02. Visualization Typology

ID 413: Information Graphics and Data Visualization
Spring 2025

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Why visualize?

To convey information through visual representations in order to:

- Map/record/summarise
- Clarify/explain
- Instruct/teach/communicate
- Discover
- Inspire/advocate/persuade/tell a story
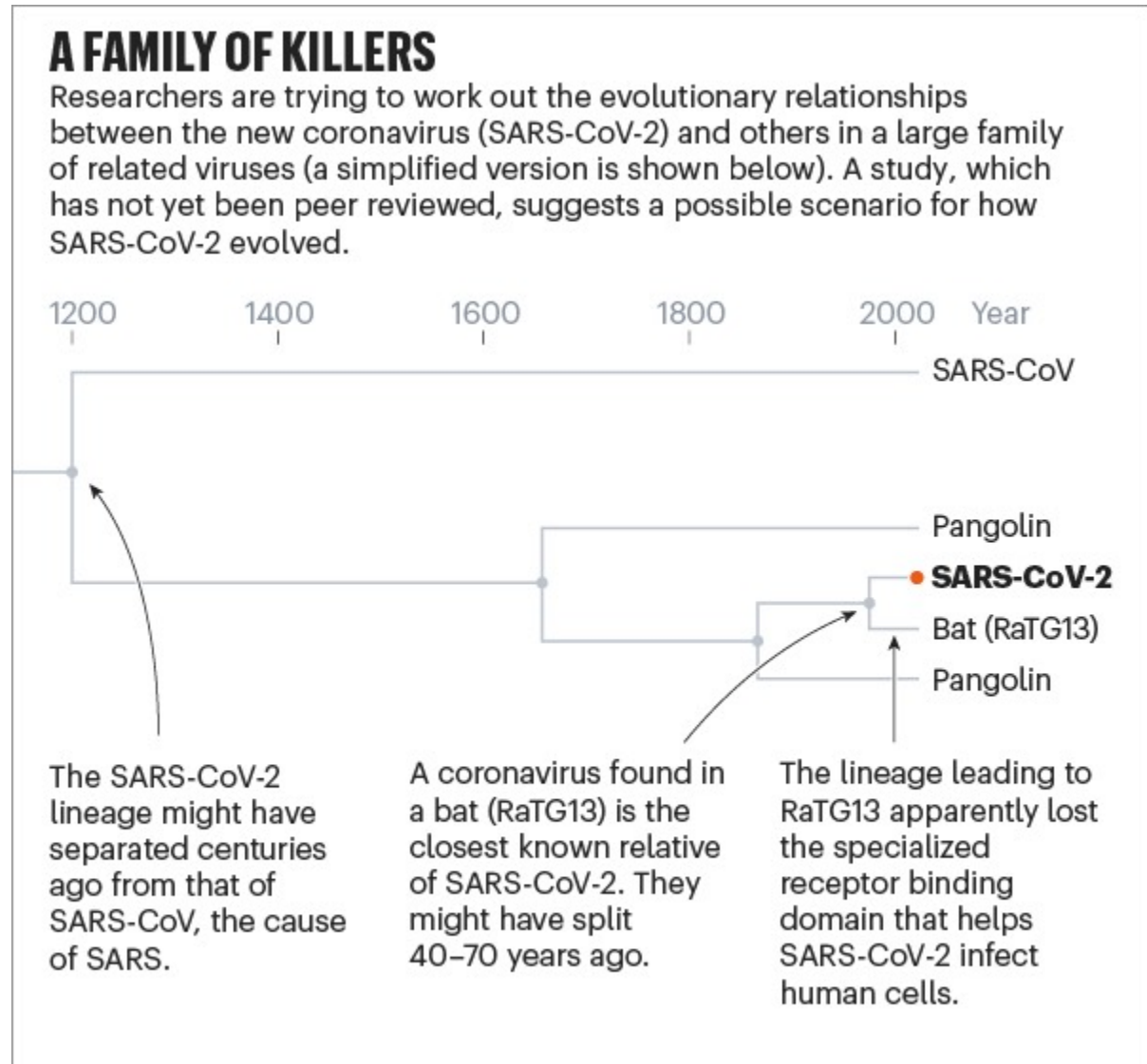
I. Classification based on the form

Temporal data visualizations track time series data – the performance of an indicator over a period of time. They normally feature lines that either stand alone or overlap with each other, with a start and finish time.

- Line graph, bar chart, gantt chart, area chart, scatter plots
- Polar area diagrams (Coxcomb chart, Florence Nightingale)
- Time series sequences
- Timelines
- Line graphs

Hierarchical data visualizations order groups within larger groups. They are best suited if you're looking to display clusters of information, especially if they flow from a single origin point.

- Tree diagrams (https://info-design-lab.github.io/UDISE/)
- Ring charts
- Sunburst diagrams

A FAMILY OF KILLERS

Researchers are trying to work out the evolutionary relationships between the new coronavirus (SARS-CoV-2) and others in a large family of related viruses (a simplified version is shown below). A study, which has not yet been peer reviewed, suggests a possible scenario for how SARS-CoV-2 evolved.

The SARS-CoV-2 lineage might have separated centuries ago from that of SARS-CoV, the cause of SARS.

A coronavirus found in a bat (RaTG13) is the closest known relative of SARS-CoV-2. They might have split 40–70 years ago.

The lineage leading to RaTG13 apparently lost the specialized receptor binding domain that helps SARS-CoV-2 infect human cells.

Classification based on the form

Network Datasets connect deeply with other datasets. Network data visualizations show how they relate to one another within a network. In other words, demonstrating relationships between datasets without wordy explanations.

- Matrix charts
- Node-link diagrams
- Word clouds
- Alluvial diagrams (Sankey diagram - https://info-design-lab.github.io/accident/)

You can find more form based classes at https://guides.library.duke.edu/datavis/vis_types

Classification based on the form

Geospatial relate to real life physical locations, overlaying familiar maps with different data points.

-        Flow map (Minard's Napolean's March)
-        Density map
-        Cartogram
-        Heat map

II. Classification based on intention (analytical, presentation)

A visualization is recommended to users by satisfying their requirements for a particular dataset. There have been many approaches like rule-based, machine learning approaches, and knowledge graph embedding approaches for recommending the visualization for the dataset. These approaches recommend visualization based on the rules, training a machine learning model by extracting features of data and by constructing a knowledge graph from the data respectively.

We consider a conversational approach to visualization, where users specify their needs at each step in natural language, with a visualization being returned in turn. Prior work has shown that visualization generation can be boiled down to the identification of visualization intent and visual encodings.

II. Classification based on intention (analytical, presentation)

Trends time series (using line or bar charts), motion chart, scatter plot

Correlation scatter plot, bubble chart, heat map

Distribution histogram, boxplot, ridgelines, violin chart, density map

Part to whole pie chart, donut chart, stacked bar chart, funnel chart

Ranking bar plot, spider/radar chart, word cloud, parallel coordinates, lollipop chart

Spatial relationship (Geo) choropleth, cartogram, hexbin map, route map

Flow chord diagram, sankey diagram, arc diagram, organisation chart

from Data to Viz

'From Data to Viz' is a classification of chart types based on input data format. It will help you find the perfect chart in three simple steps :

1 Identify what type of data you have.

2 Go to the corresponding decision tree and follow it down to a set of possible charts.

3 Choose the chart from the set that will suit your data and your needs best.
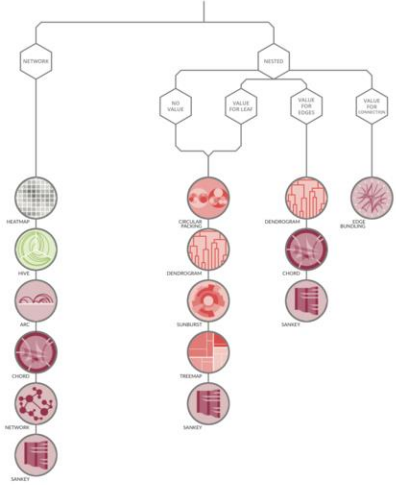
Dataviz is a world with endless possibilities and this project does not claim to be exhaustive. However it should provide you with a good starting point. For an interactive version and much more, visit:
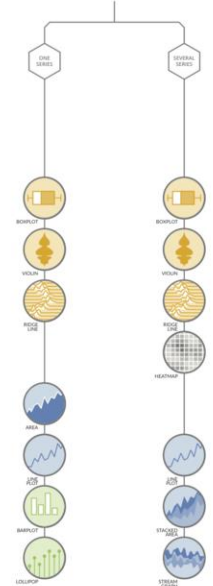
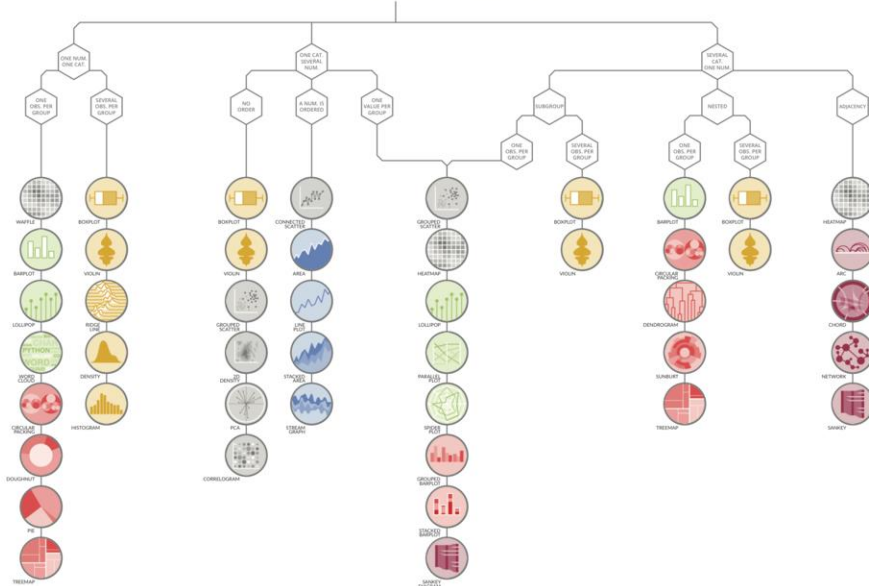data-to-viz.com

