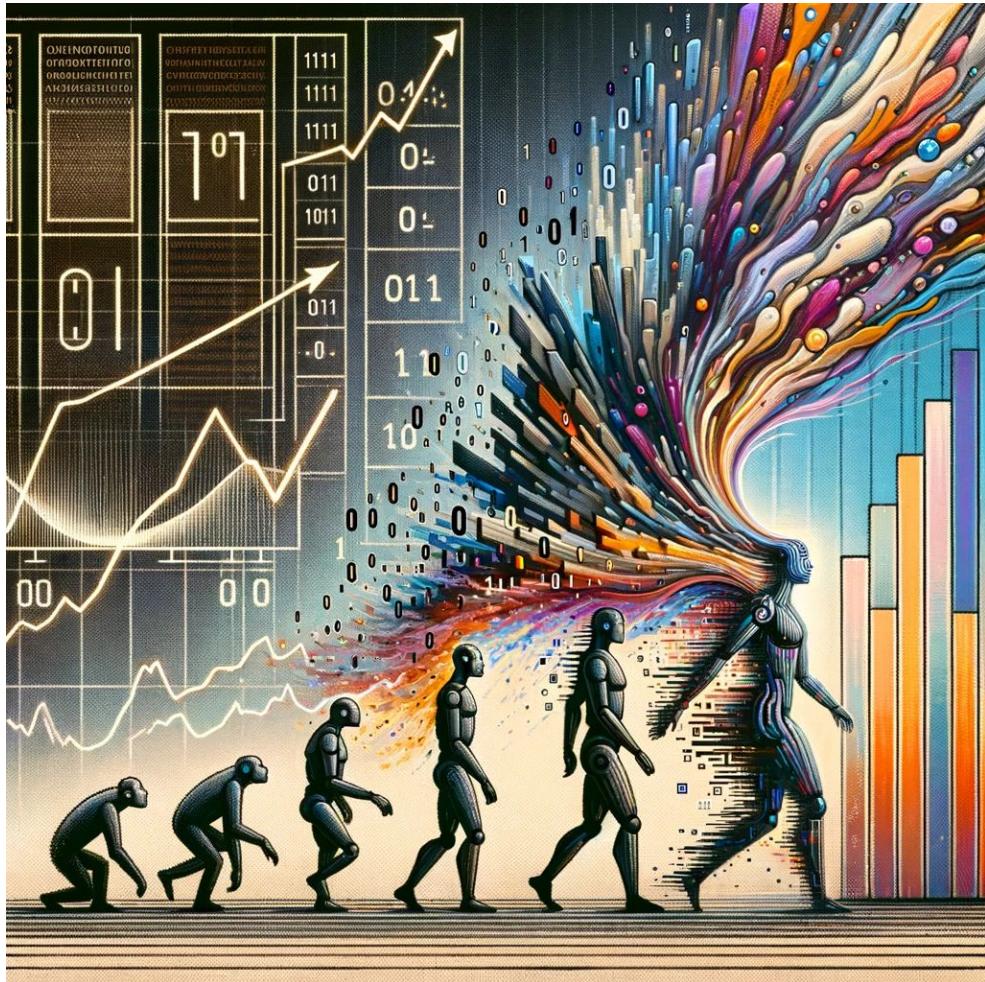


Bit to Graph: Contando historias con datos

G. Barrios
gbv@ier.unam.mx

Todos las imágenes presentadas fueron creadas con el uso de DALL-E, una herramienta de generación de imágenes basada en IA.

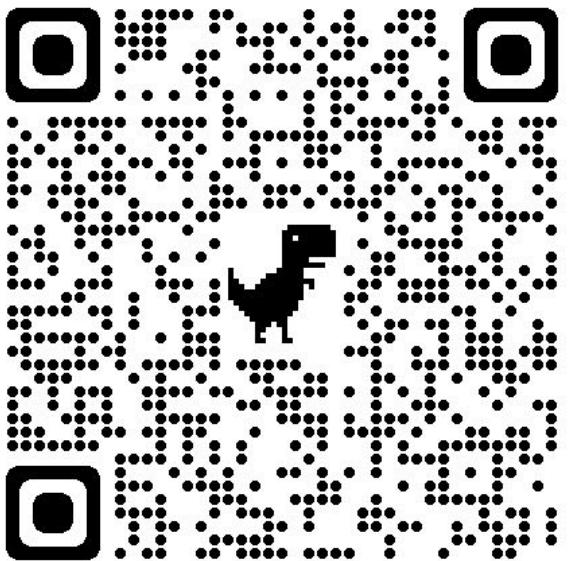
OpenAI. (2023). *DALL-E: Generación de imágenes a partir de descripciones textuales* [Software]. Disponible en <https://openai.com/dall-e>



Vamos a comenzar con unas
preguntas
y luego una historia

Formulario 01

Conocer tu percepción antes y después del taller, uso de gráficas y herramientas.





Ahora una historia

¿Contar historias con datos?

Es la habilidad de comunicar conocimiento de manera efectiva de un conjunto de datos usando narrativa y visualizaciones.

Hay tres componentes clave :

- 1. Datos:** Un análisis exhaustivo de datos alimenta tu historia. Analizar los datos utilizando análisis descriptivos, diagnósticos, predictivos y prescriptivos para tener un contexto completo.
- 2. Narrativa:** Una narrativa verbal o escrita, también llamada una trama, se utiliza para comunicar los conocimientos obtenidos de los datos, el contexto que los rodea y las acciones que recomiendas e intentas inspirar en tu audiencia.
- 3. Visualizaciones:** Representaciones visuales de tus datos y narrativa pueden ser útiles para comunicar la historia de manera clara y memorable. Estas pueden ser gráficos, diagramas, imágenes o videos.



Por qué contar historias con datos...



- 1. Mejor Comprensión y Retención**
- 2. Toma de Decisiones Informadas**
- 3. Involucramiento y Persuasión**
- 4. Claridad en la Comunicación**
- 5. Ventaja Competitiva**

“Having all the information in the world at our fingertips doesn’t make it easier to communicate: it makes it harder”



Fuentes de datos

México:

1. INEGI www.inegi.org.mx
2. Banco de México
www.banxico.org.mx
3. SNIEG www.snieg.mx
4. CONACYT www.gob.mx/conacyt
5. Datos Abiertos de México
www.datos.gob.mx

A nivel internacional:

1. OCDE www.oecd.org
2. Banco Mundial
datos.bancomundial.org
3. Naciones Unidas
www.un.org/es/library/page/databases
4. Centro de Datos de la Unión Europea data.europa.eu/en
5. Our world in data ourworldindata.org

Datos abiertos de México

The screenshot shows the official website for Mexico's Open Data portal, datos.gob.mx. The page has a dark green header bar. On the left, there is the Mexican National Seal and the text "GOBIERNO DE MÉXICO". On the right, there are links for "Trámites", "Gobierno", and a search icon. Below the header is a large teal banner with a chevron pattern. In the center of the banner, the text "HISTORIAS DE DATOS" is displayed in white, bold, uppercase letters. Below it, two lines of text in Spanish encourage users: "¿Has usado datos abiertos para crear herramientas?" and "Únete a historias de datos".

datos.gob.mx

GOBIERNO DE
MÉXICO

Trámites Gobierno

HISTORIAS DE DATOS

¿Has usado datos abiertos para crear herramientas?

Únete a historias de datos

¿ Por qué este curso en el CNEER?

Energías Renovables

Conciencia y Adopción de tecnologías y políticas sustentables

Desmitificación y Claridad de información

Cambio Climático

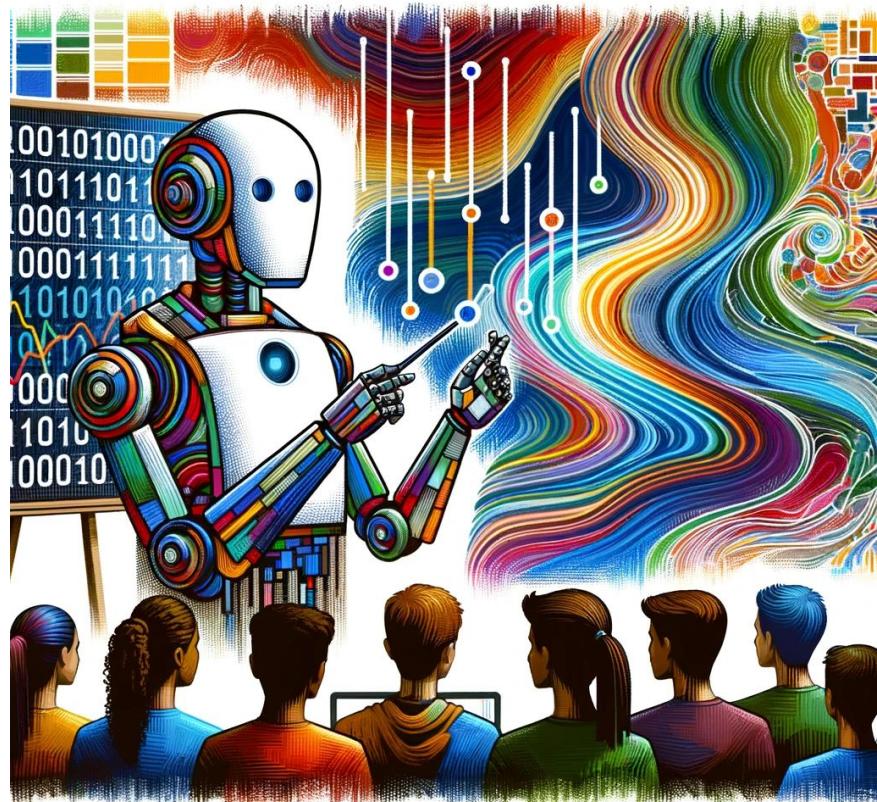
Urgencia y Acción

Relación Causa-Efecto

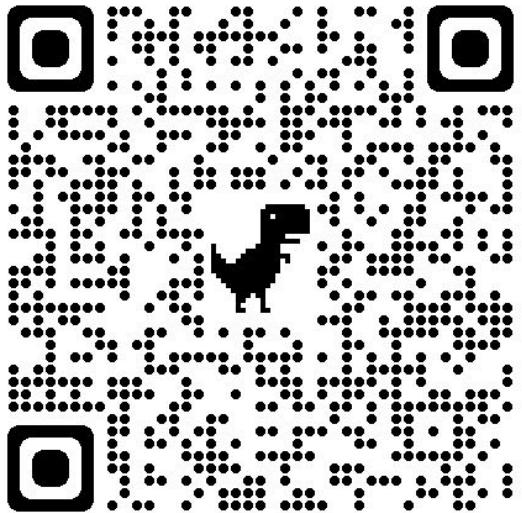
Equidad de Género

Visibilización de Desigualdades

Eficacia de Intervenciones



¿Tienes alguna idea de historia con datos?

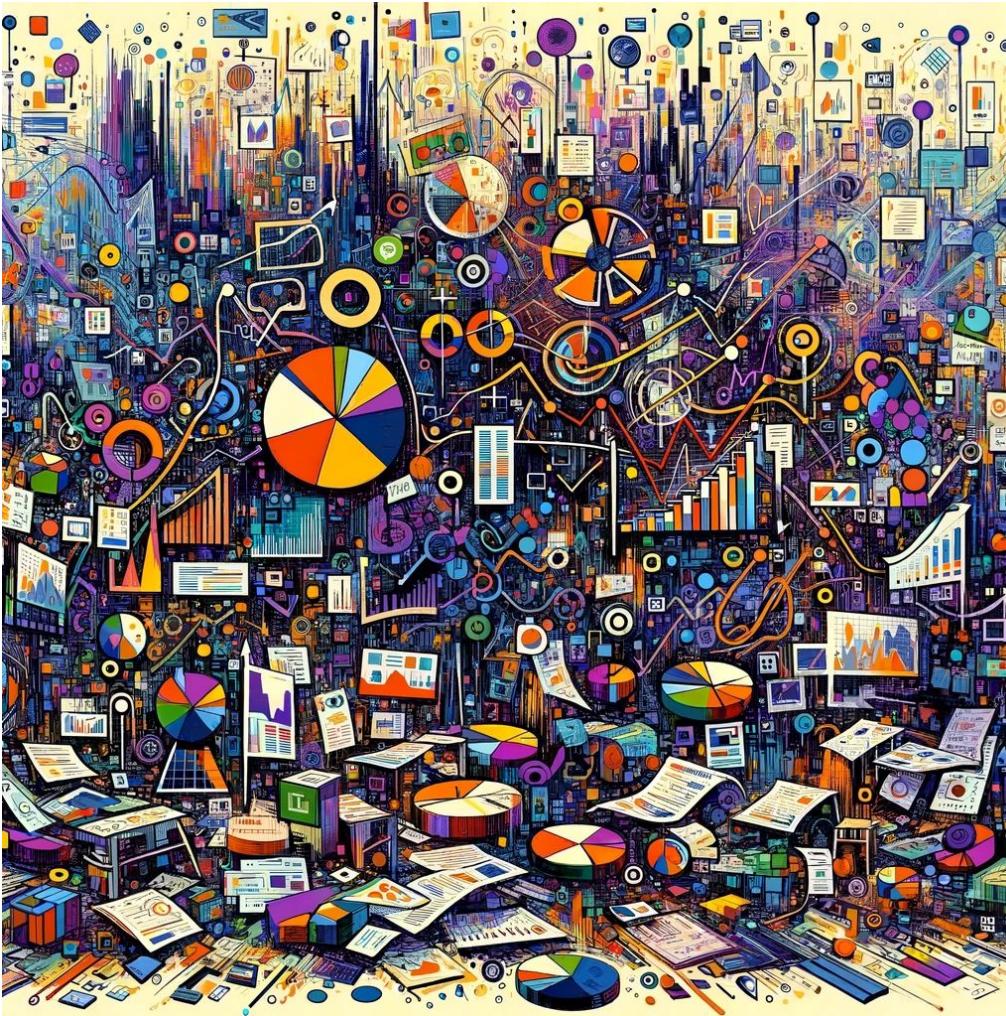


The point is to clearly tell
a story,
not to make a pretty chart.



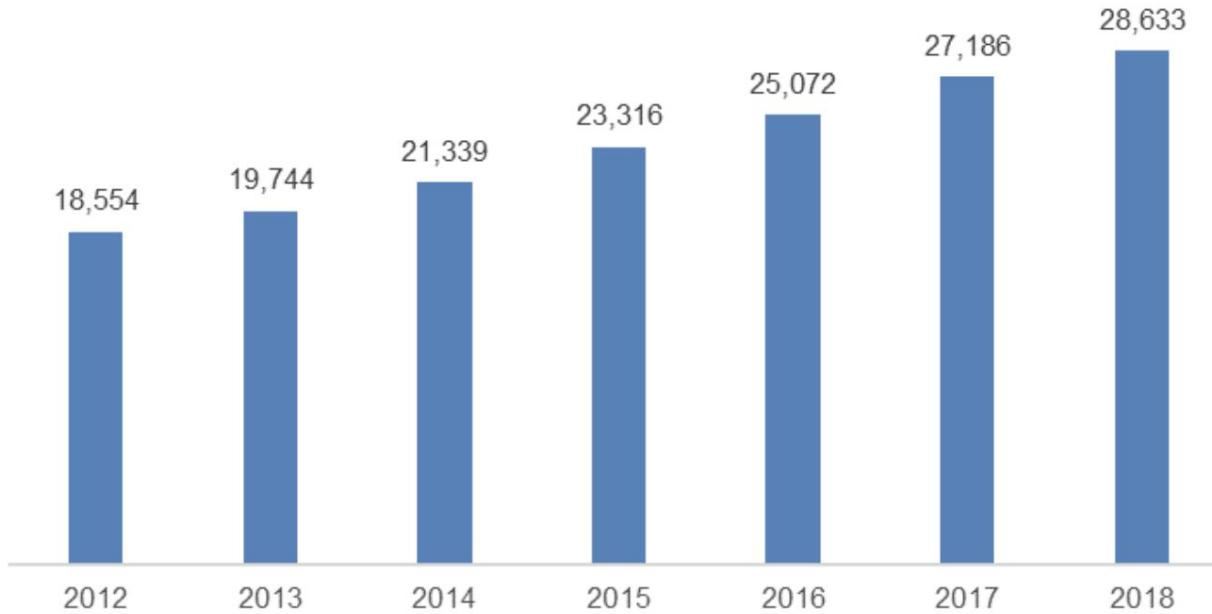
```
In [ ]:  
f      = '.../..../data/001_mujeres/API_SP.POP.TOTL.FE.ZS_DS2_es_excel_v2_6003288.xls'  
data  = pd.read_excel(f,sheet_name='Data',skiprows=3)  
lista = ['WLD','MEX','USA','LCN']  
  
data = data[data['Country Code'].isin(lista)]  
data = data.drop(columns=['Country Code','Indicator Name','Indicator Code'])  
  
# Utilizar melt() para transformar el DataFrame  
mundo = data.melt(id_vars=['Country Name'], var_name='Year', value_name='Mujeres')  
  
# Ahora pivotando para que 'Country Name' sea la columna y 'Year' sea el índice  
mundo = mundo.pivot(index='Year',columns='Country Name',values='Mujeres')  
mundo.index = mundo.index.astype(int)
```

There is a story in your data,
but your tools don't know what the story is.
That's where it takes you.



Bad graphs are
everywhere!

