

# Module 2B:

## Storytelling with Data instead of Showing Data

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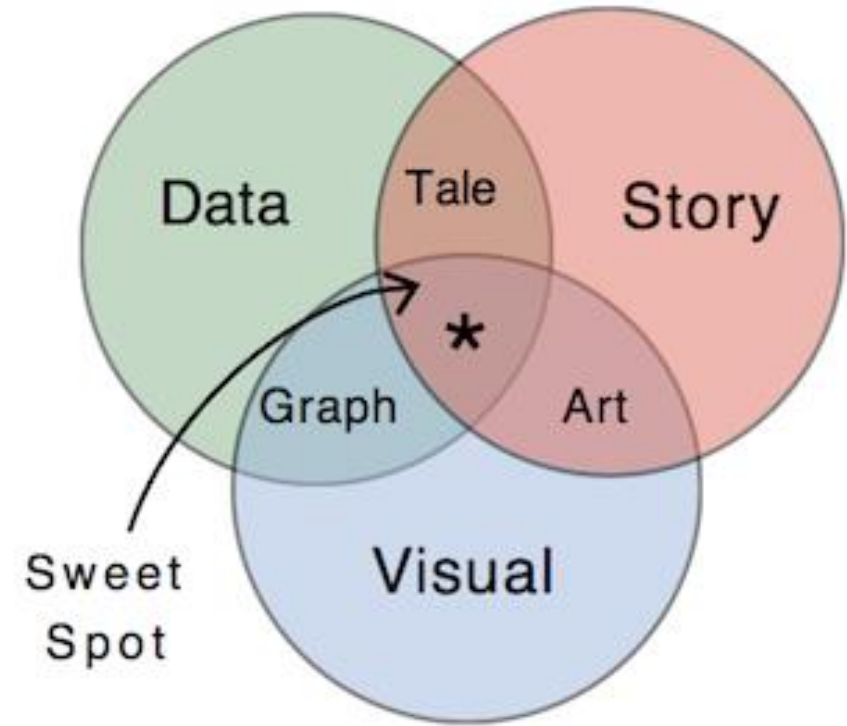
Institute of Systems Science  
National University of Singapore



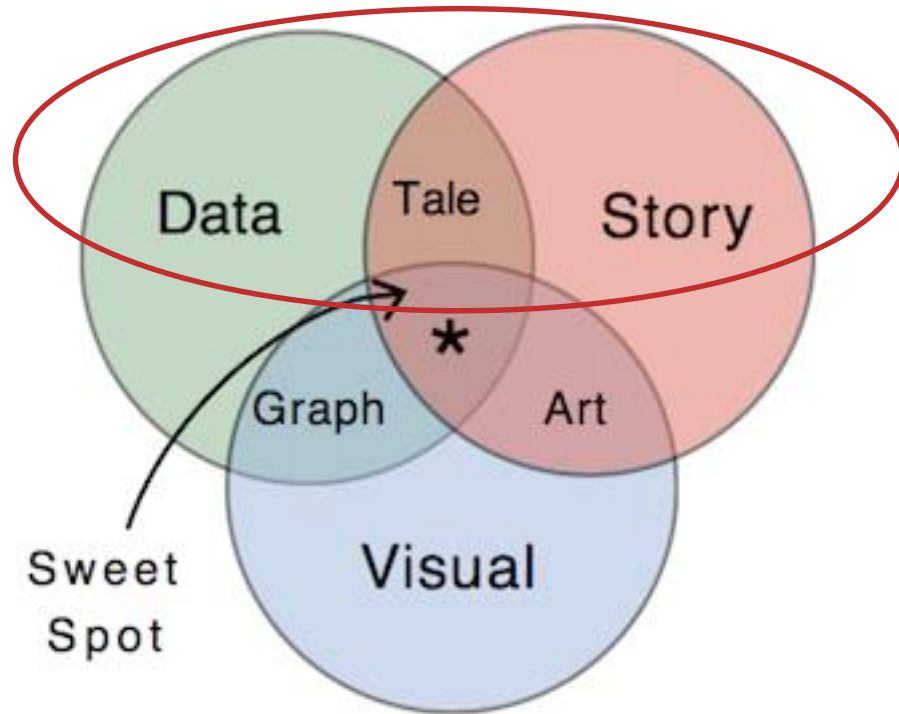
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# Introduction

- Telling compelling stories
- Storytelling with data instead of Showing Data
  - Annotation
  - Decluttering
  - Use color sparingly and strategically
  - Visual hierarchy of information