CATEGORIC
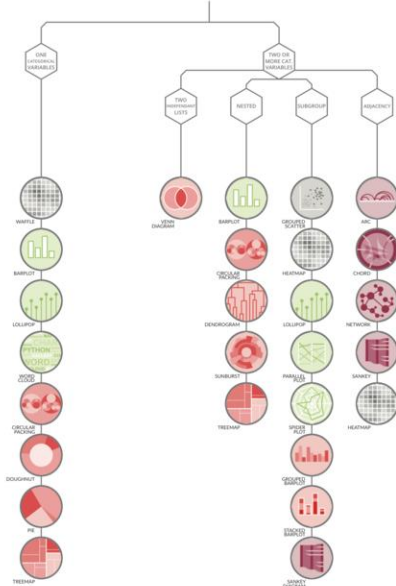
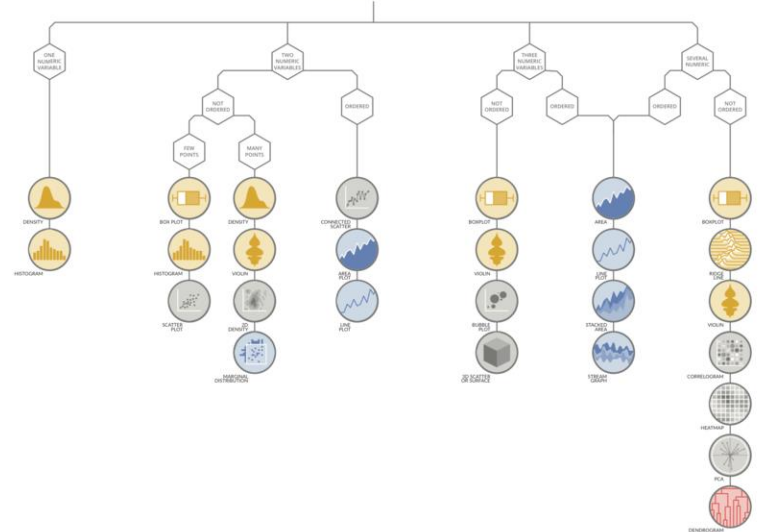## RELATIONAL

MAP

TIME SERIES

WHAT DO YOU WANT TO SHOW ?

- Distribution
- Correlation
- Ranking
- Part of a whole
- Evolution
- Maps
- Flow

CATEGORIC AND NUMERIC

NUMERIC

III. Classification based on user experience

Narratives The objective is to explain by giving the reader a vicarious experience of the intent through a story. Narrative information graphics are characterized by a story told with a distinct point of view.

Instructives explain step by step how things work. Here, the objective is to explain, by enabling the reader to sequentially step through the intent.

Exploratives offer the reader an opportunity to explore and discover the intent.

Simulatives allow the reader 'to experience the intent (usually a real world phenomena).

(Nichani and Rajamanickam 2003).

III. The 4 types of Data Visualization:
Scott Berinato, HBR, June 2016
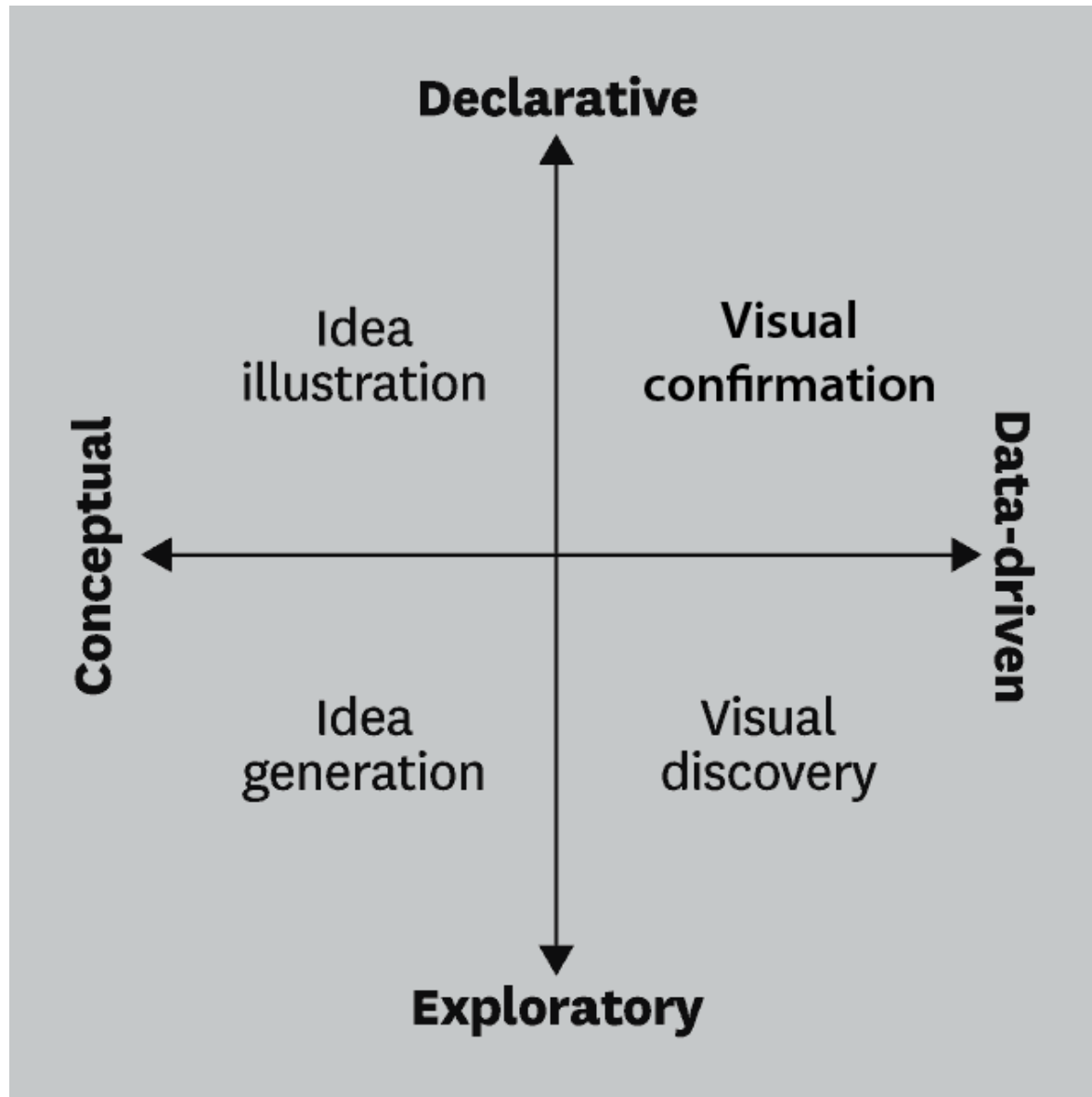
1. Idea Illustration

Idea illustrations clarify complex ideas by drawing on our ability to understand directions (up, down, forward, backward), metaphors (trees, bridges) and simple design conventions (circles, hierarchies). Org charts and decision trees are classic examples of idea illustration.