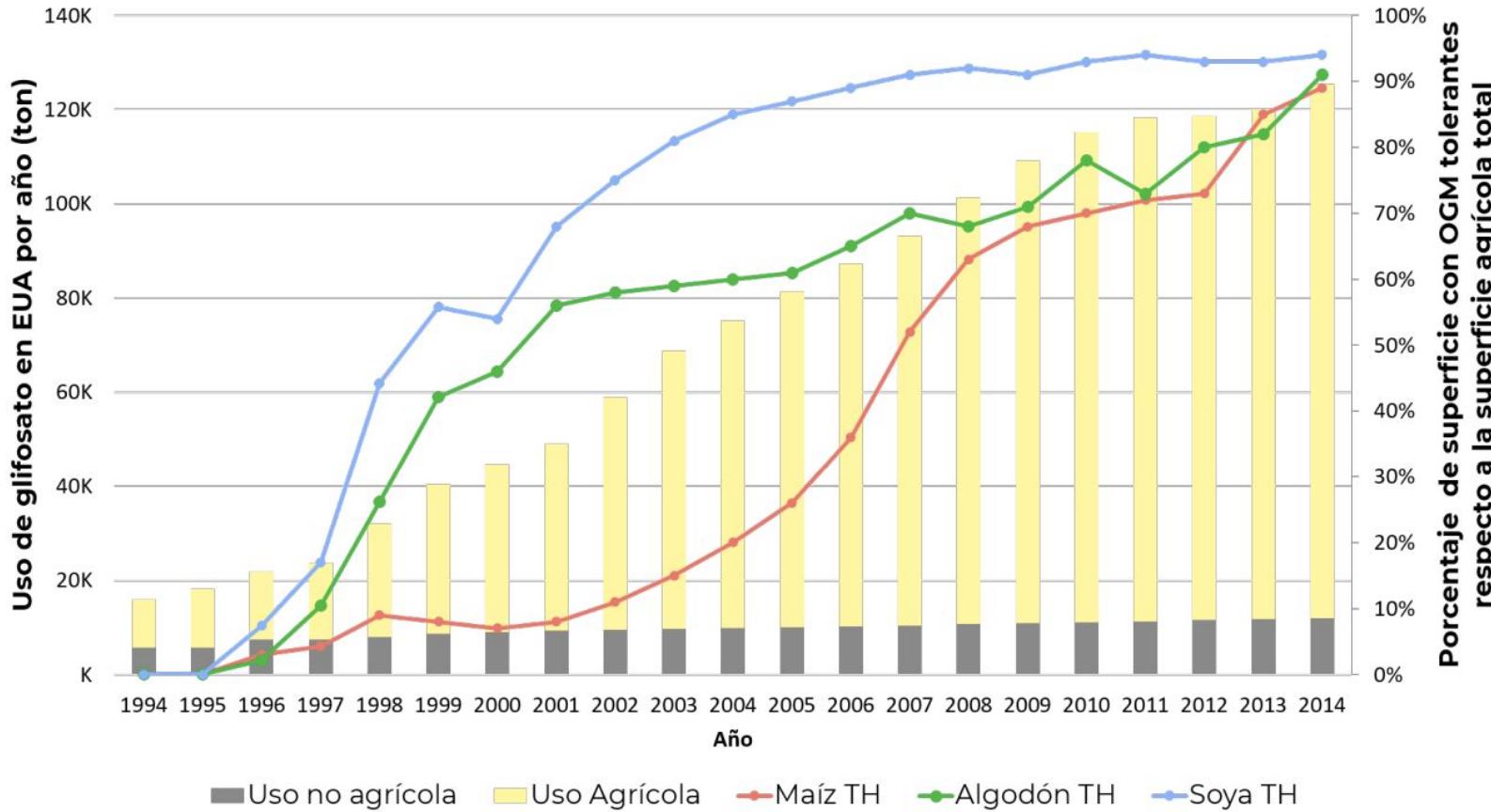
Gráfica 1. SNI Investigadores Vigentes 2012-2018



Fuente: DADC, CONACYT.



It happens in places
where you would expect
people to know better



GRÁFICA I.11

GFCYT DEL RAMO 38-CONSEJO NACIONAL DE CIENCIA Y TECNOLOGÍA, 2019-2020

Millones de pesos a precios de 2020

GFCYT 2019 DEL RAMO 38: 28,372

VARIACIÓN REAL 2019-2020: 1.9%

GFCYT 2020 DEL RAMO 38: 28,924

25,000

20,000

15,000

10,000

5,000

20,138

19,847

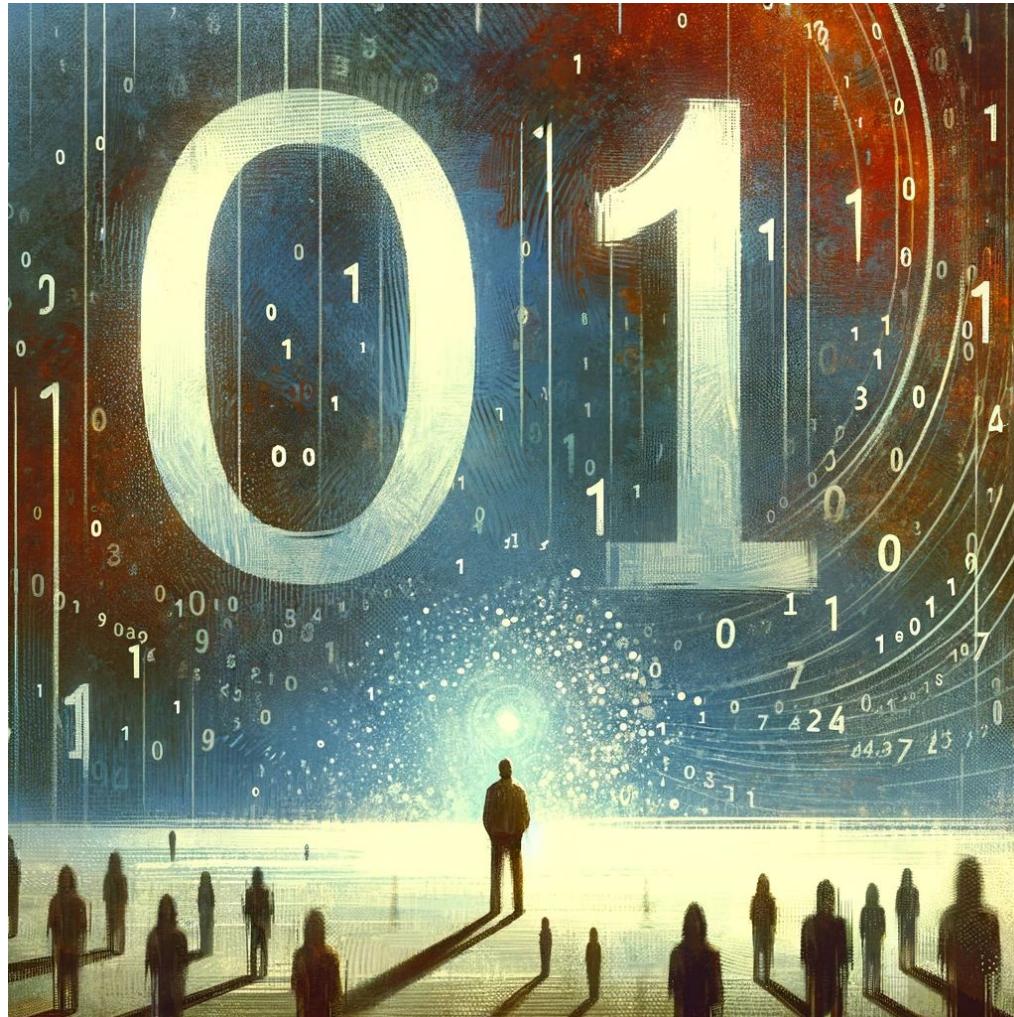
8,235

9,077

Consejo Nacional de Ciencia y Tecnología

Centros Públicos de Investigación - Conacyt

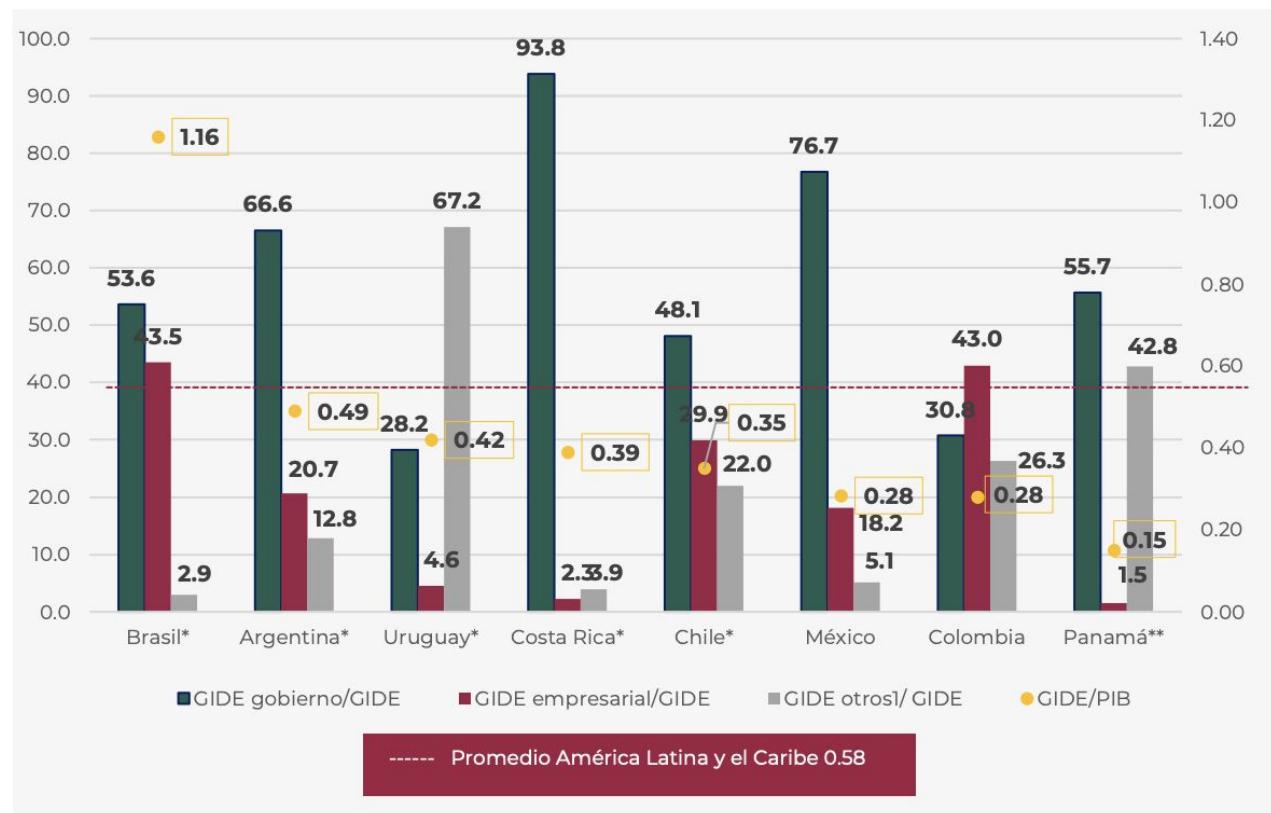
■ 2019 ■ 2020



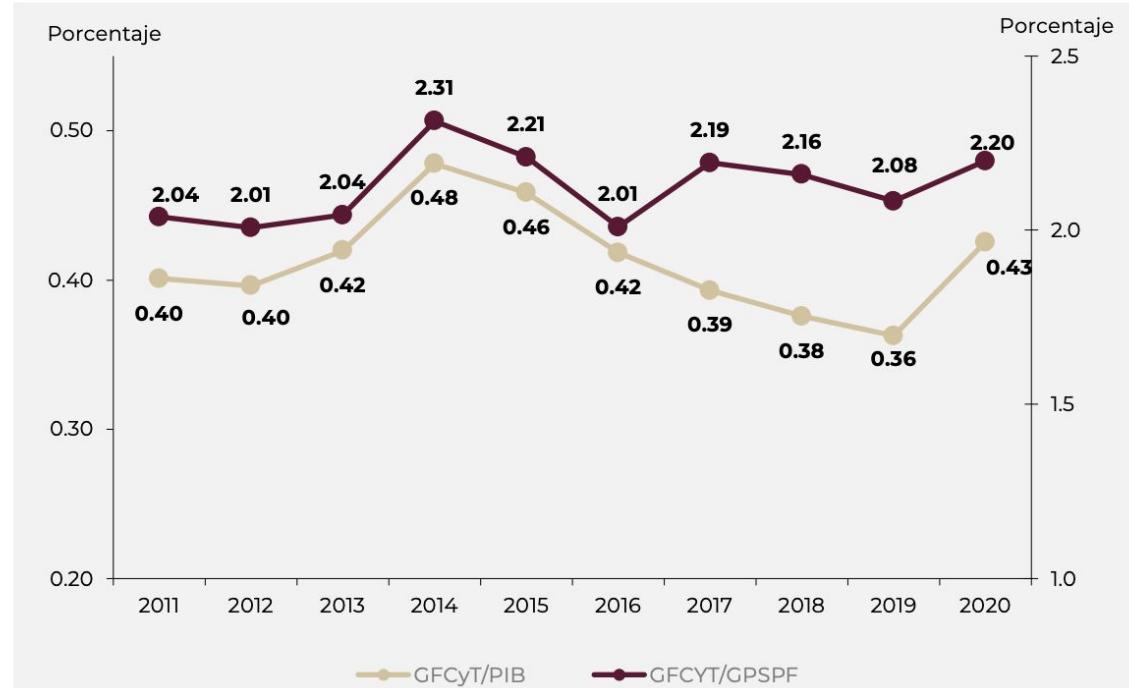
No one usually teaches
us how to tell stories
with numbers

GRÁFICA I.4

EL GIDE EN AMÉRICA LATINA, 2019 Porcentaje



GRÁFICA I.9
PARTICIPACIÓN DEL GFCYT EN EL PIB Y EN EL GPSPF, 2011-2020
Porcentaje



Fuentes: SHCP, Cuenta de la Hacienda Pública Federal, 2011-2020; INEGI, Sistema de Cuentas Nacionales de México.



Personas contando historias

Instructor resources to help teach students to drive positive change with compelling data stories

CATEGORY 1	A	B	C
CATEGORY 2	15%	22%	41%
CATEGORY 3	40%	36%	20%
CATEGORY 4	35%	17%	39%
	30%	29%	58%



Real-world datasets

Exercises & case studies



Makeover examples



The LinkedIn profile features a circular profile picture of Cole Knaflic, a woman with long brown hair, smiling. To her right are three books by Cole Nussbaumer Knaflic: 'storytelling with data', 'storytelling with data let's PRACTICE!', and 'storytelling with you'. The profile includes the following text:
Cole Knaflic
@storywithdata
Helping people create graphs that make sense, present powerfully & influence change. CEO & author of #storytellingwithyou, #SWDbook & #SWDletspractice!
Milwaukee, WI | storytellingwithdata.com | Joined November 2011
779 Following | 32.8K Followers
Followed by Pablo Alvarez, Dataviz Adventure, and 28 others you follow

storytelling  data®

READ ▾ LISTEN ▾ ATTEND ▾ PARTICIPATE ▾ CONTACT ▾ SEARCH 

community 

Watch ▾ Practice ▾ Refine ▾ Talk Discover Go Premium!  MEMBERS  LOG IN

challenges

Flex your data visualization skills by participating in the current challenge!

Topics change monthly—browse participant creations from current or past challenges to be inspired.



Personas contando historias



Premium MX

storytelling with data



Principal



Shorts



Suscripciones



YouTube Mu...



storytelling with data

@storytellingwithdata • 22.9 k suscriptores

At storytelling with data, we help people and organizations create graphs that make sense and weave them into compelling, ...

Suscrito

Lo más reciente de storytelling with data



How to turn data into stories

16 k vistas • Transmitido hace 11 días



storytelling with data

Watch this mini-workshop delivered by best-selling author Cole Nussbaumer Knaflic. Cole demonstrates how to tra...

Pasos para contar una historia

1. Entiende/define el contexto
2. Escoge un tipo de gráfica adecuado
3. Elementos extra, el peor enemigo (clutter)
4. Pon la atención donde quieres
5. Piensa como diseñadore
6. Cuenta una historia



Personas contando historias.



Pelé, Currencies, and the Informal Economy

We checked every currency's 2022 performance against the USD with available data on Google Finance, and it turns out that 6 out of the top 10 are Latin...

ERNESTO CANALES JAN 4 0 6 0 2 ↗



Domingo Brief – End-of-Year Edition

(Argentina's national football team earned its third star following a nail-biting match where they bested defending champions France on penalties...)

GABRIEL COHEN DEC 25, 2022 0 7 0 ↗



LatAm's Tourists, Chedraui, and Twitch Streamers

Mexico welcomes close to half of all tourist arrivals into Latin America & the Caribbean each year! But the interest in other parts of the region as...

ERNESTO CANALES DEC 21, 2022 0 6 0 ↗



Domingo Brief – Chile's green hydrogen potential, investment in the DR, and Pinocchio's runaway success

Brazil's Central Bank has announced it will launch its own digital currency in 2024, following a pilot project with the country's banks and...

GABRIEL COHEN DEC 18, 2022 0 7 0 ↗



Latino CEOs, Meat, and Mexican Beer

When looking at the most prominent US-based companies, S&P and Fortune 500 companies, only 3% of the CEOs are Hispanic or Latino, despite the country...

LATINOMETRICS DEC 14, 2022 0 15 0 2 ↗



Latinometrics

Visualizing Latin America's Potential

Latinometrics

Data stories and insights about Latin American markets, startups, and trends.

Hundreds of paid subscribers

Your email...

Subscribe

No thanks >



Personas contando historias

The US Has the 2nd Largest Spanish-Speaking Population

The World has around 550M Spanish Speakers

Mexico 124M
USA 57M
Colombia 50M
Spain 47M
Argentina 44M
Peru 32M
Venezuela 32M
Cuba 12M
Bolivia 11M
Dom. Rep. 11M
Honduras 9M
El Salvador 7M
Panama 7M
Mexico 7M
Brazil 7M
Guatemala 7M
Nicaragua 6M
Ecuador 7M
Italy 6M
Costa Rica 4M
Uruguay 3M
Paraguay 3M
France 2M
Philippines 2M
Costa Rica 1M

Source: Wikipedia

Latinometrics @LatamData · Jun 24, 2022

(1/8) A study predicts that the US will have more Spanish speakers than Mexico by 2050.

Show this thread

Latinometrics @LatamData · 31m
and before you go, you might also enjoy this thread:

1,105 1 6 ↑

Show this thread



Personas contando historias.

Visualize Latin America's Potential

Stay ahead of LatAm's startups, markets, and trends.



Following

Latinometrics 

@LatamData

Data visualizations and insights about Latin American startups, markets & trends.

See our charts early by joining our premium audience 

 Media & News Company 

Latin America

 latinometrics.substack.com

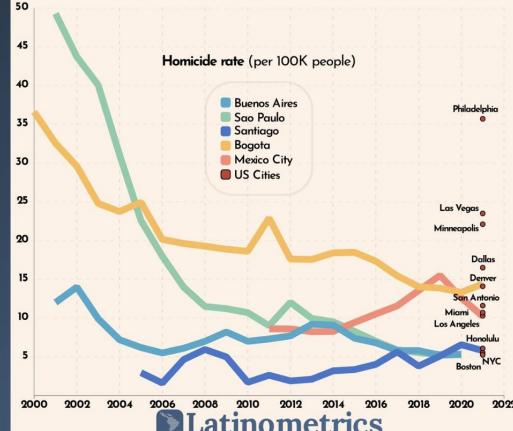
 Joined May 2016

Latinometrics  @LatamData · Dec 9, 2022

(1/11) São Paulo cut its homicide rate by 90% and is now about as safe as Boston. Mexico City is currently safer than Dallas and Denver.

A thread on LatAm's (not so) dangerous cities, by @karlaberman :

These Major LatAm Cities are Now Safer than Some US Cities



Source: The Homicide Monitor, Bloomberg

54 819 2,359

Show this thread

Personas contando historias.

Viz for Social Good
@VizFSG

Founded in 2017, Viz for Social Good (VFSG) is a global #nonprofit connecting #data enthusiasts with mission-driven organizations to create #socialgood.

Non-Governmental & Nonprofit Organization [vizforsocialgood.com](#)
Joined June 2019

Pinned Tweet

Viz for Social Good @VizFSG · Nov 29, 2022

We are an entirely volunteer-based organization and FJC, a 501c3 public charity, fiscally sponsors us. This #GivingTuesday, please consider donating to support our operations so we can continue lifting communities globally. paypal.com/donate/?hosted...

#nonprofit #fundraising

driven organizations create social change...

through data visualization and storytelling.