# Data + Story = Tale



- Data Storytelling
- Narrative
- Explanation

- **Telling Compelling Stories**
- **Think Stories, not Charts**

# Showing Data vs Storytelling with Data

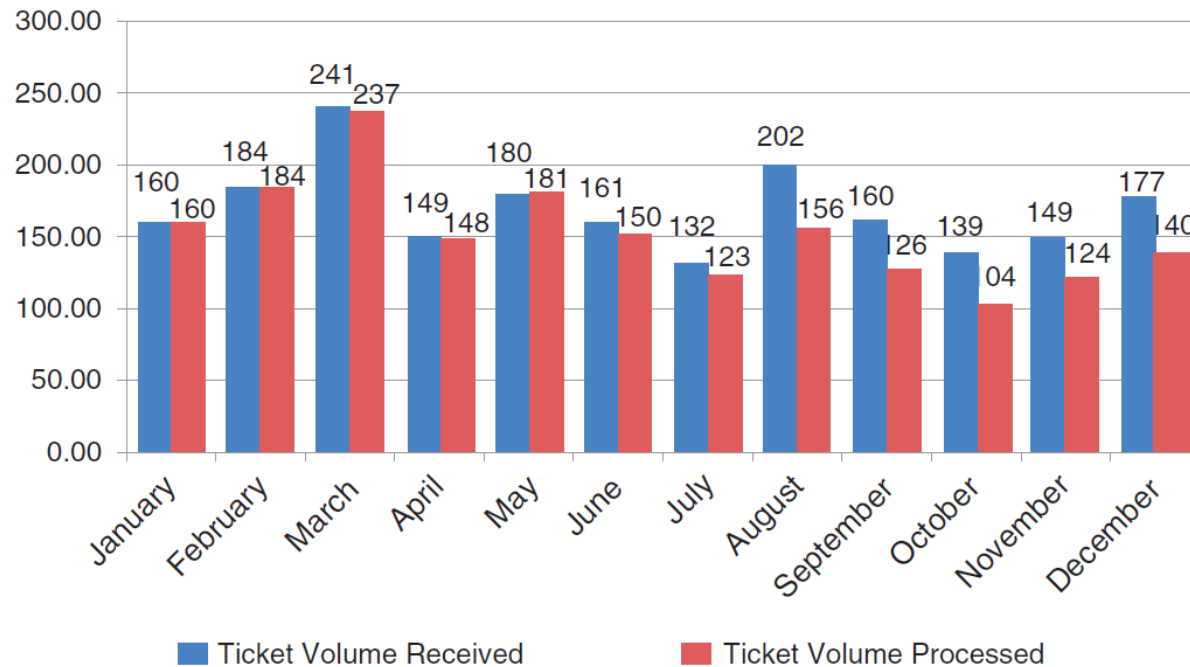
Before and After



# Before: Showing Data

## After: Storytelling with Data

Ticket Trend



## Please approve the hire of 2 FTEs

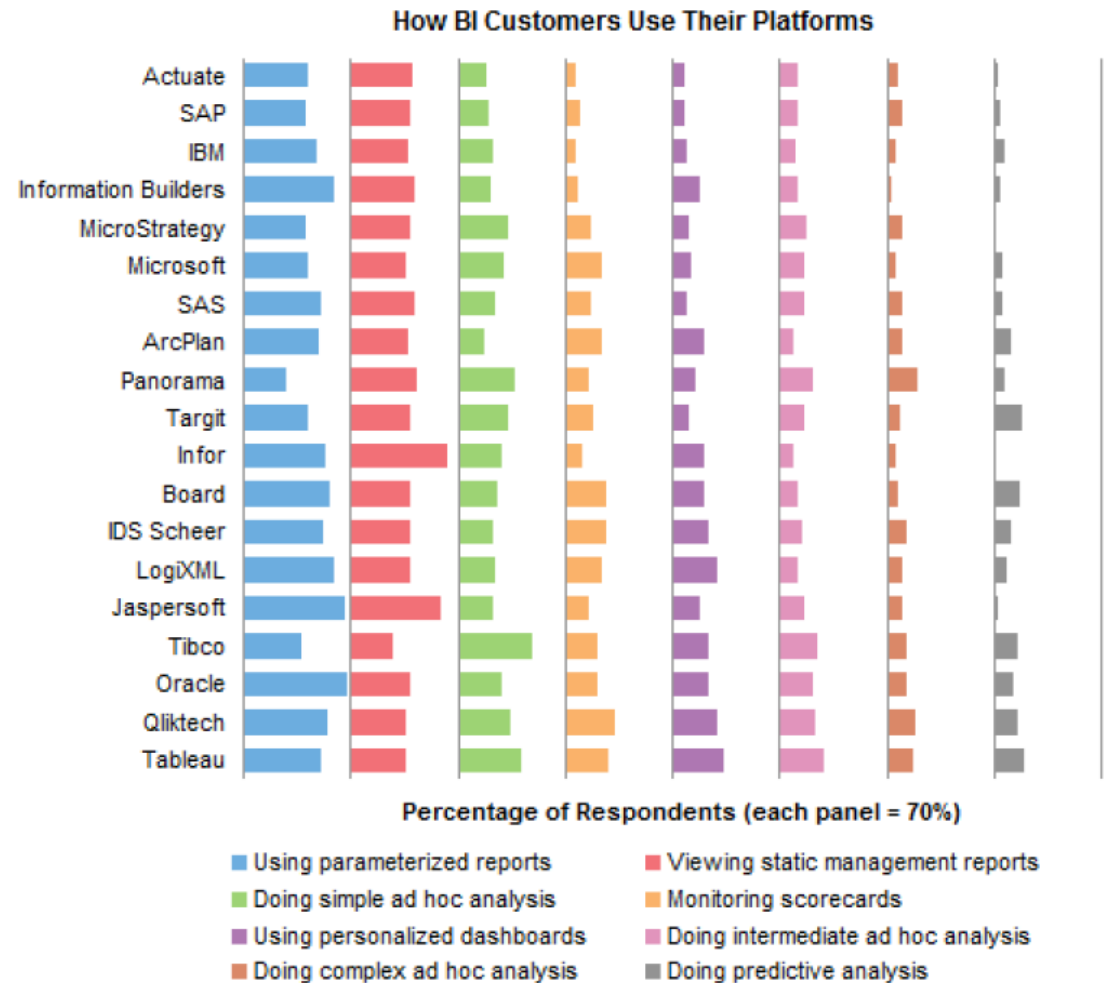
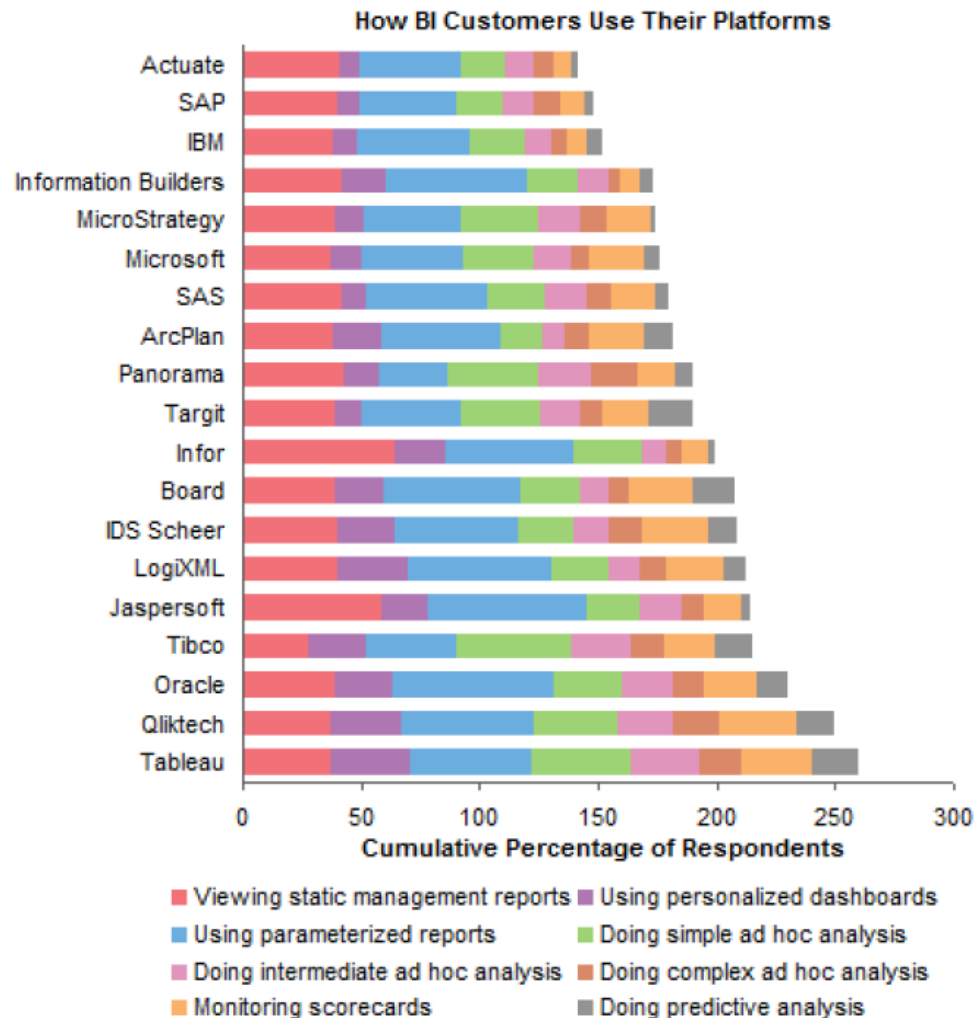
to backfill those who quit in the past year