INFO TYPE: Process, framework

TYPICAL SETTING: Presentations, teaching

PRIMARY SKILLS: Design, editing

GOALS: Learning, simplifying, explaining

FLATTENING THE CURVE

Daily number of cases

Delay outbreak peak

Reduction in peak of outbreak

Cases without protective measures

Health care system capacity

Cases with protective measures

Time since first case
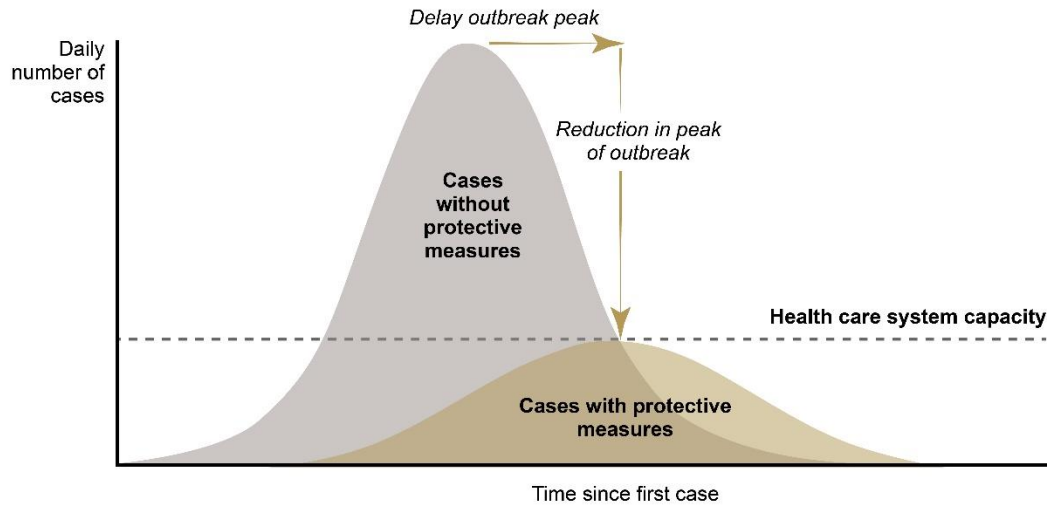
Source: CDC

Hype Cycle for Emerging Technologies

Peak of inflated expectations

Plateau of productivity

VISIBILITY

Slope of enlightenment

Technology trigger

Trough of disillusionment

TIME
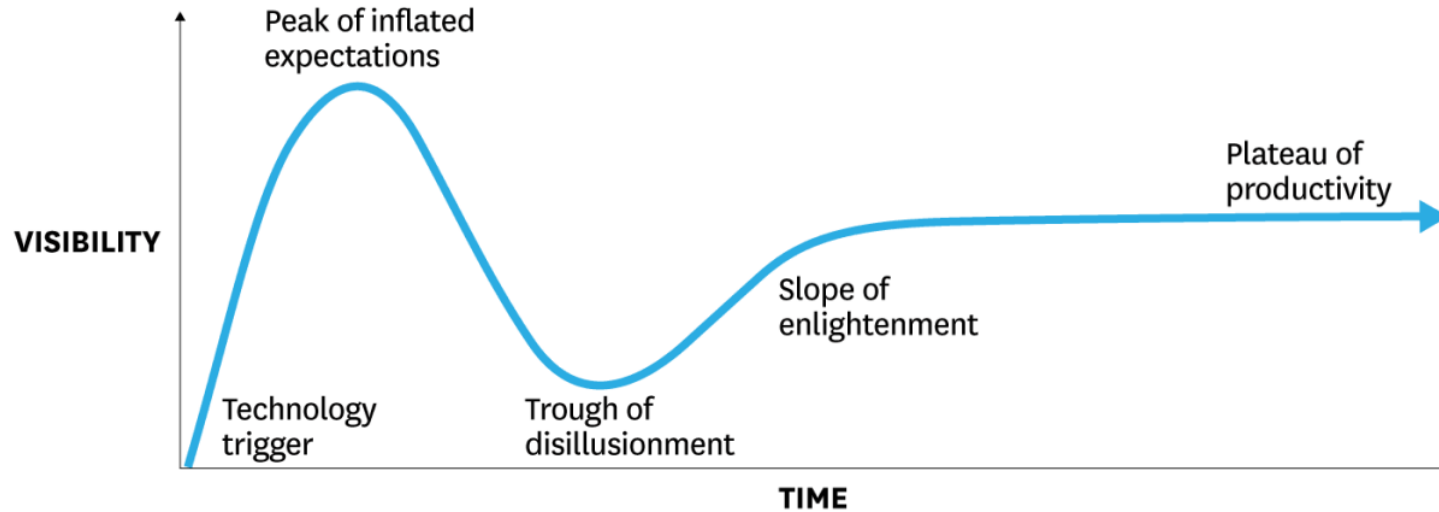
Fats, Oils, & Sweets
Use Sparingly

Milk, Yogurt & Cheese Group
2–3 Servings

Meat, Poultry, Fish, Dry
Beans, Eggs, & Nuts Group
2–3 Servings
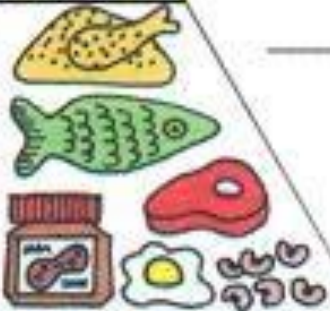
Vegetable Group
3–5 Servings

Fruit Group
2–4 Servings

Bread, Cereal,
Rice, & Pasta
Group
6–11
Servings

2. Idea Generation

Visualization as a tool to support idea generation. Like idea illustration, idea generation relies on conceptual metaphors, but it takes place in more-informal settings, such as off-sites, strategy sessions, and early-phase innovation projects.

INFO TYPE: Complex, undefined

TYPICAL SETTING: Working session, brainstorming

PRIMARY SKILLS: Team-building, facilitation

GOALS: Problem solving, discovery, innovation

①

LOTS OF CUSTOMERS
SPEND A LITTLE → FEWER CUSTOMERS
                   SPENDING MORE!

□ □ □ □ □   ▢ ▢ ▢
□ □ □ □ □   ▢ ▢ ▢
□ □ □ □ □
□ □ □ □ □

20 @ $120 PER CUSTOMER   6 @ $500
= $2,400   = $3,000

MID-
LEVEL
CUSTOMERS
MAKE
CORE

CORE
CUSTOMERS

LESS
DESIRABLE
CUSTOMERS
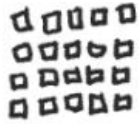
GROW THE
SECOND RING
OF CUSTOMERS
WHERE ARE $ $ $
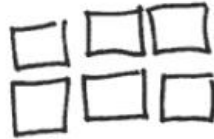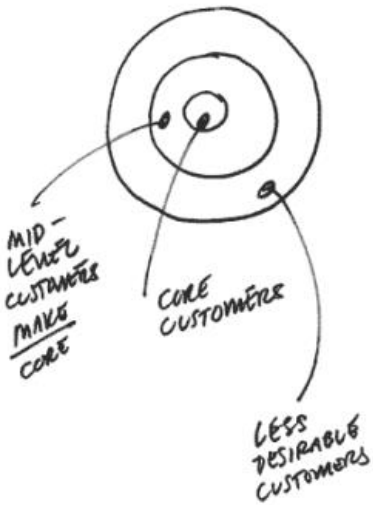
②

US. NOW → FUTURE ?

BIGGER
PIE.
FEWER
SLICES. ?

CUSTOMER GROWTH STRATEGY.