VISION
We envision a world where everyone can benefit from data visualization.

OUR VALUES
Social impact
Community
Partnership

Personas contando historias.

Escuela de Datos

9,544 Tweets

Conocimiento abierto + [datos abiertos](#)

Tutoriales, experiencias para el manejo de datos abiertos

ESCUELA DE DATOS

Escuela de Datos
@EscuelaDeDatos

Cursos y materiales gratuitos para el manejo de datos. Mapeamos casos de éxito en la región. ¡Comparte el tuyo! Somos familia @schoolofdata.

Latinoamérica y España escueladedatos.online Joined June 2013

Escuela de Datos
@EscuelaDeDatos

#DiadelosDerechosHumanos |

¿Cómo echamos a andar el #feminismo activista de #datos? 🤘🌐📊

¡Te compartimos iniciativas dateras inspiradoras para que puedas hacerlo en el marco de la finalización de los #16DíasdeActivismo!

¡Abrimos hilo! 🧵👉

Ilustración: Steve Dickie (2022)

Translate Tweet



Personas contando historias.

Categories Glossary Opp

CLIMATE TRACKER • ASIA



Data Storytelling

Made Anthony Iswara

 [View PDF](#)

The video explains why data is important for journalism – and how to make the most of data storytelling in your next energy reporting. It details the steps that data journalists usually go through, with several helpful advice so that you can kickstart your data journalism adventure today!



Energy landscape: Indonesia

Kharishar Kahfi

 [View PDF](#)

Reporting energy issues in Indonesia means getting your hand dirty because of the country's complicated love affair with coal. Can they shift to build more healthy relationship with renewable sources and to contribute in saving the planet from climate crisis? This guide will help you understand the basic of Indonesia's energy landscape and find underreported-yet-important energy stories from the world's largest archipelago.



Personas contando historias

← Federica Fragapane

3,545 Tweets



• **«Mandy On Mandie»** 1966 324

• **«John Wesley Has Died»** 1967 364

• **«Read a Four Letter Word»** 1968 1024

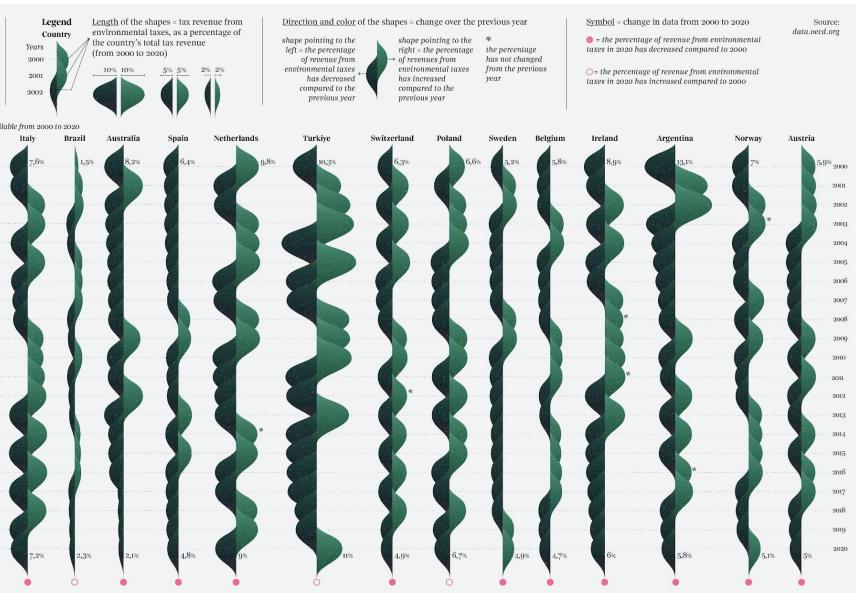
• **«Nostalgia Never Dies»** 1969 1224

...

✉️

✍️

Following



Personas contando historias.

Federica Fragapane

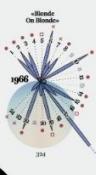
3,545 Tweets



Federica Fragapane

@fedfragapane

Information designer based in Italy
Scientific American, UN, BBC.

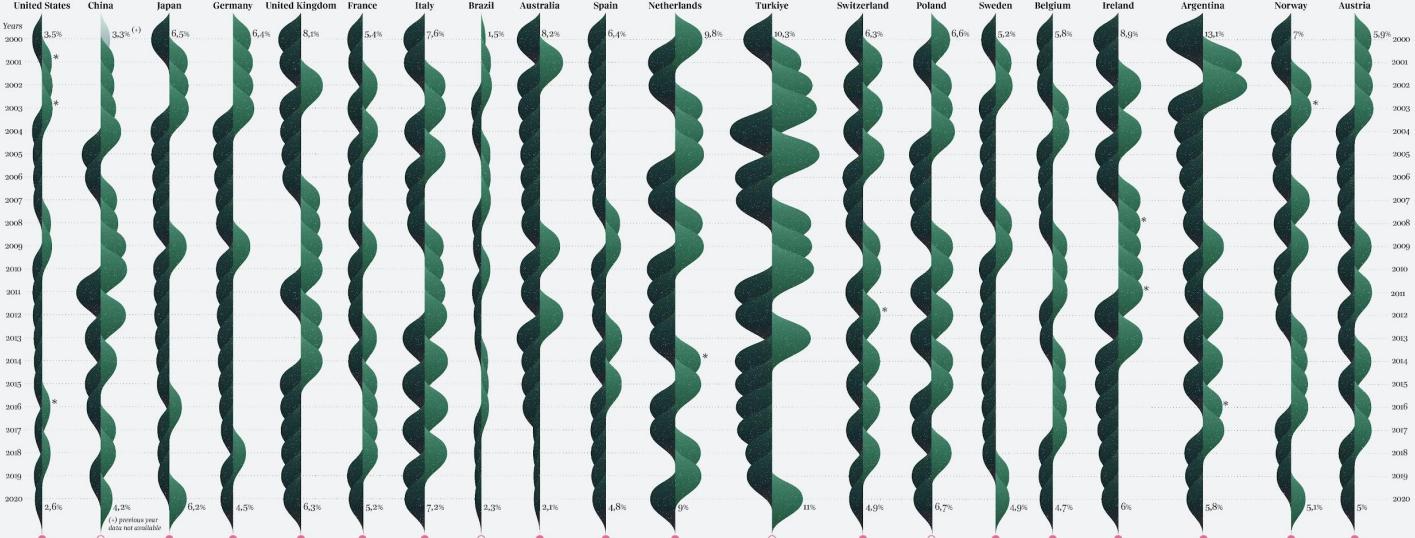


Environmental taxes

Tax revenue from environmentally related taxes

An environmental tax is defined as «a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment. Four subsets of environmental taxes are distinguished: energy taxes, transport taxes, pollution taxes and resources taxes». stats.oecd.org

The top 20 countries by GDP in 2021, selected from those with data on environmental taxes available from 2000 to 2020





Personas contando historias

← Rosana Ferrero 🐦☮️🚩

7,783 Tweets

Rosana Ferrero 🐦☮️🚩

@RosanaFerrero

Ph.D. Directora académica en @maximaDataSci_R

🎓 Cursos de Data Science + Machine Learning + Statistics

😊 Haz que tus datos sean útiles

🌿 Ecology @ SevillaR

Rosana Ferrero   
@RosanaFerrero

Personas contando historias.

Rosana Ferrero
7,783 Tweets

Following

Rosana Ferrero

@RosanaFerrero

Ph.D. Directora académica en @maximaDataSci_R
 Cursos de Data Science + Machine Learning + Statistics
 Haz que tus datos sean útiles
 Ecology @_SevillaR



Rosana Ferrero
@RosanaFerrero

¡La visualización de datos es una herramienta esencial en el mundo del #datascience! Nos permite ver patrones y tendencias en nuestros datos de manera clara y concisa

¡Cuenta historias con tus datos y comunica tus hallazgos de manera efectiva!

#dataviz #RStats #Python #data

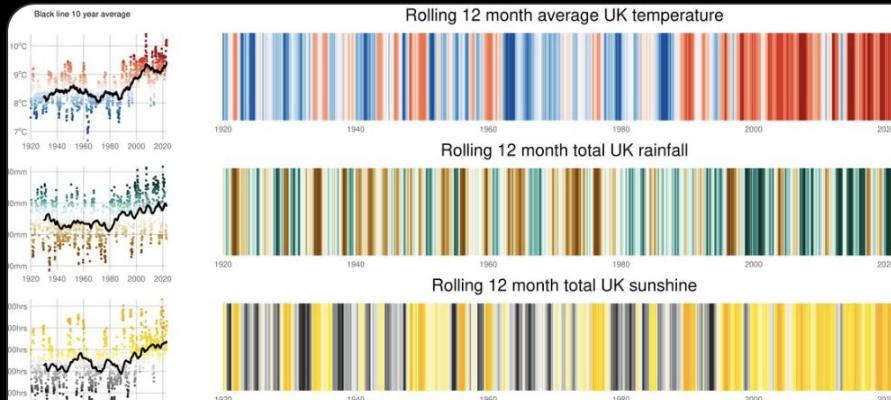
Translate Tweet

Ejemplos creativos



Neil Kaye @neirlkaye · Jan 3

Here in the UK it is getting warmer, wetter and sunnier. This **#dataviz** shows mean temperature, total rainfall and total sunshine.
Each dot and stripe is shows a rolling monthly 12 month average (e.g. July 2012 to June 2013)
#globalwarming #climatechange



Data source: Met Office Created by: @neirlkaye

41.3K

12

72

285



Ejemplos creativos

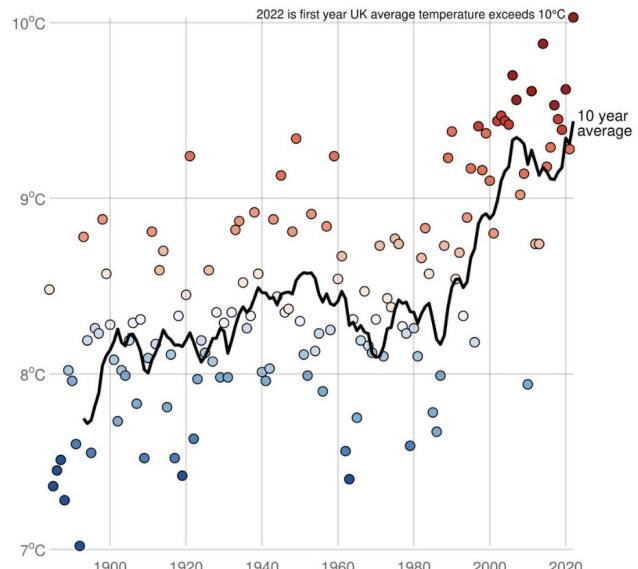


Neil Kaye @neilrkaye · Jan 3

In the UK, 2022 was the warmest year on record, this #dataviz shows annual average temperatures since 1884 and demonstrates the first year above 10°C.

#globalwarming #climatechange

UK annual mean temperature between 1884 and 2022



Data source: Met Office Created by: @neilrkaye

13K

5

39

121

↑

Ejemplos creativos



Ribhu kanchan @Ribhukanchan1 · Jan 23, 2021

Here is my submission for the week03 | **Global Warming Is Real** |

If **Global Warming** were a race, the Northern Hemisphere would be winning.

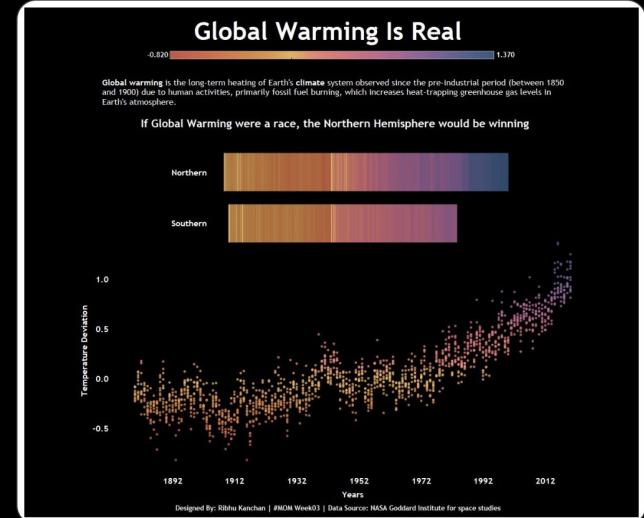
#mom2021 #datafam #dataviz

Viz at: lnkd.in/eVFgatS

Feedback yes, please

#tableaupublic #datafam

#makeovermonday2021 #GlobalWarming





Ejemplos creativos

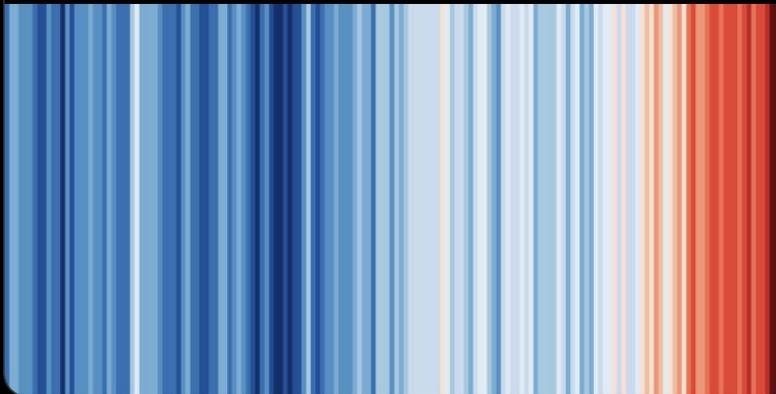


Marlen Promann Sergiwa @mpromann · Oct 3, 2019

Simplicity is captivating and easy to comprehend. The Warming Stripes [global warming #datavis](#) has become a cultural meme and an [#icon](#) for [#ClimateStrike](#) - brilliant! By [@ed_hawkins](#)

d Design Week ✨ @Design_Week · Oct 2, 2019

How this climate crisis graphic became an instantly understandable (and shareable) meme: bit.ly/2mJWL4H



Ejemplos creativos

← Tweet



Gianluca Bonifazi
@BiuniGianluca

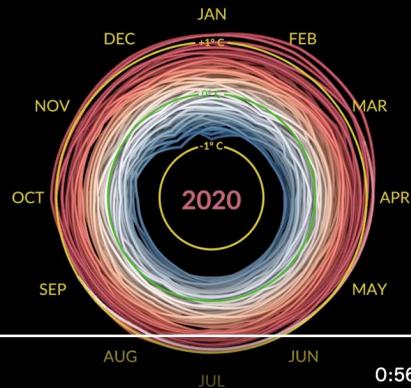
"The Climate Spiral"

Un'animazione di [@NASAViz](#) che mostra in maniera davvero efficace le anomalie mensili della temperatura globale tra il 1880 e il 2021.

#climateemergency #globalwarming #dataviz
#7dicembre

Credits: [@marksubbarao](#)

[Translate Tweet](#)



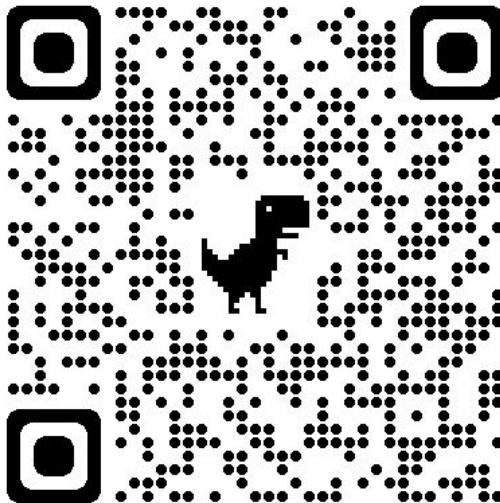
▶ 19 views

0:56 / 1:10 🔍 ↻



**“Mujeres en el mundo,
la UNAM y la ciencia”**

Al repo y la libreta de
Jupyter



Sesión 2

Introducción: Pasos para contar una historia

1. Entiende/define el contexto
2. Escoge un tipo de gráfica adecuado
3. Elementos extra, el peor enemigo
(clutter)
4. Pon la atención donde quieres
5. Piensa como diseñadore
6. Cuenta una historia

Introducción

Existen un sinfín de herramientas que pueden ayudarte a contar historias. Sin embargo, las herramientas no conocen tus datos ni la historia como tú.

Tómate el tiempo para dominar tus herramientas de tal manera que no sean una limitante cuando las quieras usar.

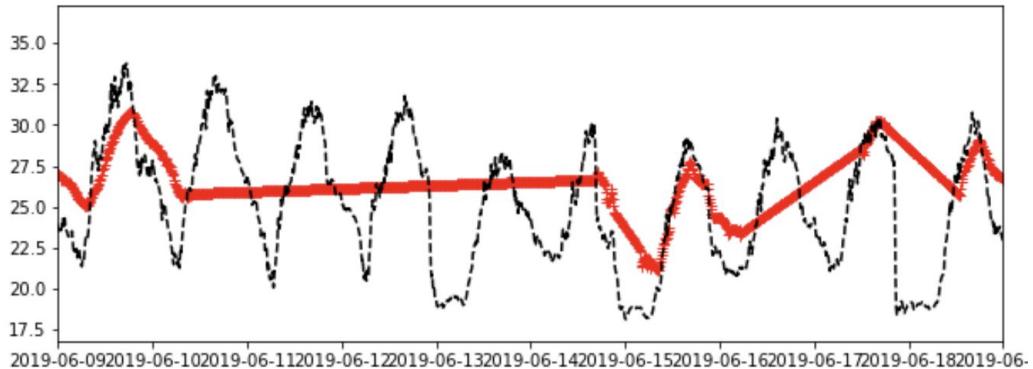
Cole.

Contexto

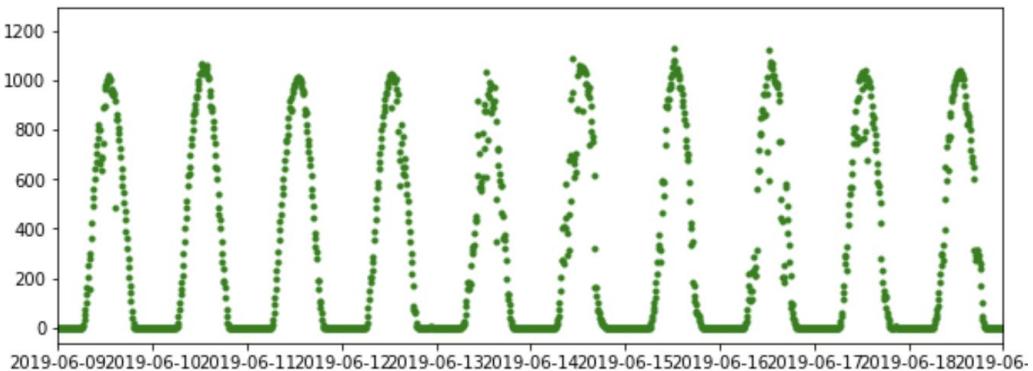
El éxito en la visualización de datos no empieza con la visualización de los datos

Entender el contexto y los datos para saber qué comunicar.