Ticket volume over time



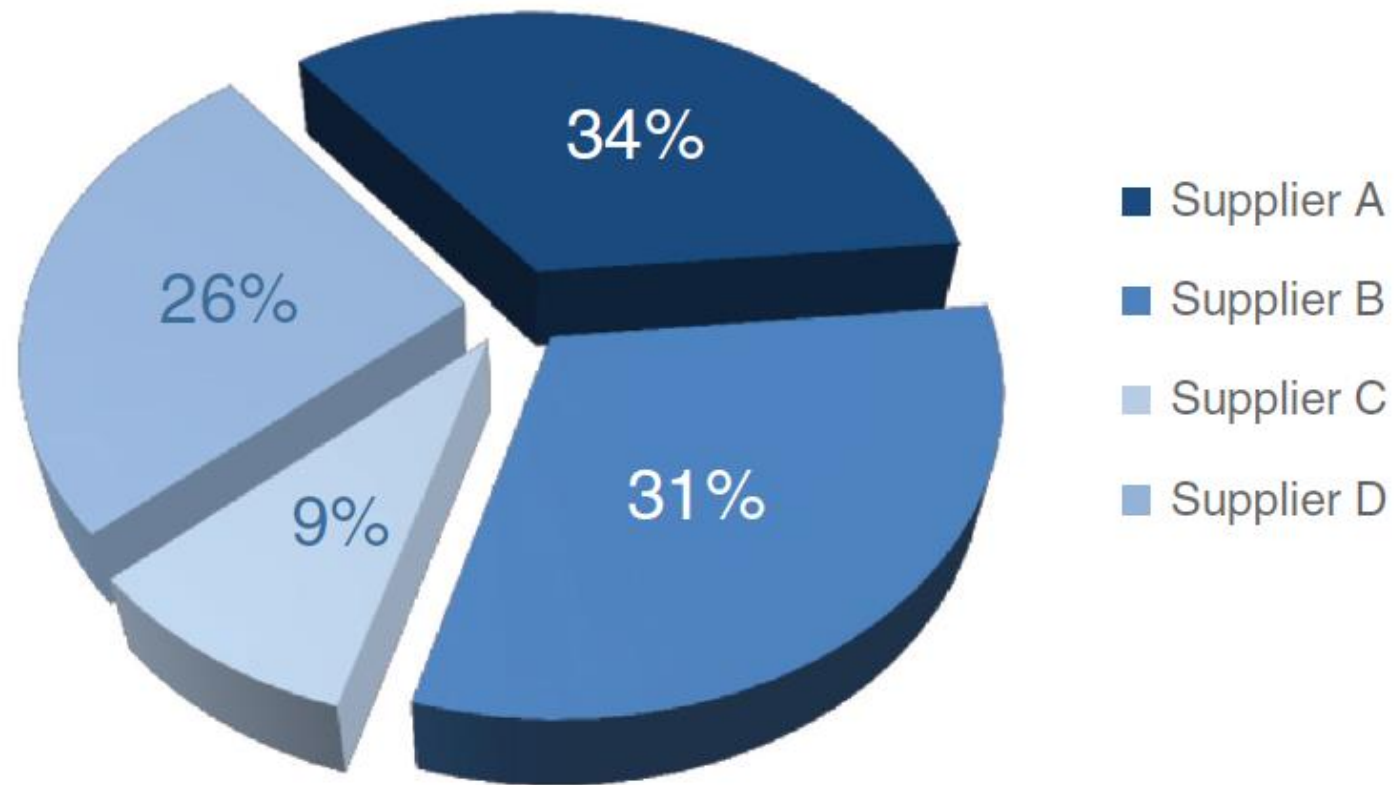
Data source: XYZ Dashboard, as of 12/31/2014 | A detailed analysis on tickets processed per person and time to resolve issues was undertaken to inform this request and can be provided if needed.

# Before & After: Choosing the Right Chart



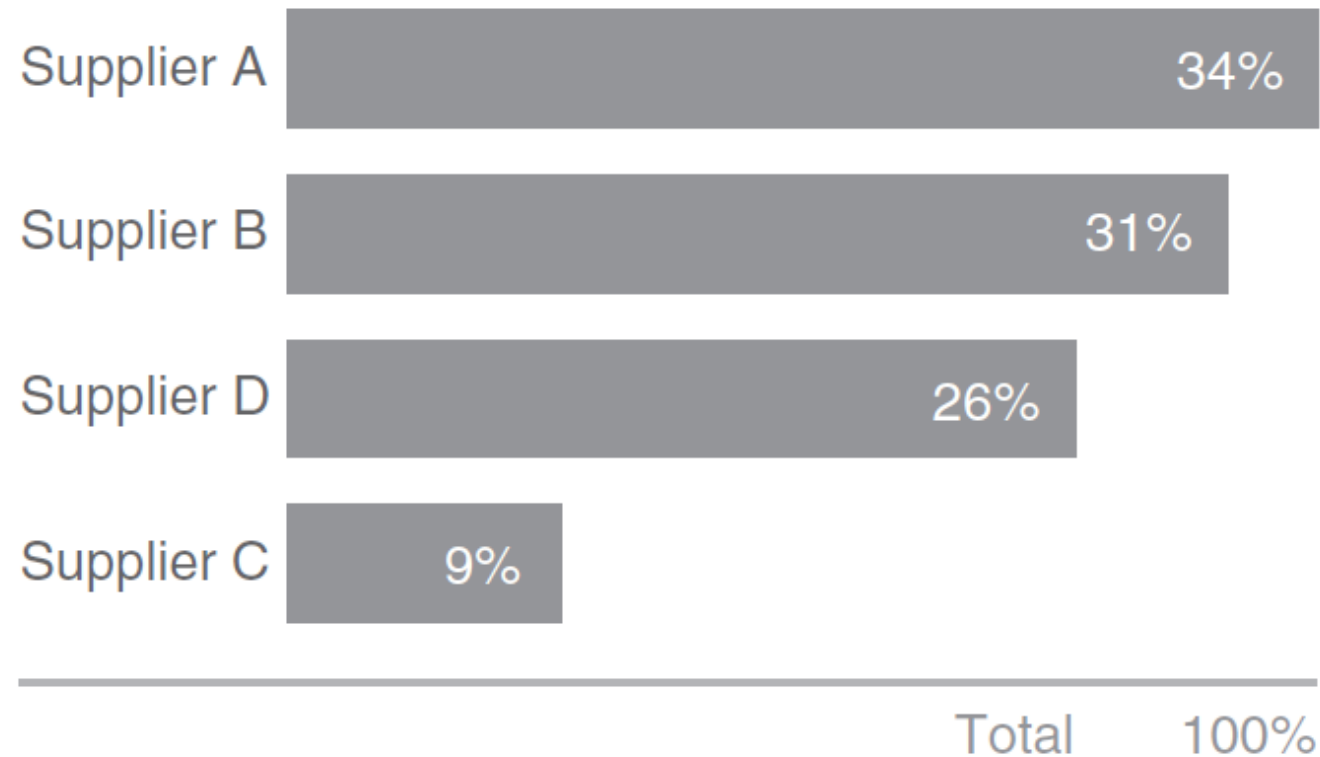
# Before: Choosing the Right Chart

Supplier Market Share



# After: Choosing the Right Chart

## Supplier Market Share

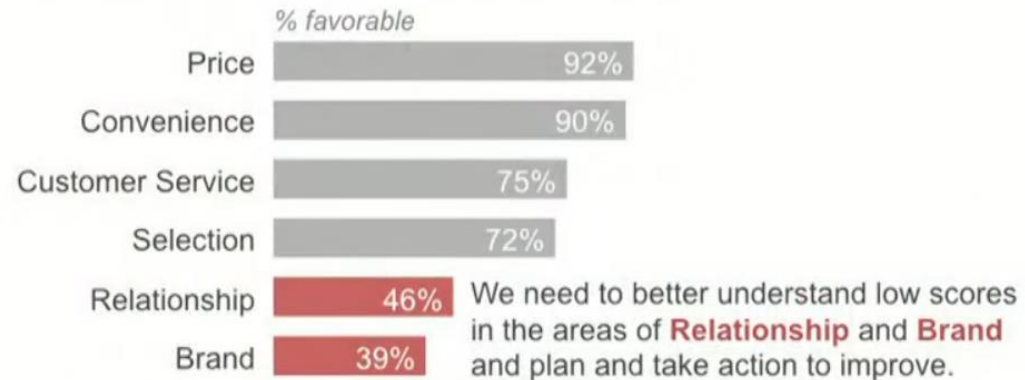




# A preattentive attribute example

...However, there are also **areas in need of change**.

