasting relationships**
- **Income of Canadians, 2017**

SENIORS ONLINE



INTERNET USE FOR 65-TO 74-YEAR-OLDS INCREASED FROM 65% IN 2013 TO 81% IN 2016.



THE TOP 4 TECHNOLOGICAL DEVICES SENIORS OWNED IN 2016 WERE:



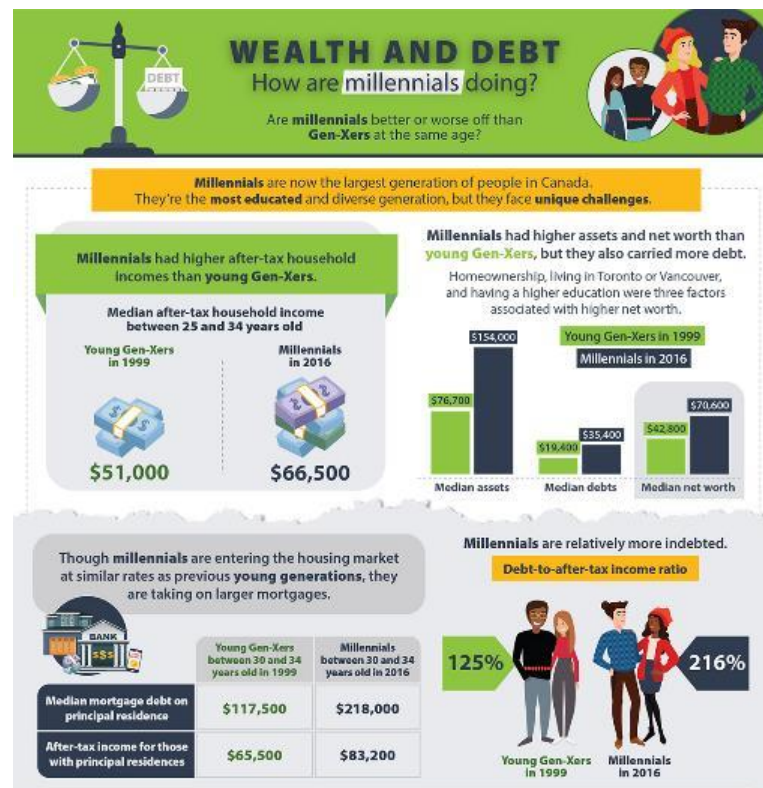
<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019024-eng.htm>

SUBJECTS

Of interest to a wide range of people.

Examples:

- **Wealth and debt: How are millennials doing?**
- **Sending money to relatives or friends living abroad**
- **New Data on Disability in Canada, 2017**