1. Contexto: exploratory vs explanatory

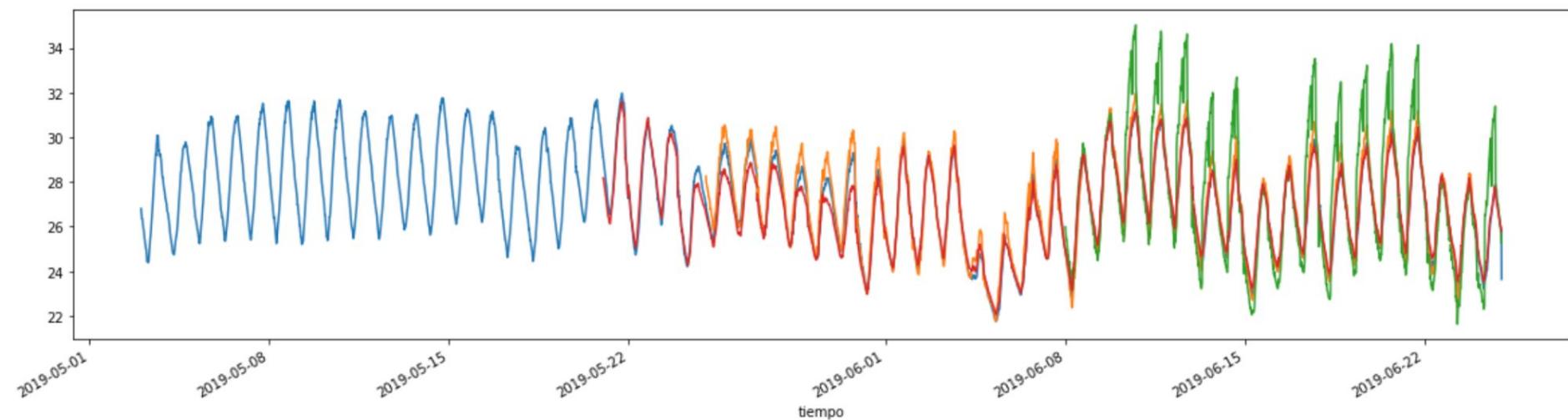


La exploración de datos es parte del proceso de entender los datos y definir lo que es importante resaltar a otras personas.



1. Contexto: exploratory vs explanatory

No está bien mostrar datos de exploración cuando deberíamos estar mostrando datos para explicar



1. Contexto: ¿a quién, qué y cómo?

Quién es tu audiencia y cómo te perciben.

Comunidad 18 a 25 años.

Posicionarte como experto en el tema: presentación.

1. Contexto: ¿a quién, qué y cómo?

Qué quieres que tu audiencia sepa o haga.

Saber sobre ER: cambio climático, tecnologías, EE

Call to action? Discusión o reflexión, acción específica

Mecanismo: Insta, TikTok, Twitter, Blog (Seminarios, videos, correos, etc)

Tono: Alertar, informar, gravedad, seriedad.

1. Contexto: ¿a quién, qué y cómo?

Cómo vas a usar los datos para establecer tu objetivo.

Datos disponibles

No ignores datos que no apoyan tu idea

Storyboarding

Evolución de las EL a partir del acuerdo de París en Mx

1. Intro al acuerdo de París
2. Figura 1: evolución en % de las EL del 2015 a 2020
3. Definición de Energías Limpias
4. Figura 2, de las EL, cual es el % de ER en 2020
5. Figura 3, crecimiento de las ER del 2015 a 2020

1. Contexto: ¿a quién, qué y cómo?

Si solo tuvieras una gráfica u oración para comunicar, cuál sería?
qué dirías ?

2. Escoge el efecto visual o el tipo de gráfica



2. Escoge el efecto visual: Texto simple

1%

de las casas en Mx
poseen **calentador
solar**

10%

de la energía en Mx es
producida por ER
comparado con 5% en 2010

2. Escoge el efecto visual: tablas

Interactúan con nuestro sistema verbal a través de la lectura. Útil si tenemos datos de diferentes unidades

Grupo	Métrica A	Métrica B	Métrica C
Grupo 1	\$X.X	Y%	C kWh
Grupo 2	\$X.X	Y%	C kWh
Grupo 3	\$X.X	Y%	C kWh
Grupo 4	\$X.X	Y%	C kWh

Grupo	Métrica A	Métrica B	Métrica C
Grupo 1	\$X.X	Y%	C kWh
Grupo 2	\$X.X	Y%	C kWh
Grupo 3	\$X.X	Y%	C kWh
Grupo 4	\$X.X	Y%	C kWh

2. Escoge el efecto visual:

- a. Gráficas de puntos
- b. Gráficas de lineas
- c. Gráficas de barras
- d. Gráficas de área
- e. Stacked horizontal and vertical
- f. Gráficas de cascada
- g. Heatmap

Sesión 3

Introducción: Pasos para contar una historia

1. Entiende/define el contexto
2. Escoge un tipo de gráfica adecuado
3. Elementos extra, el peor enemigo
(clutter)
4. Pon la atención donde quieres
5. Piensa como diseñadore
6. Cuenta una historia

Resumen: Escoge el efecto visual

Texto simple: No porque tengas números significa que debas tener una gráfica, uno o dos números pueden ser escritos directamente.

1%

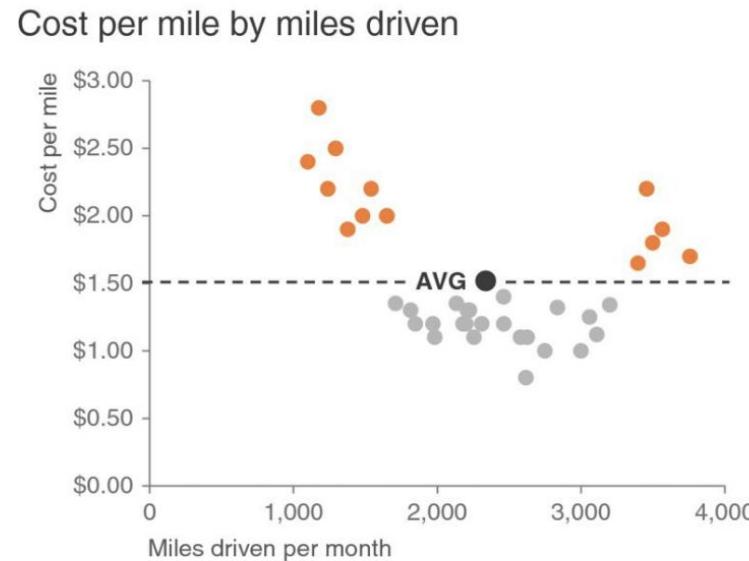
de las casas en Mx
poseen **calentador
solar**

10%

de la energía en Mx es
producida por ER
comparado con 5% en 2010

Resumen: Escoge el efecto visual

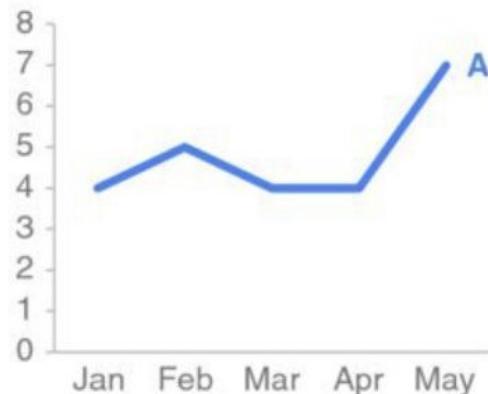
Gráfica de puntos: Útil para mostrar la relación entre dos cosas.



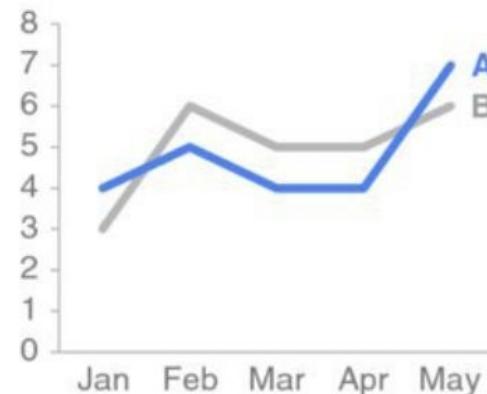
Resumen: Escoge el efecto visual

Gráfica de líneas: Los puntos están conectados físicamente mediante la línea, esto implica una conexión entre ellos que no suele existir en datos categóricos.

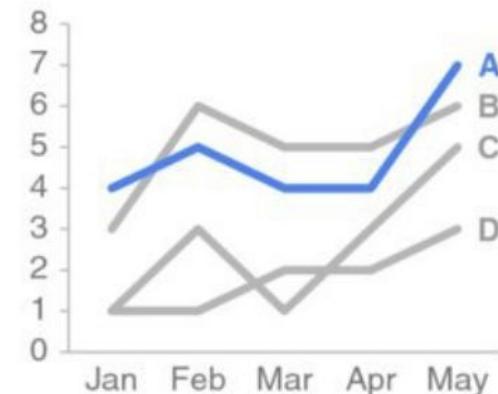
Single series



Two series



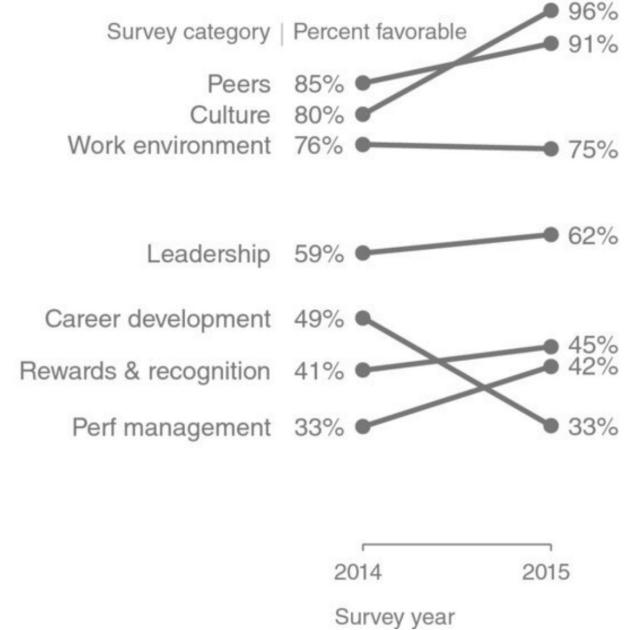
Multiple series



Resumen: Escoge el efecto visual

Gráfica de pendiente: Útil cuando hay dos períodos o dos puntos de comparación y se quiere mostrar el incremento o decremento relativo.

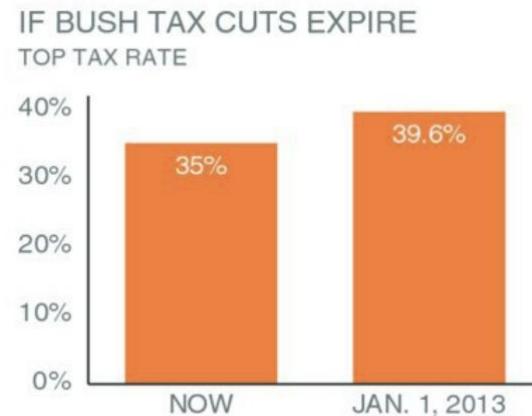
Employee feedback over time



Resumen: Escoge el efecto visual

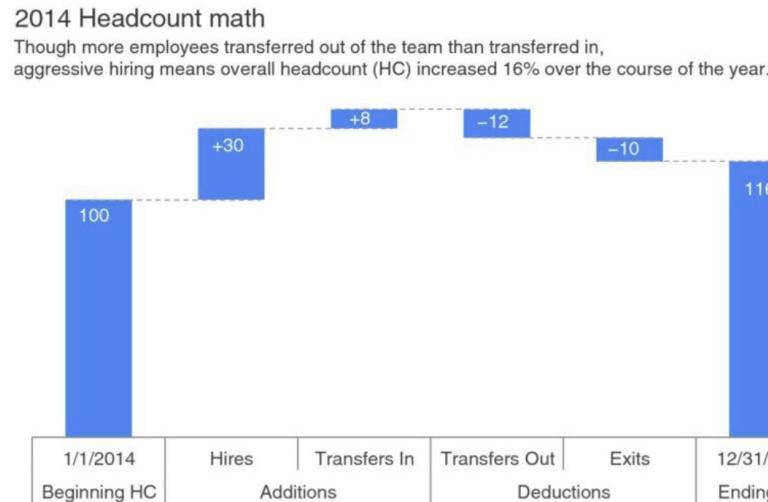
Gráfica de barras:

Siempre utiliza el cero como base para no crear confusión. Se sugiere colocar las leyendas dentro de la barra para reducir clutter. Se puede prescindir de los ejes o gris claro para quitarles importancia.



Resumen: Escoge el efecto visual

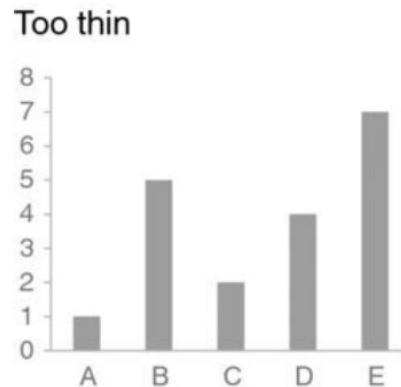
Gráfica de cascada: Usada para separar las partes de un total y enfocarse en una a la vez o para mostrar el punto de inicio, incrementos, decrementos y el punto resultante.



Resumen: Escoge el efecto visual

Gráfica de barras verticales:

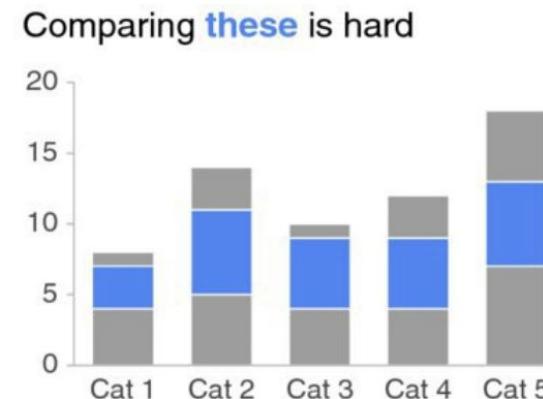
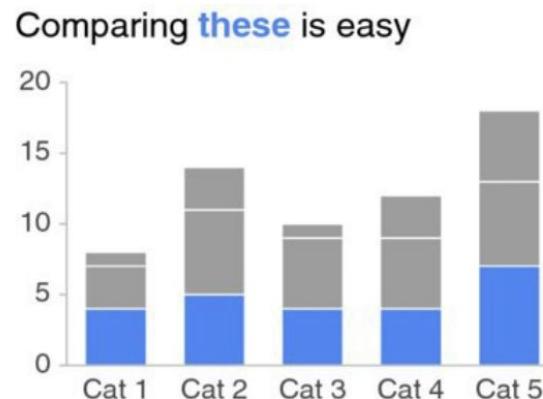
Excelente para datos categóricos. Es muy fácil de leer y considera el orden de los datos categóricos.



Resumen: Escoge el efecto visual

Gráfica de barras verticales acumuladas:

Puede ser utilizada entre diferentes categorías y dar una idea de los componentes de estas categorías. Pueden mostrar valores absolutos o sumar 100%.

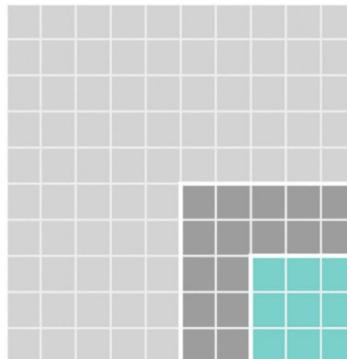


Resumen: Escoge el efecto visual

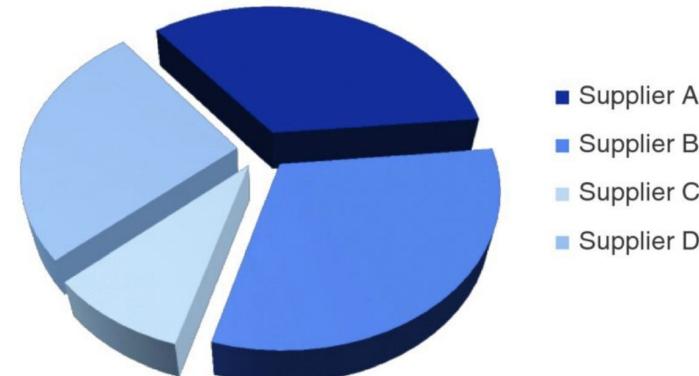
Gráfica de área:

Deben usarse con cuidado, la mente no hace un buen trabajo en asignar valores cuantitativos a espacios bidimensionales.

Interview breakdown



Supplier Market Share



3. Clutter, tu enemigo

<https://www.collinsdictionary.com> › diccionario › inglés ▾

Clutter definición y significado | Diccionario Inglés Collins

Clutter is a lot of things in an untidy state, especially things that are not useful or necessary.

Caroline prefers her worktops to be clear of **clutter**.



Verywell Mind
The Cost of Clutter in Your Life



JDog Junk Removal & Hauling
Clutter Removal: A Guide to Getting You...



ABC News
How clutter affects your health - ABC News



YouTube
Clutter to Clean - Real Life Organizing Makeover - YouTube

3. Clutter, tu enemigo

Cuida la carga cognitiva

Clutter: Visual elements that take space but don't increase understanding

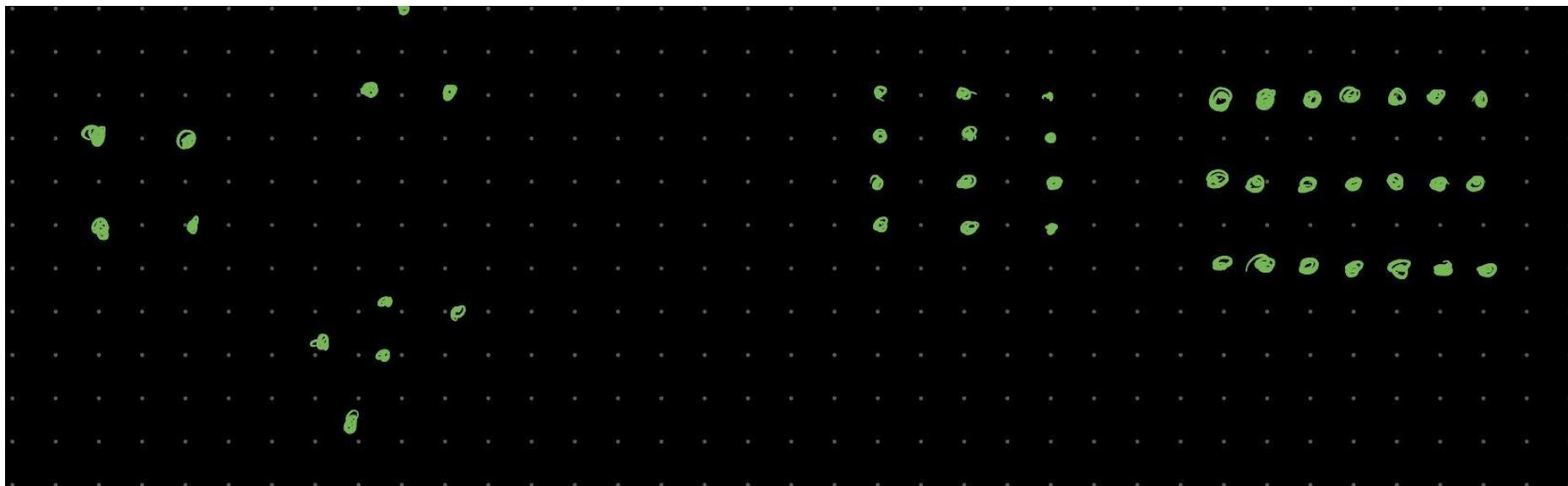
Las gráficas se ven más complicadas de lo que son.