CURRENT   FUTURE

MORE ↑

LESS
SPEND $

THIS IS
WHERE OUR
CUSTOMERS
ARE NOW

THIS IS
WHERE OUR
FUTURE LIES!
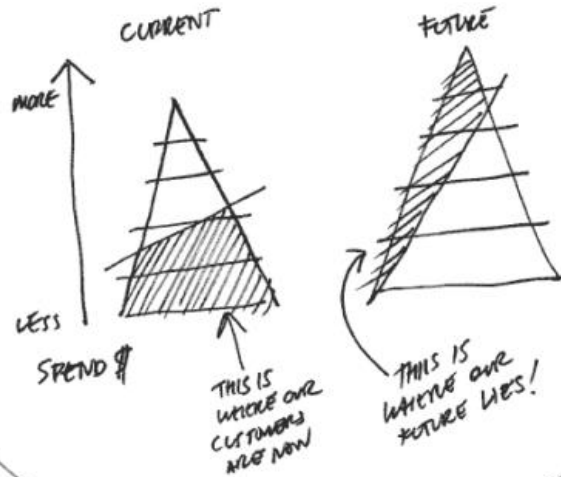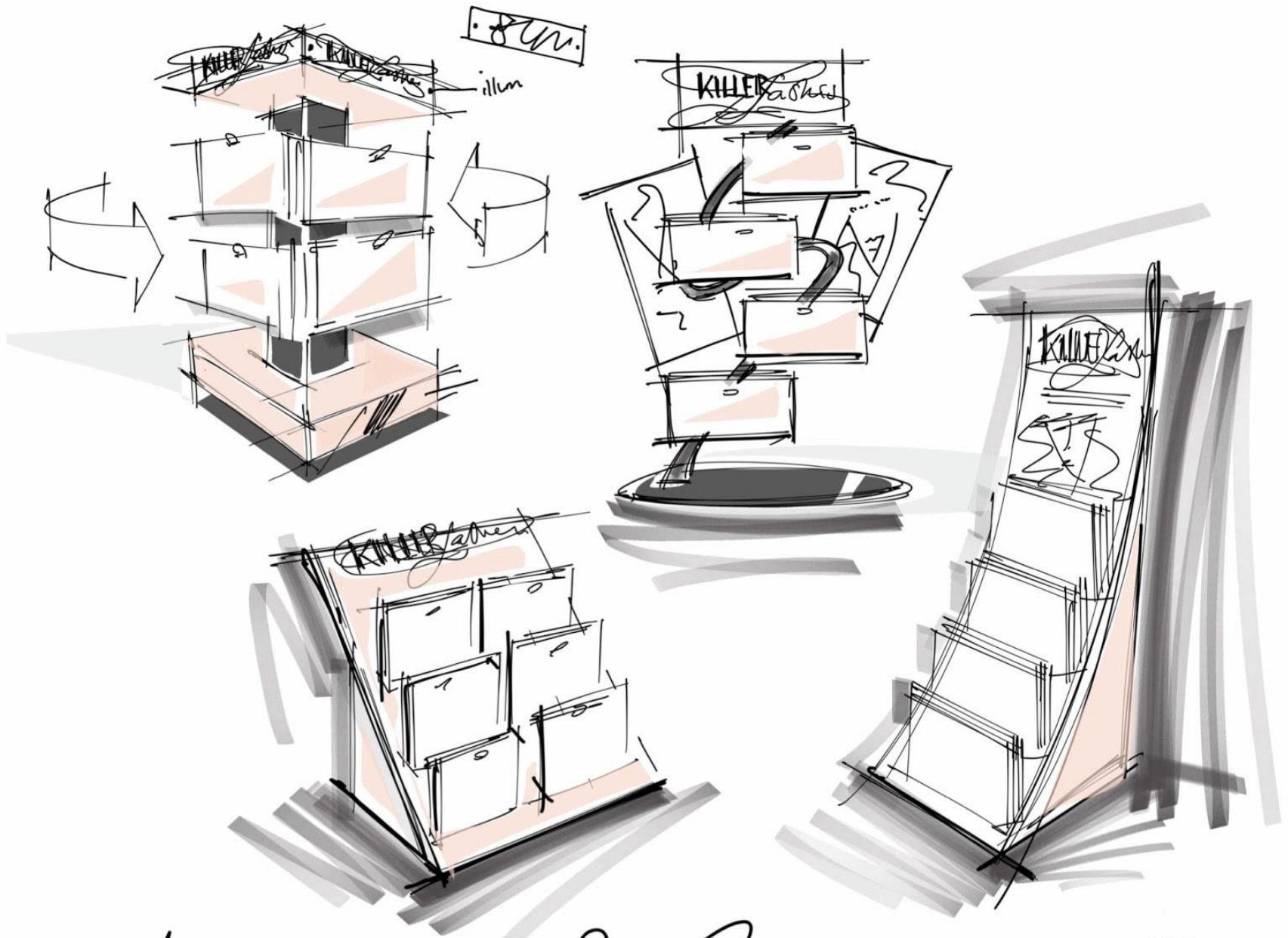
THIS
ONE

KILLER LASHES COUNTER UNITS.

3. Visual Confirmation

You're answering one of two questions with this kind of project: Is what I suspect actually true? or What are some other ways of depicting this idea?

THE TRANSATLANTIC SUPERHIGHWAY

Every day, about 1,200 aircraft fly inside the North Atlantic Organized Track System. Here we follow a typical evening flight from New York's JFK to London's Heathrow as it cruises along the V track at 35,000 feet.

Graphics by John Grimwade

Concorde flew between 50,000 and 60,000 feet, far above the main traffic flow.

4 HALFWAY POINT
At 30W, responsibility for the flight is transferred from Gander to Prestwick Oceanic Air Traffic Control in Scotland.

60 miles

80 miles

60 miles

80 miles (10 min.)

2,000 feet

2,000 feet

360 MILES

Some flight levels are reserved for aircraft flying in the direction opposite the peak flow.

3 POSITION CHECK
Aircraft in oceanic airspace are out of radar contact for about four hours. Position reports are made by radio at every 10 degrees of longitude, and the information is used to update displays at the oceanic control centers.
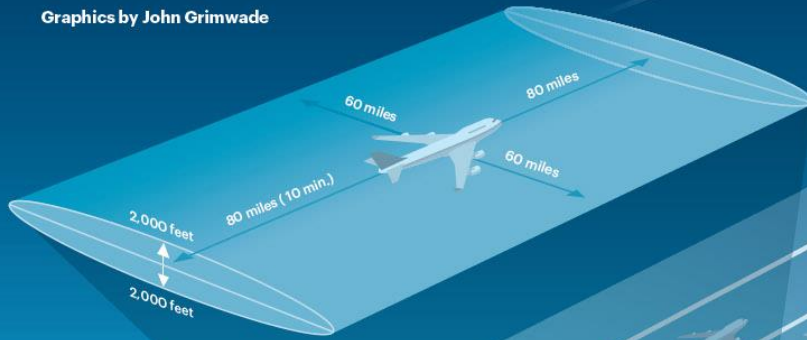
Aircraft crossing the main traffic flow (for example, Madrid to Los Angeles) are routed above or below the track system.

ORGANIZED TRACK SYSTEM

FLIGHT LEVELS (FEET)

39,000
37,000
35,000
33,000
31,000
29,000

T

U

V

W

X

2 SAFETY ENVELOPE
Aircraft must keep minimum distances from one another in the track system, while maintaining constant altitude and speed.

UNITED KINGDOM
Prestwick

SHANWICK OCEANIC CONTROL AREA

ICELAND

Shannon

IRELAND

30°W

WESTBOUND (DAY)

GREENLAND

GANDER OCEANIC CONTROL AREA

1 GETTING IN LINE
Taking into account airlines' preferred routes, oceanic controllers at Gander, Newfoundland, organize aircraft approaching from different directions into position for the Atlantic crossing. This flight is entering the system on track V at 35,000 feet.

CANADA

A B C D E

T U V W X

EASTBOUND (NIGHT)

NORTH ATLANTIC OCEAN

Gander

JET STREAM

NEWFOUNDLAND

EAST INTO THE NIGHT

As a result of passenger demand, time zone differences, and airport noise restrictions, North Atlantic air traffic has two peak flows: eastbound, leaving North America in the evening, and westbound, leaving Europe in the morning. Every 12 hours a new track system is prepared, to allow as many aircraft as possible to follow the most economical flight paths. Because of changing weather conditions, the track positions are rarely identical.

BOCA EM AÇÃO
COMO É O TRÁFICO NA FAVELA?

Os pontos de tráfico de drogas, conhecidos como "bocas", operam como empresas, escondidos em favelas e bairros pobres das grandes cidades. Os criminosos se organizam em uma hierarquia preocupada em garantir duas coisas: o abastecimento constante de cocaína, maconha e outros entorpecentes e o sistema de proteção contra a polícia ou quadrilhas rivais.

Para garantir a eficiência do negócio, são contratados diversos funcionários. O esquema de segurança e a acirrada disputa entre traficantes põem em risco a vida de compradores e moradores da favela. "Até chegar a boca, o usuário tem que andar na favela. Ele é avaliado e nem percebe. Se os seguranças pensarem que ele é um policial disfarçado, atiram", diz o delegado Carlos Roberto Alves de Andrade, da Delegacia de Repressão ao Crime Organizado do Departamento de Narcóticos de São Paulo. **5**

por Christina Silva

CRIME ORGANIZADO
VÁRIOS FUNCIONÁRIOS ESTÃO ENVOLVIDOS NO ESQUEMA DE TRÁFICO

AVIÕEZINHOS
Os garotos que levam a droga da boca para os clientes são mais comuns no Rio de Janeiro. Em São Paulo, onde as favelas são planas, a distância entre a boca e o consumidor é pequena e o serviço deles nem sempre é necessário

ALTO ESCALÃO
Traficantes de maior hierarquia ficam posicionados sobre lajes e barracos, onde podem se proteger melhor e atirar em caso de tentativa de invasão. Carregam fuzis, ideais para combates a longa distância

A BOCA
Geralmente fica perto de riachos, esgotos ou barrancos, para dificultar a chegada da polícia. Em uma mesma favela, podem existir várias bocas e nem toda a droga fica aqui. Barracos conhecidos como "paiol" são usados para armazenamento de grandes quantidades e da munição da quadrilha

GERENTE DA BOCA
É responsável pela chegada da droga e pela contratação do pessoal. É ele que comanda toda a operação dentro da favela e, por isso, é sempre alguém de muita confiança do dono da boca

SEGURANÇAS
A função deles é proteger os arredores da boca da polícia e de traficantes rivais. Eles usam armas próprias para combate a curta distância

ENQUANTO ISSO...
O dono da "boca" não lida diretamente com a venda da droga. Ele comanda o tráfico de um barraco ou casa afastada, por meio dos gerentes. Bocas bem-sucedidas podem transformar traficantes em homens ricos e bem de vida

Fonte: Polícia Civil e GOE

4. Visual Exploration

Open-ended data-driven visualizations It is intended to produces insights that can't be gleaned any other way.