## Annual Customer Survey: Results Overview

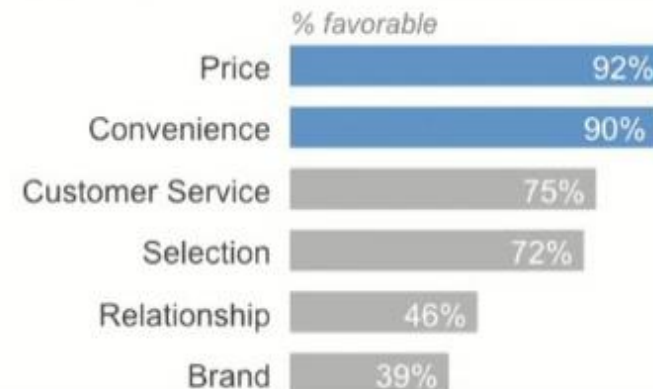


# A preattentive attribute example

**Celebrate where we're doing well!**

Survey respondents are highly satisfied with **price** and **convenience**.

## Annual Customer Survey: Results Overview

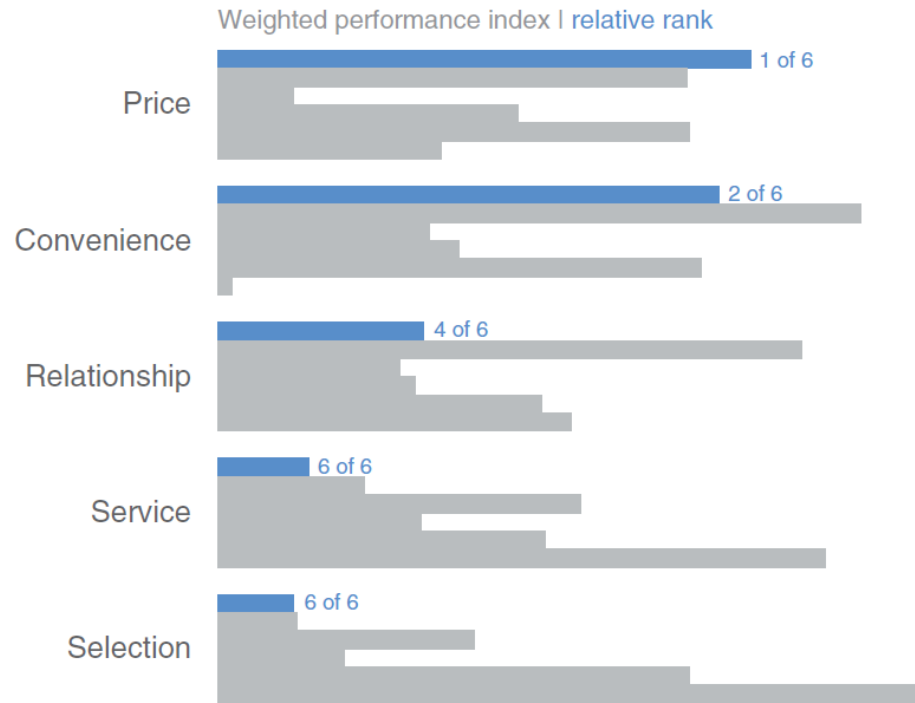


# using contrast strategically

## Performance overview

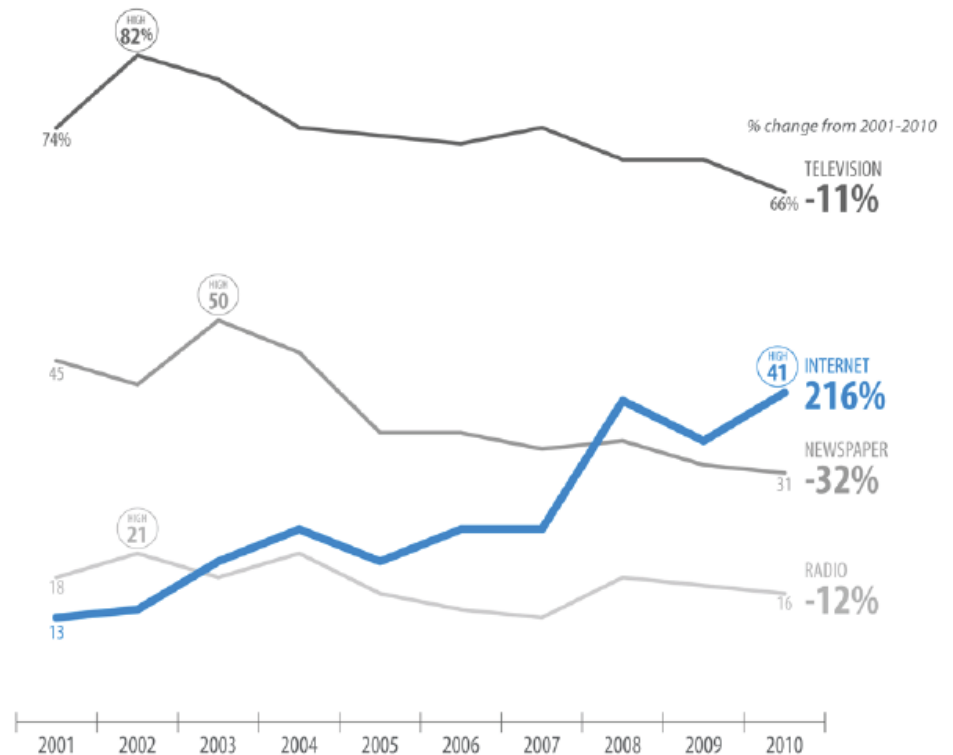
### ■ Our business

- Competitor A
- Competitor B
- Competitor C
- Competitor D
- Competitor E

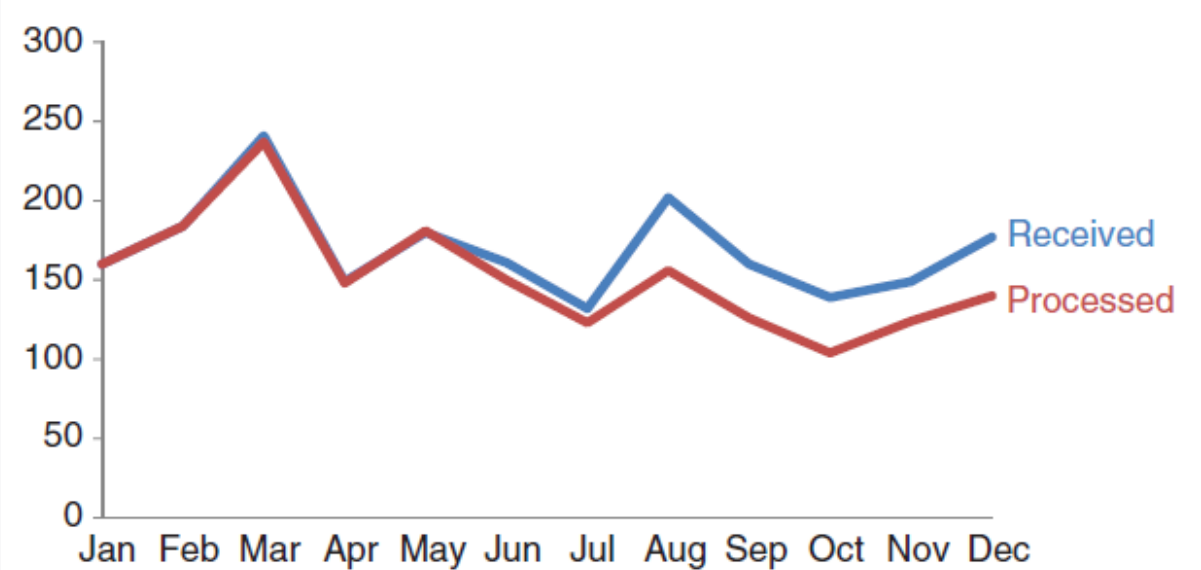
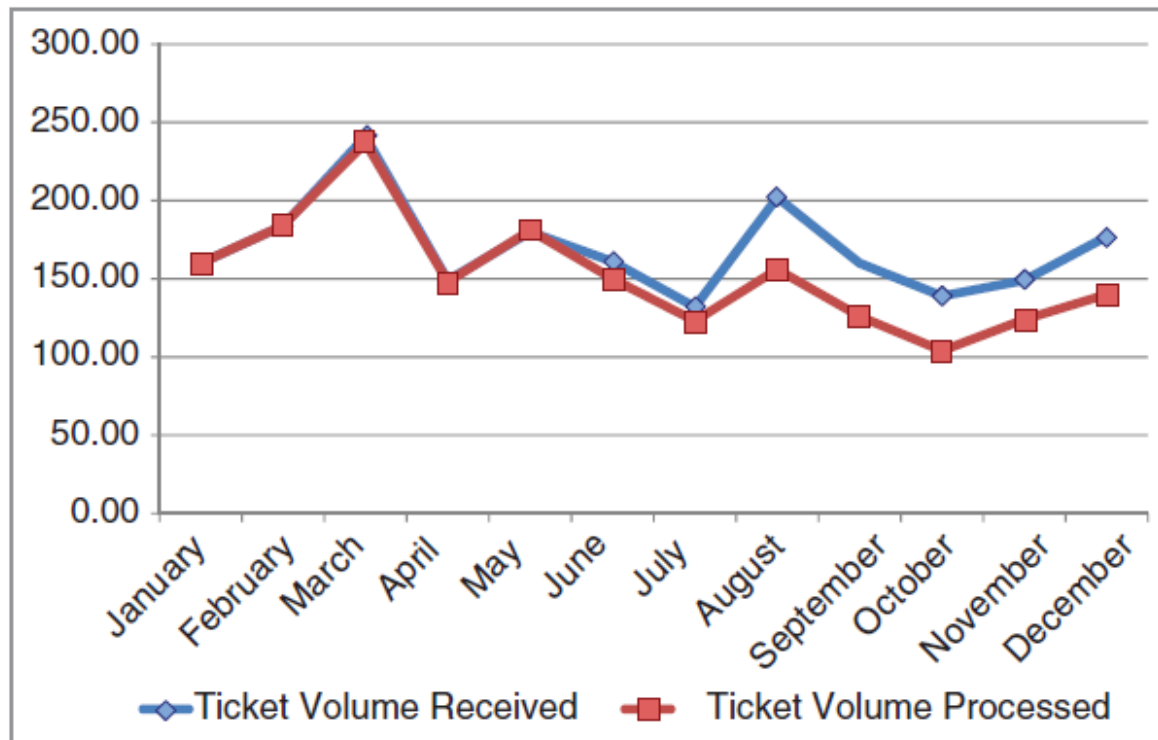


## Where do you get most of your news about national and international issues?

Percent of respondents identifying main source(s) of news.  
Each respondent could volunteer up to two sources.