<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019029-eng.htm>

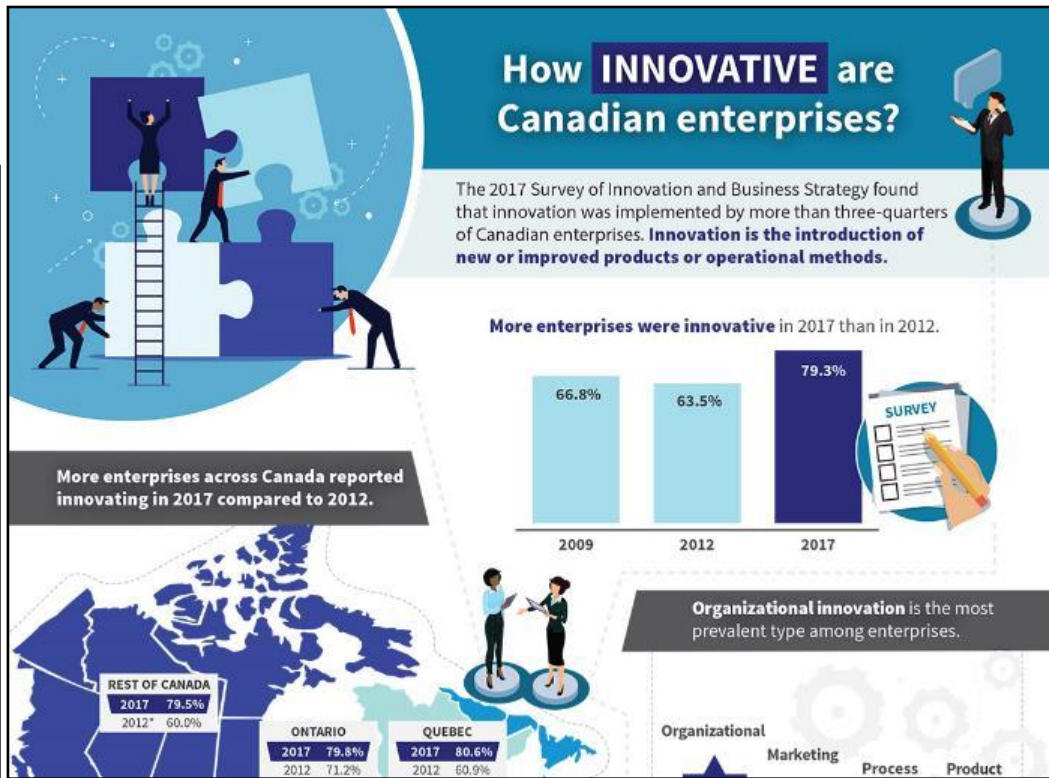
PLAIN LANGUAGE

Accessible language, without jargon, understandable by an 8th grader

Example:

How innovative are Canadian enterprises?

Defines innovation (jargon) in the first section



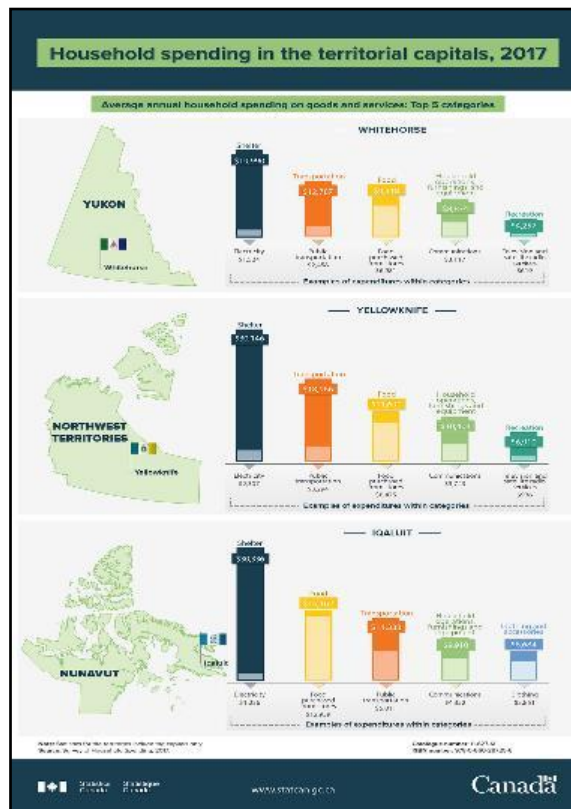
<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018034-eng.htm>

WORD COUNT

Example:

Household spending in the territorial capitals, 2017

151 words



<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018052-eng.htm>

THOUGHT-OUT?