INFO TYPE: Big data, complex, dynamic

TYPICAL SETTING: Working sessions, testing, analysis

PRIMARY SKILLS: Business intelligence, programming, paired analysis

GOALS: Trend spotting, sense making, deep analysis

A PERIODIC TABLE OF VISUALIZATION METHODS

Data Visualization
Visual representations of quantitative data in schematic form (either with or without axes)

Information Visualization
The use of interactive visual representations of data to amplify cognition. This means that the data is transformed into an image, it is mapped to screen space. The image can be changed by users as they proceed working with It

Concept Visualization
Methods to elaborate (mostly) qualitative concepts, ideas, plans, and analyses.

Strategy Visualization
The systematic use of complementary visual representations in the analysis, development, formulation, communication, and implementation of strategies in organizations.

Metaphor Visualization
Visual Metaphors position information graphically to organize and structure information. They also convey an insight about the represented information through the key characteristics of the metaphor that is employed

Compound Visualization
The complementary use of different graphic representation formats in one single schema or frame

																		G graphic facilitation
C continuum												Me meeting trace	Mm metro map	Tm temple	St story template	Tr tree	Ct cartoon
Tb table	Ca cartesian coordinates											Co communication diagram	Fp flight plan	Cs concept sceleton	Br bridge	Fu funnel	Ri rich picture
Pi pie chart	L line chart																
B bar chart	Ac area chart	R radar chart cobweb	Pa parallel coordinates	Hy hyperbolic tree	Cy cycle diagram	T timeline	Ve venn diagram	Mi mindmap	Sq square of oppositions	Cc concentric circles	Ar argument slide	Sw swim lane diagram	Gc gantt chart	Pm perspectives diagram	D dilemma diagram	Pr parameter ruler	Kn knowledge map
Hi histogram	Sc scatterplot	Sa sankey diagram	In information lense	E entity relationship diagram	Pt petri net	Fl flow chart	Cl clustering	Lc layer chart	Py minto pyramid technique	Ce cause-effect chains	Tl toulmin map	Dt decision tree	Cp cpm critical path method	Cf concept fan	Co concept map	Ic iceberg	Lm learning map
Tk tukey box plot	Sp spectogram	Da data map	Tp treemap	Cn cone tree	Sy system dyn./ simulation	Df data flow diagram	Se semantic network	So soft system modeling	Sn synergy map	Fo force field diagram	Ib ibis argumentation map	Pr process event chains	Pe pert chart	Ev evocative knowledge map	V Vee diagram	Hh heaven 'n' hell chart	I infomural

Note: Depending on your location and connection speed it can take some time to load a pop-up picture.

© Ralph Lengler & Martin J. Eppler, www.visual-literacy.org

version 1.5

Cy Process Visualization

Hy Structure Visualization

☼ Overview

¤ Detail

◎ Detail **AND** Overview

< > Divergent thinking

Su supply demand curve	Pc performance charting	St strategy map	Oc organisation chart	Ho house of quality	Fd feedback diagram	Ft failure tree	Mq magic quadrant	Ld life-cycle diagram	Po porter's five forces	S s-cycle	Sm stakeholder map	Is ishikawa diagram	Tc technology roadmap
Ed edgeworth	Pf portfolio	Sg strategic	Mz mintzberg's	Z zwicky's	Ad affinity	De decision	Bm bcg matrix	Stc strategy	Vc value chain	Hy hype-cycle	Sr stakeholder	Ta taps	Sd spray

IIT BOMBAY
Campus Map

Infographic Vs. Data Visualization

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In their book *Designing Data Visualizations*, authors Noah Iliinsky and Julie Steele use the following three criteria to determine whether to call a graphic a data visualization or an infographic:

1. **Method of generation:** This criterion refers to what goes into creating the graphic itself. If lots of original illustrations are created to explain the data, for example, it's likely to be an infographic. You often see infographics with beautiful, elaborate images created to explain the information.

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2. **Quantity of data represented:** Typically, data visualizations have more and different kinds of data from infographics. Also, the data in data visualizations changes frequently to indicate changes in status. In addition, an infographic is less likely to include interactive numbers.

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3. **Degree of aesthetic treatment applied:** This criterion refers to the artfulness of the graphic. If a lot of design work has gone into displaying information, the graphic is likely to be an infographic.

Infographics

Visual representation of data that is:

o   manually drawn (and therefore a custom treatment of the information);

o   specific to the data at hand (and therefore nontrivial to recreate with different data);

o   aesthetically rich (strong visual content meant to draw the eye and hold interest);

o   relatively data-poor (because each piece of information must be manually encoded).

Data Visualization

Visual representation of data that is:

o algorithmically drawn (may have custom touches but is largely rendered with the help of computerized methods);

o easy to regenerate with different data (the same form may be repurposed to represent different datasets with similar dimensions or characteristics);

o often aesthetically barren (data is not decorated);

o relatively data-rich (large volumes of data are welcome and viable, in contrast to infographics).

BURNING MAN

HEIGHT of MAN and BASE

| 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
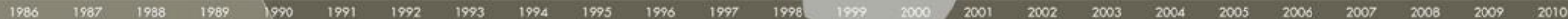
PARTICIPANTS

TICKET PRICE

THEME

GOOD EVIL · INFERNO · FERTILITY · NEBULOUS ENTITY · WHEEL of TIME · BODY · SEVEN AGES · FLOATING WORLD · BEYOND BELIEF · VAULT of HEAVEN · PSYCHE · HOPE FEAR · GREEN MAN · AMERICAN DREAM · EVOLUTION · METROPOLIS

MOON PHASE (burn night)

EVENT/FESTIVAL ATTENDANCE

- RAINBOW GATHERING 30,000
- BURNING MAN ARTS FESTIVAL 51,454
- SUPER BOWL 70,774
- BONNAROO MUSIC FESTIVAL 75,000
- GLASTONBURY FESTIVAL 137,500
- COACHELLA VALLEY MUSIC and ARTS FESTIVAL 225,000
- WOODSTOCK FESTIVAL 500,000
- KUMBH MELA 40,000,000
- HAJJ 1,613,000

THEMECAMPS (placed)

FIRE CONCLAVE GROUPS

ART PROJECTS (registered)

BLM CITATIONS

RECYCLED ALUMINUM CANS

COSTS TOTAL EXPENDITURES

COST / PORTOPOTTIES & MAN

PLAYA 200 sq. mi.

BLACK ROCK DESERT 1000 sq. mi.

HUALAPAI FLAT 1997

BLACK ROCK DESERT 1990-1996 1998-PRESENT

BLACK ROCK CITY 5 sq. mi.

BAKER BEACH 1986-1990

the TEMPLES of BURNING MAN

TEMPLE of the MIND 2000 · TEMPLE of TEARS 2001 · TEMPLE of JOY 2002 · TEMPLE of HONOR 2003 · TEMPLE of STARS 2004 · TEMPLE of DREAMS 2005 · TEMPLE of HOPE 2006 · TEMPLE of FORGIVENESS 2007 · BASURA SAGRADA 2008 · FIRE of FIRES 2009 · TEMPLE of FLUX 2010

PARTICIPANT DEMOGRAPHICS

SEX — MALE 54% · NO RESPONSE 6% · FEMALE 40%

AGE — 41-50 18% · 51-60 9% · 61+ 2% · UNDER 21 4% · 31-40 36% · 21-30 31%

GRADUATED COLLEGE — NO 31% · YES 69%

INCOME — $50-100k 10% · $100-300k 13% · $300k+ 2% · $0-10k 14% · $30-40k · $10-30k

CITY POPULATIONS of NEVADA
- LAS VEGAS 1,558,861
- RENO 220,500
- CARSON CITY 55,439
- BLACK ROCK CITY 43,435
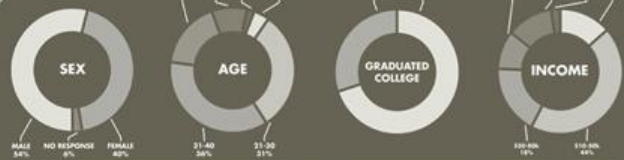
AVERAGE WEEKLY WEATHER FORECAST
86° HIGH · 41° LOW
WIND SPEED 7 MPH

LOCAL POPULATION COMPARISON
GERLACH 499 · BLACK ROCK CITY 43,435

Black Rock Desert valley fills with water during Pleistocene ice age · Humboldt River flows to Black Rock Desert sub-basin · Lahontan lake covers 8,665 square miles; lakebed under about 500 feet of water · Lake disappears significantly · Great Basin tribes inhabit area · Frémont Expedition · Peter Lassen led California Trail emigrants through Applegate-Lassen Cutoff · Western Pacific's Feather River Route starts (Oakland - Salt Lake City) · Largest mammoth found in North America · First Black Rock City built · Land speed record (ThrustSSC) · First successful launch of an amateur rocket to space (Stratofox)

Nobels no degrees

This visualization explores Nobel Prizes and graduate qualifications from 1901 to 2012, by analysing the age of recipients at the time prizes were awarded, average age evolution through time and among categories, graduation grades, main university affiliations and the principal hometowns of the graduates.

How to read it?

Each dot represents a Nobel laureate, each recipient is positioned according to the year the prize was awarded (x axis) and age of the person at the time of the award (y axis).