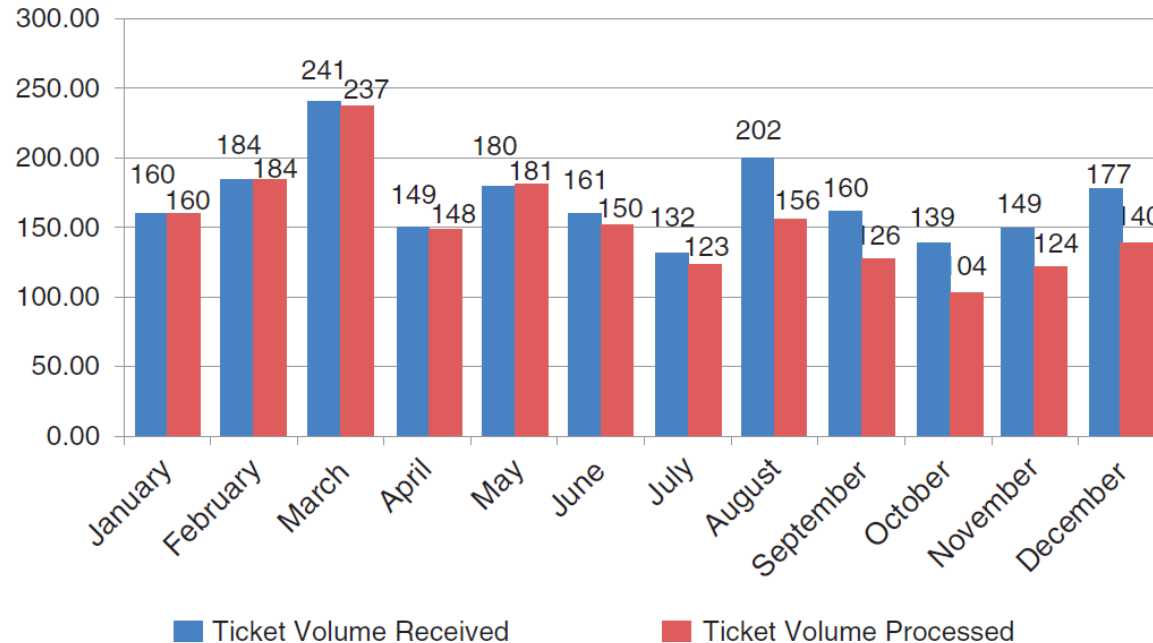
## Before & after Decluttering



# Before: Showing Data After: Storytelling with Data

Add action title and annotation

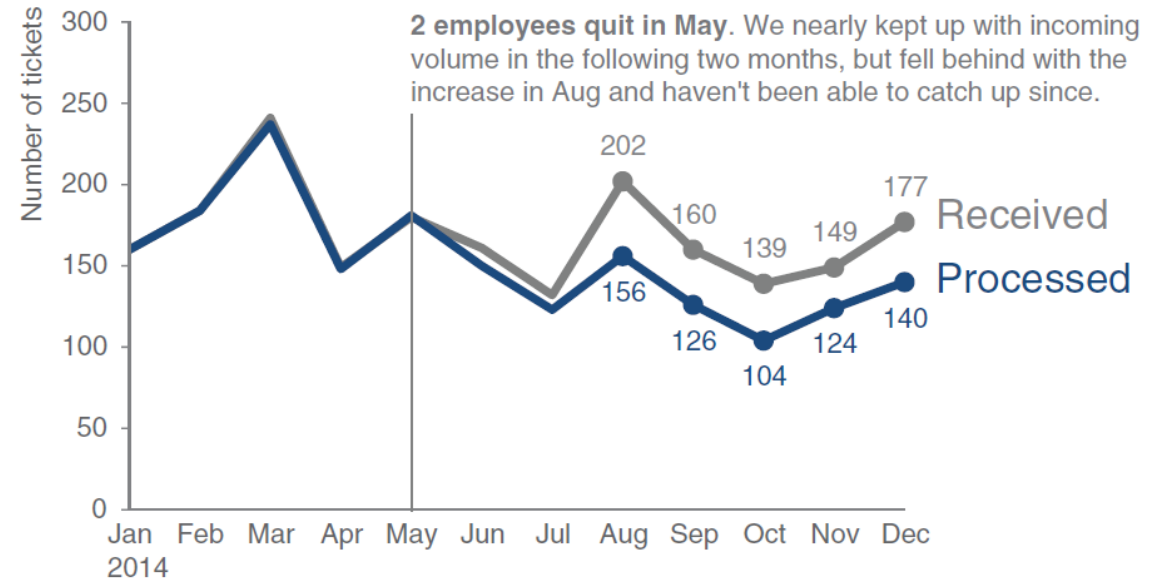
### Ticket Trend



## 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.

# Color

## Use color sparingly

### Country Level Sales Rank Top 5 Drugs

Rainbow distribution in color indicates sales rank in given country from #1 (red) to #10 or higher (dark purple)

Country	A	B	C	D	E
AUS	1	2	3	6	7
BRA	1	3	4	5	6
CAN	2	3	6	12	8
CHI	1	2	8	4	7
FRA	3	2	4	8	10
GER	3	1	6	5	4
IND	4	1	8	10	5
ITA	2	4	10	9	8
MEX	1	5	4	6	3
RUS	4	3	7	9	12
SPA	2	3	4	5	11