Cuando las gráficas se perciben complicadas, corremos el riesgo de que nuestra audiencia decida no esforzarse para entender lo que mostramos.

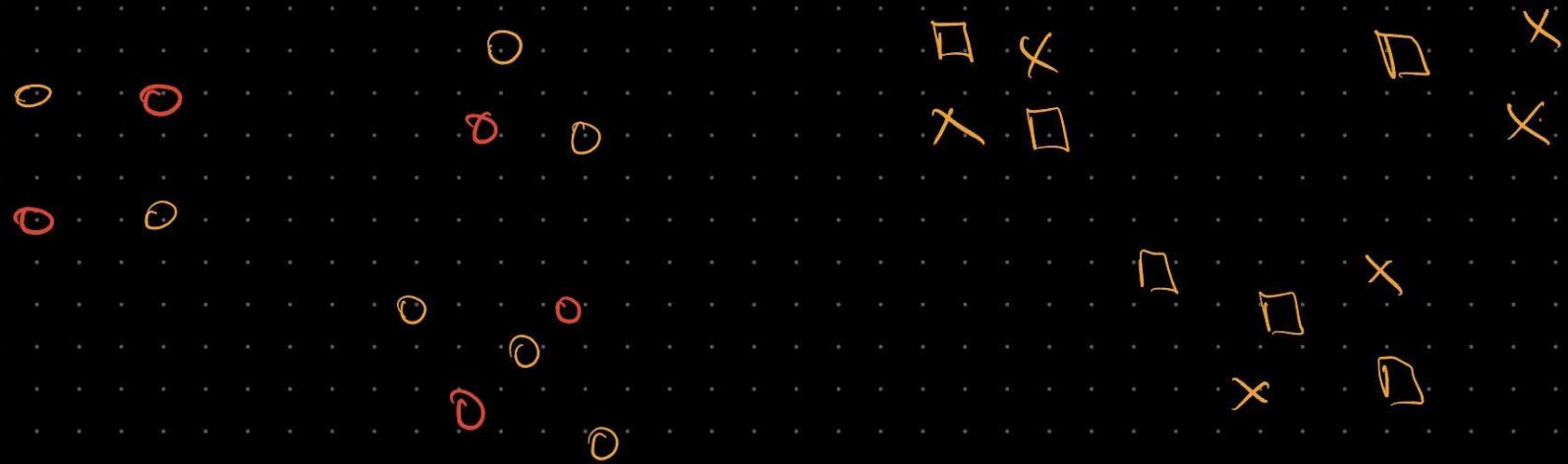
3. Clutter: Principios gestálticos de percepción visual

1. Proximidad
2. Semejanza
3. Confinamiento
4. Closure
5. Continuidad
6. Conexión

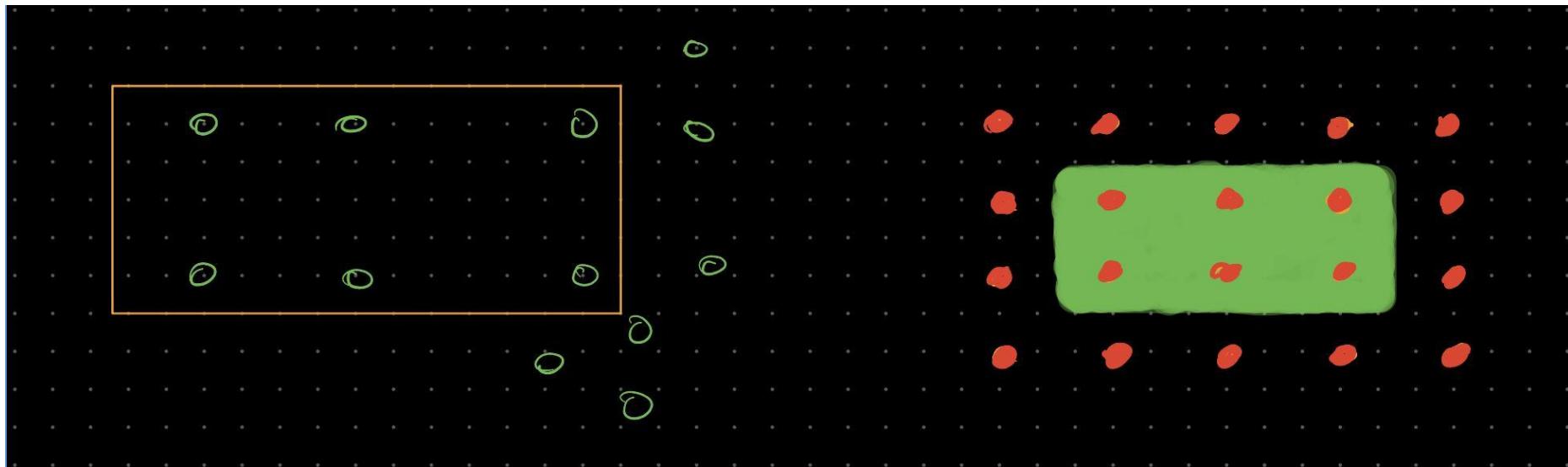
3. Clutter: Proximidad



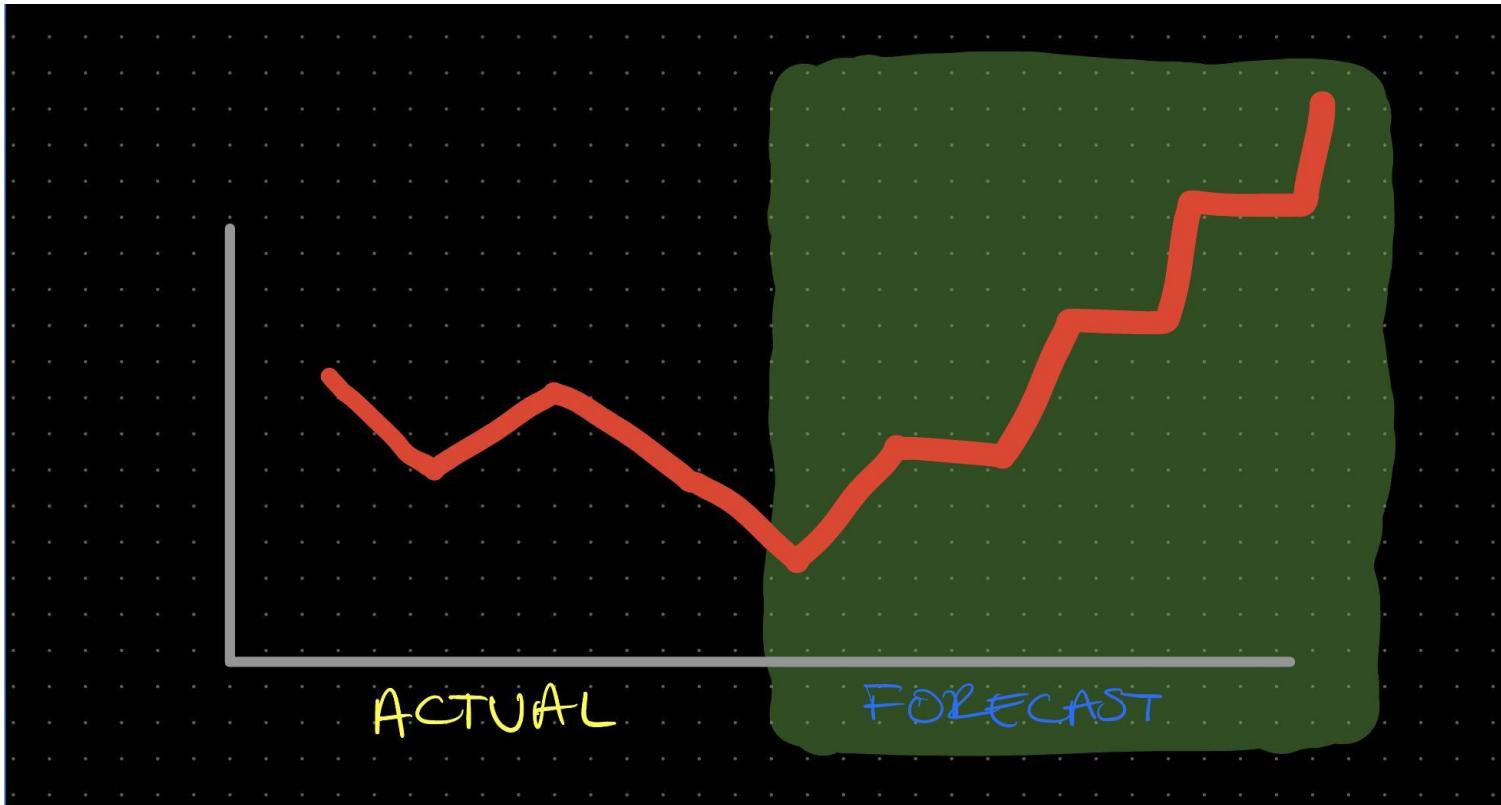
3. Clutter: Similitud



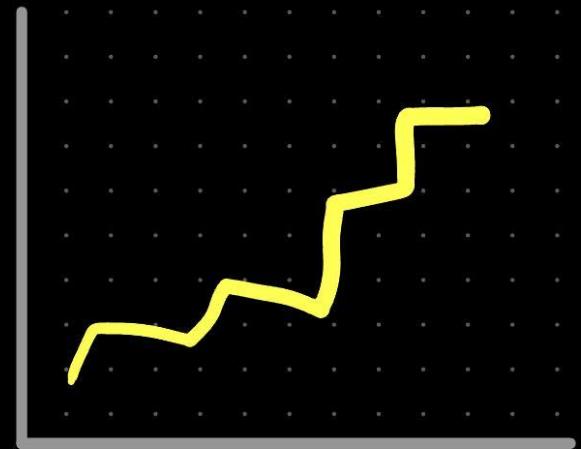
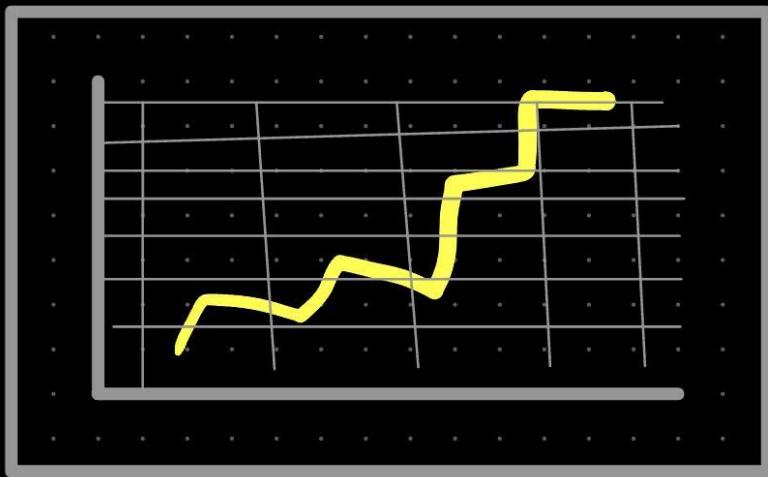
3. Clutter: Confinamiento



3. Clutter: Confinamiento

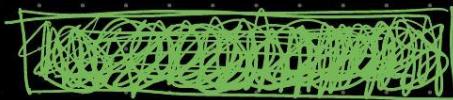


3. Clutter: Cierre (Closure)

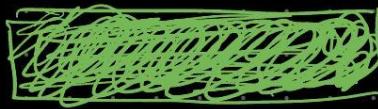


3. Clutter: Continuidad

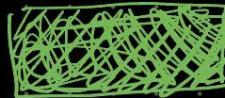
A



B



C

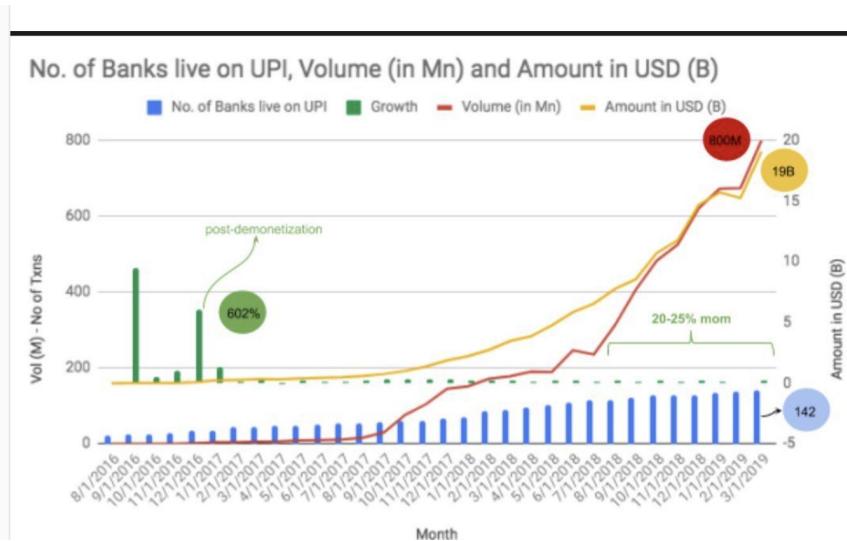


D



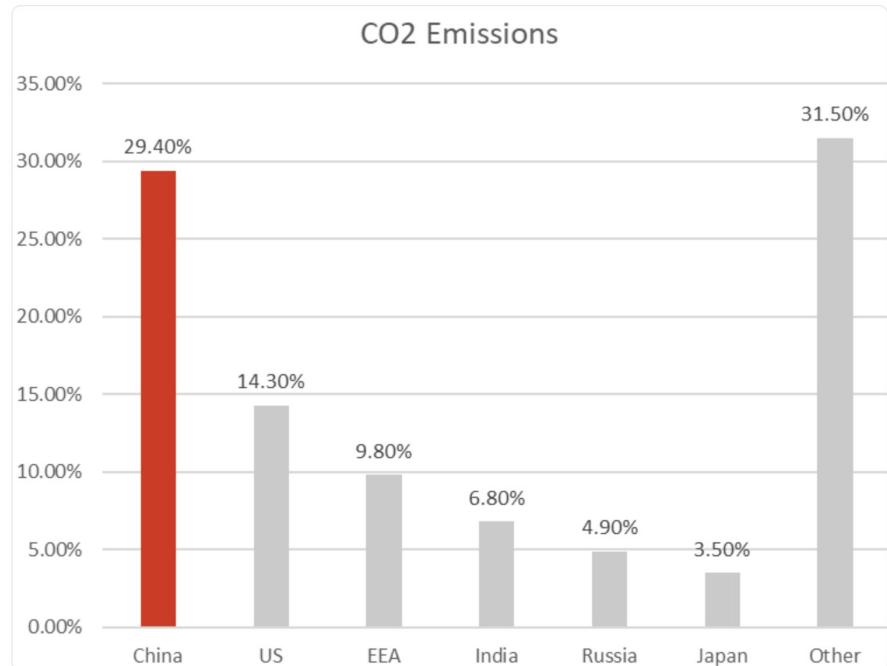
3. Clutter: Consejos

- Elementos alineados
- Evitar usar texto en diagonal y líneas



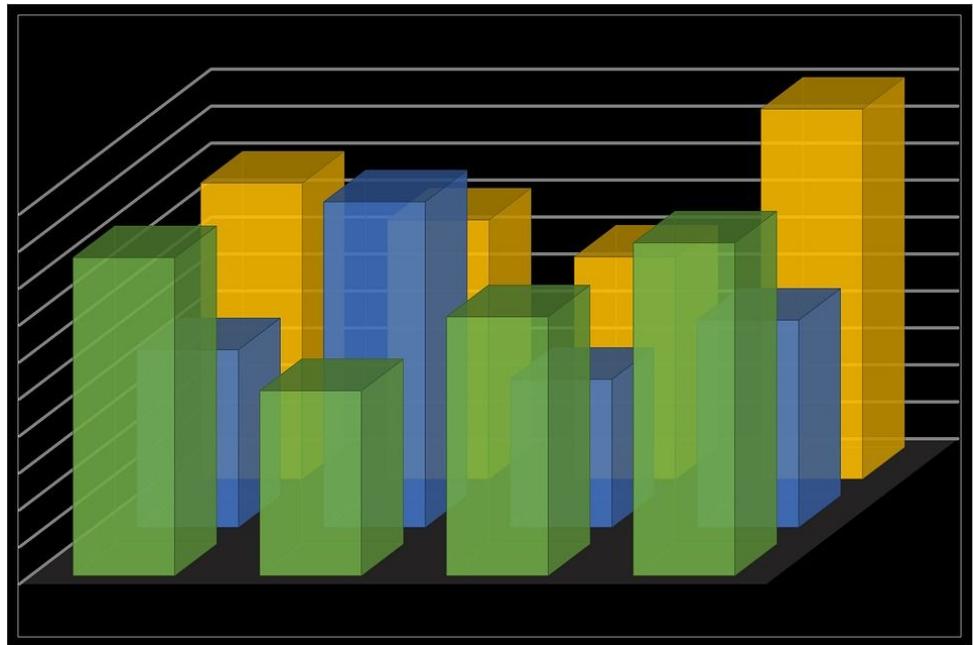
3. Clutter: Consejos

- Siéntete cómodx con espacios en blanco
- Usa el contraste de manera estratégica
- No elimines \$, % ni comas como separador de miles