Principal university affiliations of Nobel laureates at the moment the Prize was awarded.

grade level
- PhD
- master
- bachelor
- no degree

man
woman

Nobel awarded to more than one person

in-depth examination

age time trend

average age for each for each CATEGORY

average age of Nobel laureate

CHEMISTRY (59 years) 57 years

ECONOMIC SCIENCES (66 years) 59 years

PHYSICS (59 years) 54 years

LITERATURE 64 years (59 years)

PHYSIOLOGY OR MEDICINE (59 years) 57 years

PEACE 61 years (59 years)

1901 · 1911 · 1921 · 1931 · 1941 · 1951 · 1961 · 1971 · 1981 · 1991 · 2001 · 2012

Harvard
MIT
Stanford
Caltech
Columbia
Cambridge
Berkeley

total of laureate for each city
12 · 7 · 51 · 7 · 17 · 23 · 10 · 13 · 8 · 7

principal hometowns of laureates

Chicago · Washington · New York · Boston · London · Paris · Munich · Berlin · Wien · Budapest · Moscow

1.
Multiple awards:
Marie Curie, the first recipient of two Nobel Prizes (*chemistry* and *physics*)

2.
The oldest:
Leonid Hurwicz, awarded at age 90

3.
The youngest:
Lawrence Bragg, awarded at age 25

4.
Sibling pride:
Jan and Nikolaas Tinbergen, the only brothers to win a prize each (*economics* and *medicine*)

5.
The self-taught:
Guglielmo Marconi, the only Nobel laureate (*physics*) without a degree

6.
The posthumous:
Erik Axel Karlfeldt, the first person to be awarded a Nobel Prize after his death

7.
The First Lady of *Economics*:
Elinor Ostrom, the only female recipient of the Nobel Prize in *economics*

Four Ways to Slice Obama's 2013 Budget Proposal

Explore every nook and cranny of President Obama's federal budget proposal.

All Spending	Types of Spending	Changes	**Department Totals**

$921.6 billion
Health and Human Services

Empty circles show income.

$885.3 billion
Social Security

$620.3 billion
Defense

$519.5 billion
Treasury

$154.7 billion
Agriculture

$137.4 billion
Veterans Affairs

$94.9 billion
Personnel Management

$89.0 billion
Labor

$74.3 billion
Transportation

$57.4 billion
Defense Civil Programs

$55.7 billion
Education

$45.1 billion
Homeland Security

$44.0 billion
Housing

$37.4 billion
International

$32.3 billion
Energy

$31.6 billion
State

$30.0 billion
Justice

$17.7 billion
NASA

$11.4 billion
Interior

$9.6 billion
F.C.C.

Brain Mass
Neurons Cortex
Neurons Cerebellum
Neurons Rest of Brain
Non Neurons Cortex
Non Neurons Cerebellum
Non-Neurons Rest of Brain
Neurons Whole Brain
Non Neurons Whole Brain
Total Neurons
Total Non Neurons

Denominator:
Body Mass
Brain Mass
Neurons Cortex
Neurons Cerebellum
Neurons Rest of Brain
Non Neurons Cortex
Non Neurons Cerebellum
Non-Neurons Rest of Brain
Neurons Whole Brain
Non Neurons Whole Brain
Total Neurons
Total Non Neurons

1st closest   2nd closest   3rd closest   3rd farthest   2nd farthest   1st farthest

Ratio Difference

0.000   0.002   0.004   0.006   0.008   0.010   0.012   0.014   0.016   0.018

Cartogram ⬤ Geographic Map

2014

NDA	336
UPA	60
Others	147

2019

NDA	349
UPA	82
Others	109

Alliances   State Map   Voter Margin

General Election Results Explorer State: UTTAR PRADESH ▾   Constituency: VARANASI ▾

Votes ⬤ Percentage

2019   45.22 BJP
                                                                                    SP

2014   36.07 BJP
                                                                             AAP

2009   2.59 BJP
        BSP

2004   9.07 INC
                 BJP

1999   8.47 BJP
                 INC

Search public data or change visualization

Venkatesh

Public Data

- World Development Indicators
  - Economic Policy and Debt
  - Education
  - Environment
    - Agricultural irrigated land (% of tot…
    - Agricultural land (sq. km)
    - Agricultural machinery, tractors
    - Agricultural machinery, tractors pe…
    - Agricultural production index
    - Agriculture value added per worke…

Clear

Compare by [Country ▾]

Region [Color ▾]
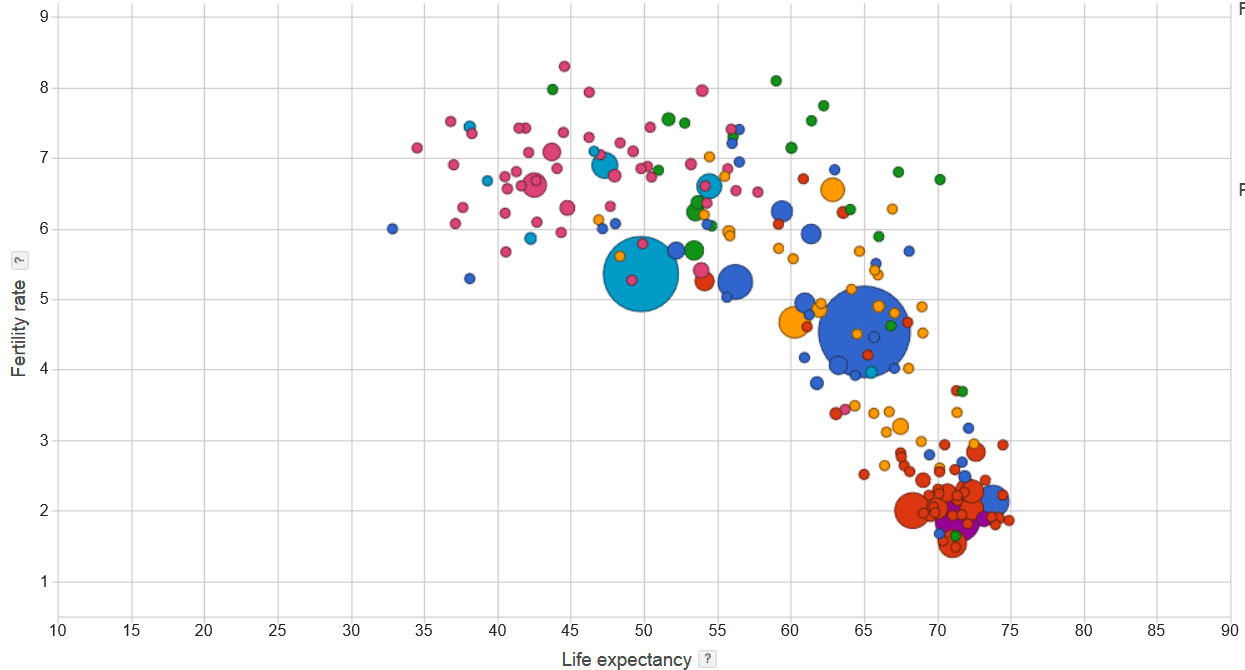Lending Type [All ▾]
Income Level [All ▾]

- Afghanistan
- Albania
- Algeria
- American Samoa
- Andorra
- Angola
- Antigua and Barbuda
- Argentina
- Armenia
- Aruba

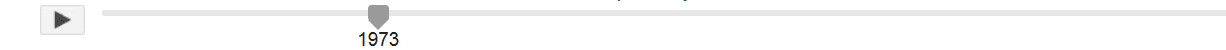Clear selections

- Gender
- Urbans/Rurals

Countries [?]

Region [?]
- East Asia & Pacific
- Europe & Central Asia
- Latin America & Caribbean
- Middle East & North Africa
- North America
- South Asia
- Sub-Saharan Africa

Population [?]

1973

Data from World Bank   Last updated: Jan 12, 2016

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Assignment 2: Chart Deconstruction & Redesign

Deconstructing a chart amounts to a deeper version of the self-sufficiency test. It helps us understand what parts of the chart are doing what, and what cues certain parts send to readers.