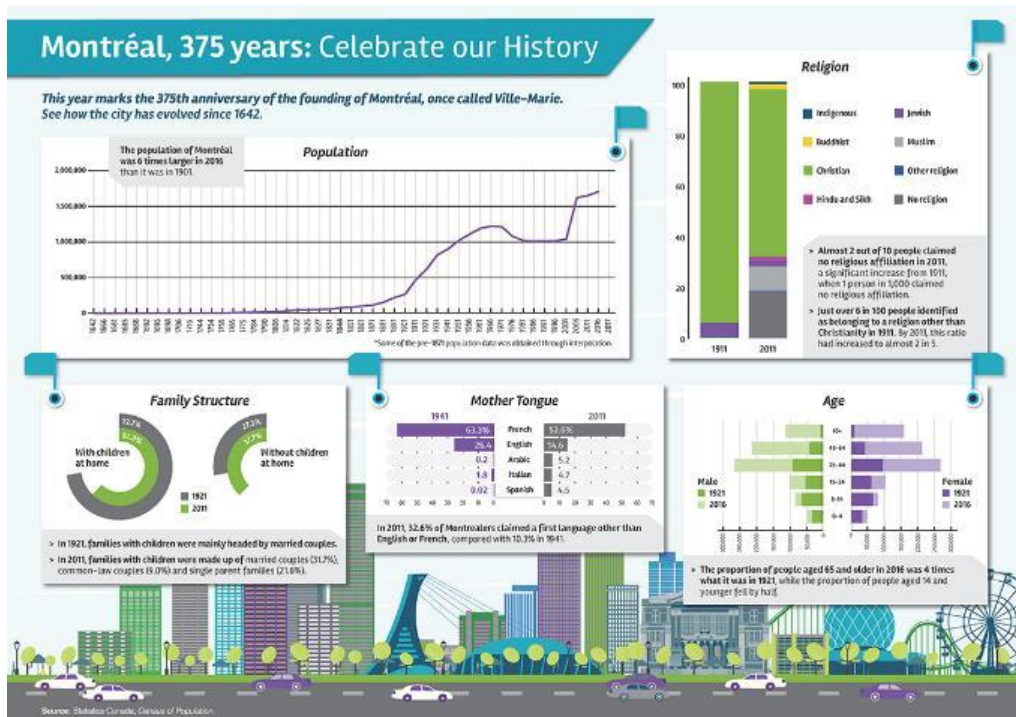
Presentation driven by the content

Example:

Montréal, 375 years: Celebrate our history

Good: Sights from Montréal as decoration

Less good: Large empty population chart + opaque charts block the skyline

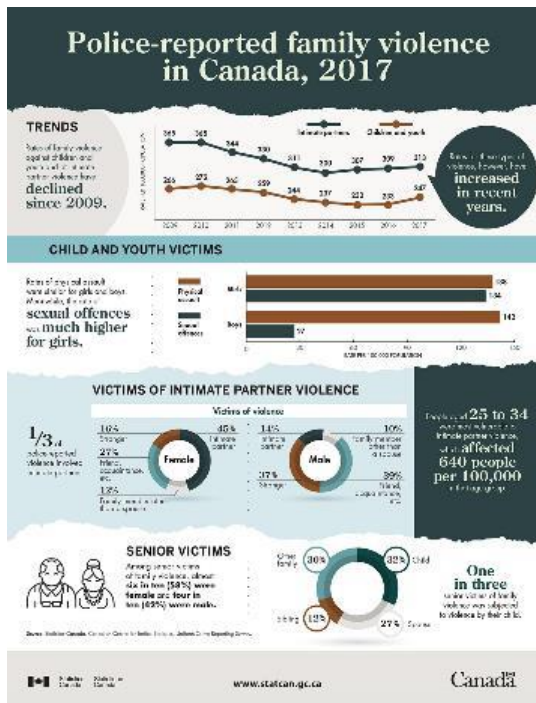


SENSITIVE TOPICS

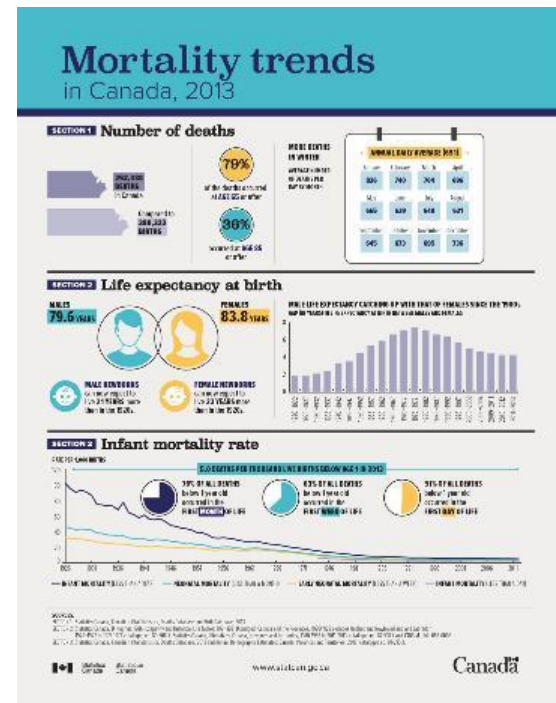
Content appropriate for more sensitive topics

