



Melhores Práticas Visuais

André Piotto





Ajudamos as pessoas a ver e a entender os dados

Produtos da plataforma

Plataforma integrada completa para todo o seu fluxo de trabalho

Tableau Prep



Preparação de dados visual,
direta e inteligente

Integração aprofundada com o
fluxo de trabalho analítico

Tableau Desktop



Criação de análises avançadas
que agregam valor aos negócios

Uso avulso ou publicação de
pastas de trabalho e fontes de
dados no Tableau Server

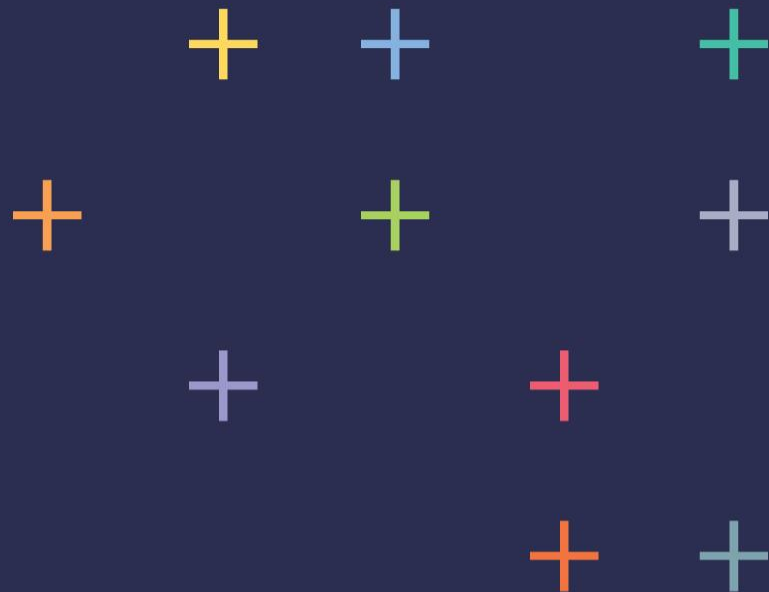
Tableau Server/ Tableau Online



Processo governado e seguro de
compartilhamento e colaboração
na empresa

Criação, interação e visualização
de conteúdo na Web e em
dispositivos móveis

As principais tendências de business intelligence para 2019



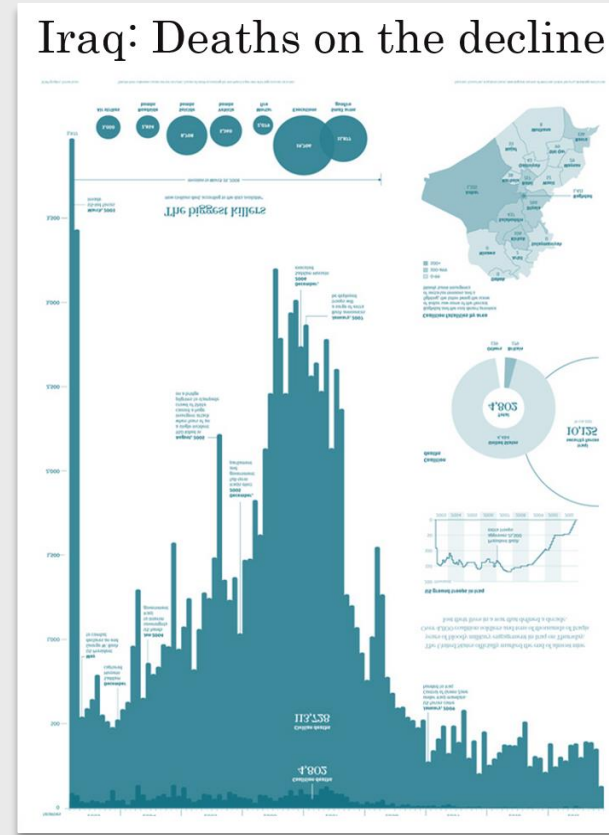
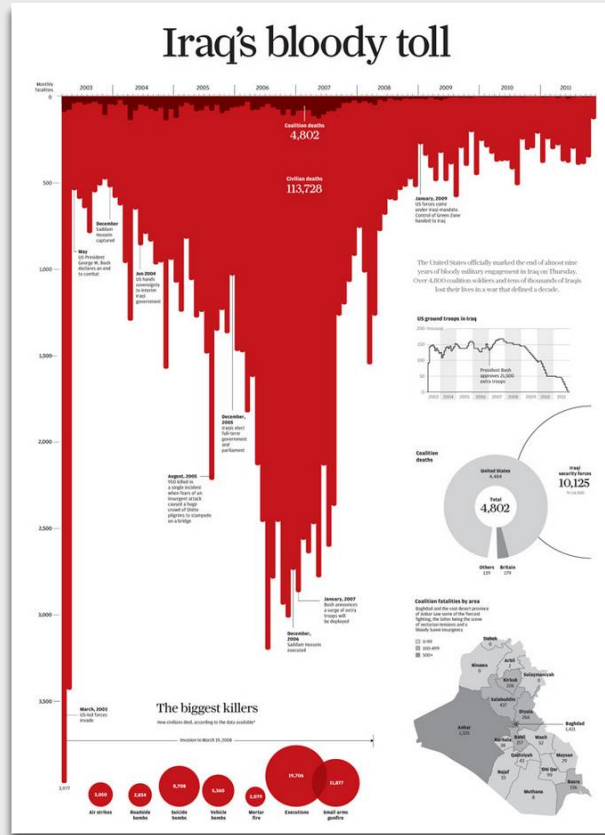
O ritmo e a evolução das soluções de business intelligence indicam que o que está funcionando hoje pode precisar ser melhorado amanhã. Ao planejar o futuro, os líderes avaliam as tendências e as tecnologias emergentes que moldarão o setor de business intelligence e criam novas oportunidades. Com base nas entrevistas que fizemos com especialistas na área, estas são as previsões coletivas que representam as dez principais tendências em 2019 e além.

Contar histórias com dados é a nova linguagem das corporações

Descobrir e compartilhar informações extraídas dos dados passou a ser uma tarefa coletiva.

Hoje é fundamental que os analistas consigam expor as etapas que levaram às informações sobre os dados de forma acionável e fácil de entender, o que é conhecido como “contar histórias com dados”. À medida que as empresas criam uma cultura de análise, contar histórias com dados tem ganhado novos significados. Em vez de apresentar uma conclusão única, os métodos de contar histórias com dados de hoje enfatizam a criação de diálogo e colaboração. Isso estimula a diversidade das perspectivas antes de uma decisão comercial. À medida que mais cargos passarem a contar histórias com os dados, o potencial de impacto nos negócios aumentará, pois os dados serão usados para interagir, informar e testar ideias em toda a empresa.

Enquadramento -> Ideia & Mensagem



Tipos de Designs



Design RUIM

London 51.51 N, 0.13 W Mon 9 Dec @ 16:02:42
Go to Map - Go to Grid - Change City

WEATHER STATIONS (MULTIPLE SOURCES)

STATION	WIND SPEED	WIND GUSTS	DIRECTION	TEMPERATURE	HUMIDITY	RAIN TODAY	PRESSURE	FORECAST
CASA Office: Bloomsbury W1	8 mph	9 mph	SE ↘	11.5 °C	76%	0.0 mm	1027.9 mbar	Clear Night
Lambeth Meters: Brixton SW9	4.3 mph	4.3 mph	SW ↙	11.0 °C	83%	0.0 mm	1026.4 mbar	Clear Night
Hampstead NW2	3.6 mph	3.6 mph	S ↑	9.8 °C	84%	0.0 mm	1029.0 mbar	Clear Night

WEATHER (METAR)

London City Airport
Mostly clear SW at 3 mph 11 C

FORECAST (YAHOO! WTH)

Mon	Tue
10 C Mostly Clear	9 C Partly Cloudy

TUBE LINE STATUS (TfL)

Easternlee	Good Service
Central	Good Service
Circle	Good Service
District	Good Service
V & C	Good Service
Jubilee	Good Service
Metropolitan	Good Service
Northern	Good Service
Piccadilly	Good Service
Victoria	Good Service
V & C	Good Service
Overground	Good Service
DLR	Good Service

BIKE SHARING (TfL)

4.3 % Stations Full
4.9 % Stations Empty

7354 Bikes Available
430 Bikes or Docks Faulty

Available Bikes (last 24h)

IN SERVICE (TfL)

7197 London buses

AIR POLLUTION (DEFRA)

poll ¹ Tree avog	Ozone	NO ₂	SO ₂	PM _{2.5}	PM ₁₀
Bloomsbury	13	38	4	9	10
Maylebone Rd	9	16	26	22	34
N Kensington	14	40	?	12	18

RADS (CASA)

CASA Office Desk 1
6 cpm (uncalibrated)

RIVER LEVEL (PLA)

Thames (Tower Pier)
4.13 metres

STOCKS (YAHOO)

FTSE 100 Index
6552.34
+0.35 (0.01%)

RANDOM TRAFFIC CAMERAS (TfL)

BBC NEWS (BBC)

Rigby killer 'a soldier of Allah' Mayor bite 'scaring' claim withdrawn | Murder police found grave in garden | Cameron praises 'towering' Mandela | Police crackdown on pirate site ads | Why do we value gold?

ELECTRICITY (N Grid)

Demand (Great Britain)
48211 MW

MOOD (LSE HAPPINESS)

8% **unhappier** than the long term average for here
13% **happier** than the whole country right now

TWITTER TRENDS FOR LONDON

MPs #NFL Christmas #Confident Xmas #ashes London
#RIPAlexTurner #12DaysOfJonesDAY9 Waca



Design BOM

Physician Engagement

1 *Does it matter how pharmaceutical companies contact physicians about new drugs? Select a campaign type and see how prescription volume correlates with campaign types.*

Solicitations Sent: 27	Unique Drugs Prescribed: 10	Prescription Count: 221
-------------------------------	------------------------------------	--------------------------------

2 > *Select a physician. The area chart to the right filters to all prescriptions written by that physician.*

Physician Name	Brand	Prescription Volume by Drug
Albert Ng	Accitrope	0 Rx
	Alista	9 Rx
	Eribitol	36 Rx
Jack Han	Meritux	22 Rx
	Jason Vieh	0 Rx
Jennifer Martinez	Meritux	24 Rx
	Accitrope	18 Rx
Jill Harris	Erifol	0 Rx
	Fenofara 3%	10 Rx
	Humadine XR	25 Rx
Marissa Neher	Novochol	6 Rx
	Affiniox	0 Rx
Mark Mendel	Juvilex	21 Rx
	Accitrope	0 Rx
Suzanna Pondel	Affiniox	16 Rx
	Corovera	0 Rx
	Eribitol	12 Rx
	Fenofara 3%	6 Rx
	Eribitol	16 Rx
Tamara Han	Meritux	31 Rx
Tom Garson	Affiniox	11 Rx
	Humadine XR	14 Rx

3 *Select a bar. These represent the number of prescriptions each physician has written for each drug. The bar chart below will filter yet again to show the volume of prescriptions for that specific drug and when they were written.*

Prescription Count (left axis): 0 to 20
Unique Pharmaceutical Count (right axis): 0 to -20

Source: <https://www.artplusdata.com/portfolio/PhysicianEngagement>



Experimento

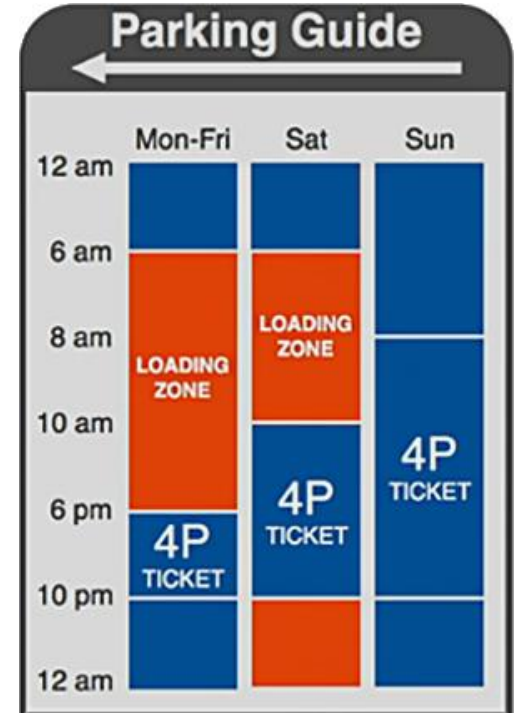
Textual Display



Pergunta: São 10:57am na Terça-feira.

Posso estacionar?

Visual



Depois, isso.

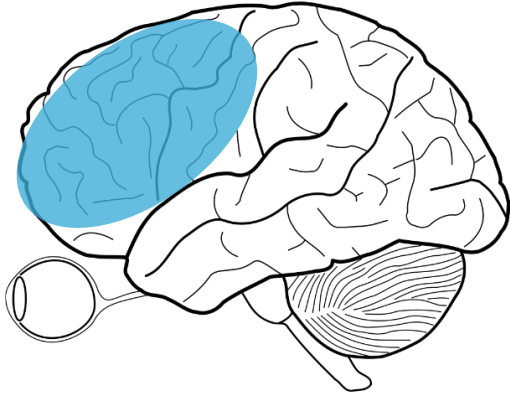
**PRIMEIRO VOCÊ VAI
LER ISSO AQUI.**

Depois, vai ler isso.

A fascinante ciência da visualização de dados

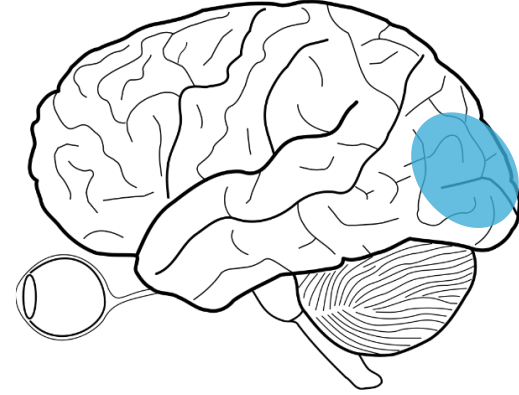


Cortex Frontal



O **pensamento consciente**, é controlado principalmente pelo córtex cerebral na parte frontal do cérebro.