TUR	7	2	3	4	8
UK	1	2	3	6	7
US	1	2	4	3	5

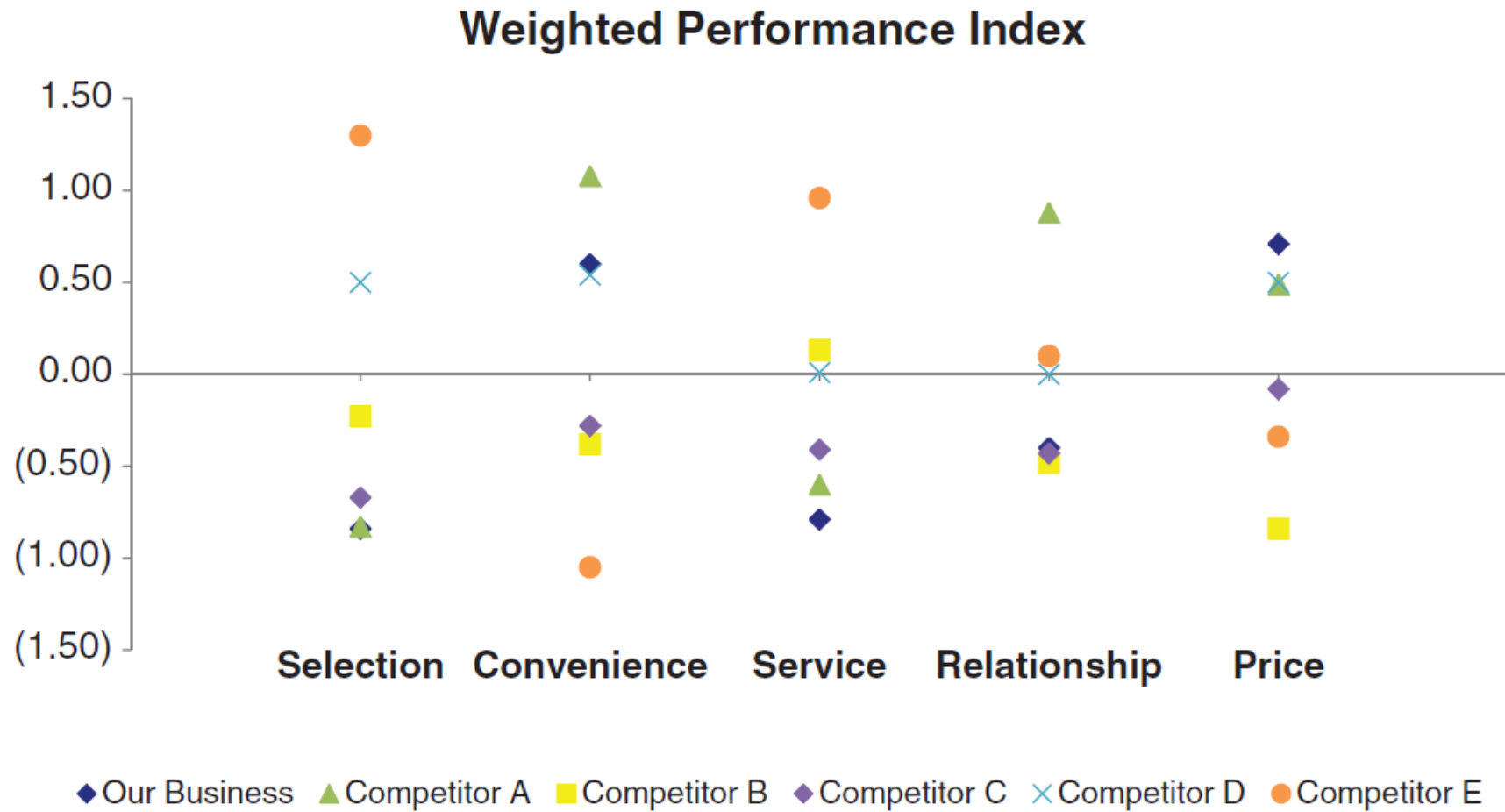
### Top 5 drugs: country-level sales rank

RANK	1	2	3	4	5+
------	---	---	---	---	----

#### COUNTRY | DRUG

	A	B	C	D	E
Australia	1	2	3	6	7
Brazil	1	3	4	5	6
Canada	2	3	6	12	8
China	1	2	8	4	7
France	3	2	4	8	10
Germany	3	1	6	5	4
India	4	1	8	10	5
Italy	2	4	10	9	8
Mexico	1	5	4	6	3
Russia	4	3	7	9	12
Spain	2	3	4	5	11
Turkey	7	2	3	4	8
United Kingdom	1	2	3	6	7
United States	1	2	4	3	5

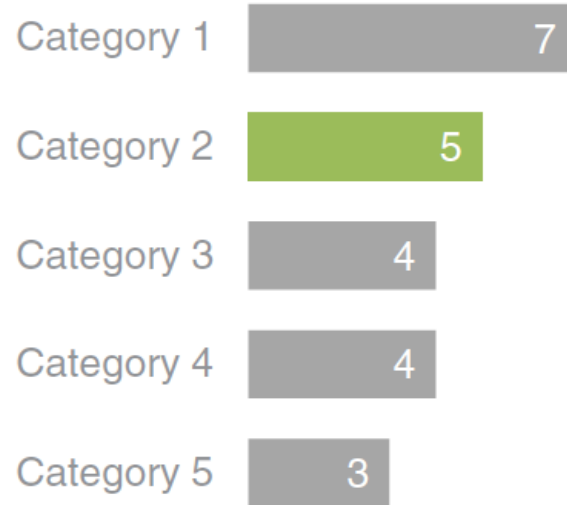
# Non-strategic use of contrast



# Color options with brand color

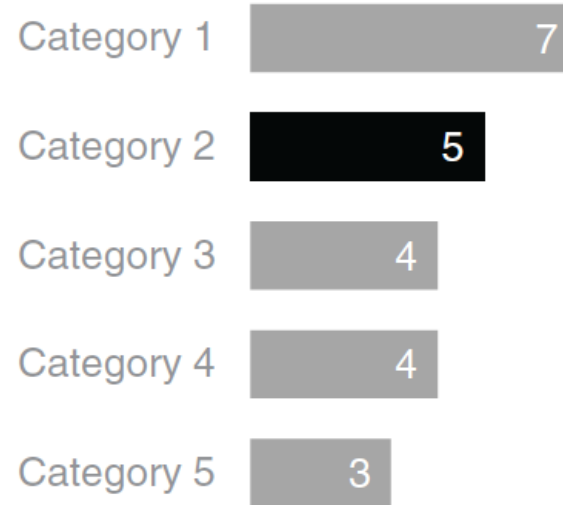
Brand colors: to leverage or not to leverage?