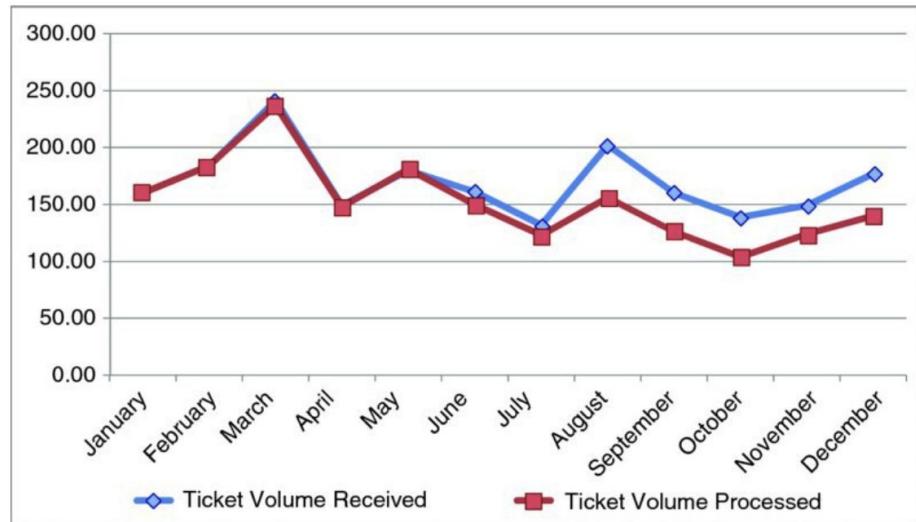
3. Clutter: Consejos

- Rara veces funciona el 3D



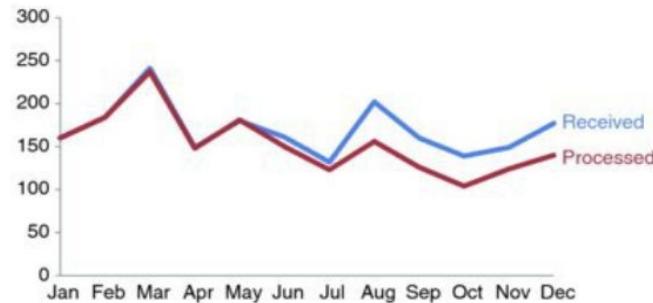
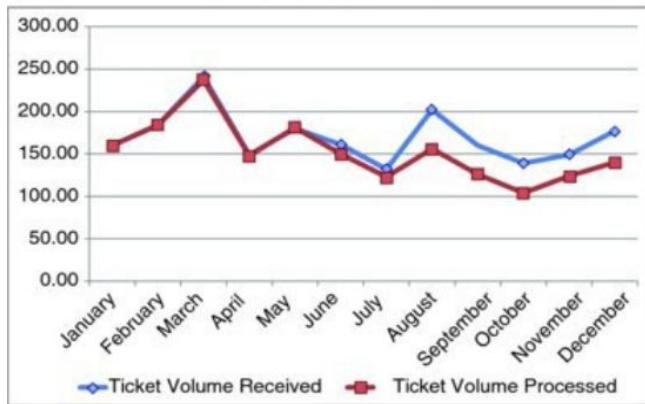
3. Clutter: Consejos

- Elimina bordes
- Elimina grid
- Eliminar marcadores de puntos
- Limpia de ejes
- Etiqueta datos directamente
- Resalta con color



3. Clutter: Consejos

- Elimina bordes
- Elimina grid
- Eliminar marcadores de puntos
- Limpia de ejes
- Etiqueta datos directamente
- Resalta con color



4. Pon la atención donde quieras: Preattentive attributes
5 segundos

756395068473

658663037576

860372658602

846589107830

4. Pon la atención donde quieras: Preattentive attributes
5 segundos

756**3**9506847**3**

65866**3**037576

860**3**72658602

8465891078**3**0

4. Pon la atención donde quieras: Preattentive attributes

- Orientación
- Forma
- Tamaño
- Curvatura
- Matiz (hue)
- Posición
- Longitud y espesor de línea
- Marcas de línea
- Intensidad

4. Preattentive attributes en el texto

No preattentive attributes

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.
You have a great company – keep up the good work!

Color

What are we doing well? Great Products. **These products are clearly the best in their class.** Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.
You have a great company – keep up the good work!

Size

What are we doing well? Great Products. These products are the best in their class. Replacement parts are shipped when needed. You sent gaskets **without me having to ask.** Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours. You have a great company – keep up the good work!

Outline (enclosure)

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The **account manager even called to check in** after normal business hours.
You have a great company – keep up the good work!

Bold

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.
You have a great company – keep up the good work!

Italics

What are we doing well? Great Products. These products are clearly the best in their class. *Replacement parts are shipped when needed.* You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.
You have a great company – keep up the good work!

Separate spatially

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask.
Problems are resolved promptly.

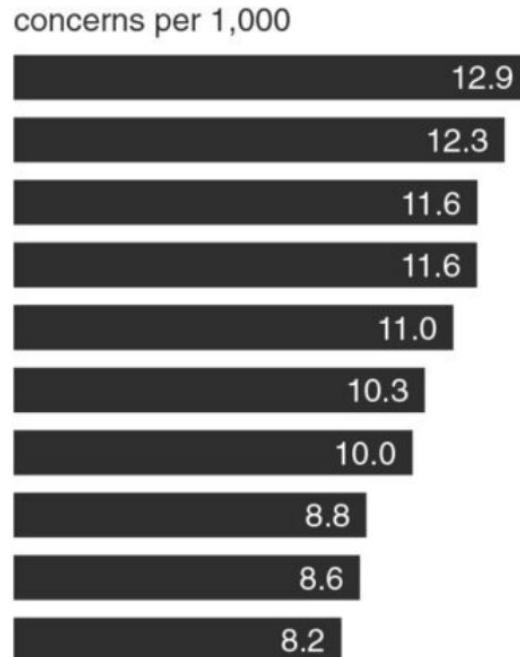
Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours. You have a great company – keep up the good work!

Underline (added marks)

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.
You have a great company – keep up the good work!

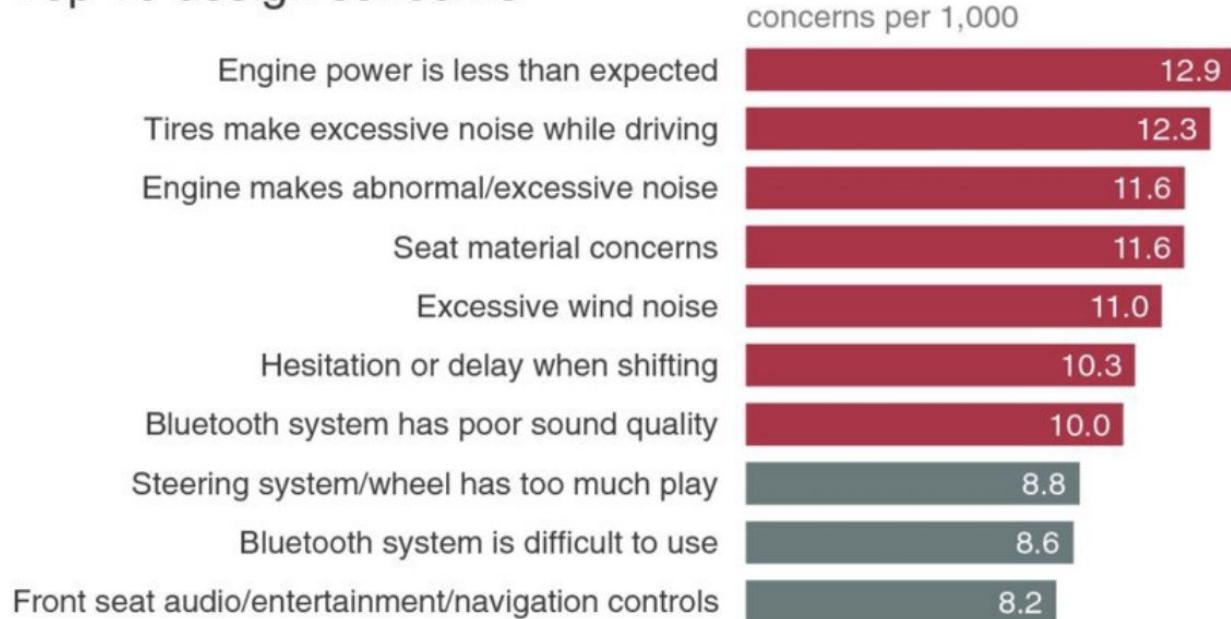
4. Preattentive attributes en gráficas

Top 10 design concerns

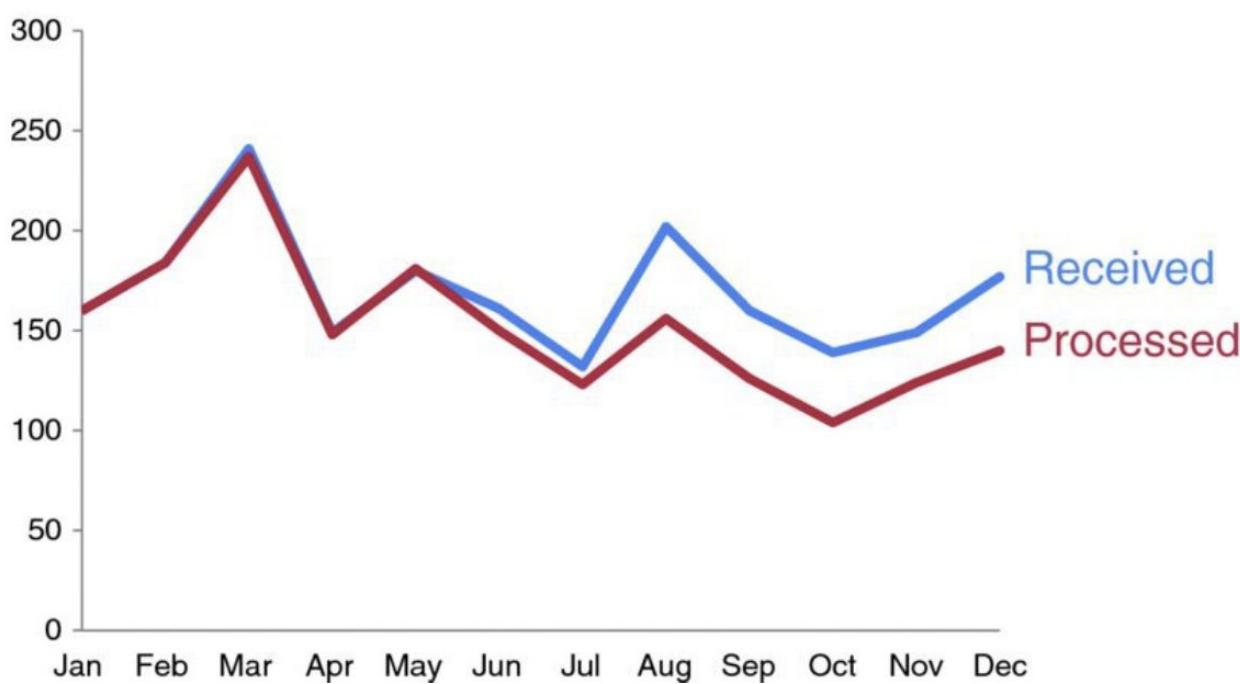


4. Preattentive attributes en gráficas

Top 10 design concerns



4. Preattentive attributes en gráficas



4. Preattentive attributes en gráficas



4. Preattentive attributes en gráficas

1. Resaltar más de un aspecto puede hacer otras cosas difíciles de ver
2. No uses preattentive attributes en EDA
3. Usa tamaños relativos para implicar importancia
4. Resiste el uso del color. Colorear debe ser siempre una decisión intencional
5. Se sugiere diseñar en escalas de grises y utilizar un color sólido para llevar la atención a donde queremos
6. No uses muchos colores al mismo tiempo, evita entrar a rainbow-land, pierde su valor preattentive
7. Usa el color de manera consistente

4. Preattentive attributes en gráficas

8. Diseña considerando el daltonismo

See your graphs and slides through colorblind eyes

There are a number of sites and applications with colorblindness simulators that allow you to see what your visual looks like through colorblind eyes. For example, *Vischeck* (vischeck.com) allows you to upload images or download the tool to use on your own computer. *Color Oracle* (colororacle.org) offers a free download for Windows, Linux, or Mac that applies a full-screen color filter independent of the software in use. *CheckMyColours* (checkmycolours.com) is a tool for checking foreground and background colors and determining if they provide sufficient contrast when viewed by someone having color-sight deficiency.

4. Preattentive attributes en gráficas

Color Oracle

Design for the Color Impaired



Color Oracle is a free color blindness simulator for Windows, Mac and Linux. It takes the guesswork out of designing for color blindness by showing you in real time what people with common color vision impairments will see.

Color Oracle applies a full screen color filter to art you are designing, independently of the software in use. Eight percent of all males are affected by color vision impairment – make sure that your graphical work is readable by the widest possible audience.

Download

Version 1.3, May 5, 2018.

[macOS](#) [Windows](#) [Linux](#)

Colour Oracle for Windows and Linux requires [Java 6 or higher](#).

macOS 10.15 Catalina users, please [see the manual for fixing a common issue](#).

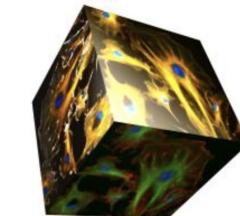
Vischeck

[Home](#)
[Vischeck](#)
[Daltonize](#)
[Examples](#)
[Downloads](#)
[Info & Links](#)
[FAQ](#)
[About Us](#)

User quotes:
love it! I've always wondered what things looked like to colorblind people!! Thanks! I know it's only a sample but that really helps.
-K. de Berzunza

Web Vischeck
[Google Search](#)

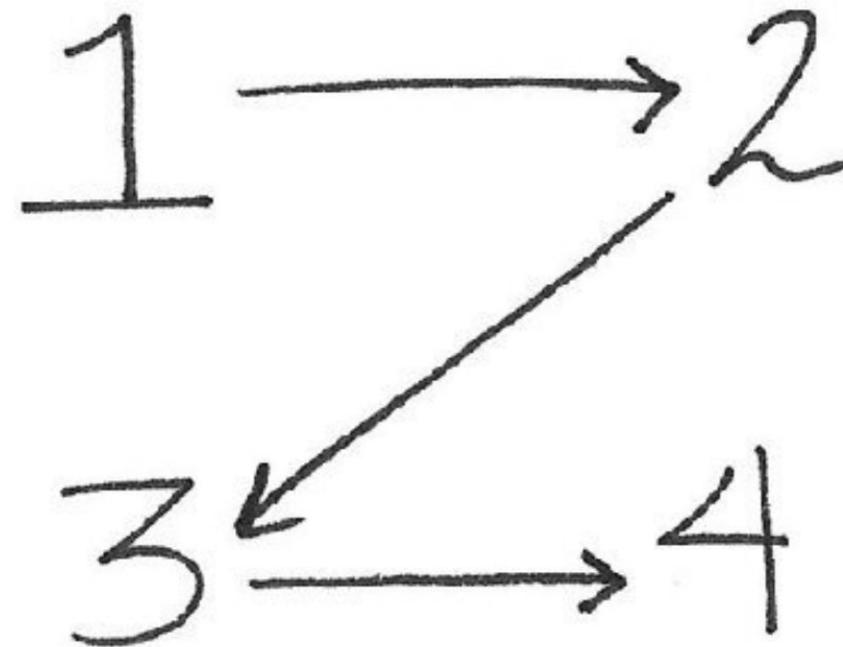
 [Wikipedia Affiliate Button](#)



How do babies see the world? Visit [TinyEyes](#).

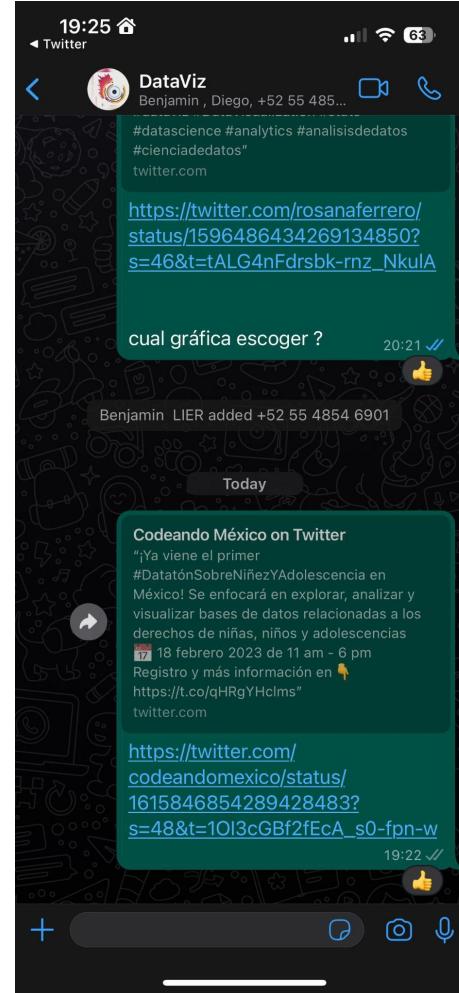
Passive monitoring of cognitive health: [Mindstrong Health](#).

4. Preattentive attributes: posición



Sesión 4

Newsletter by WhatsApp



Introducción: Pasos para contar una historia

1. Entiende/define el contexto
2. Escoge un tipo de gráfica adecuado
3. Elementos extra, el peor enemigo
(clutter)
4. Pon la atención donde quieres
5. Piensa como diseñadore
6. Cuenta una historia

5. Piensa como diseñadore

- Resalta lo importante
- Elimina distracciones
- Jerarquía de información

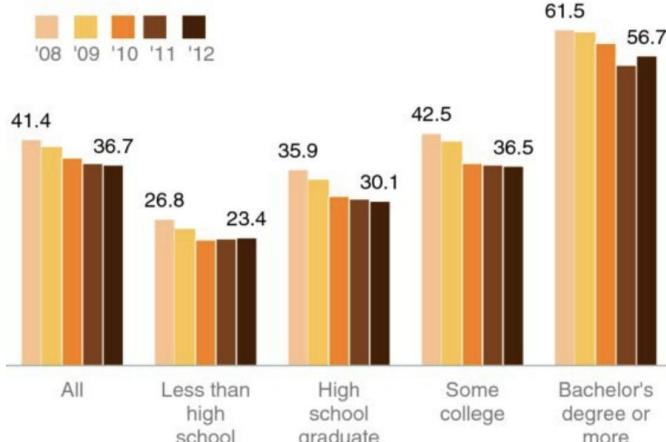
5. Piensa como diseñadore: Resalta

- MAYÚSCULAS y tipografía
- Color
 - Inversión de fondo**
- Tamaño
- Jerarquía de información

5. Piensa como diseñadore: Resalta

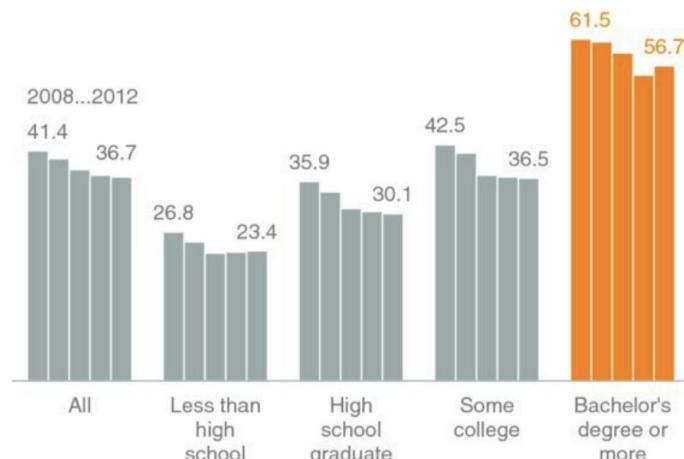
New Marriage Rate by Education

Number of newly married adults per 1,000 marriage eligible adults



New Marriage Rate by Education

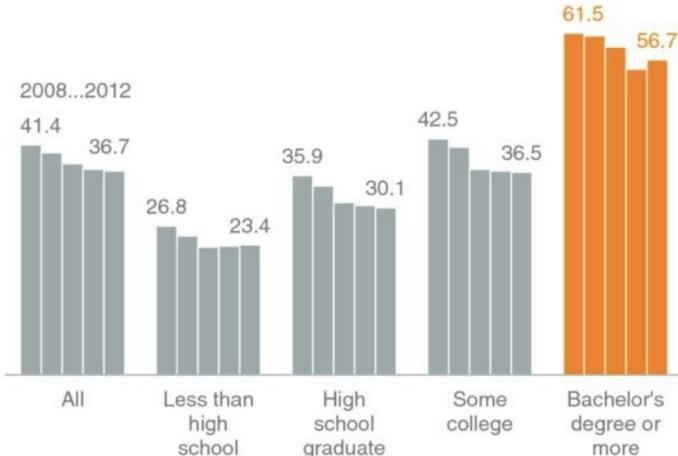
Number of newly married adults per 1,000 marriage eligible adults