Cortex Visual

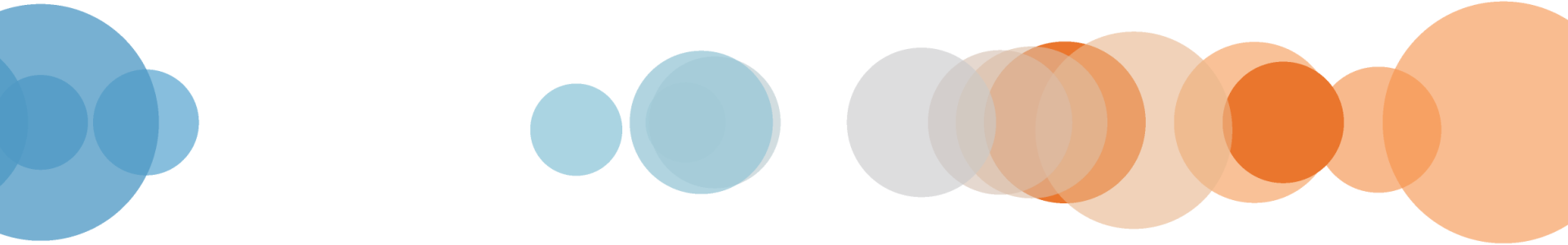


A sua visão, controlada pelo córtex visual localizado na parte de **trás** do cérebro, **é muito rápido e eficaz**.

90% visual -> Processando 60.000 vezes mais rápidas do que texto.

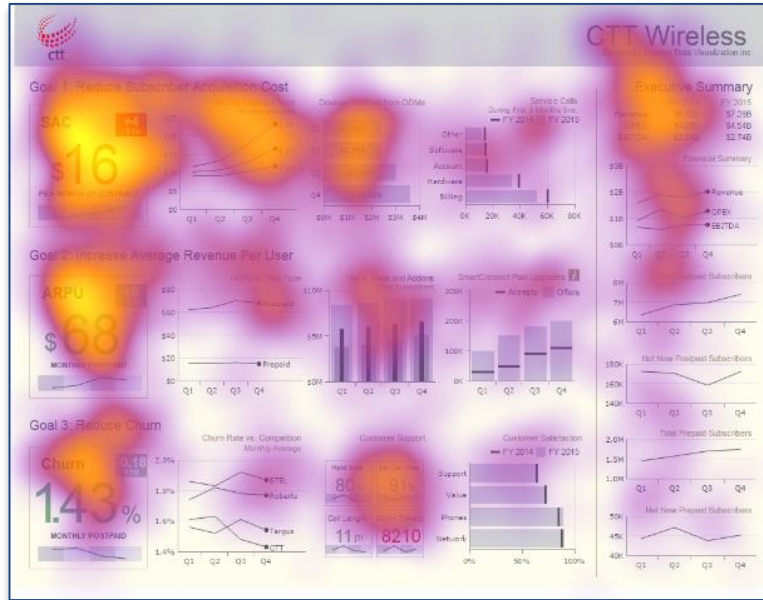
Ciência Visual

Como analizamos os dados de rastreamento ocular?

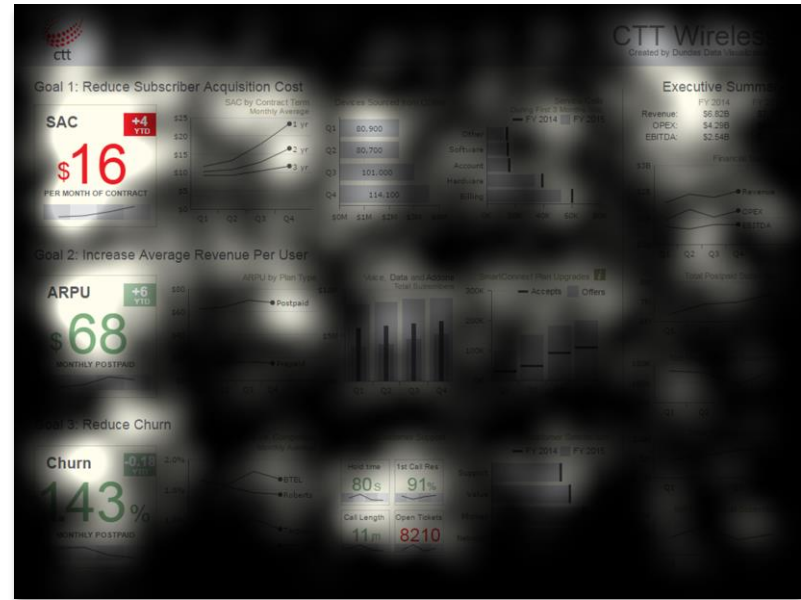


Estudos Científicos

Mapas de Calor



Mapas de Opacidade



Rastreamento Ocular





Diagrama de Gutenberg

(será tudo fixo e imutável?)

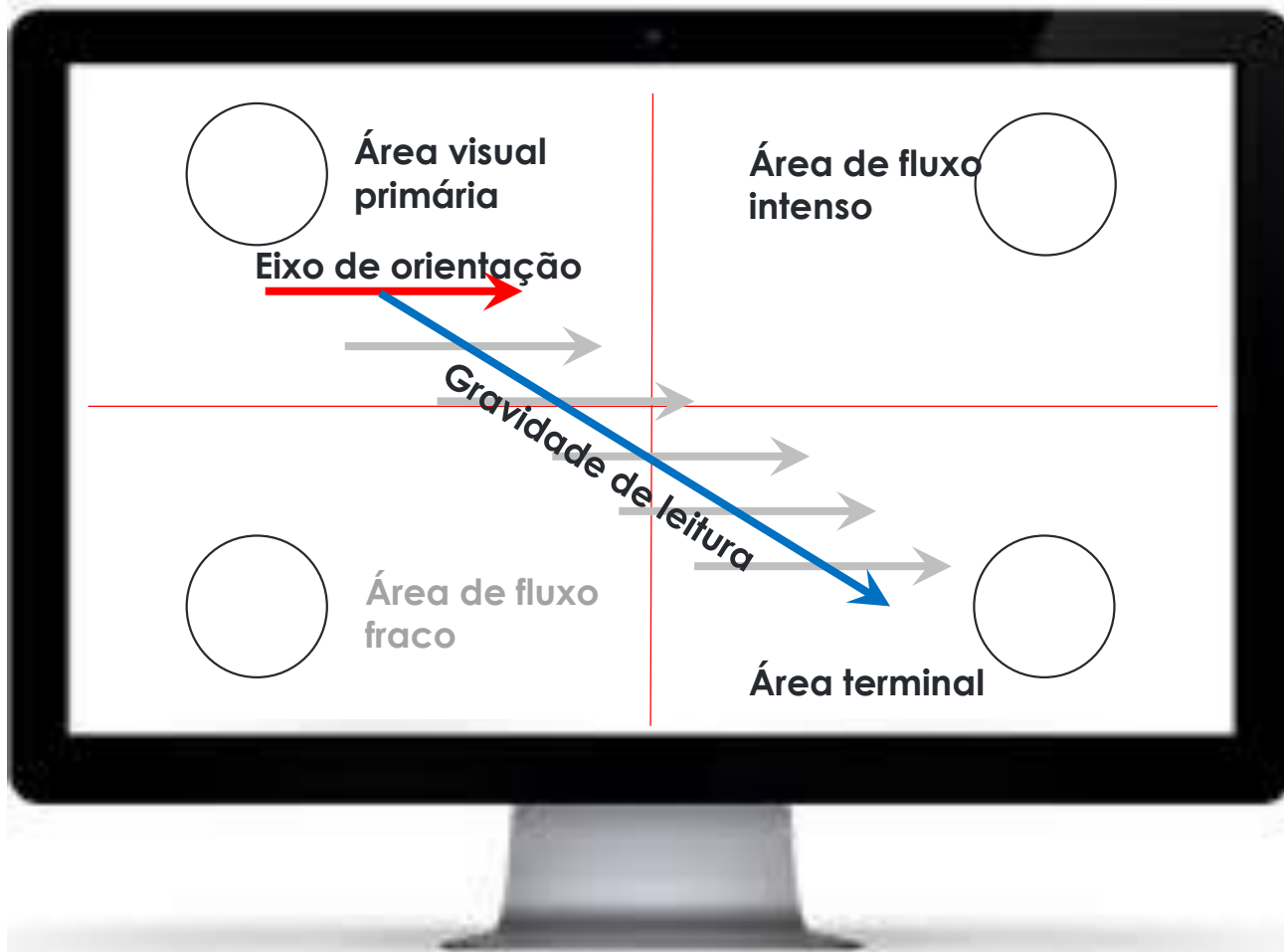




Diagrama de Gutenberg

(temos como quebrar esse padrão?)



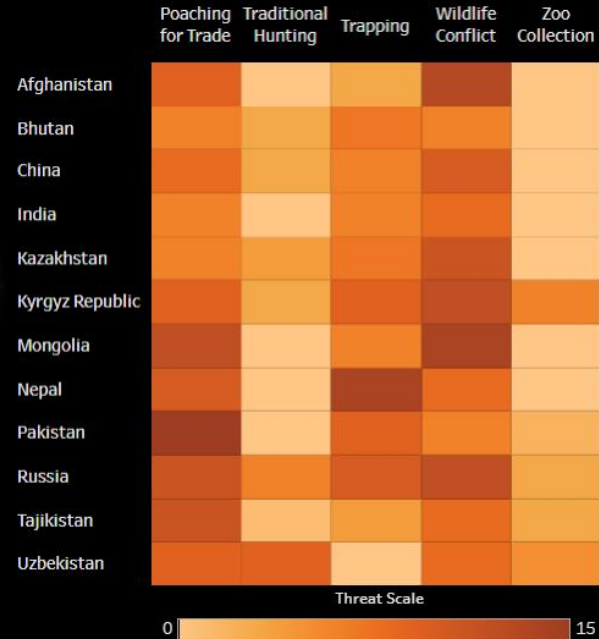
The **Reasons** Snow Leopards are Disappearing



Snow Leopards are classified as **endangered** species. The primary reasons for the species' decline are due to illegal poaching, retaliation for livestock depredation, habitat destruction, and climate change. We need to come together to **increase awareness** about the declining population in governments and communities of snow leopard range countries to improve the conservation of the beautiful animal.



i Most Dangerous Places & Why



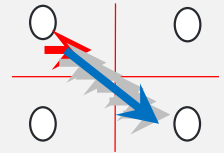
1 – Estudos Científicos: Rastreamento Ocular

Diagrama de
Gutenberg

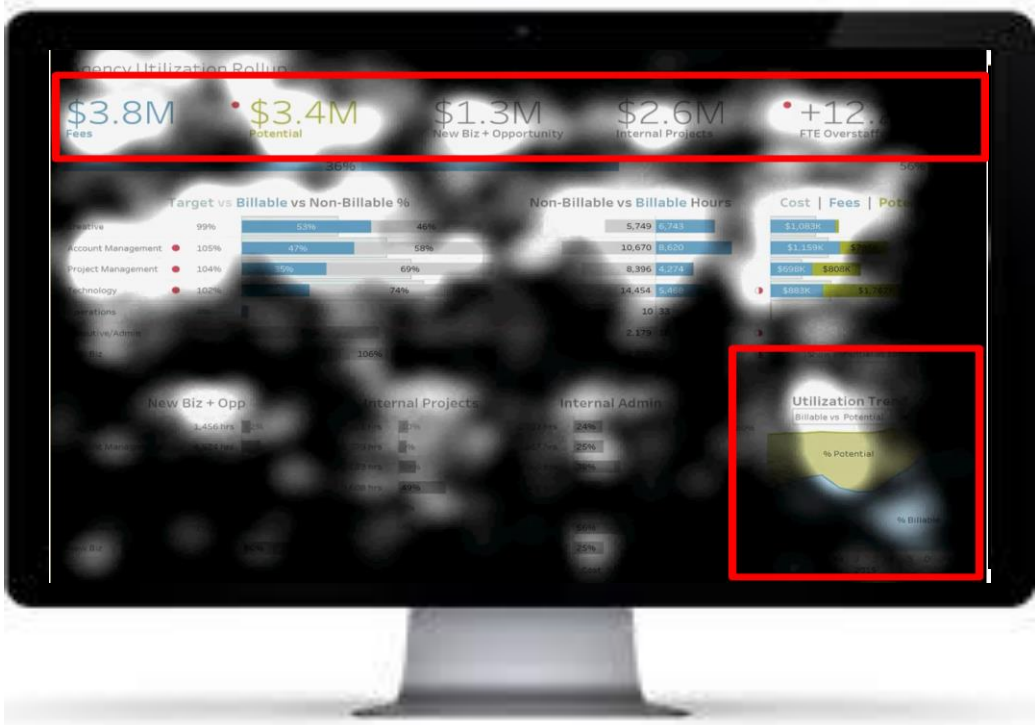


Recursos

<https://www.nngroup.com/articles/f-shaped-pattern-reading-web-content/>



Estudios Científicos

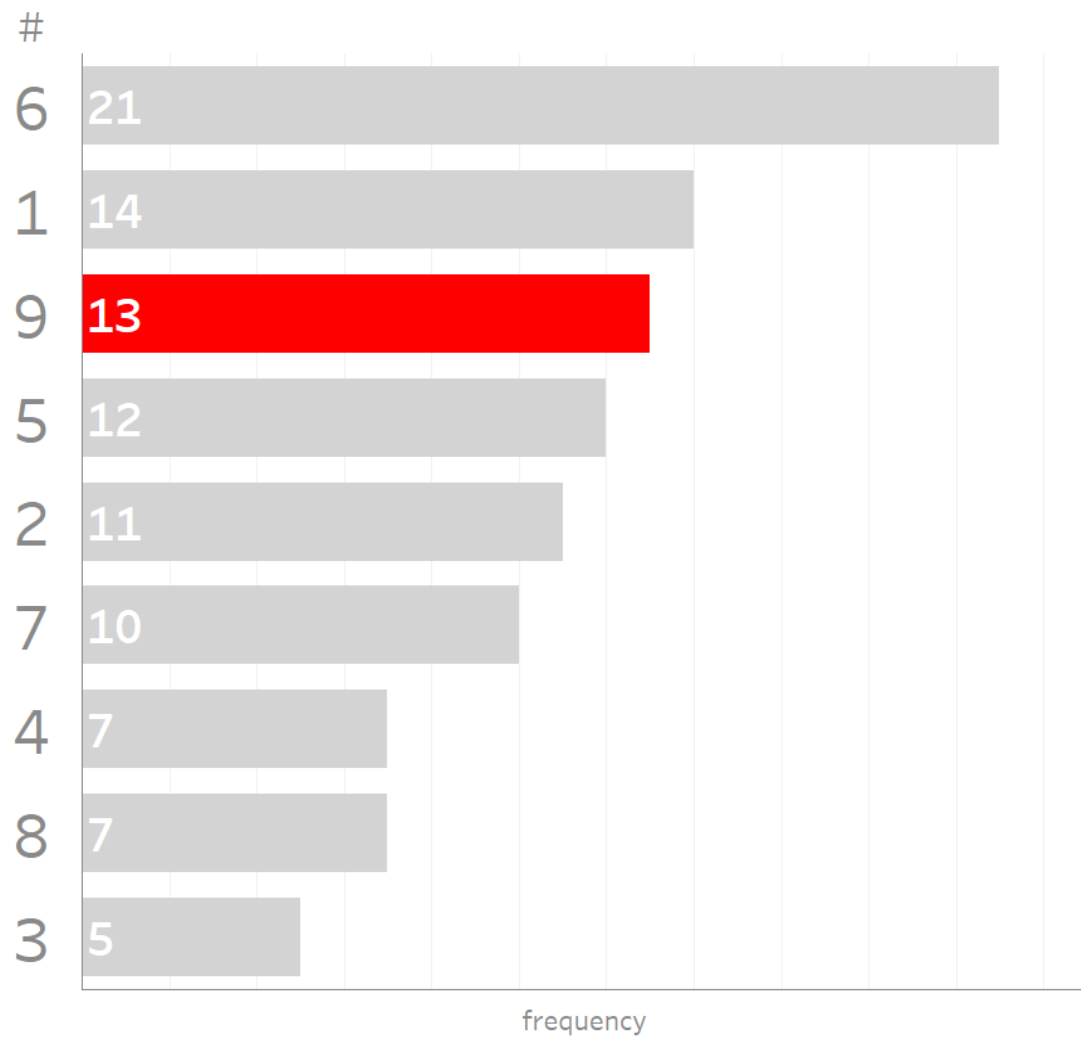




Quantos novos?