Examples:

- Police-reported family violence in Canada, 2017
- Mortality trends in Canada, 2013



<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018054-eng.htm>



<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2017022-eng.htm>

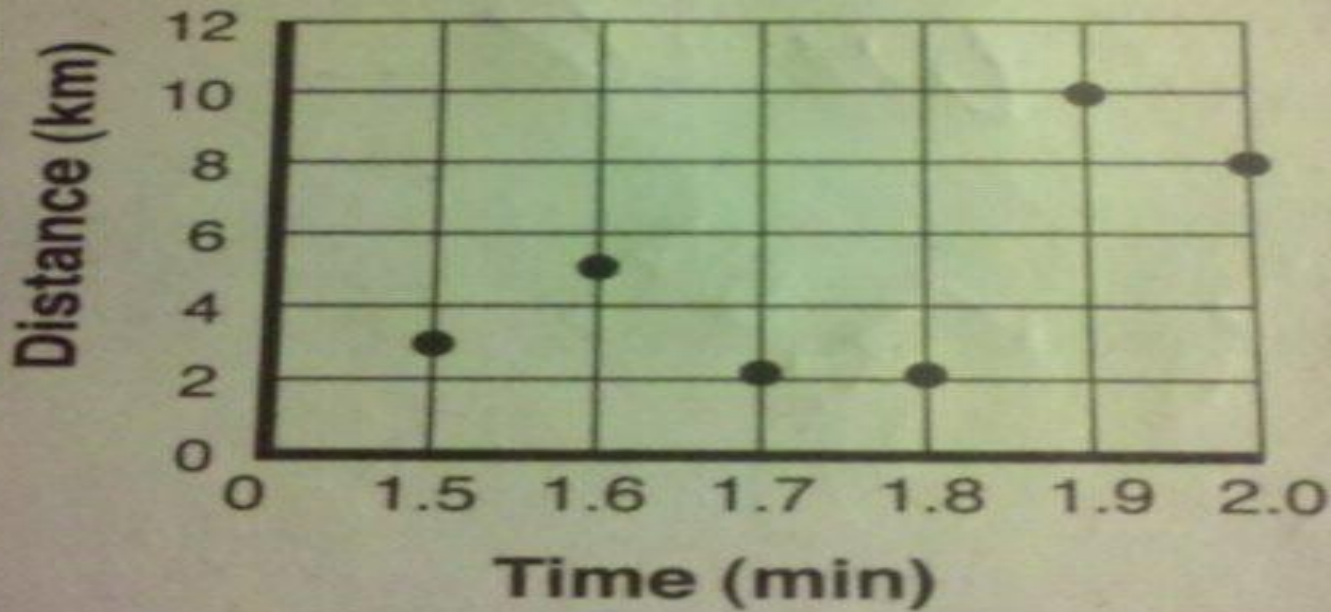


Bad Math The Chart Chapter



FAIL

Number of Books Read Per Month



VIA 9GAG.COM

Ohio Unemployment Rate