## Leverage **brand color**



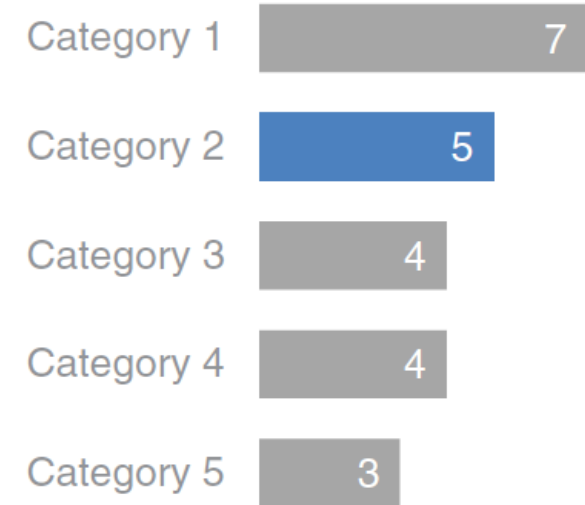
*ClientLogo*

## Draw attention with **black**



*ClientLogo*

## Use **complementary color**

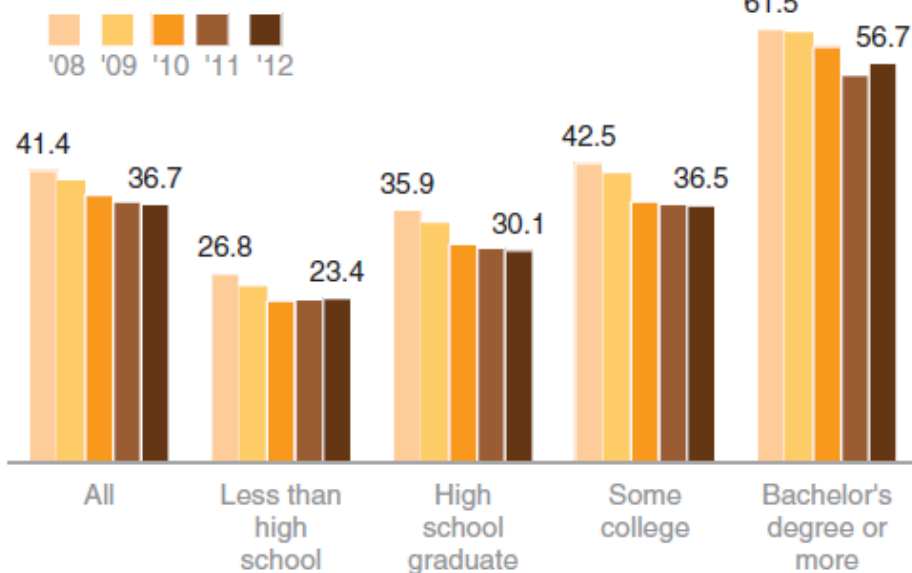


*ClientLogo*

# Highlighting the Important Stuff & Eliminate Distractions

## New Marriage Rate by Education

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



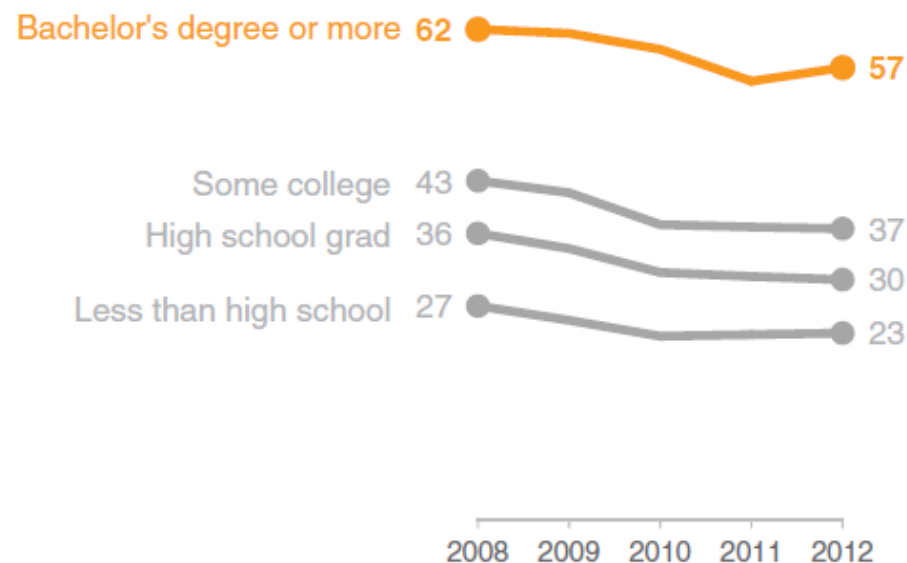
Note: Marriage eligible includes the newly married plus those widowed, divorced, or never married at interview.

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



# Visual Hierarchy of Information

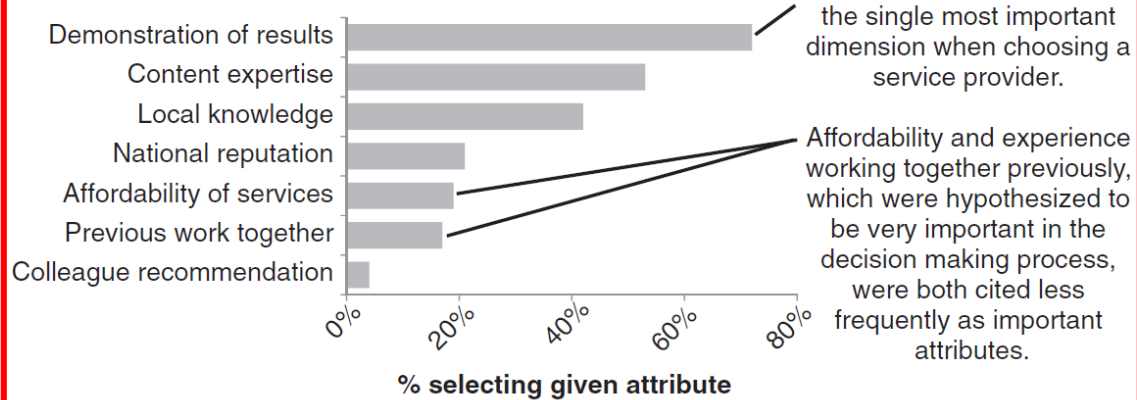
## Create Clear Visual Hierarchy of Information

### Issues vs. Satisfaction by Model



## Demonstrating effectiveness is most important consideration when selecting a provider

In general, what attributes are the most important to you in selecting a service provider?  
(Choose up to 3)