2	2	5	6	7	1	1	6	9	1
9	1	7	5	5	5	6	2	5	9
4	5	2	9	6	9	7	6	4	6
8	1	5	7	8	5	6	6	6	7
7	2	3	6	8	9	1	7	9	1
3	8	6	8	4	5	6	9	4	5
4	9	9	2	3	7	1	9	1	2
3	7	8	1	6	1	5	6	1	6
5	6	6	8	6	6	9	1	2	6
3	2	4	2	6	9	4	2	7	1

2	2	5	6	7	1	1	6	9	1
9	1	7	5	5	5	6	2	5	9
4	5	2	9	6	9	7	6	4	6
8	1	5	7	8	5	6	6	6	7
7	2	3	6	8	9	1	7	9	1
3	8	6	8	4	5	6	9	4	5
4	9	9	2	3	7	1	9	1	2
3	7	8	1	6	1	5	6	1	6
5	6	6	8	6	6	9	1	2	6
3	2	4	2	6	9	4	2	7	1

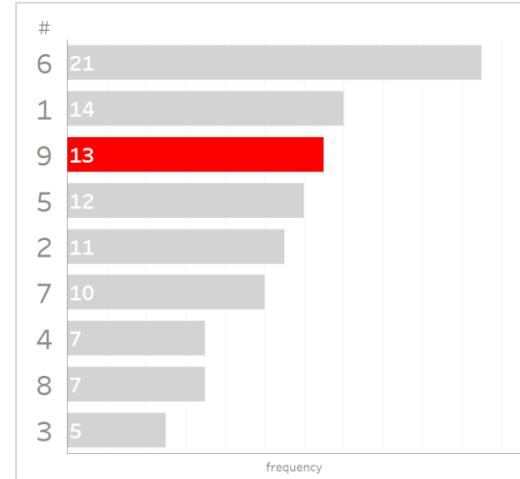


Color

2	2	5	6	7	1	1	6	9	1
9	1	7	5	5	5	6	2	5	9
4	5	2	9	6	9	7	6	4	6
8	1	5	7	8	5	6	6	6	7
7	2	3	6	8	9	1	7	9	1
3	8	6	8	4	5	6	9	4	5
4	9	9	2	3	7	1	9	1	2
3	7	8	1	6	1	5	6	1	6
5	6	6	8	6	6	9	1	2	6
3	2	4	2	6	9	4	2	7	1

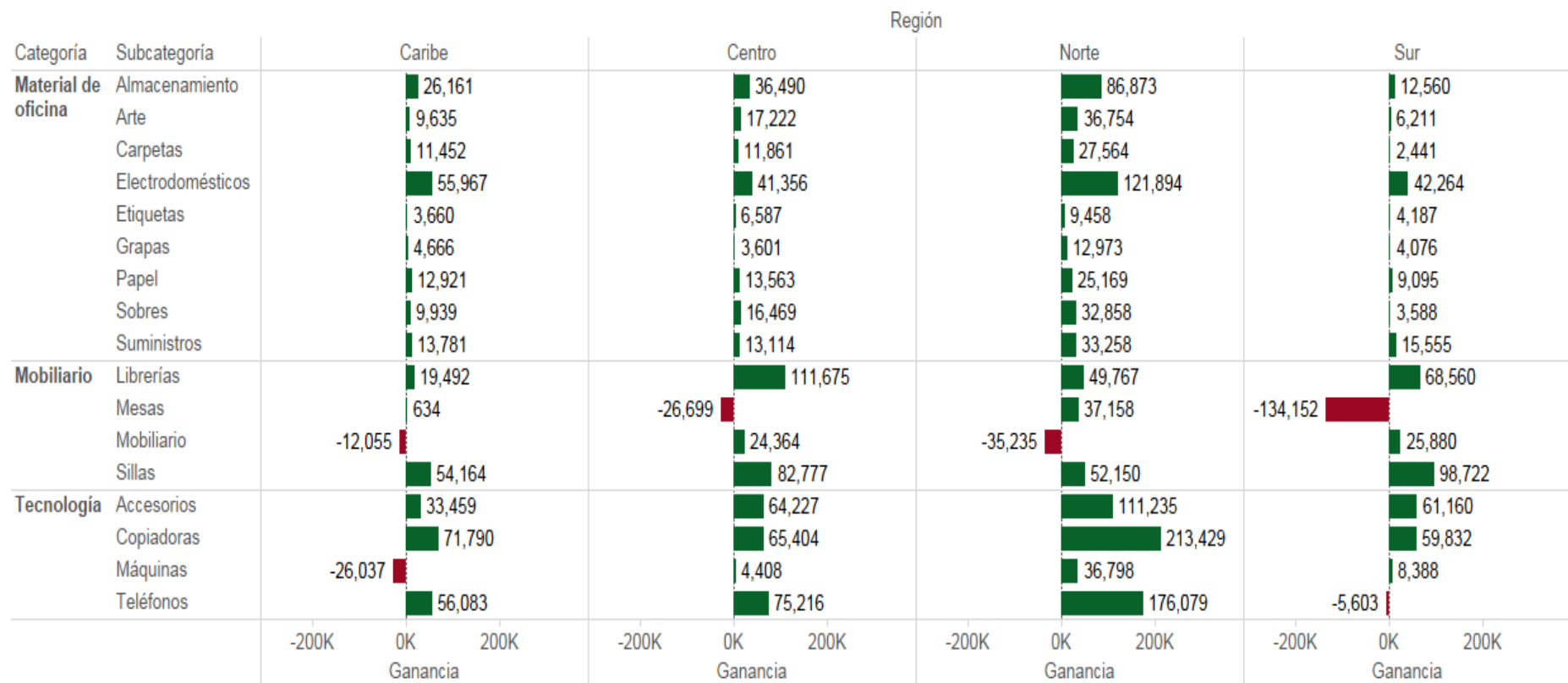
2	2	5	6	7	1	1	6	9	1
9	1	7	5	5	5	6	2	5	9
4	5	2	9	6	9	7	6	4	6
8	1	5	7	8	5	6	6	6	7
7	2	3	6	8	9	1	7	9	1
3	8	6	8	4	5	6	9	4	5
4	9	9	2	3	7	1	9	1	2
3	7	8	1	6	1	5	6	1	6
5	6	6	8	6	6	9	1	2	6
3	2	4	2	6	9	4	2	7	1

Longitud



Categoría	Subcategoría	Región			
		Caribe	Centro	Norte	Sur
Material de oficina	Almacenamiento	26,161	36,490	86,873	12,560
	Arte	9,635	17,222	36,754	6,211
	Carpetas	11,452	11,861	27,564	2,441
	Electrodomésticos	55,967	41,356	121,894	42,264
	Etiquetas	3,660	6,587	9,458	4,187
	Grapas	4,666	3,601	12,973	4,076
	Papel	12,921	13,563	25,169	9,095
	Sobres	9,939	16,469	32,858	3,588
	Suministros	13,781	13,114	33,258	15,555
Mobiliario	Librerías	19,492	111,675	49,767	68,560
	Mesas	634	-26,699	37,158	-134,152
	Mobiliario	-12,055	24,364	-35,235	25,880
	Sillas	54,164	82,777	52,150	98,722
Tecnología	Accesorios	33,459	64,227	111,235	61,160
	Copiadoras	71,790	65,404	213,429	59,832
	Máquinas	-26,037	4,408	36,798	8,388
	Teléfonos	56,083	75,216	176,079	-5,603

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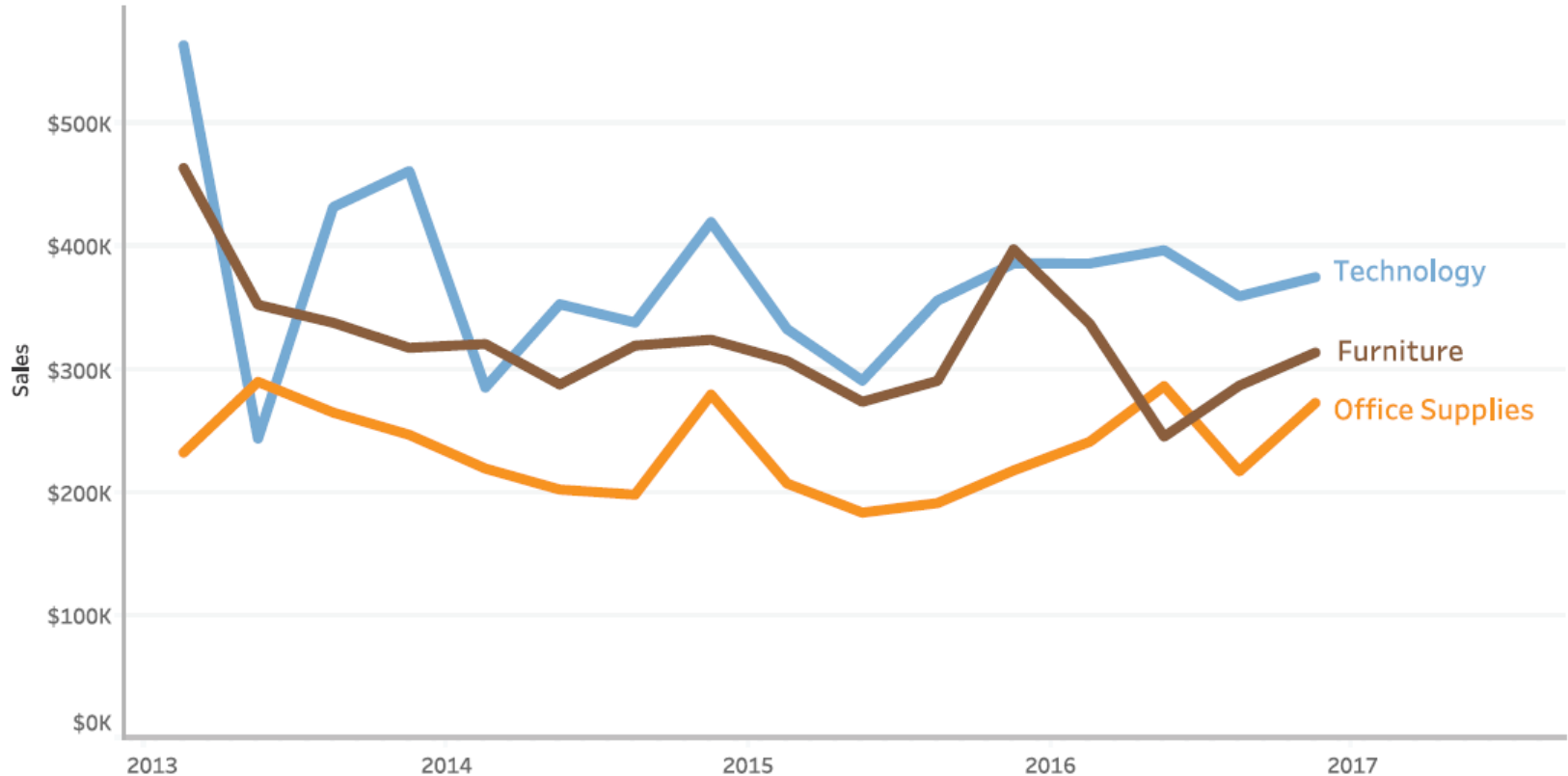


Maior valor? Tendências?

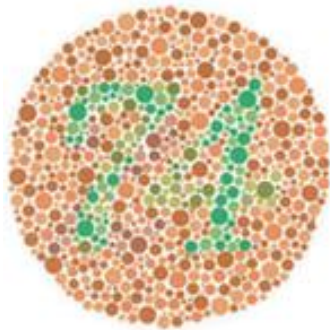
Category	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4
Furniture	\$463,988	\$352,779	\$338,169	\$317,735	\$320,875	\$287,934	\$319,537	\$324,319
Office Supplies	\$232,558	\$290,055	\$265,083	\$246,946	\$219,514	\$202,412	\$198,268	\$279,679
Technology	\$563,866	\$244,045	\$432,299	\$461,616	\$285,527	\$353,237	\$338,360	\$420,018
Category	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
Furniture	\$307,028	\$273,836	\$290,886	\$397,912	\$337,299	\$245,445	\$286,972	\$313,878
Office Supplies	\$207,363	\$183,631	\$191,405	\$217,950	\$241,281	\$286,548	\$217,198	\$272,870
Technology	\$333,002	\$291,116	\$356,243	\$386,445	\$386,387	\$397,201	\$359,656	\$375,229

Maior valor? Tendências?