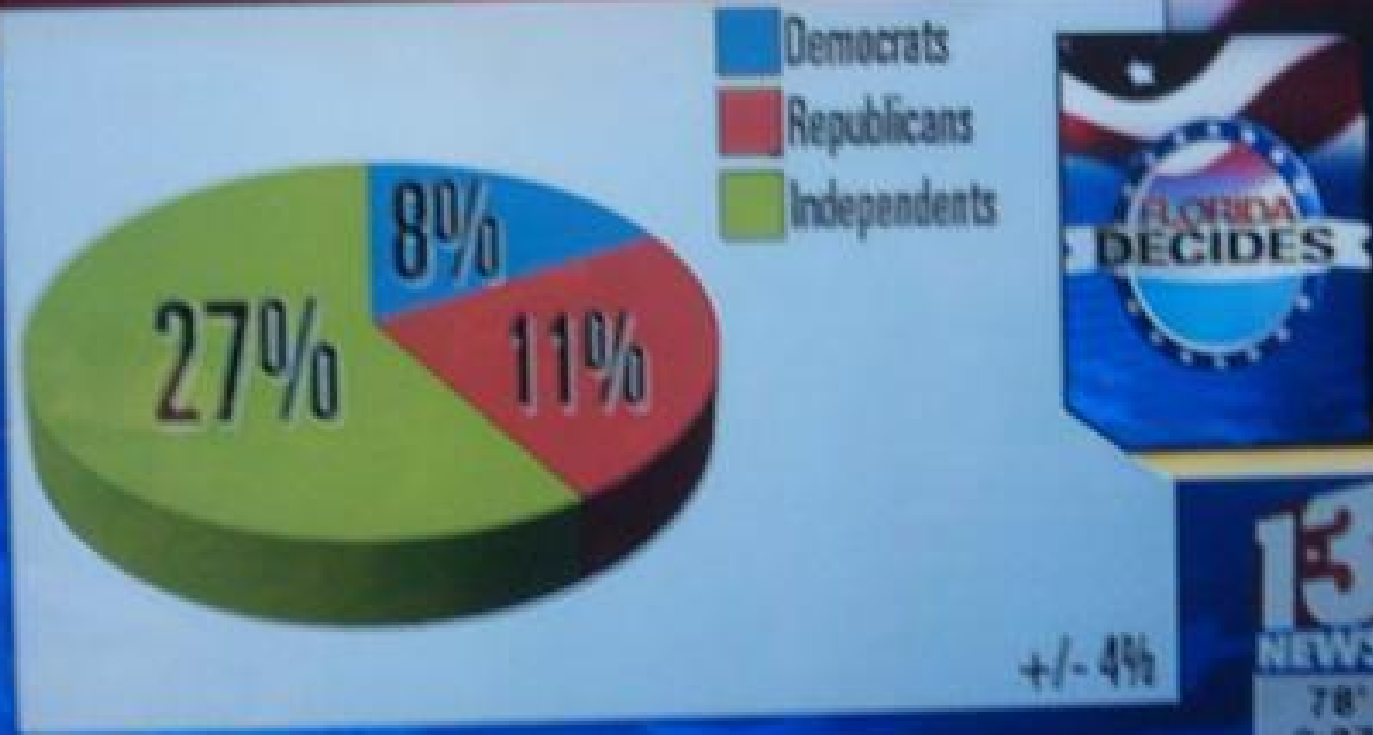


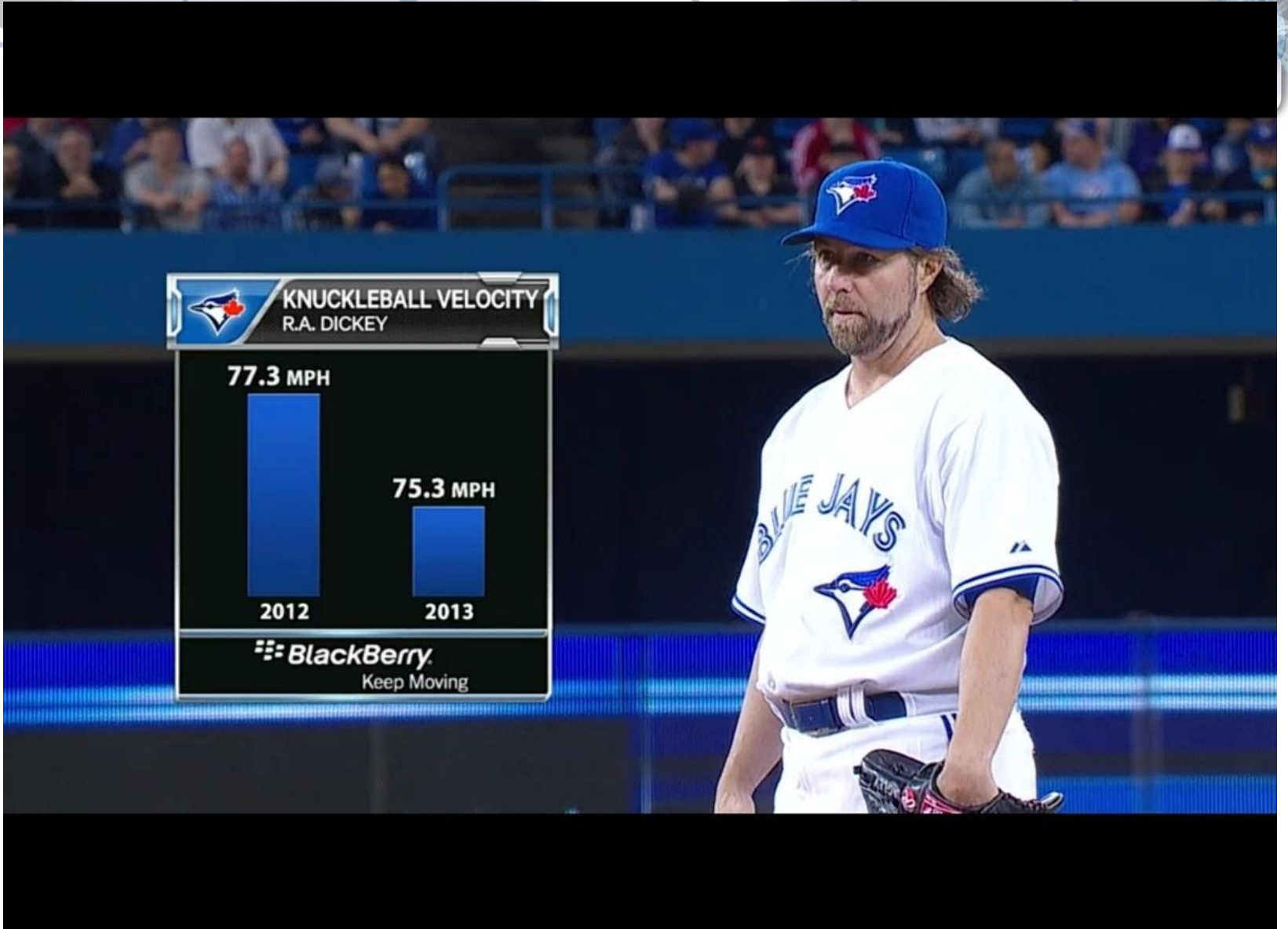
1/3 of our operating budget goes towards financial aid.



Florida Decides Poll

WHO ARE CHILES' SUPPORTERS?