5. Piensa como diseñadore: Elimina distracciones

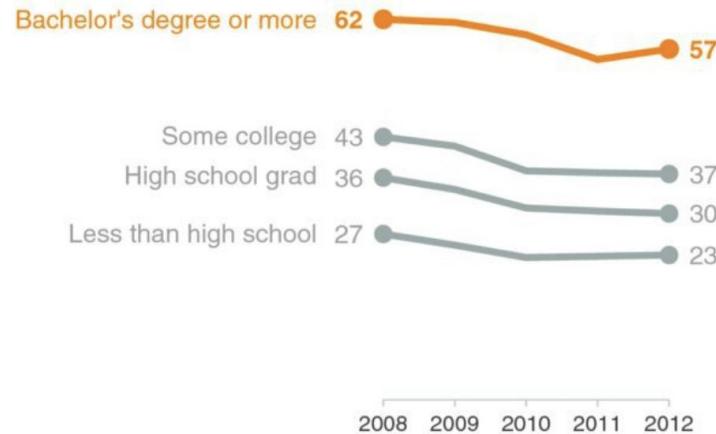
New Marriage Rate by Education

Number of newly married adults per 1,000 marriage eligible adults



New marriage rate by education

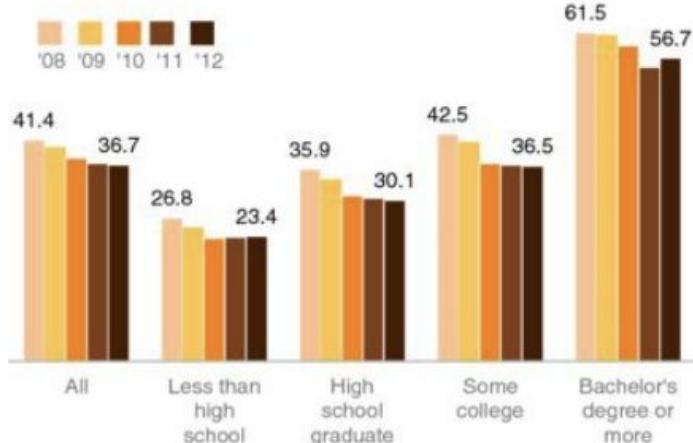
Number of newly married adults per 1,000 marriage eligible adults



5. Piensa como diseñadore: Elimina distracciones

New Marriage Rate by Education

Number of newly married adults per 1,000 marriage eligible adults



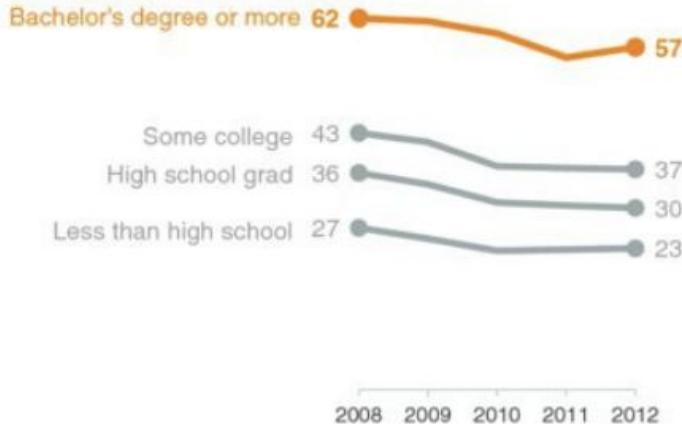
Note: Marriage eligible includes the newly married plus those widowed, divorced, or never married at interview.

Source: U.S. Census

Adapted from PEW RESEARCH CENTER

New marriage rate by education

Number of newly married adults per 1,000 marriage eligible adults



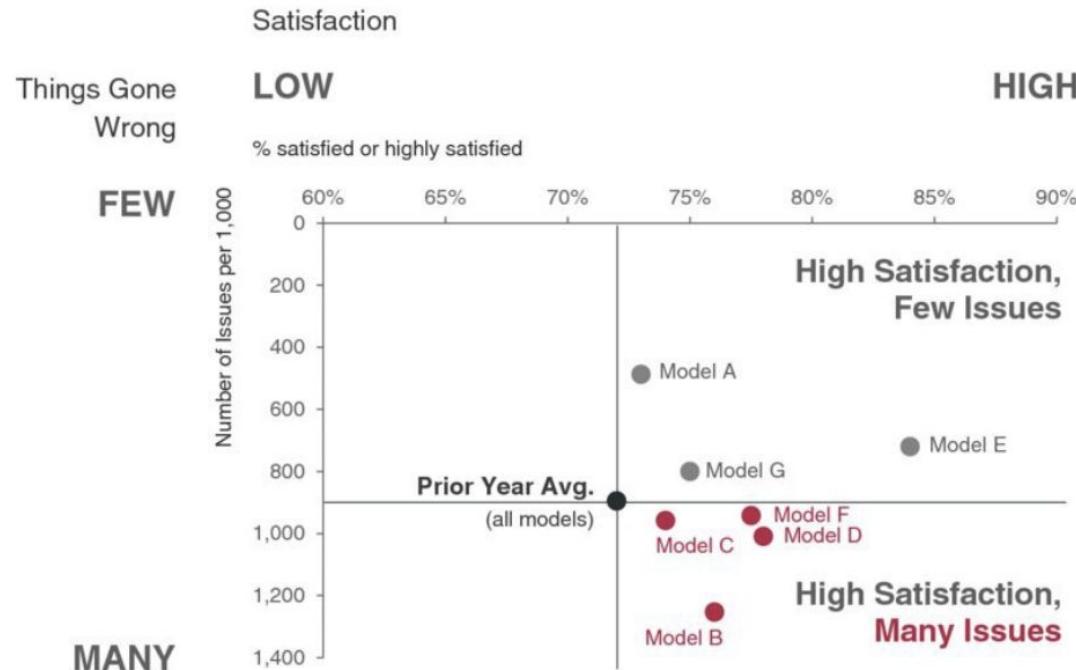
Note: Marriage eligible includes the newly married plus those widowed, divorced, or never married at interview.

Source: U.S. Census

Adapted from PEW RESEARCH CENTER

5. Piensa como diseñadore: Jerarquías de información

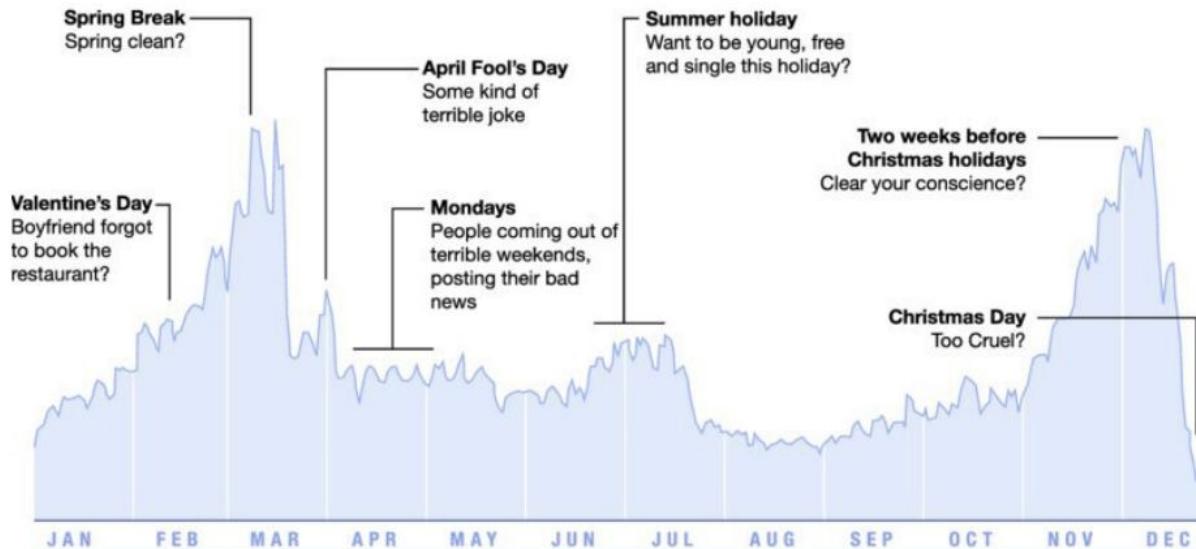
Issues vs. Satisfaction by Model



5. Piensa como diseñadore: Usa texto

Peak Break-up Times

According to Facebook status updates

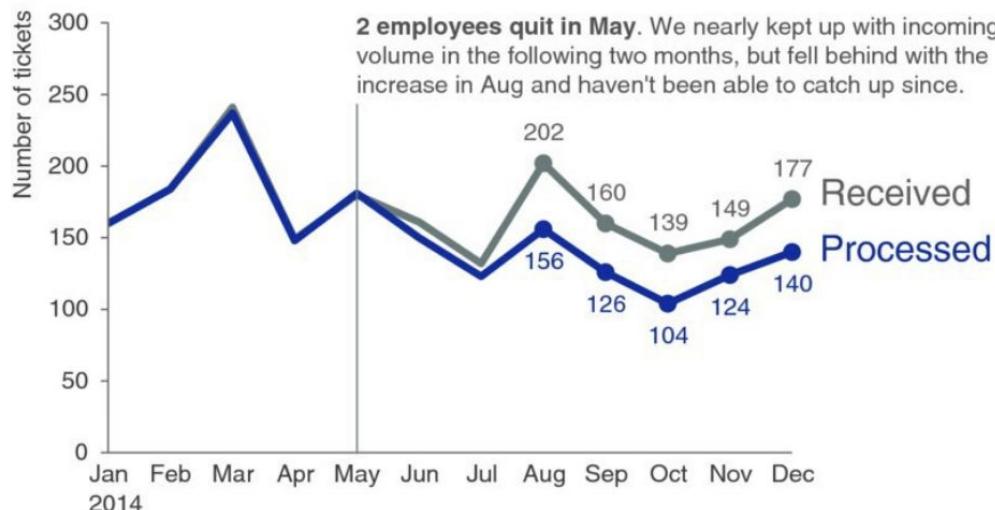


5. Piensa como diseñadore: Llamado a la acción

Please approve the hire of 2 FTEs

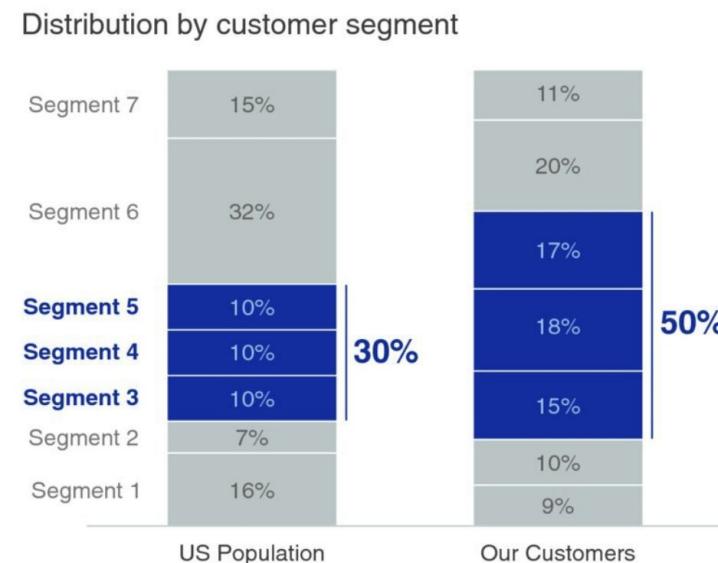
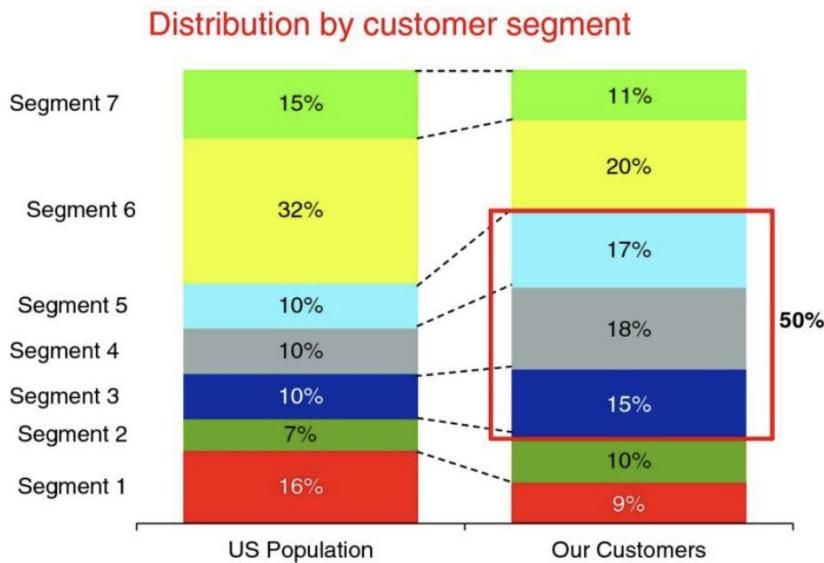
to backfill those who quit in the past year

Ticket volume over time

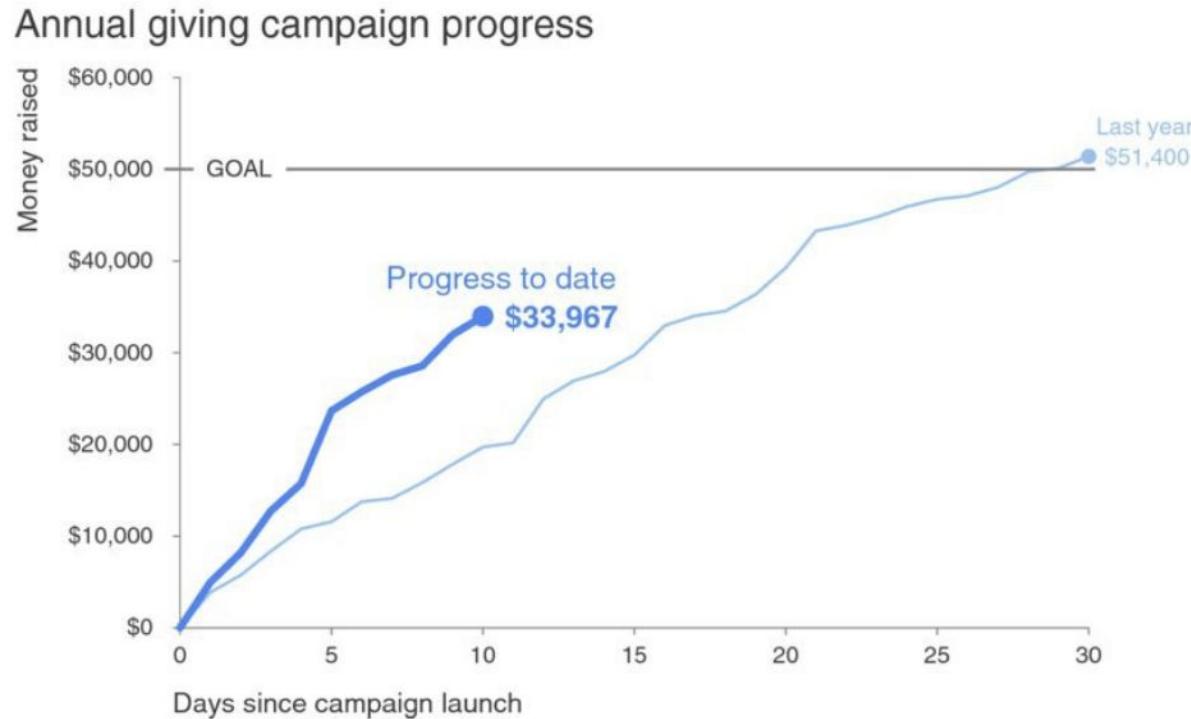


Data source: XYZ Dashboard, as of 12/31/2014 | A detailed analysis on tickets processed per person and time to resolve issues was undertaken to inform this request and can be provided if needed.

5. Piensa como diseñadore: Evita rainbow-land

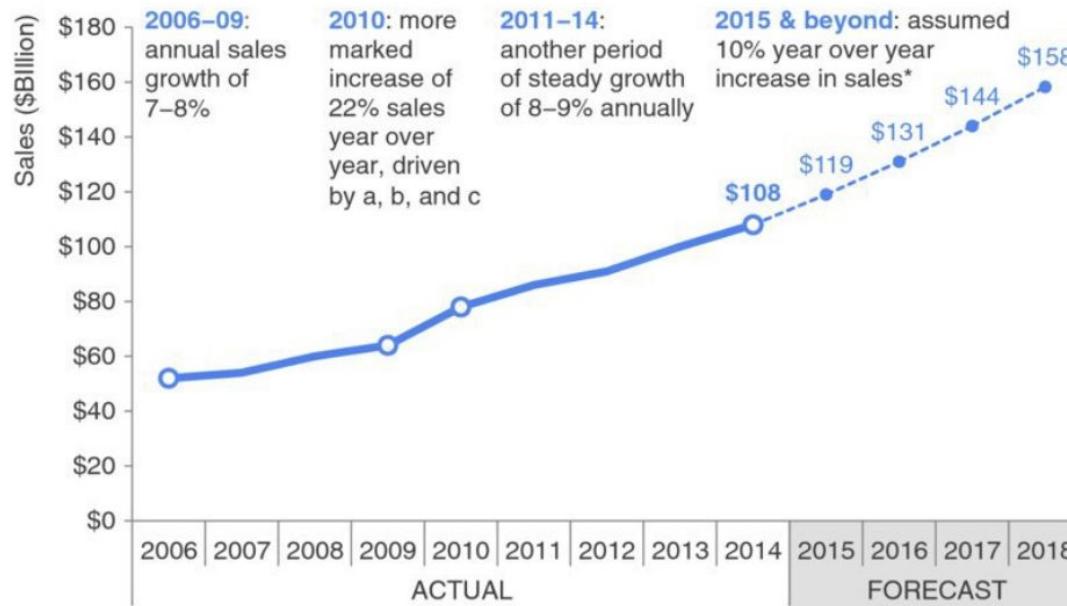


Ejemplos de buenas visualizaciones



Ejemplos de buenas visualizaciones

Sales over time

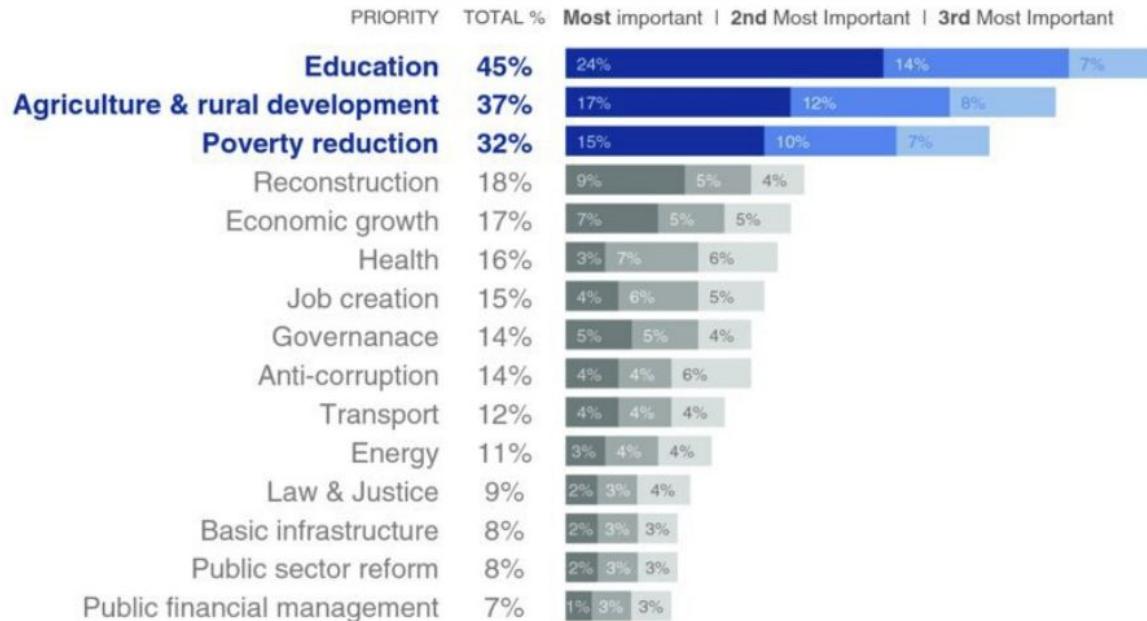


Data source: Sales Dashboard; annual figures are as of 12/31 of the given year.