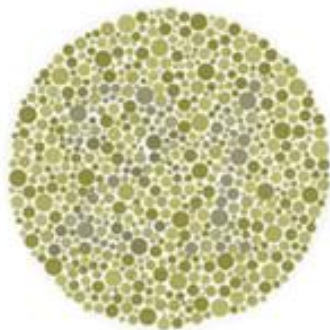
Sales by category



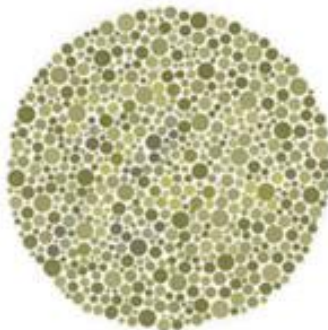
Color Vision Deficiency (CVD)



Normal vision



Deuteranopia



Protanopia



Tritanopia

CVD Impacts approximately 1:12 men and 1:200 women



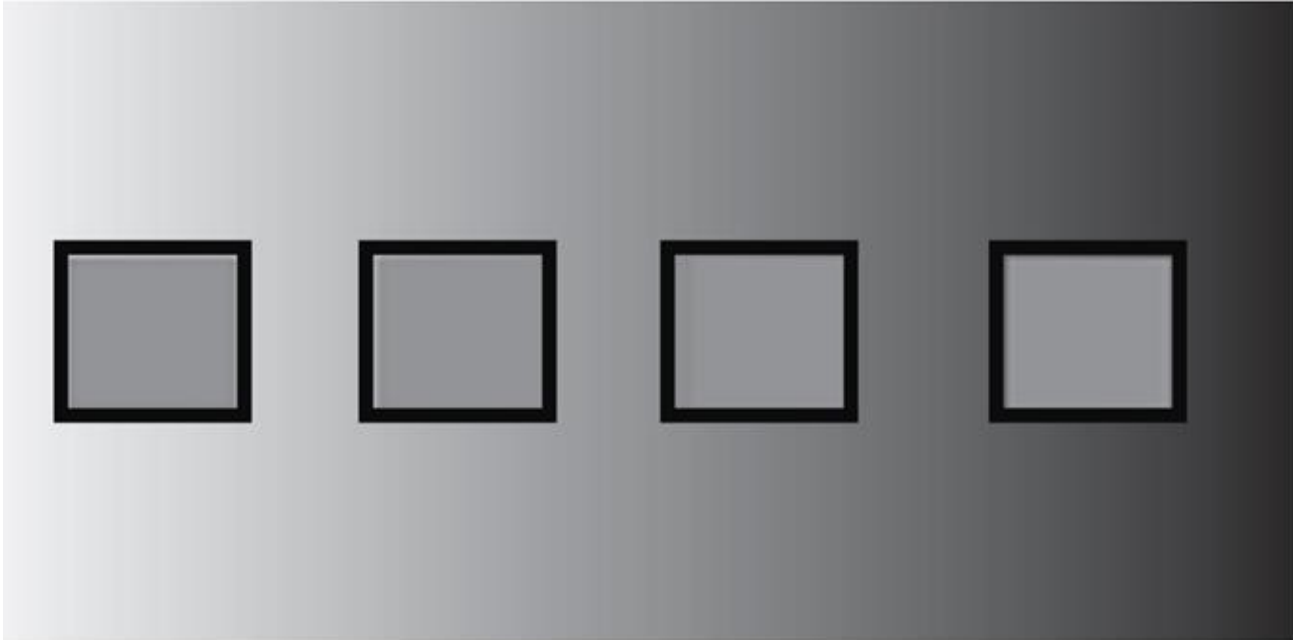
Color Perception

Color perception is relative, not absolute

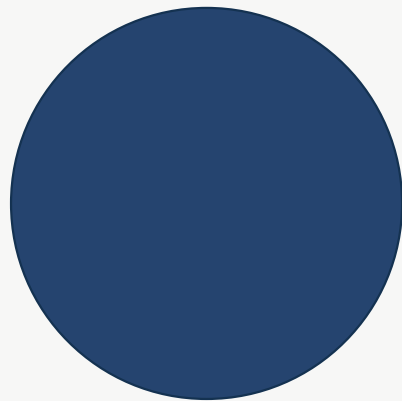


Color Perception

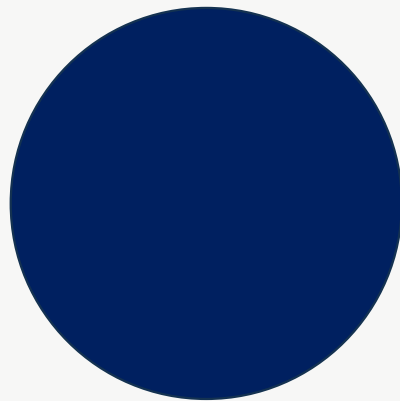
Provide a consistent background



Qual Círculo é mais escuro?



A



B

Atributos Pre-atenção



Orientation



Length



Width



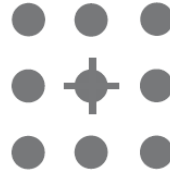
Size



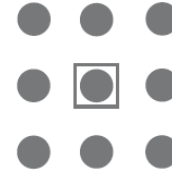
Shape



Curvature



Added Marks



Enclosure



Color Value



Color Hue

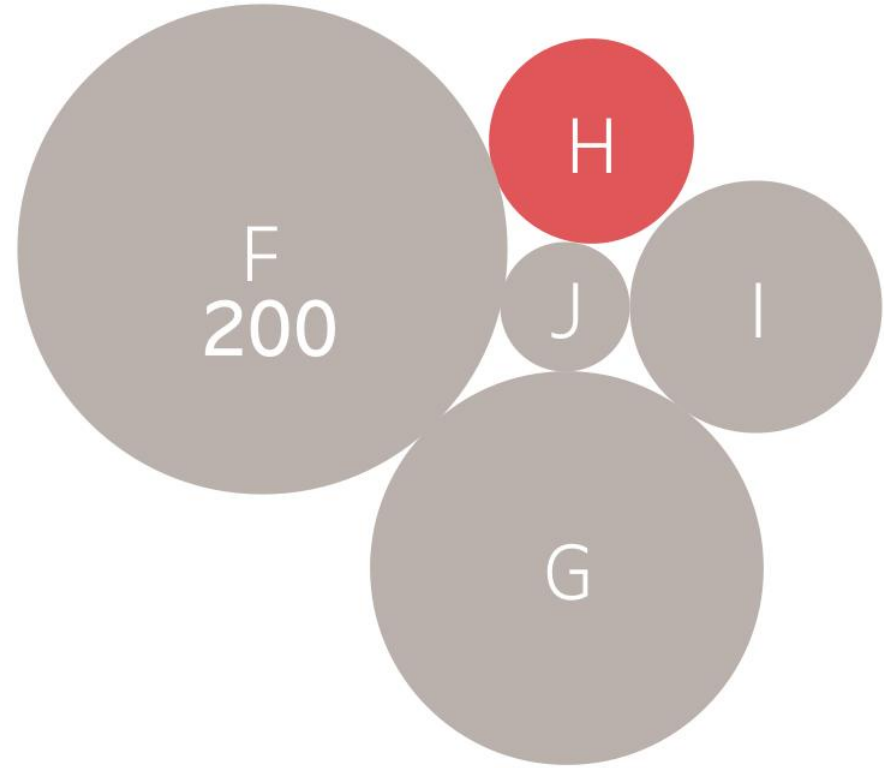
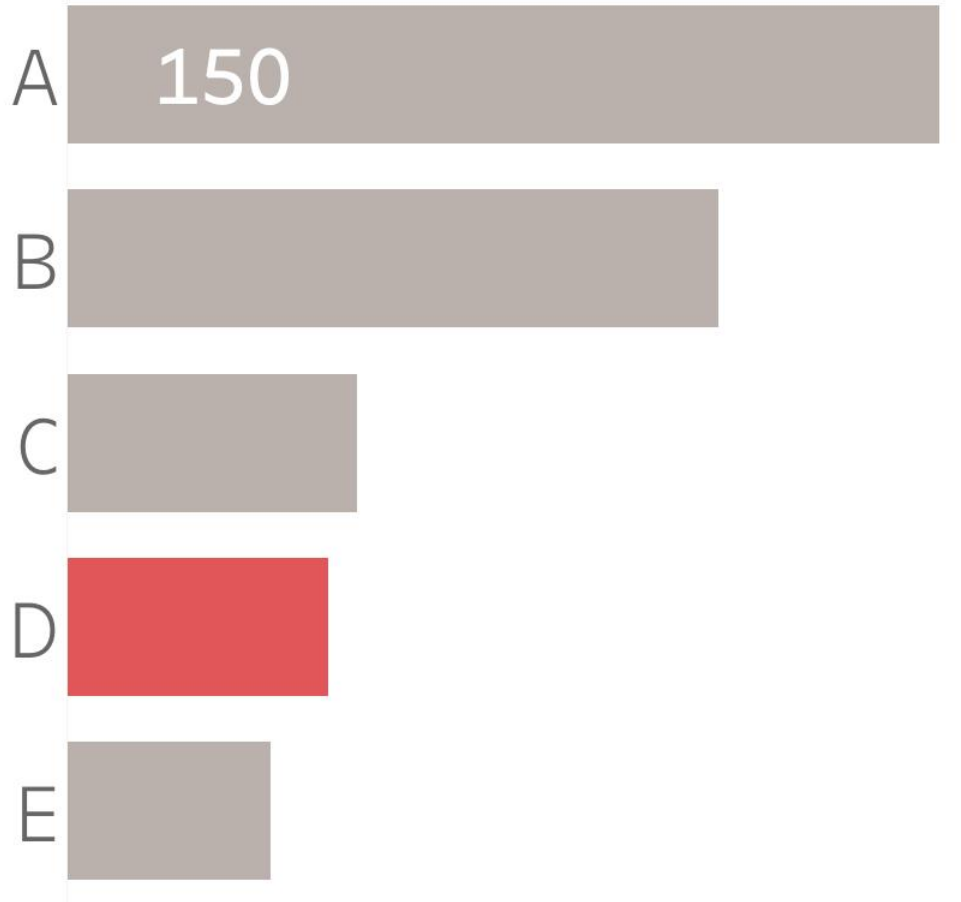


Position



Spatial Grouping

What are the values of **D** and **H**?





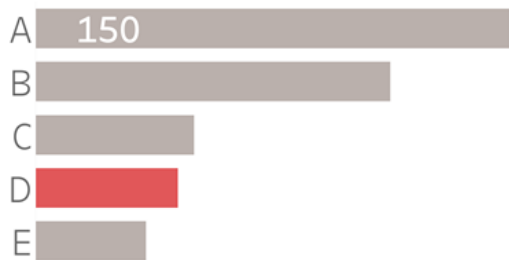
Resultados...(no Tableau)

Bin Size
10

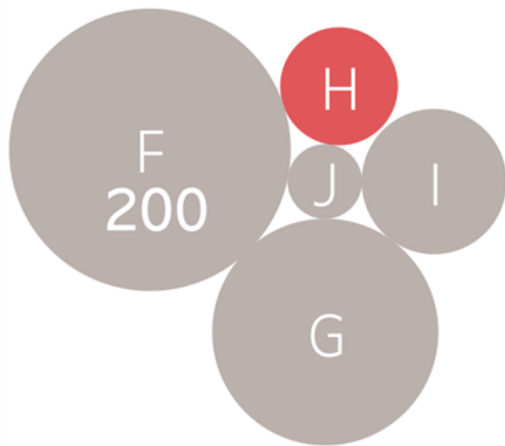
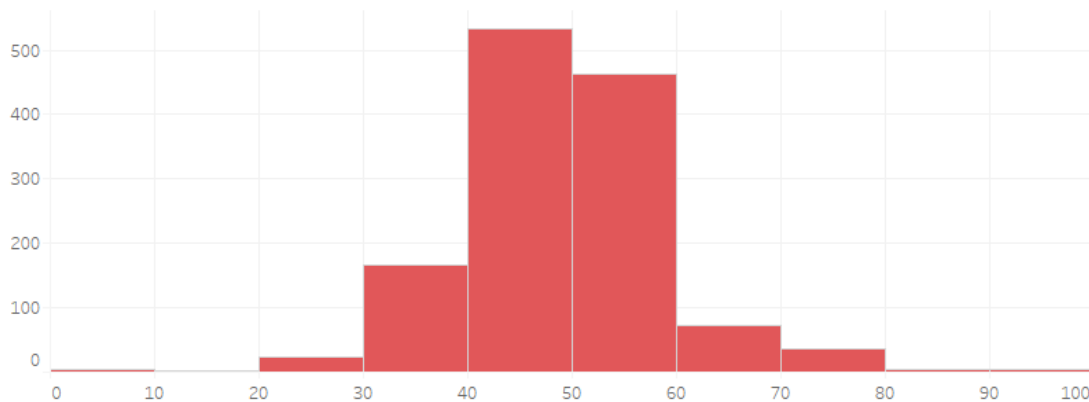
Timestamp
01/01/2016 00:00:..

Responses: **1,407**

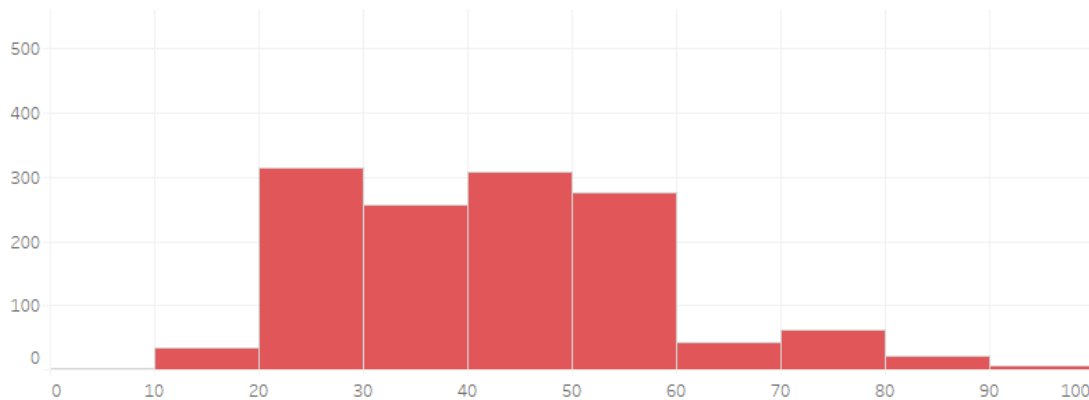
What are the results?