In better dataviz, every part of the chart is doing something useful, it's free of redundant parts that take up cognitive processing time for no reason, and the cues to readers move them towards the intended message, not away from it.
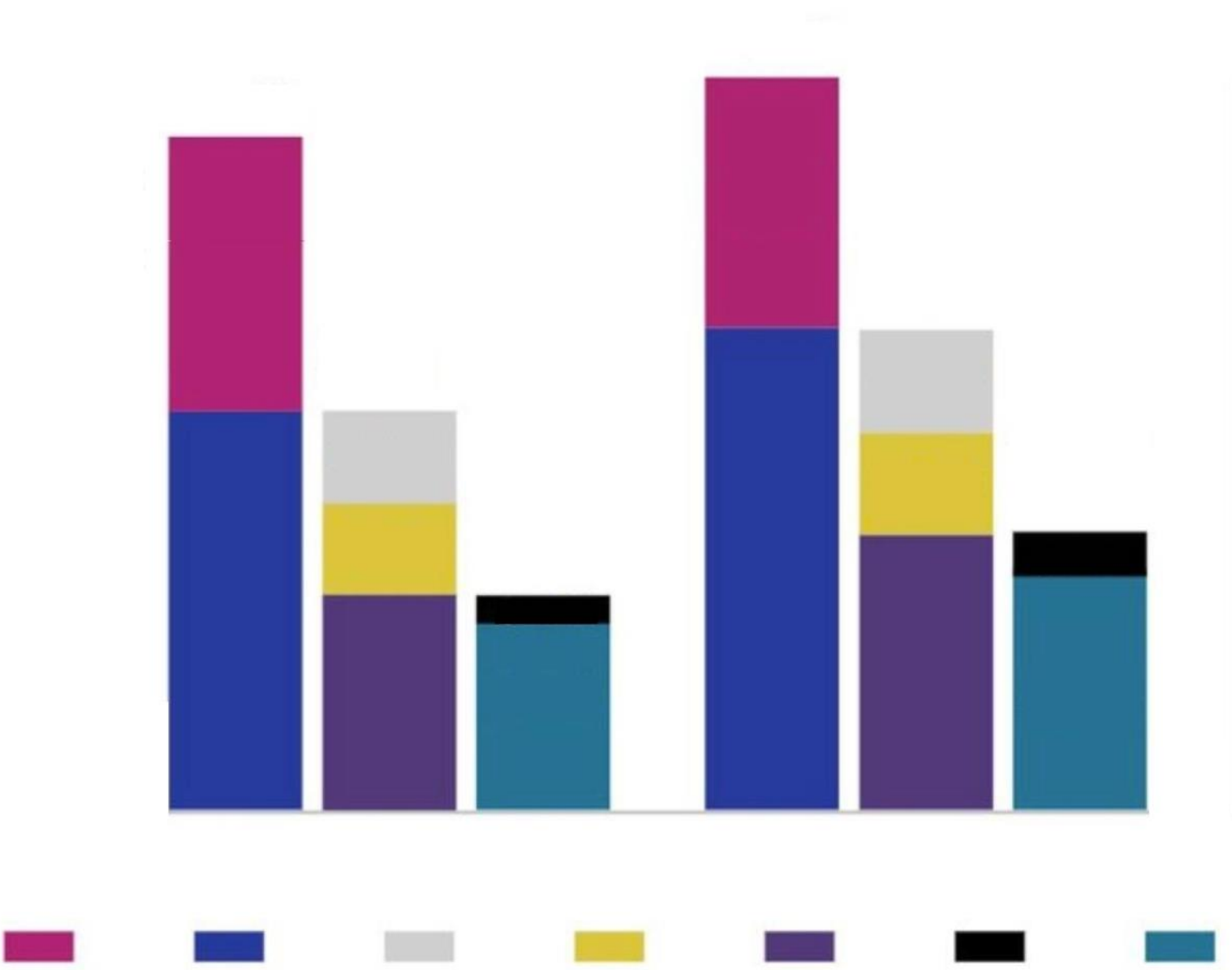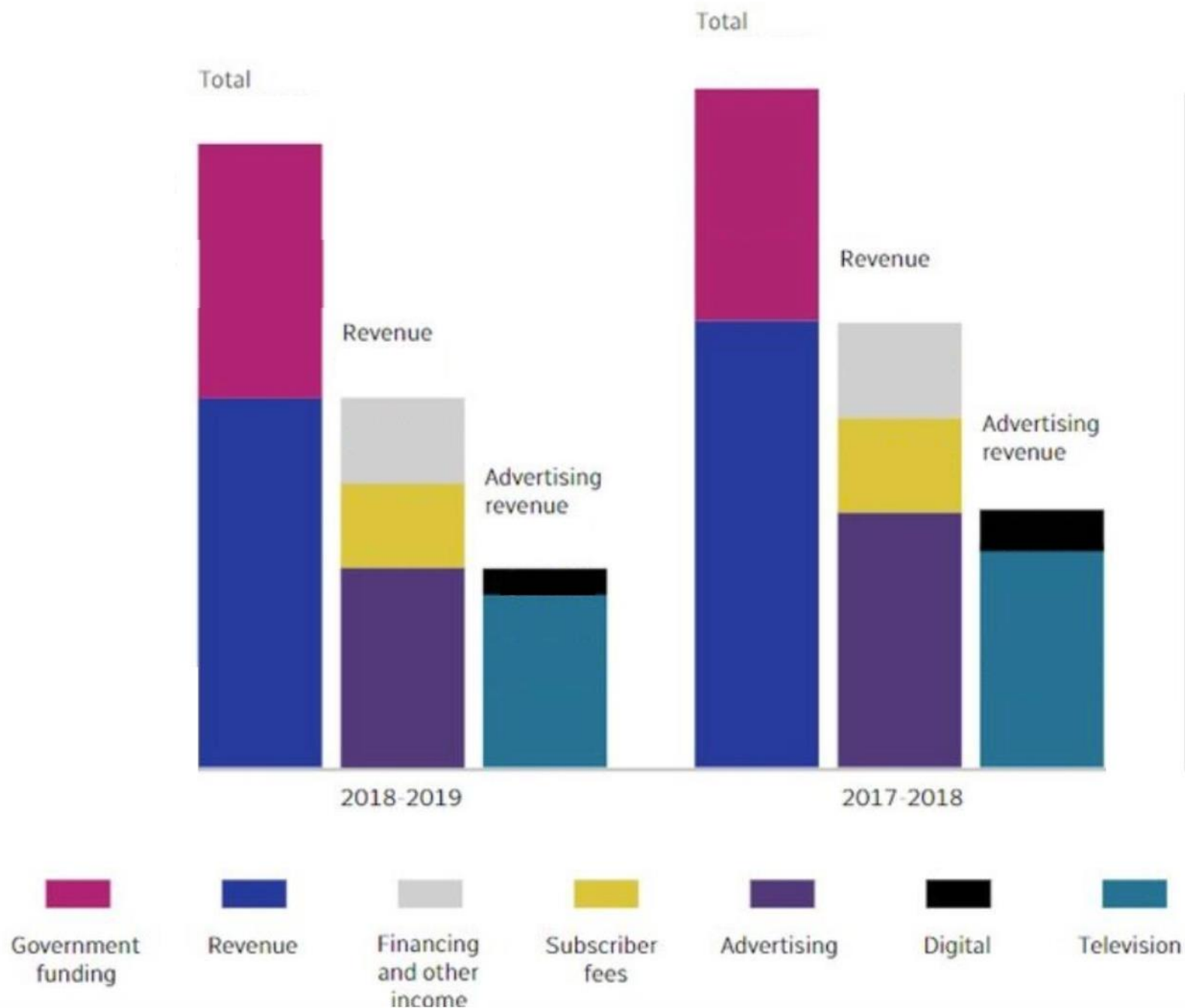
What can you guess?

- The data has a top-level split into two groups.

- Within each group, the data is further split into 3 parts, corresponding to the 3 columns.

- With each part, there are a variable number of subparts, each of which is given a unique color.

- The color legend suggests that each group's data are split into 7 subparts, so I'm guessing that the 7 subparts are aggregated into 3 parts.

- The core chart form is a stacked column chart with absolute values so relative proportions within each column (part) is important.

What can you guess?

- Comparing across columns is not supported because each column has its own total value.

- Comparing same-color blocks across the two groups is meaningful. It's easier to compare their absolute values but harder to compare the relative values (proportions of total).

- If the two groups are time periods, I'd guess that the group on the left is the earlier time period, and the one on the right is the later time period.