*Use this footnote to explain what is driving the 10% annual growth forecast assumption.

Ejemplos de buenas visualizaciones

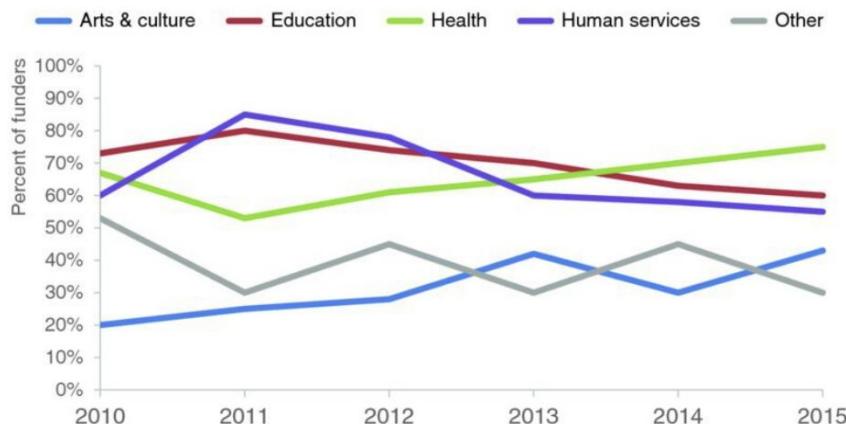
Top 15 development priorities, according to survey



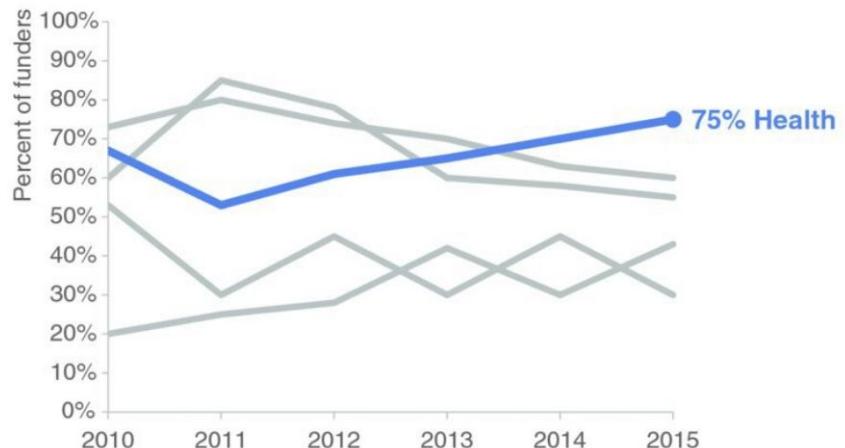
N = 4,392. Based on responses to item, *When considering development priorities, which one development priority is the most important? Which one is the second most important priority? Which one is the third most important priority?* Respondents chose from a list. Top 15 shown.

Ejemplos de buenas visualizaciones: Spaghetti graph

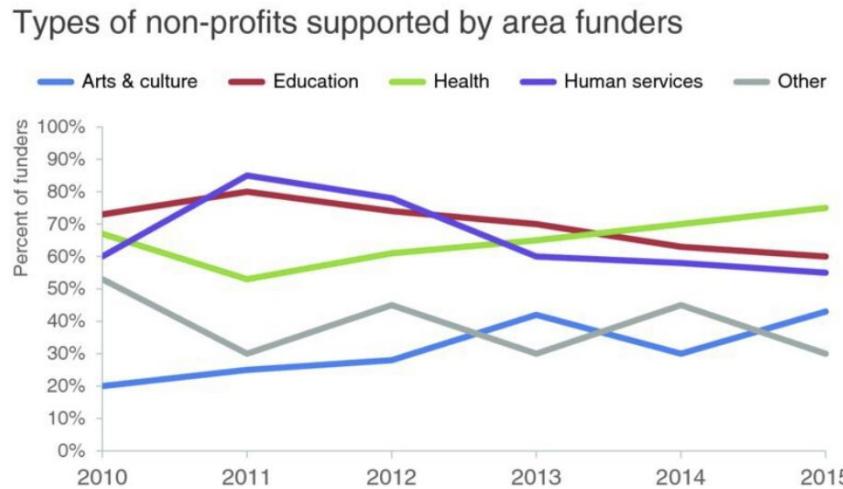
Types of non-profits supported by area funders



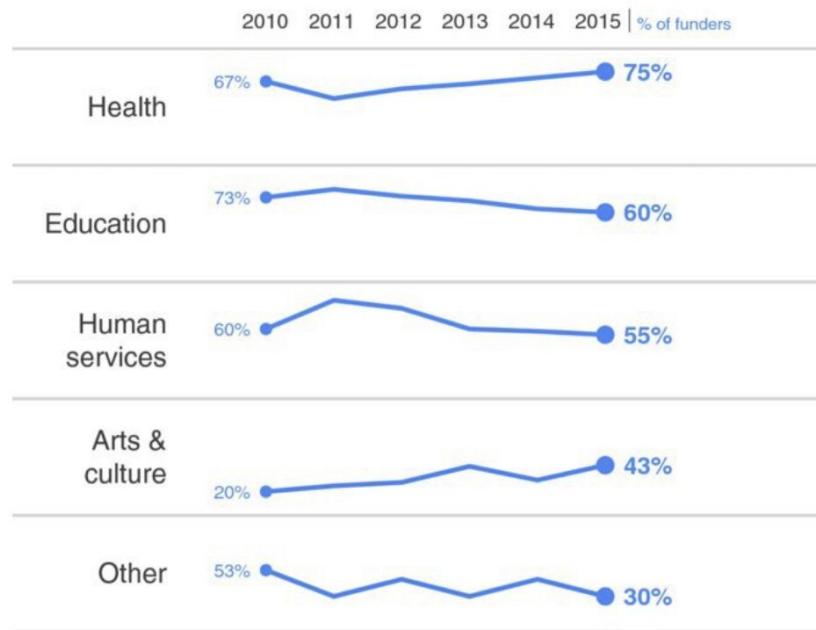
Types of non-profits supported by area funders



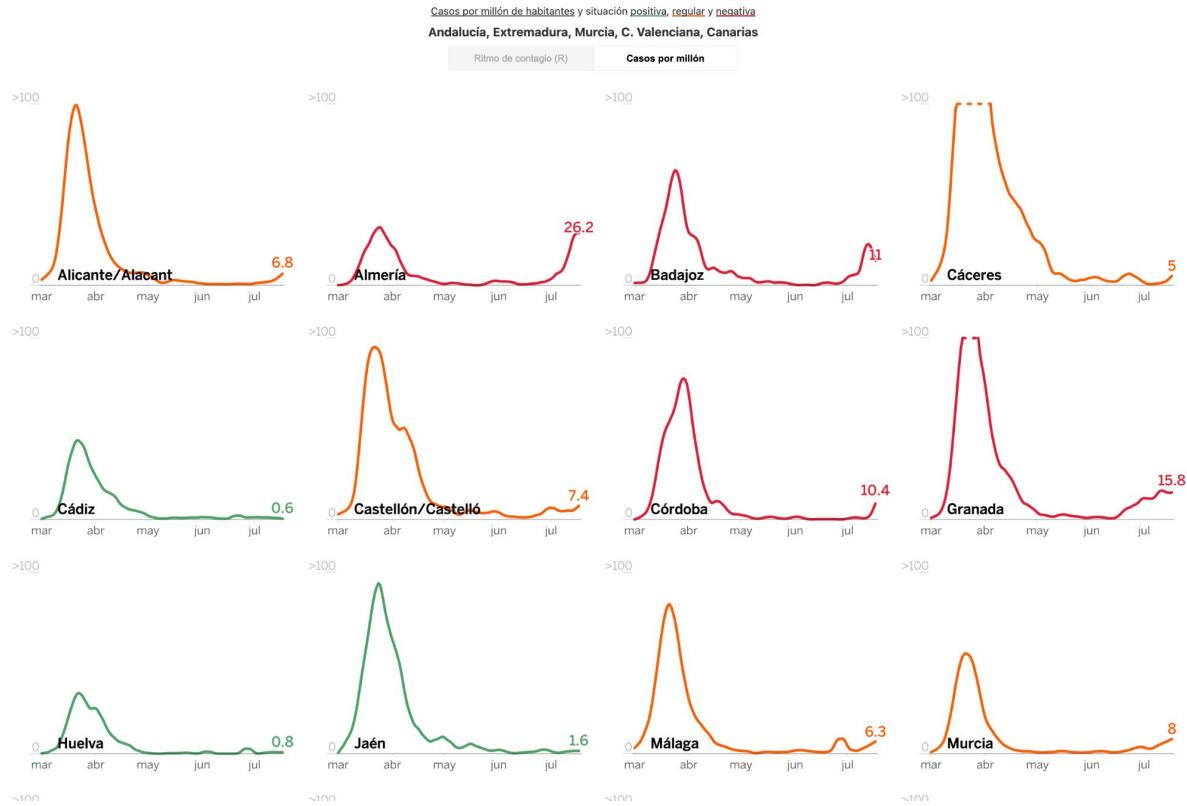
Ejemplos de buenas visualizaciones: Spaghetti graph



Types of non-profits supported by area funders



Ejemplos de buenas visualizaciones



6. Cuenta una historia

1. Inicio
2. Desarrollo
3. Conclusión

6. Cuenta una historia

1. Keep it simple
2. Edit ruthlessly
3. Be authentic
4. Don't communicate for yourself --
communicate for your audience

6. Cuenta una historia con datos y figuras

1. Introduce la gráfica, construye contexto para la audiencia
 - Cuando y donde
 - Personaje principal
 - ¿Por qué es necesario o qué ha cambiado?
 - La solución

6. Cuenta una historia con datos y figuras

2. Desarrolla la historia

- Desarrolla el problema o explica
- Contexto externo o comparaciones
- Ejemplos
- Datos que apoyen
- Explica que pasaría si no se toman acciones
- Discute opciones potenciales tomando en cuenta el problema
- Muestra los beneficios de la solución propuesta
- Deja claro a la audiencia por qué están en posición de tomar una decisión

6. Cuenta una historia con datos y figuras

3. Concluye

- Call to action
- Qué acción tomar
- Qué hacer con el conocimiento adquirido

6. Cuenta una historia: Junta todo

1. Entiende/define el contexto
2. Escoge un tipo de gráfica adecuado
3. Elementos extra, el peor enemigo
(clutter)
4. Pon la atención donde quieres
5. Piensa como diseñadore
6. Cuenta una historia

Sesión 5

Inicio

Análisis de la producción de calor por plantas termosolares en el país

El uso de calor solar en la industria en Mx

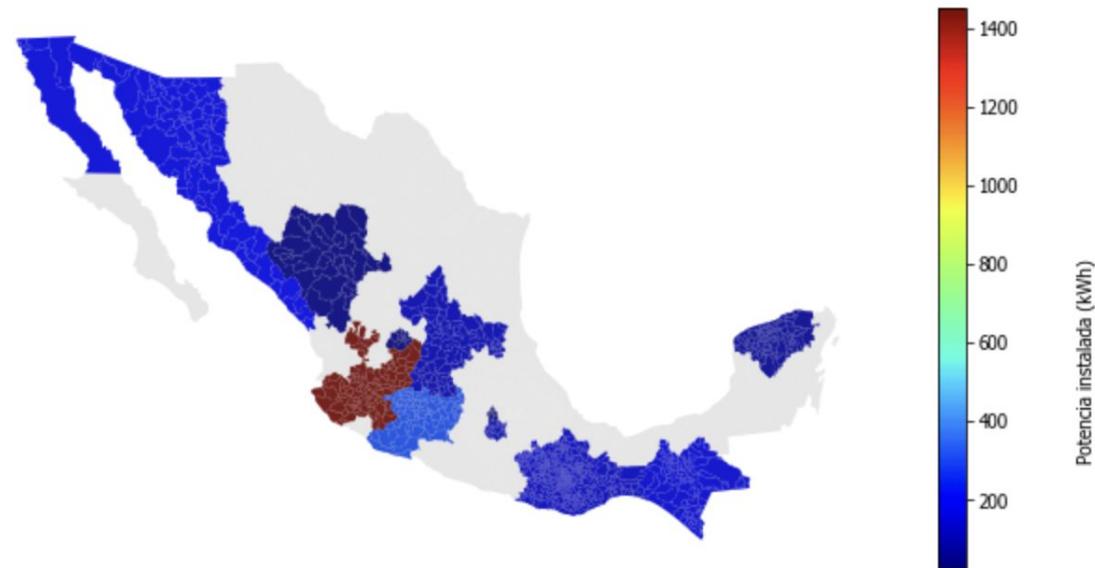
¿Generamos suficiente energía renovables en Mx ?

Inicio

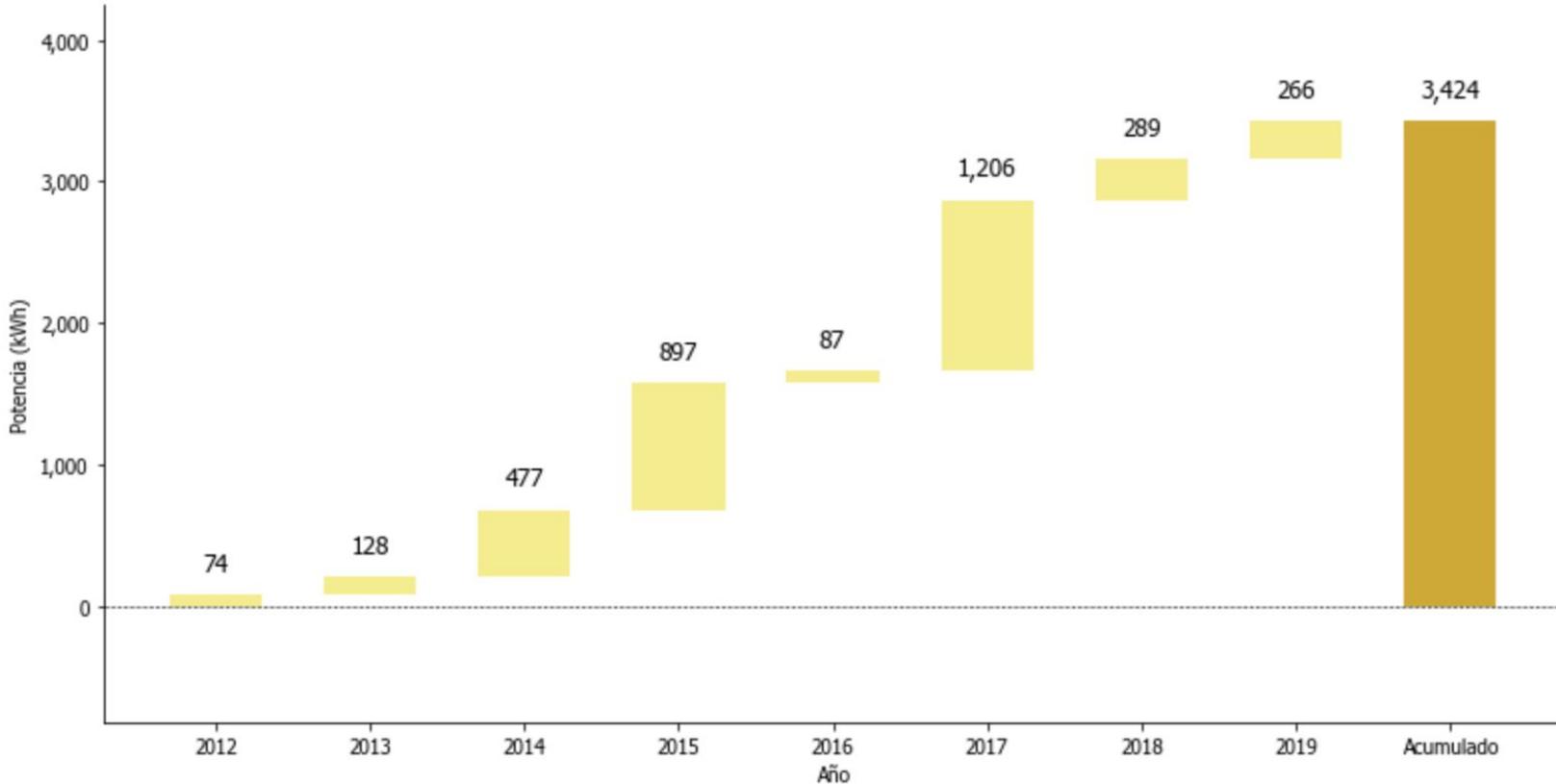
El uso de calor solar en la industria en Mx

qué es una planta termosolar y porqué

A partir del 2012 en Mx se han instalado XXX PTS de uso industrial



Potencia térmica instalada en México



Introducción: Pasos para contar una historia

1. Entiende/define el contexto
2. Escoge un tipo de gráfica adecuado
3. Elementos extra, el peor enemigo
(clutter)
4. Pon la atención donde quieres
5. Piensa como diseñadore
6. Cuenta una historia