The bar is **45**. Here are all the guesses:



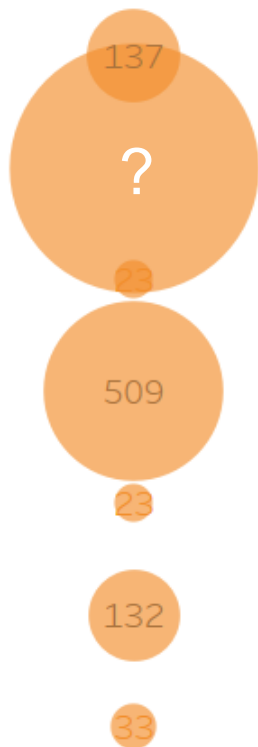
The circle is **35**. Here are all the guesses:



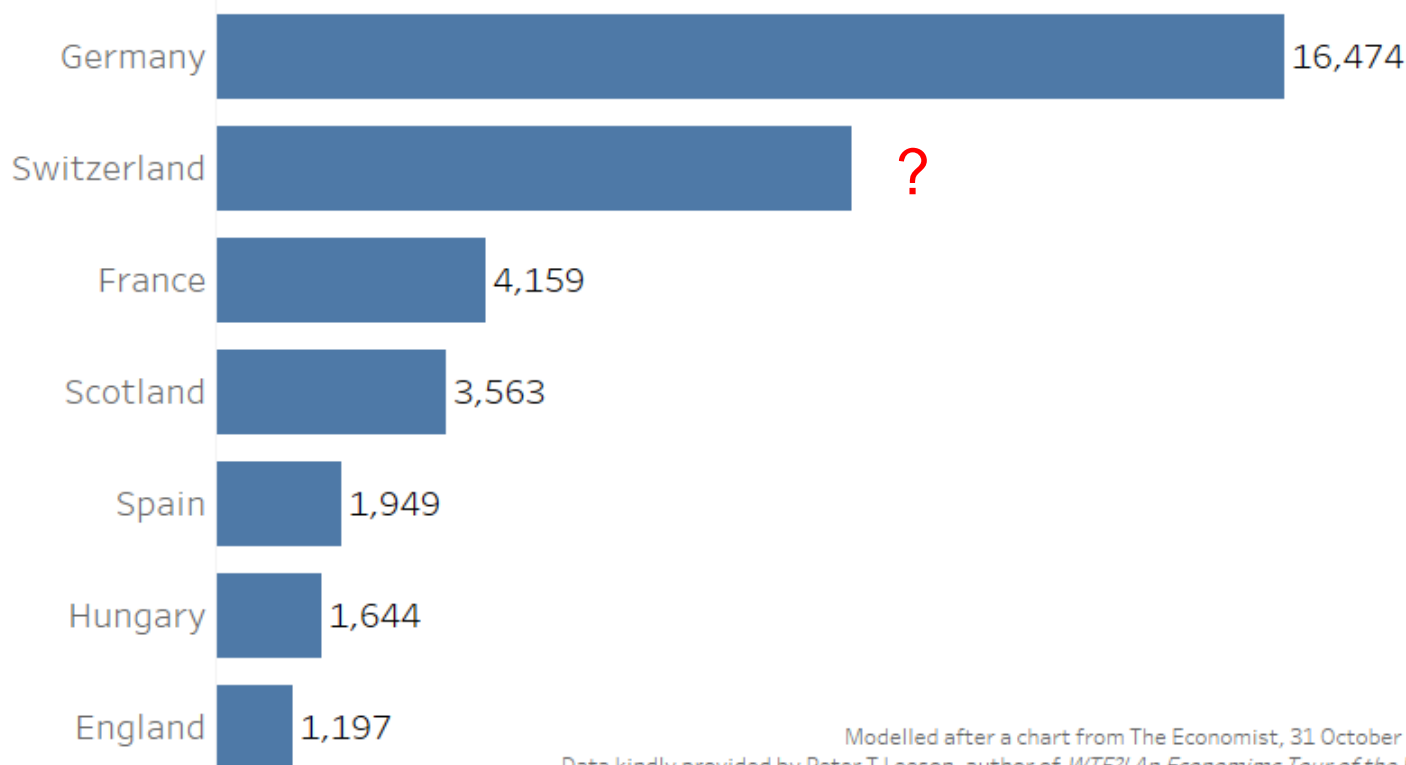
Double, double toil and trouble

European Witchcraft, 1300-1850

**Trials per 100k
people**



Total people accused of witchcraft



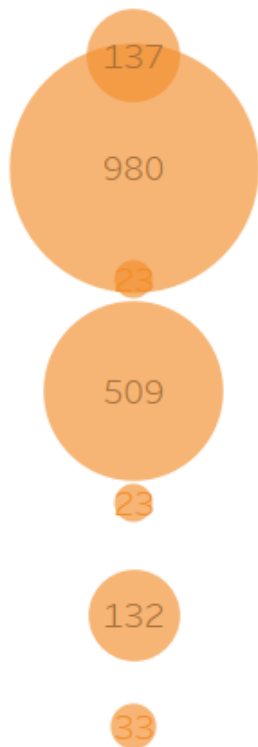
Modelled after a chart from The Economist, 31 October 2017.

Data kindly provided by Peter T Leeson, author of *WTF?! An Economimc Tour of the Wierd*

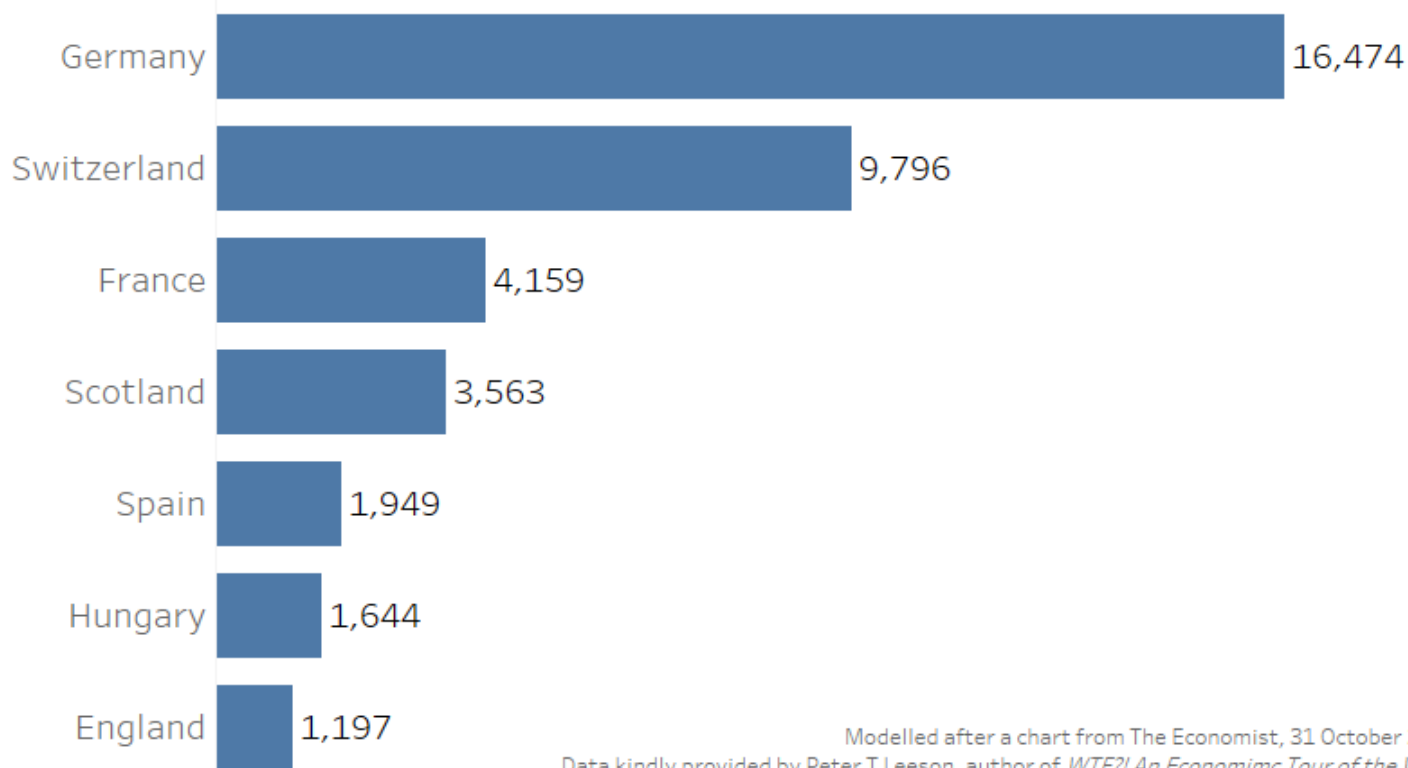
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Dicas para a criação de dashboards



Uso de cor



O uso das cores na visualização dos dados

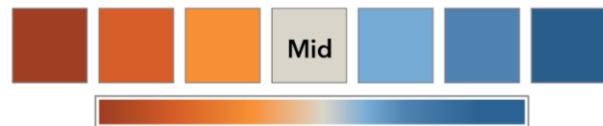
SEQUENCIAL

A cor se ordena do menor para o maior



DIVERGENTE

Duas cores sequenciais com um ponto medio neutro



CATEGÓRICO

Cores contrastantes para comparação individual



RESSALTADO

Color usada para ressaltar algo



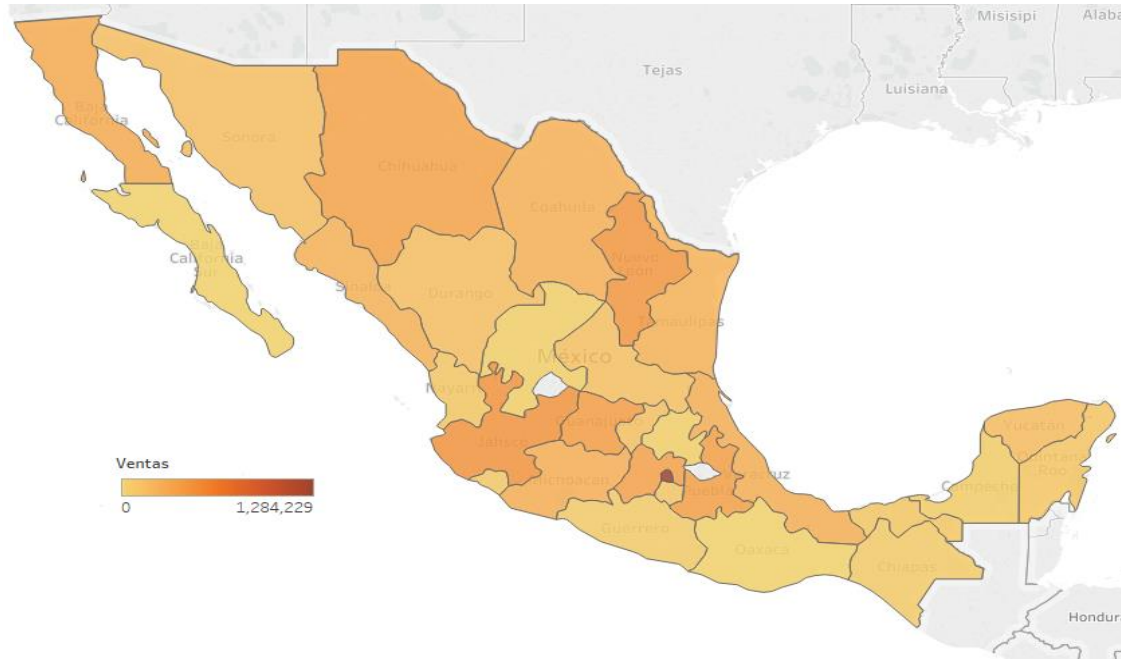
ALERTA

Color usada para chamar a atenção do usuário



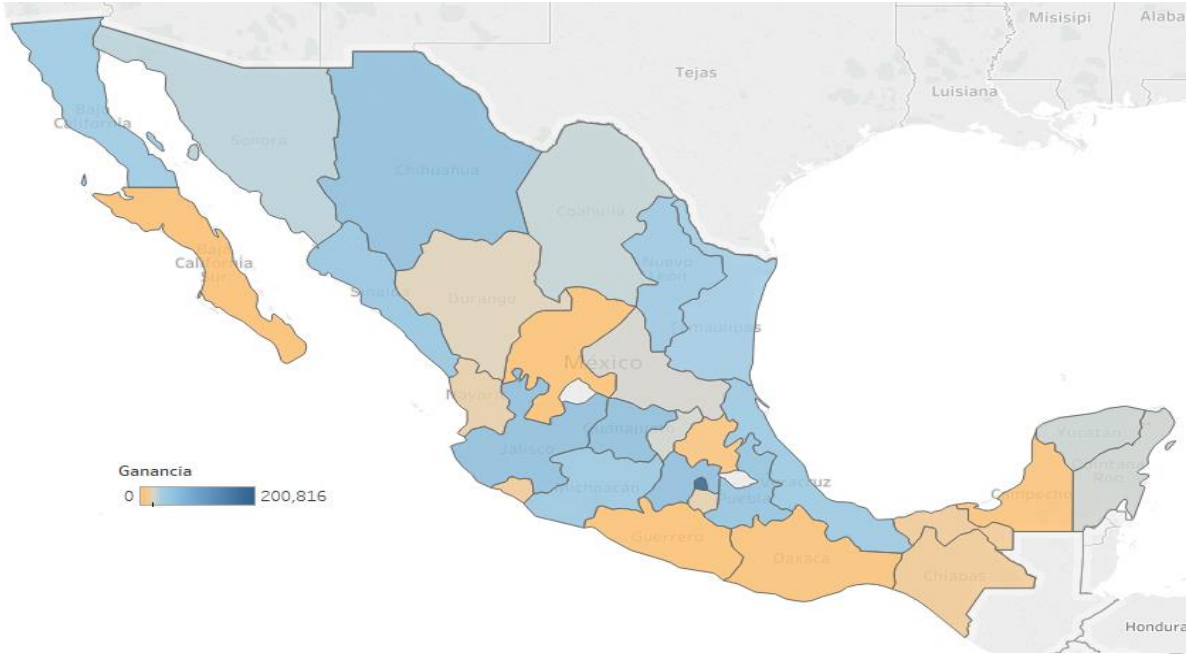
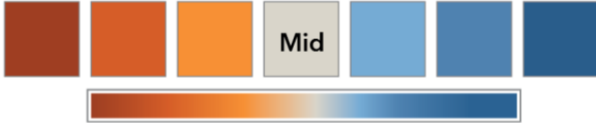
SECUENCIAL