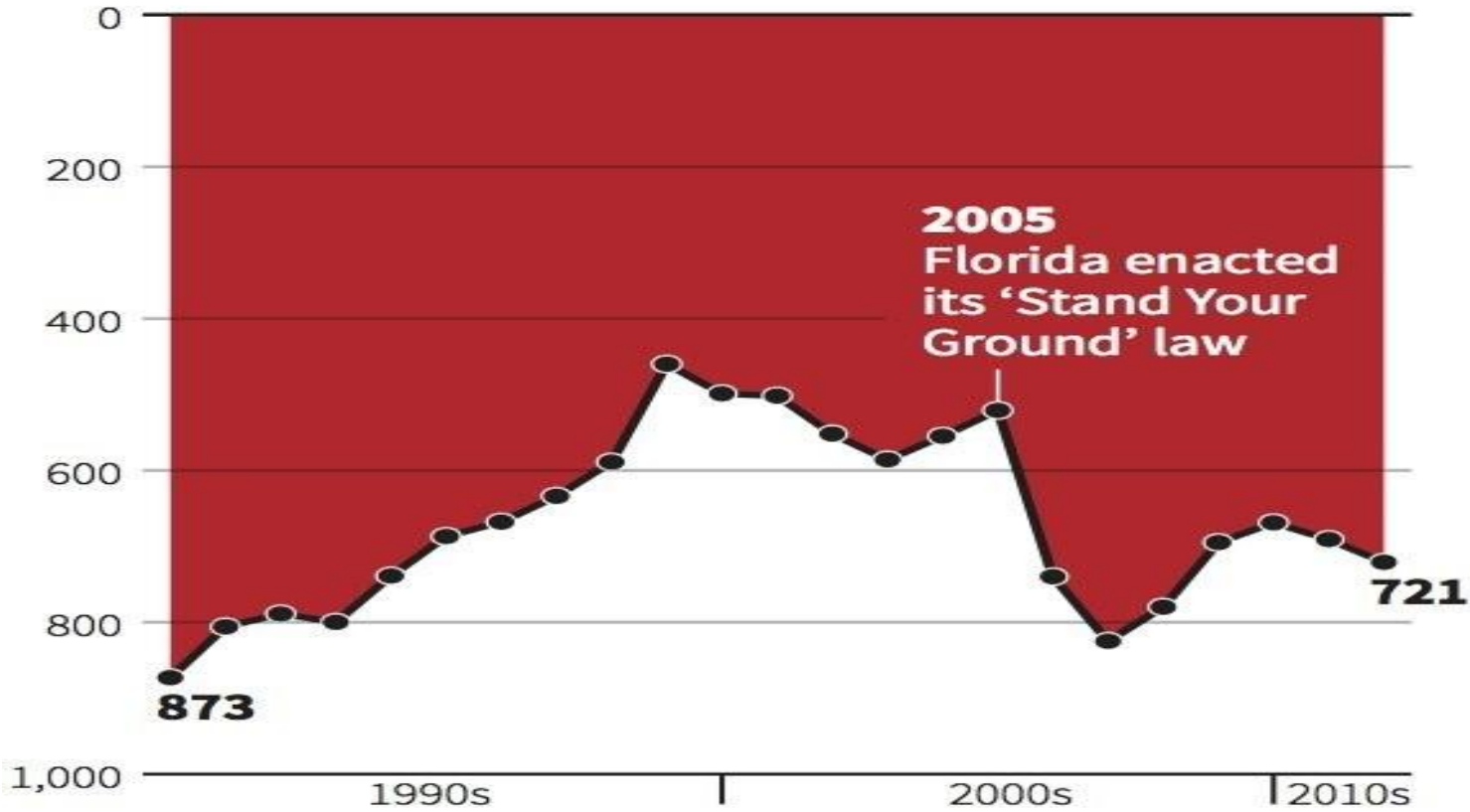






Gun deaths in Florida

Number of murders committed using firearms



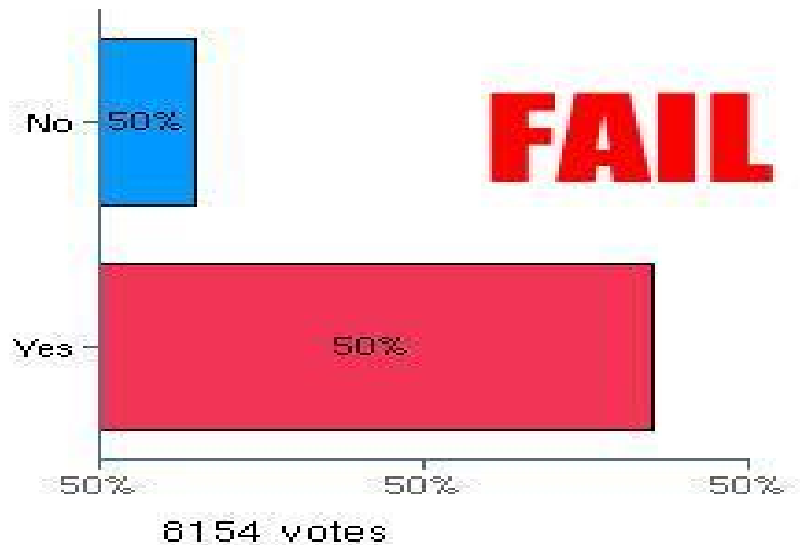
Source: Florida Department of Law Enforcement

C. Chan 16/02/2014



Obama's Nobel Prize

Does U.S. President Barack Obama deserve to have won the 2009 Nobel Peace Prize?