Total · Total · Revenue · Revenue · Advertising revenue · Advertising revenue

2018-2019 · 2017-2018

Government funding · Revenue · Financing and other income · Subscriber fees · Advertising · Digital · Television
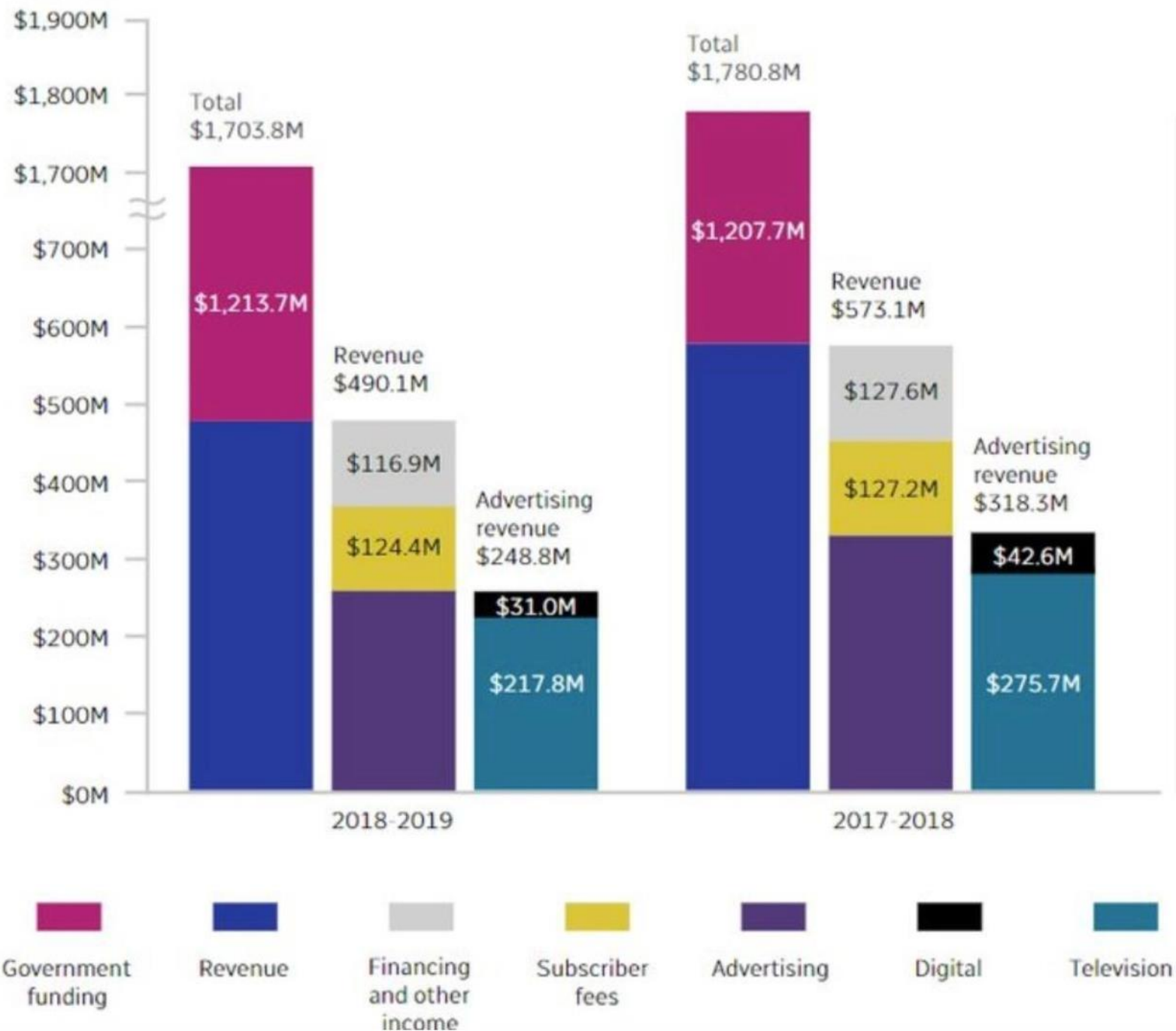
What can you guess?

- Now we see that the chart concerns revenues of a business over two years.

- My guess on the direction of time was wrong. The more recent year is placed on the left, counter to convention.

- The entity receives substantial government funding. In 2017-8, it has 1 dollar of government funds for every 2 dollars of revenues. In 2018-9, it's roughly 2 dollars of government funds per every 3 dollars of revenues. Thus, the ratio of government funding to revenues has increased.

- On closer inspection, the 7 colors do not represent 7 components of this entity's funding. The categories listed in the color legend overlap.

- The 3 columns within each year group are nested. The second column breaks down revenues into 3 parts while the third column breaks down advertising revenues into two parts.

- This design does not offer any visual cues to help readers understand how the three columns within a year-group relates to each other. Adding guiding lines or changing the color scheme helps.

Total
$1,703.8M

$1,213.7M

Revenue
$490.1M

$116.9M

$124.4M

Advertising
revenue
$248.8M

$31.0M

$217.8M

2018-2019

Total
$1,780.8M

$1,207.7M

Revenue
$573.1M

$127.6M

$127.2M

Advertising
revenue
$318.3M

$42.6M

$275.7M

2017-2018

Government
funding

Revenue

Financing
and other
income

Subscriber
fees

Advertising

Digital

Television
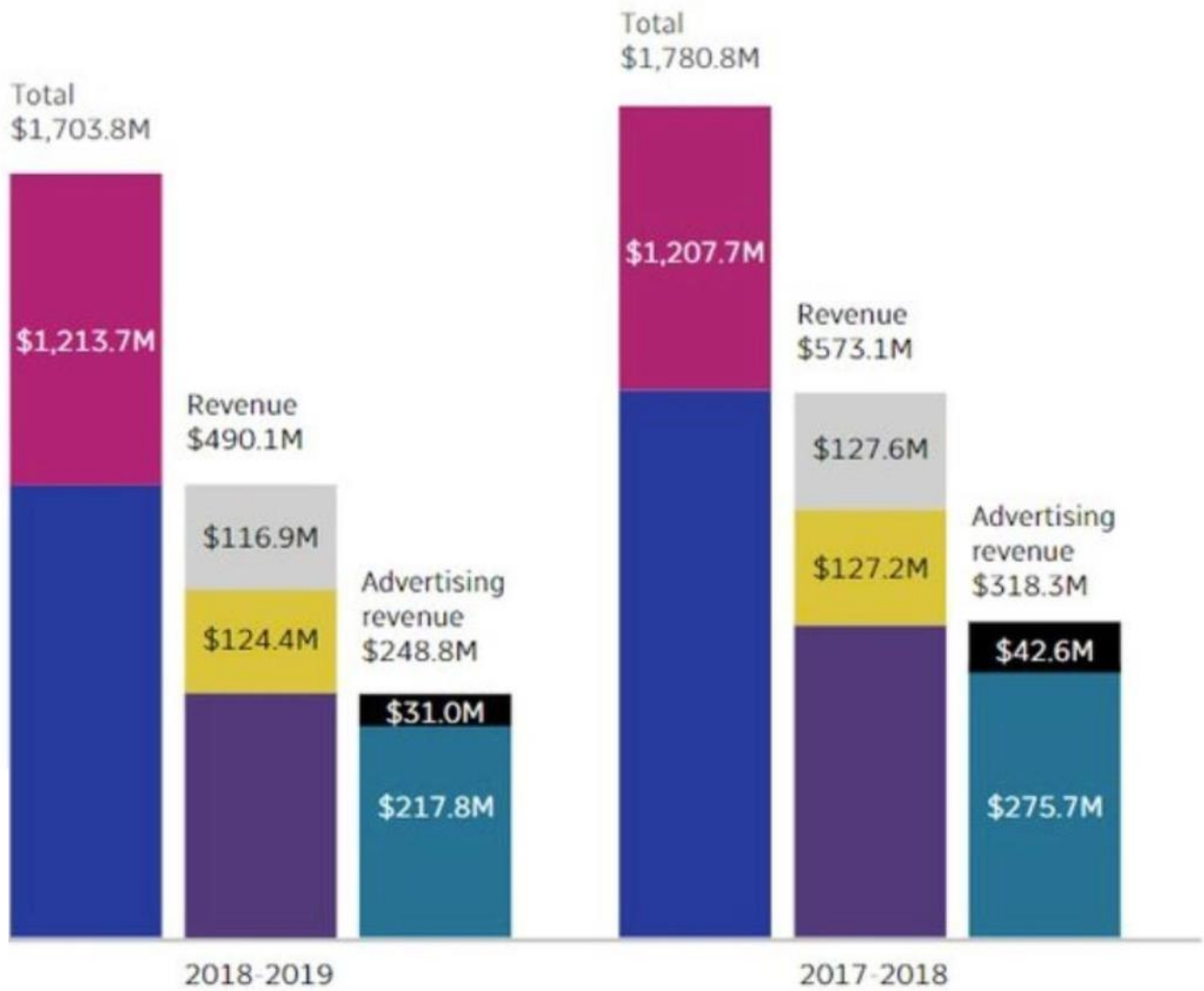
What can you guess?

- Because of the nested structure, two of the column segments, which are the sums of subparts, are not labeled. This creates a very strange appearance: usually, the largest parts are split into subparts, so such a labeling system means the largest parts/subparts are not labeled while the smaller, less influential, subparts are labeled!

- The system of labeling can be described as: label everything that is not further broken down into parts on the chart.

- You may notice another oddity. The pink segment is well above $1 billion but it is roughly the size of the third column, which represents $250 million. It appears, these columns are not drawn to scale. What is happening?

2018-2019		
Total $1,703.8M		
$1,213.7M (Government funding)	Revenue $490.1M	
	$116.9M (Financing and other income)	Advertising revenue $248.8M
	$124.4M (Subscriber fees)	$31.0M (Digital)
		$217.8M (Television)

2017-2018		
Total $1,780.8M		
$1,207.7M (Government funding)	Revenue $573.1M	
	$127.6M (Financing and other income)	Advertising revenue $318.3M
	$127.2M (Subscriber fees)	$42.6M (Digital)
		$275.7M (Television)

Legend: Government funding · Revenue · Financing and other income · Subscriber fees · Advertising · Digital · Television

What can you guess?

- Notice the scale of the vertical axis. It has a discontinuity between $700 million and $1.7 billion. In other words, the two pink sections are artificially shortened. The erased section contains $1 billion (!) Notice that the erased section is larger than the visible section.

- The focus of chart is to show what proportion of CBC's funds come from the government. On this chart, the only way to figure that out is to copy out the data and divide. It's roughly 1.2/1.7 = 70% approx.