Vendas por estado



DIVERGENTE

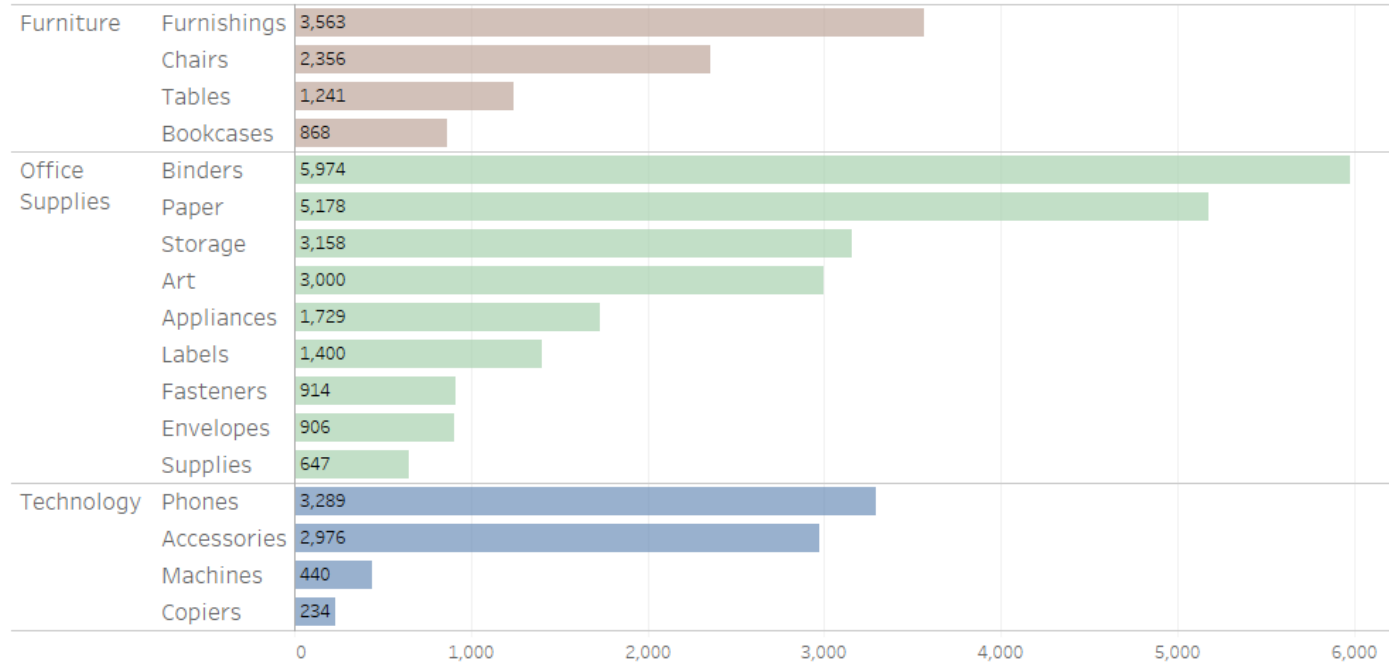
Lucro por estado



CATEGÓRICO

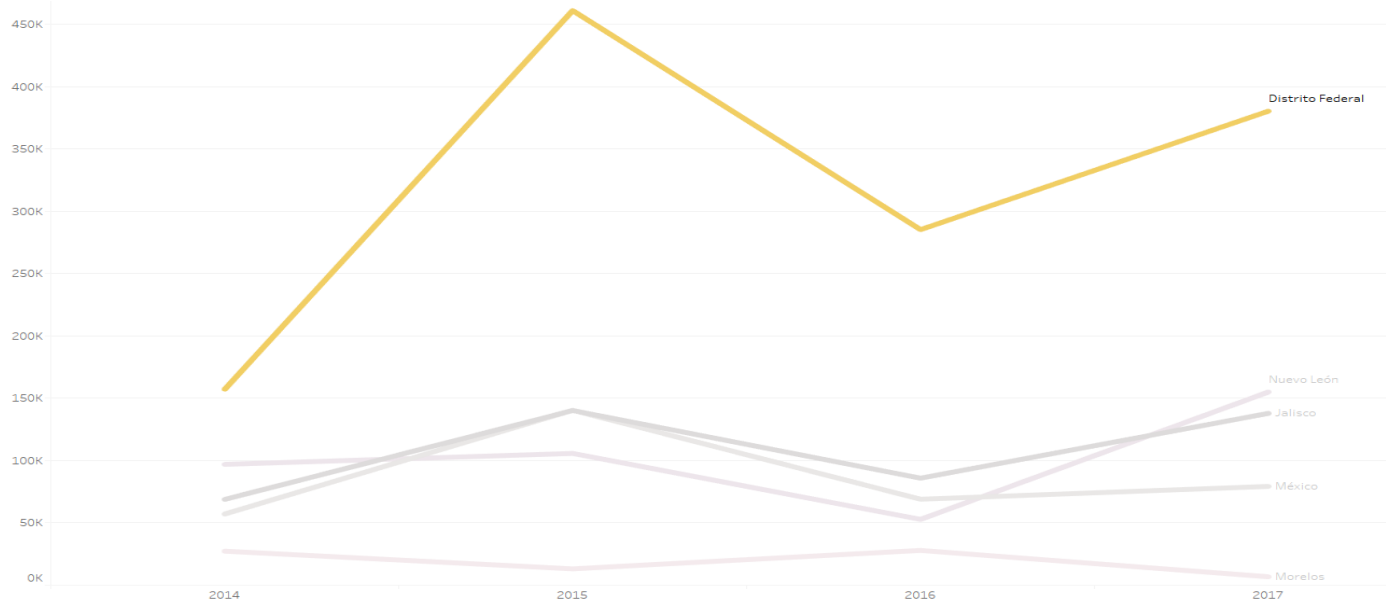


Quantidade por categoría e subcategoría



RESULTADO

Vendas por estado, 2014-2017



ALERTA



ATUAL VS. ESPERADO



83 %

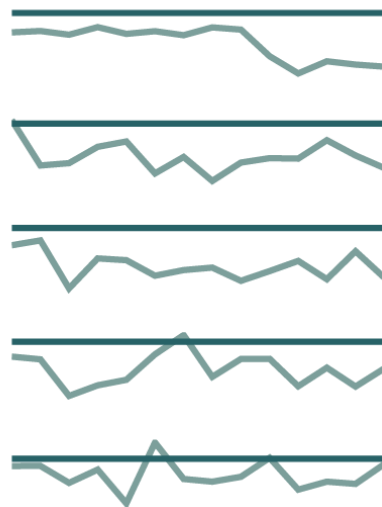
86 %

90 %

92 %

97 %

TENDENCIA DE 14 DIAS



ÚLTIMA ATUALIZAÇÃO

3 dias

19 dias

2 dias

7 dias

13 dias



Atenção Visual

Pontos importantes:

1. *Tamanho dos números*
2. *Localização das Infos*
3. *Orientação por contrastes*



Recursos

<https://www.tableau.com/pt-br/about/blog/2017/6/eye-tracking-study-5-key-learning-data-designers-everywhere-72395>



1 – Números Grandes : Na Parte superior ou inferior?

Números grandes

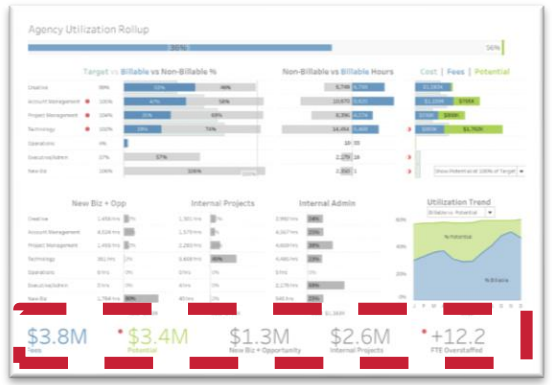
PARTE SUPERIOR OU INFERIOR



1 – Números Grandes: Tempo para primeira fixação (*Parte Inferior ou superior*)



1.9

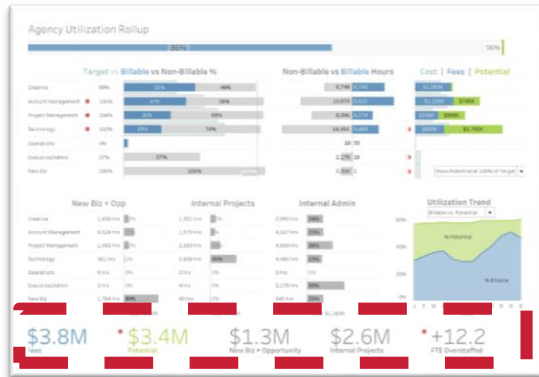
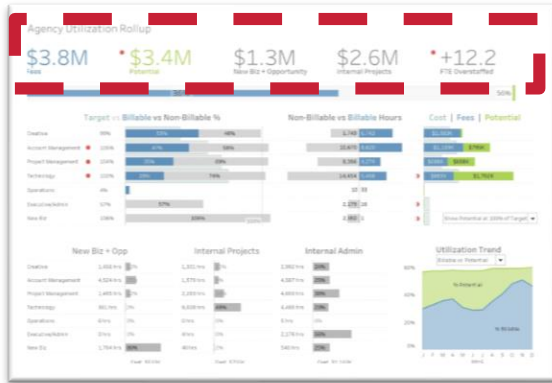


6.1

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5

Time to First Fixation (sec)

1 – Números Grandes: Duração da Fixação (*Parte Inferior ou superior*)

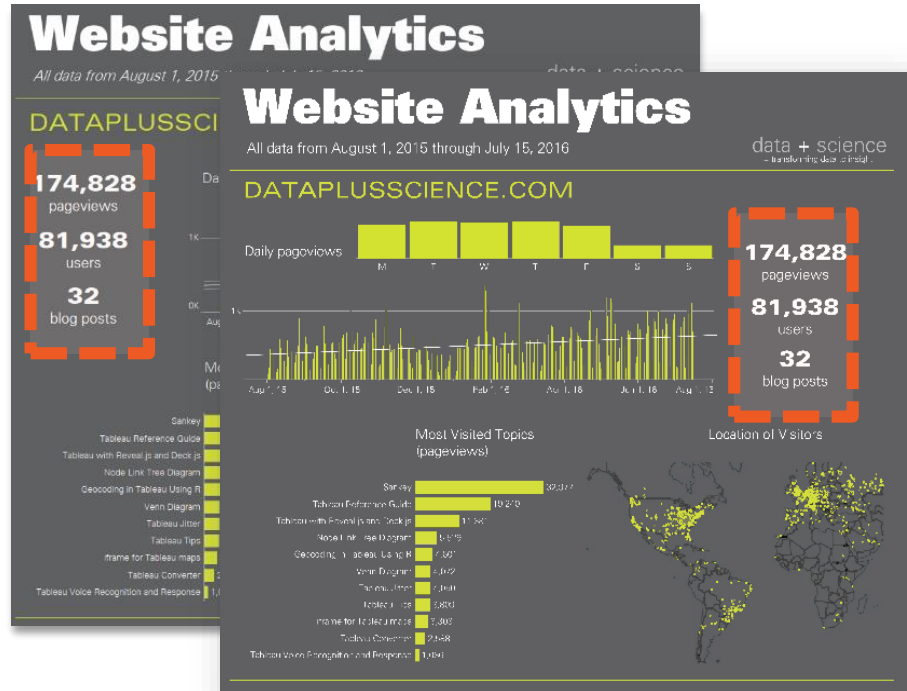


0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6

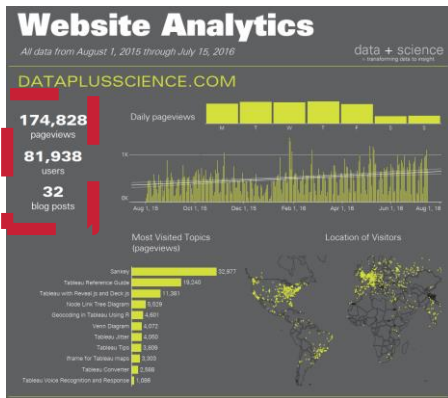
Fixation Duration (sec)

1 – Números Grandes : Esquerda ou direita?

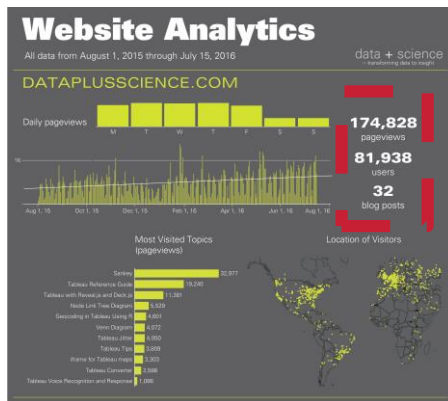
<p>Números grandes</p> <p>PARTE SUPERIOR OU INFERIOR</p>	<p>Números grandes</p> <p>ESQUERDA OU DIREITA</p>



1 – Números Grandes: Tempo para Fixação



2.7

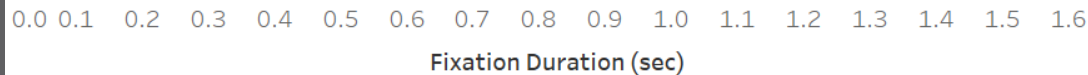
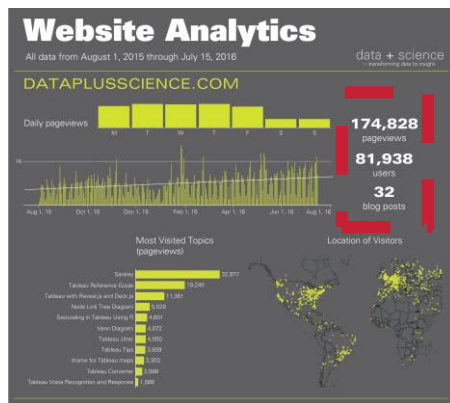
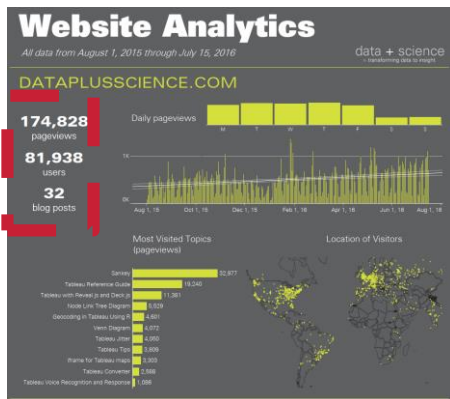


4.0

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5

Time to First Fixation (sec)

1 – Números Grandes: Duração da Fixação



1 – Números Grandes: Uso de alto o baixo o contraste?

Números grandes

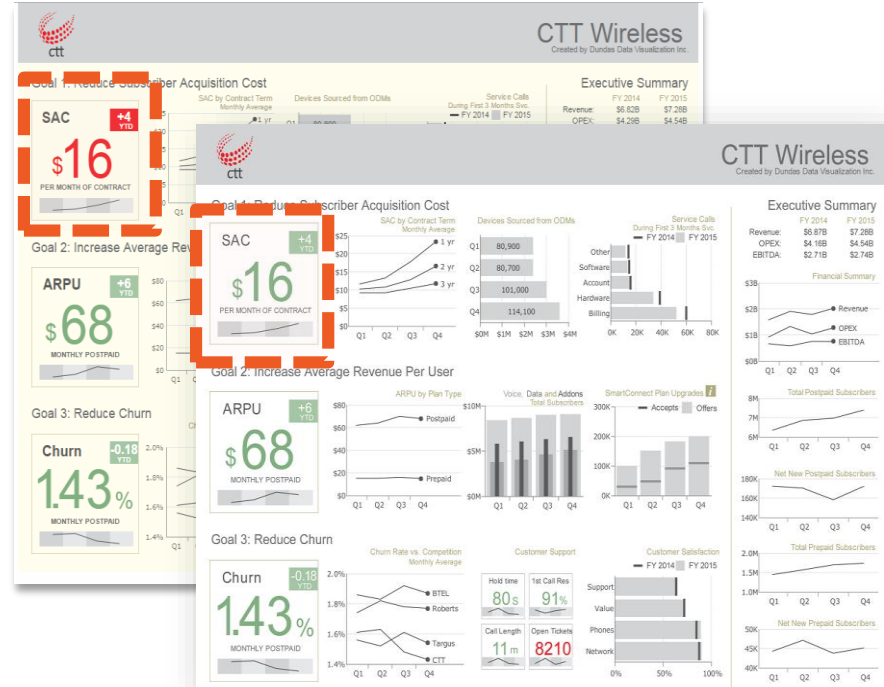
PARTE
SUPERIOR
OU INFERIOR

Números grandes

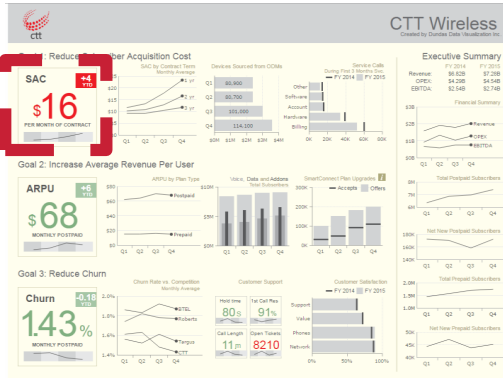
ESQUERDA
OU DIREITA

Números grandes

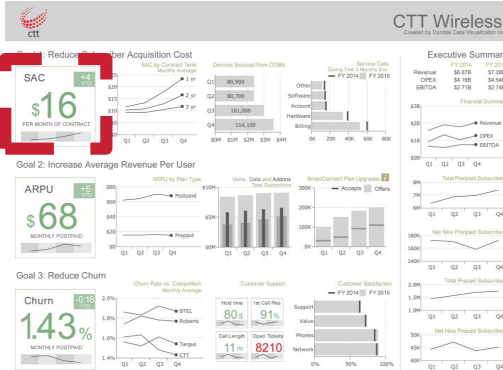
ALTO OU
BAIXO
CONTRASTE



1 – Números Grandes: Tempo para Fixação (*alto ou baixo contraste?*)