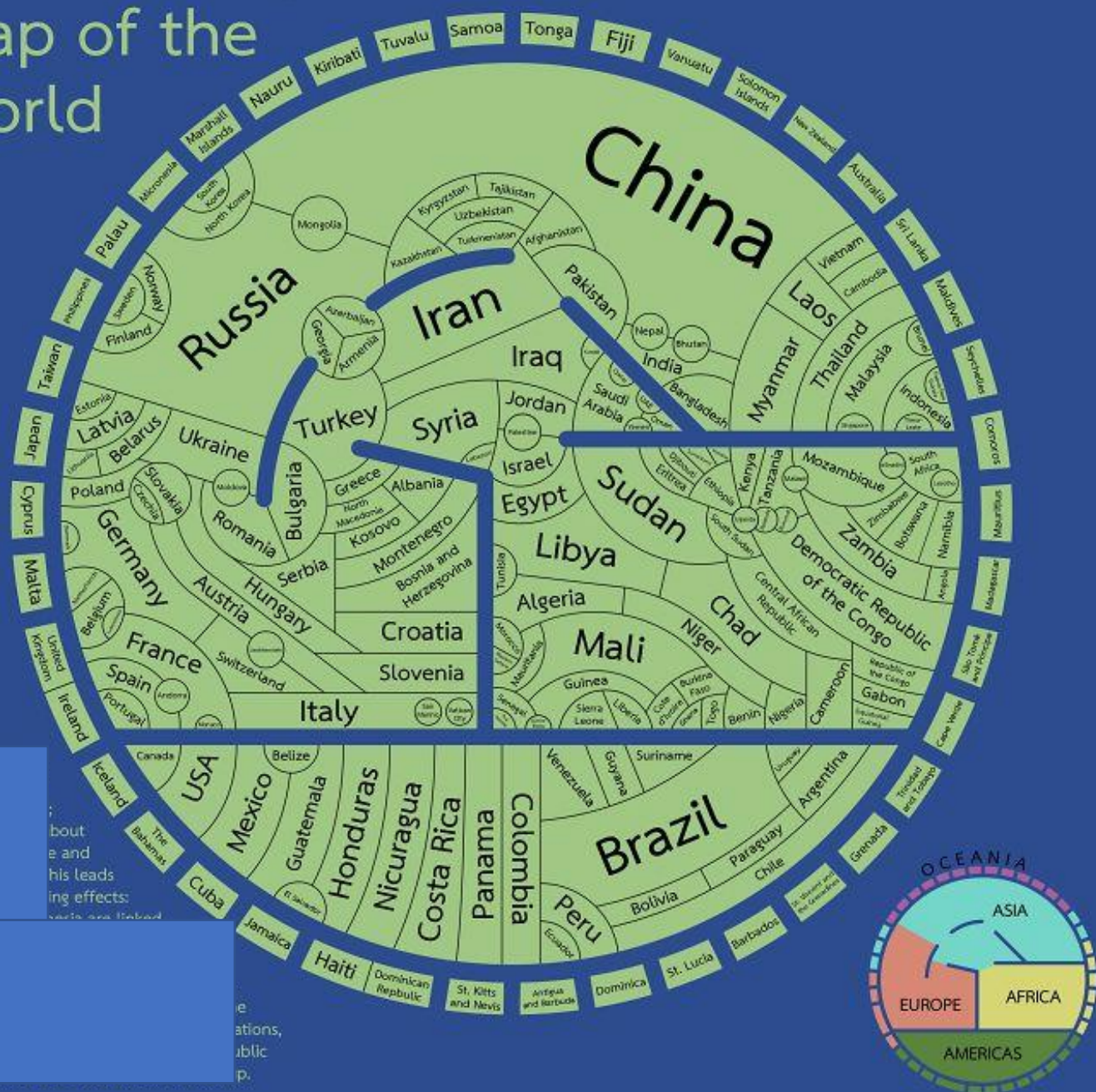


This is a non-scientific user poll. Results are not statistically valid and cannot be assumed to reflect the views of Washington Post users as a group or the general population.

failblog.org (most coverage, [click here.](#))

The Topologist's Map of the World

100



**Great
(Outside of
the Box)
Data
Visualization**





100

QUESTIONS?

You can contact the PRASC team at:
statcan.prasc-prasc.statcan@canada.ca