1.1

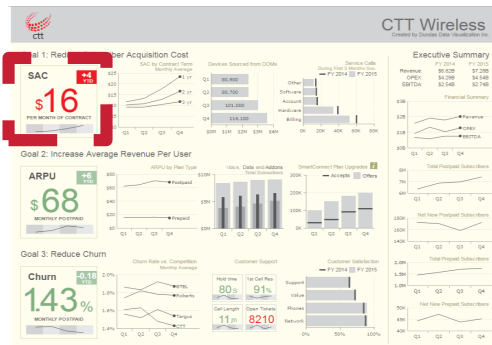
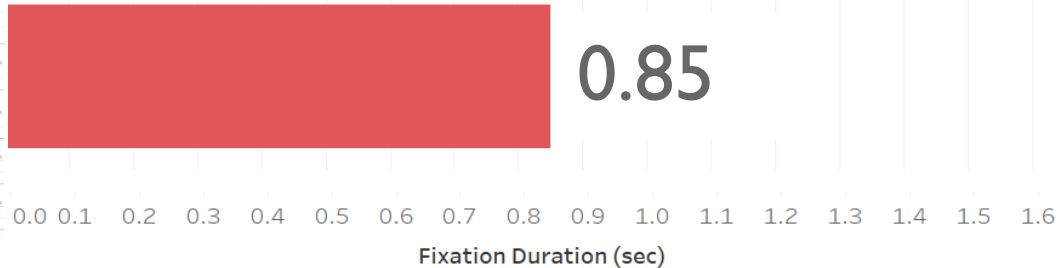


1.0

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5

Time to First Fixation (sec)

1 – Números Grandes: Duração da Fixação (alto ou baixo contraste?)



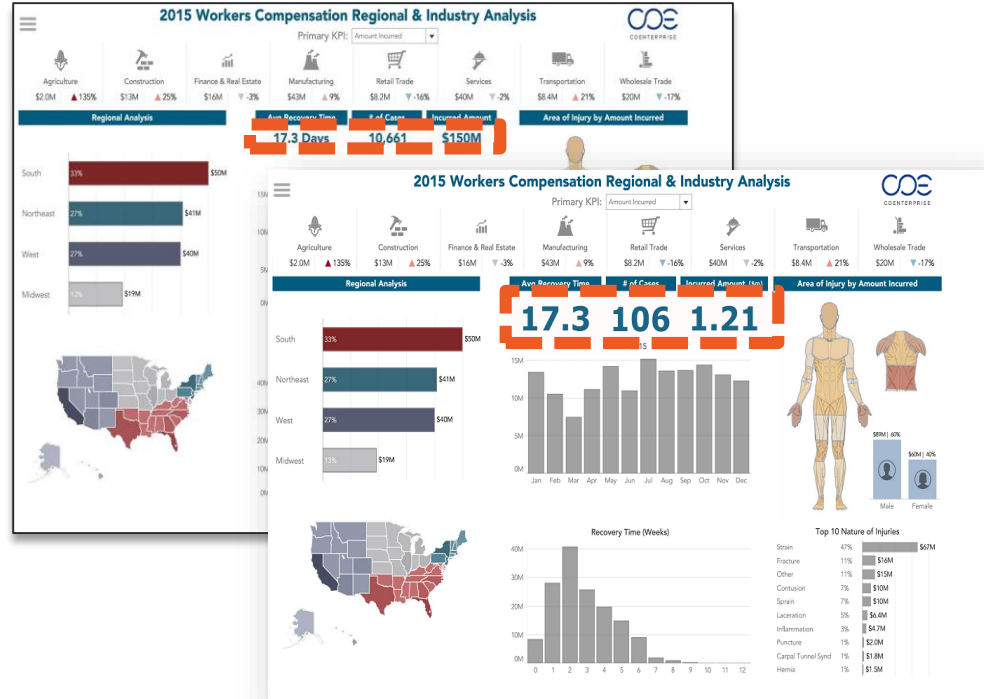
1 – Números Grandes: Fonte Media ou Grande?

Números grandes
PARTE SUPERIOR OU INFERIOR

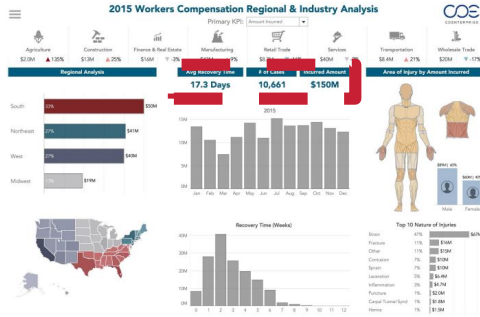
Números grandes
ESQUERDA OU DIREITA

Números grandes
ALTO OU BAIXO CONTRASTE

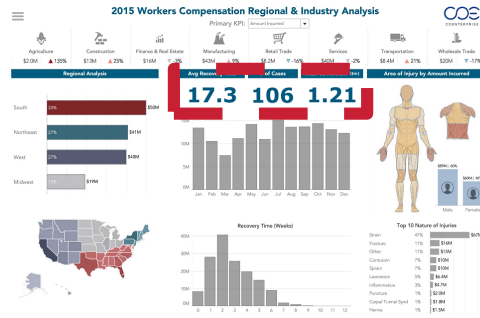
Números grandes
FONTE MEDIA OU GRANDE



1 – Números Grandes: Tempo para Fixação (*Fonte media ou grande?*)



3.7

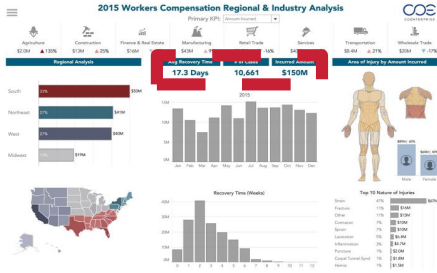


2.7

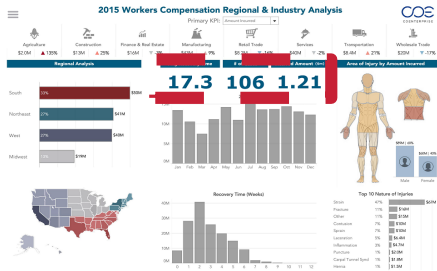
0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5

Time to First Fixation (sec)

1 – Números Grandes: Duração da Fixação (*Fonte média ou grande?*)



0.4



0.8

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6
Fixation Duration (sec)





Fundamentos e Dashboards

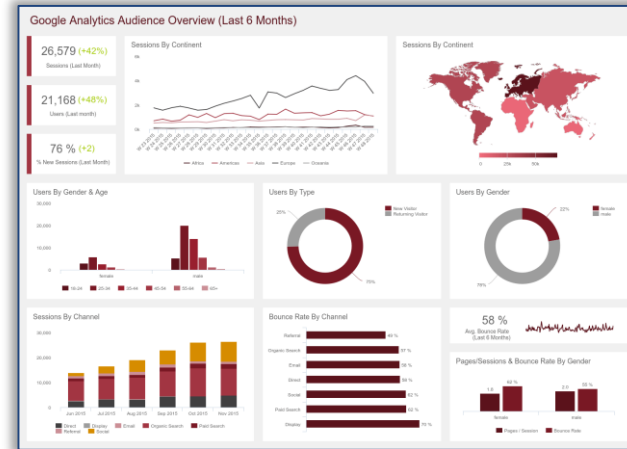
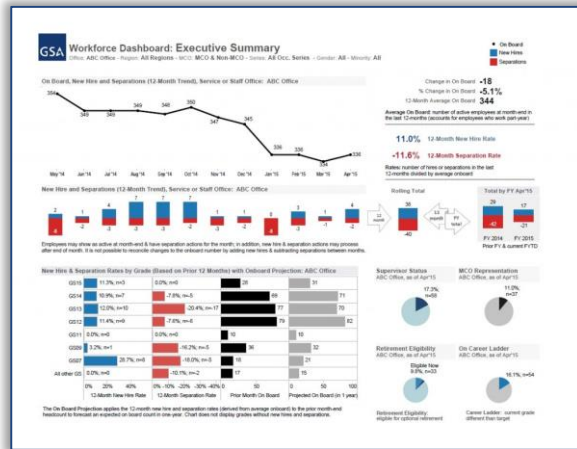
(O que são? Como se reproduzem?)

Dashboard: Definição

Um **dashboard** é uma exibição visual das informações mais importantes necessárias para alcançar um ou mais objetivos; consolidado e organizado em uma única tela para que a informação possa ser monitorada facilmente.

Recursos

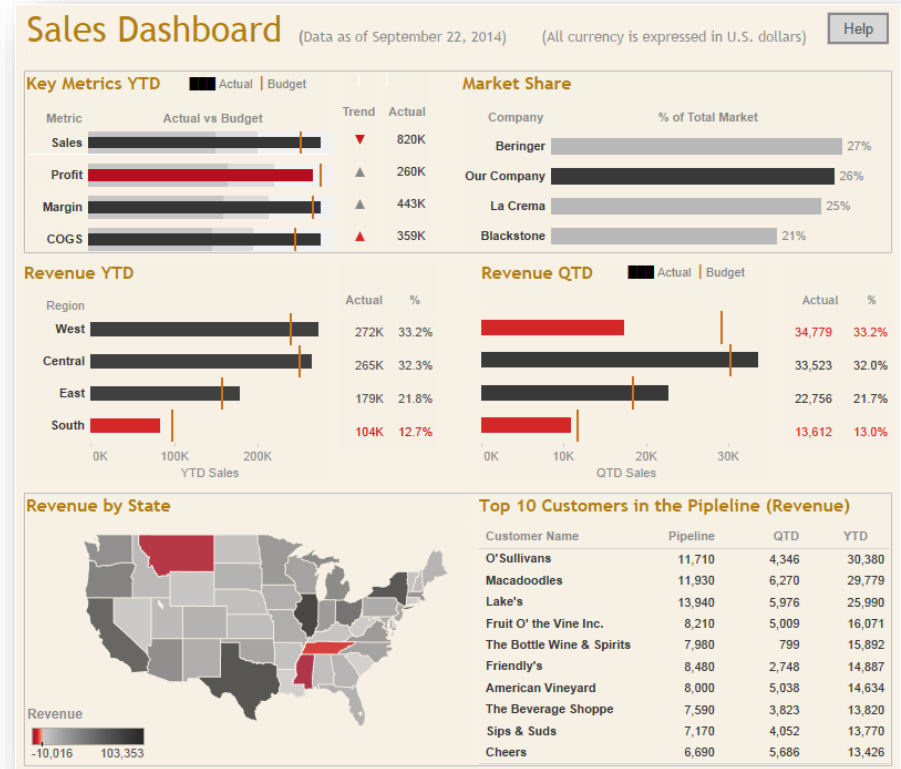
<https://www.tableau.com/pt-br/learn/whitepapers/6-best-practices-for-effective-dashboards>



Dashboard: Tipos Principais

Strategico

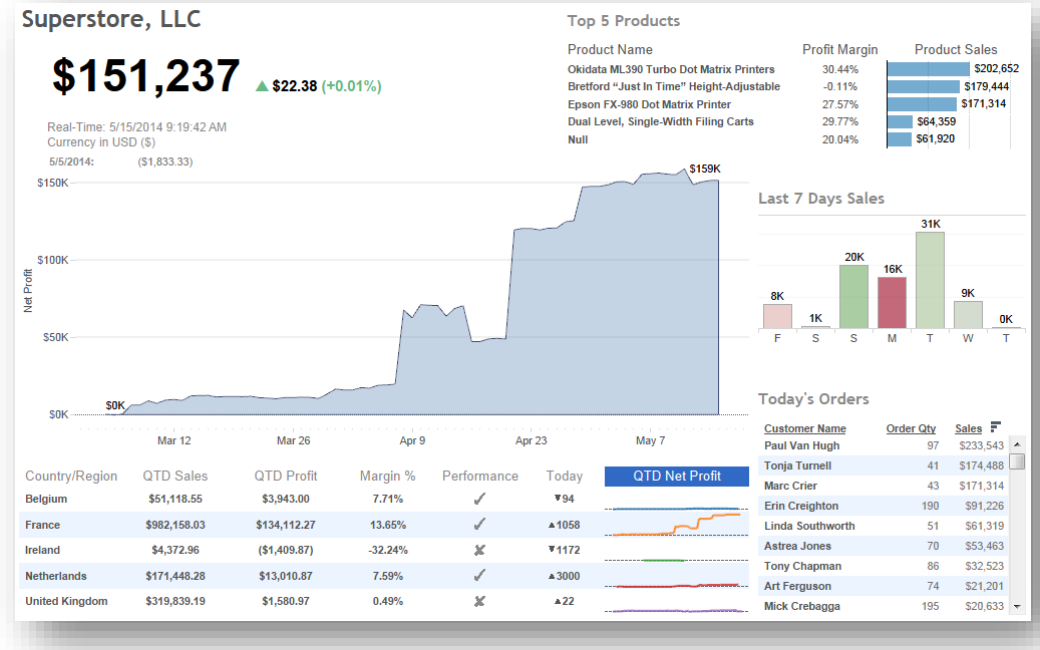
- Fornece a visão geral rápida que os tomadores de decisão precisam para monitorar a saúde e as oportunidades do negócio
- Concentra-se em medidas de alto nível de desempenho para iluminar o caminho para o futuro (ex: boas e más avaliações de desempenho)



Dashboard: Tipos Principais

Operacional

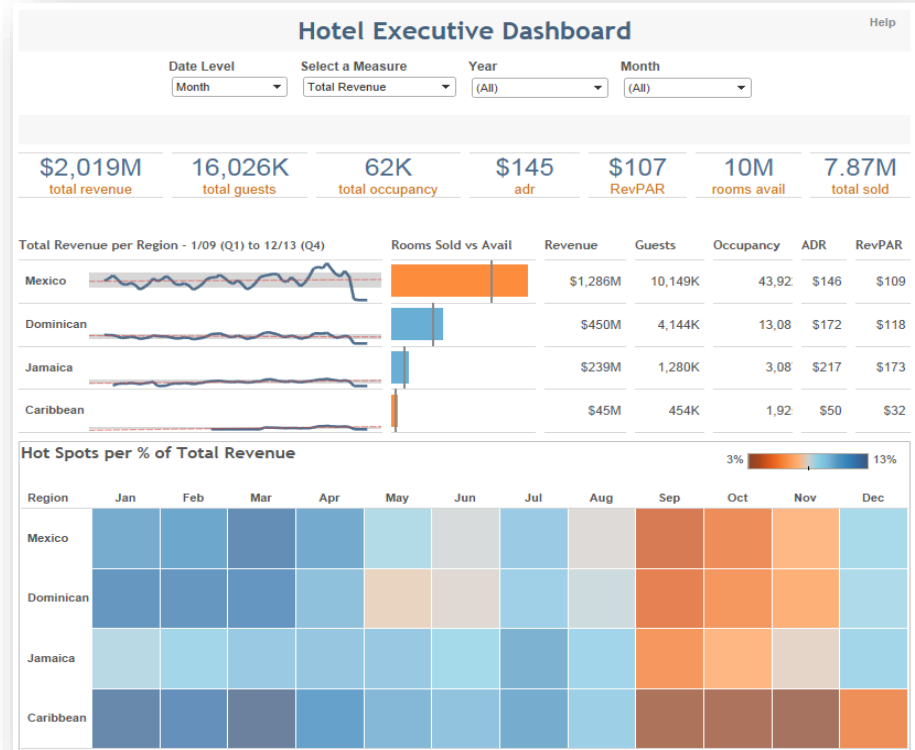
- Usado principalmente para monitorar operações
- Dinâmico e de natureza imediata (ex: informações de vendas diárias)



Dashboard: Tipos Principais

Analítico

- Requer contexto adicional (comparações, histórico, avaliações)
- Altamente interativo



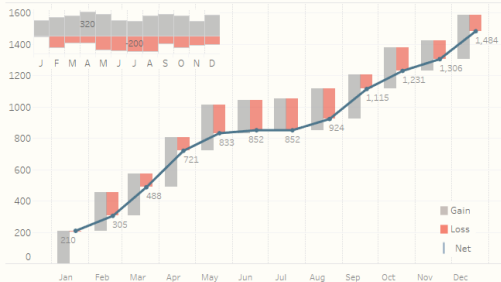


Visuais viscerais e reflexivos

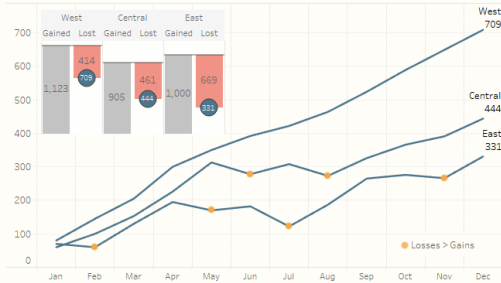
O Visceral

Subscriber Churn Analysis

Subscriber activity - All



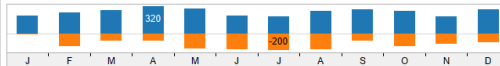
Net subscriber activity by division



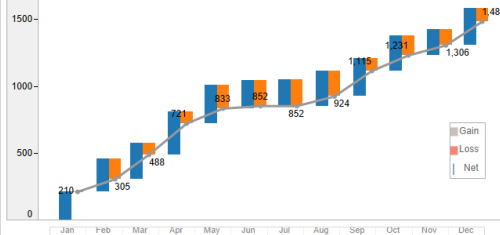
Details

Division	Month	Gained	Lost	Net	Running total
West	January	80	0	80	80
	February	80	-15	65	145
	March	90	-30	60	205
	April	120	-25	95	300
	May	100	-50	50	350
	June	139	-77	62	392
	July	75	-45	30	422
	August	119	-77	42	464
	September	90	-30	60	524
	October	80	-15	65	589
	November	80	-20	60	649
	December	90	-30	60	709
Central	January	60	0	60	60
	February	85	-45	40	100
	March	80	-27	53	153
	April	90	-17	73	226
	May	120	-33	87	313
	June	45	-80	-35	278
	July	75	-45	30	308
	August	45	-80	-35	273
	September	80	-27	53	326
	October	85	-45	40	366
	November	60	-35	25	391
	December	80	-27	53	444
East	January	70	0	70	70
	February	80	-90	-10	60
	March	100	-30	70	130
	April	110	-45	65	195
	May	70	-95	-25	170
	June	45	-33	12	182
	July	50	-110	-60	122
	August	99	-34	65	187
	September	112	-34	78	265
	October	99	-88	11	276
	November	55	-65	-10	266
	December	110	-45	65	331
Grand Total		3,028	-1,544	1,484	

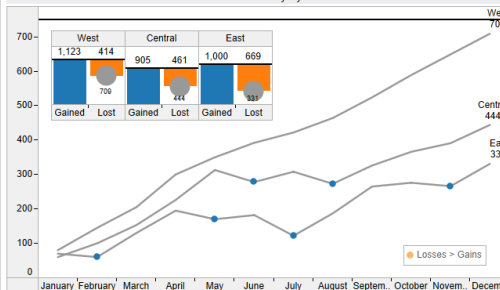
Subscriber Churn Analysis



Subscriber activity - All



Net subscriber activity by division



Details

Division	Month	Gained	Lost	Net	Running total
West	January	80	0	80	80
	February	80	-15	65	145
	March	90	-30	60	205
	April	120	-25	95	300
	May	100	-50	50	350
	June	119	-77	42	392
	July	75	-45	30	422
	August	119	-77	42	464
	September	90	-30	60	524
	October	80	-15	65	589
	November	80	-20	60	649
	December	90	-30	60	709
Total		1,123	-414	709	4,829
Central	January	60	0	60	60
	February	85	-45	40	100
	March	80	-27	53	153
	April	90	-17	73	226
	May	120	-33	87	313
	June	45	-80	-35	278
	July	75	-45	30	308
	August	45	-80	-35	273
	September	80	-27	53	326
	October	85	-45	40	366
	November	60	-35	25	391
	December	80	-27	53	444
Total		905	-461	444	3,238
East	January	70	0	70	70
	February	80	-90	-10	60
	March	100	-30	70	130
	April	110	-45	65	195
	May	70	-95	-25	170
	June	45	-33	12	182
	July	50	-110	-60	122
	August	99	-34	65	187
	September	112	-34	78	265
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	November	55	-65	-10	266
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Grand Total		3,028	-1,544	1,484	

O Reflexivo

UK'S HOMELESSNESS



4,134

rough sleepers in 2016

134%

increase since 2010

12%

of rough sleepers were female

CRISIS

Homelessness is on the rise



Rough sleepers have been steadily increasing since 2010. In 2016, there were **4,134** rough sleepers across England - an increase of **16%** from 2015 and **134%** from 2010. Although the number of vacant dwellings have been decreasing there were **590k** in 2016.

Majority of areas have seen an increase



● Increase in rough sleepers compared to 2010



● Increase in rough sleepers compared to 2015

CHAIN figures are more alarming

The Combined Homelessness and Information Network (CHAIN) reports that there were **8,096** rough sleepers in London alone during 2015-16. A striking difference compared to the official single night counts.

Official Count 964

CHAIN Count 8,096

TOMORROW TODAY

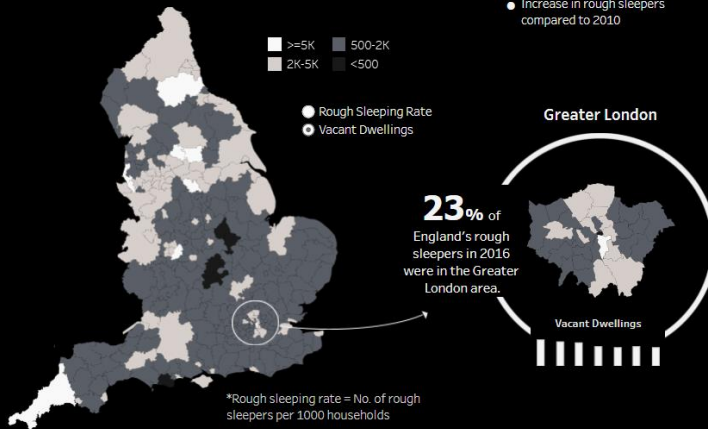
Homelessness is not acceptable. Not in 2018, and not in one of the richest countries in the world; the UK. Papa Baiden's social enterprise, **Tomorrow Today**, plans to launch with the sole purpose of delivering the "In Our Hands" project which aims to fight homelessness through four main work streams:

- Relief Work
- Public Engagement
- Collaboration
- Policy Change

£40bn

estimated benefit of the project to British society

[Learn More](#)



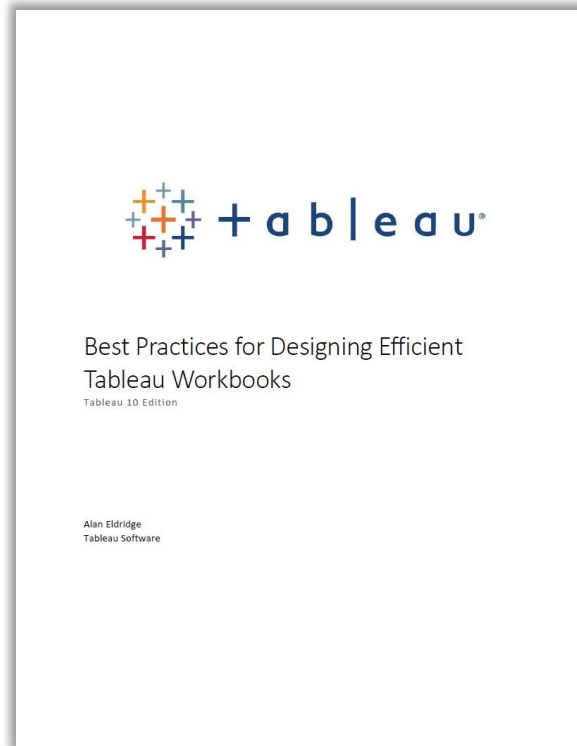
*Rough sleeping rate = No. of rough sleepers per 1000 households



Dashboard: Performance

Maiores informações:

- *Detalhamento sobre desenho;*
- *Dicas de filtros e uso de cores;*
- *Detalhes sobre performance;*
- *Conceitos de uso de cálculos programáticos...*



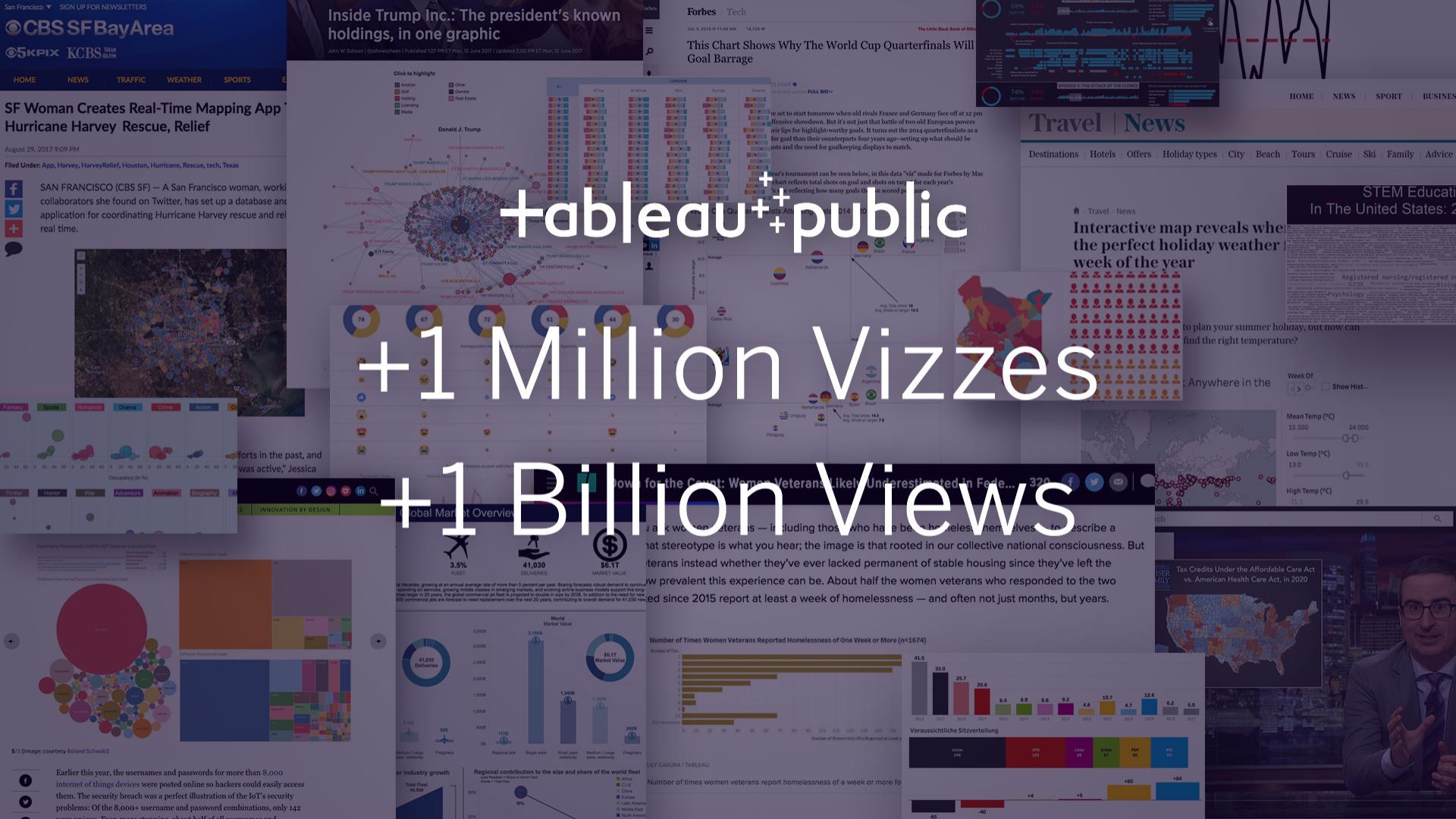
Recursos

<https://www.tableau.com/learn/whitepapers/designing-efficient-workbooks>





Ganha a corrida quem
tiver as melhores
informações e que
saiba o que fazer com
elas.



+tableau+public
+1 Million Vizizes
+1 Billion Views

Earlier this year, the usernames and passwords for more than 8,000 internet of things devices were posted online so hackers could easily access them. The security breach was a perfect illustration of the IoT's security problems: Of the 8,000+ username and password combinations, only 142 were unique. That's a far less helpful combination.

THANK YOU