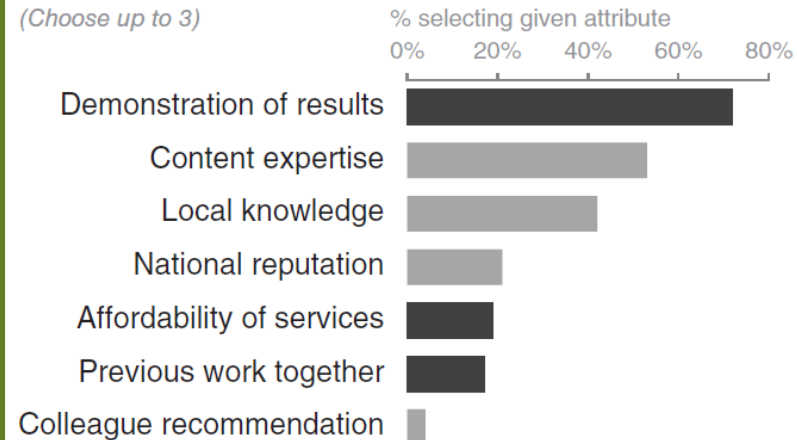
Data source: xyz; includes N number of survey respondents. Note that respondents were able to choose up to 3 options.

## Lack of Visual Order vs Improvised with Visual Order

### Demonstrating effectiveness is most important consideration when selecting a provider

In general, what attributes are the most important to you in selecting a service provider?

(Choose up to 3)



Survey shows that **demonstration of results** is the single most important dimension when choosing a service provider.

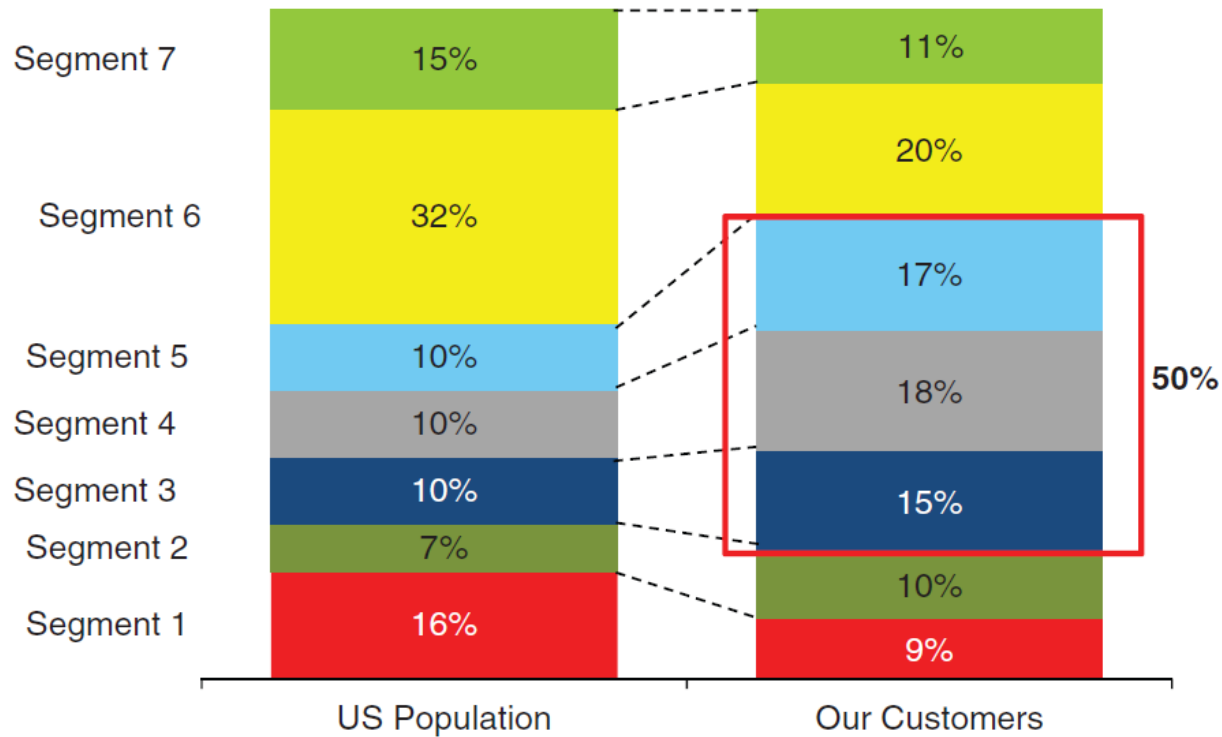
**Affordability** and **experience working together previously**, which were hypothesized to be very important in the decision making process, were both cited less frequently as important attributes.

Data source: xyz; includes N number of survey respondents. Note that respondents were able to choose up to 3 options.

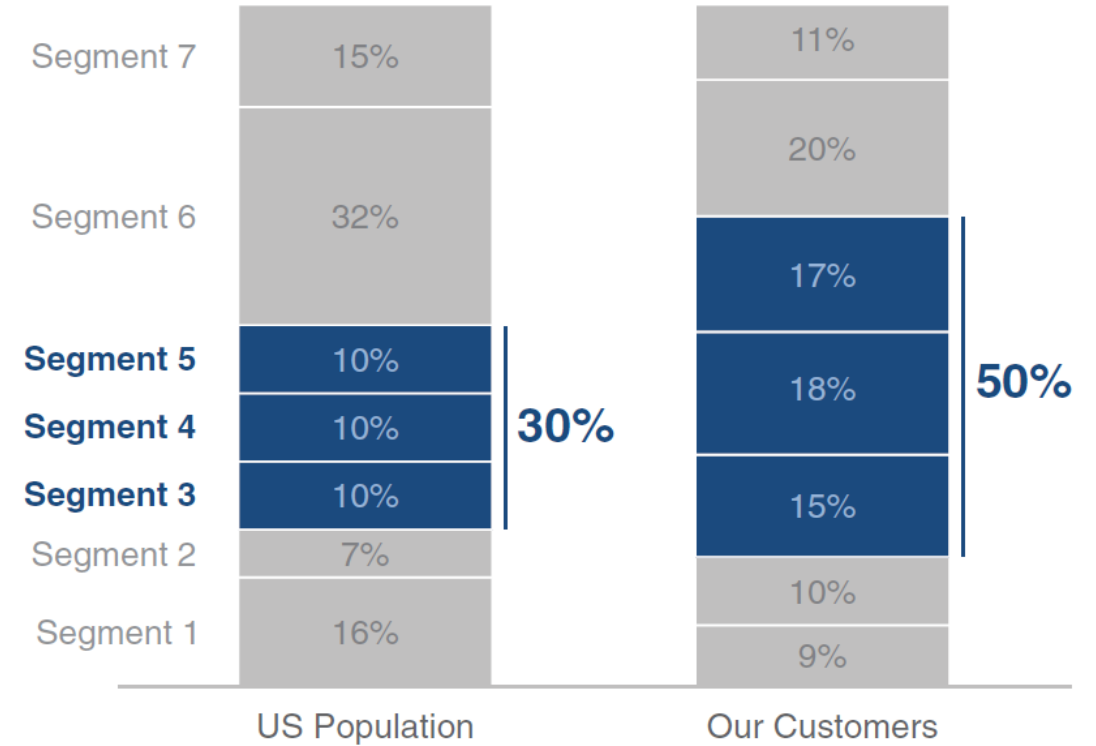
# Aesthetic Design

Sense of Visual Organisation: Alignment, Colour, White Space

Distribution by customer segment

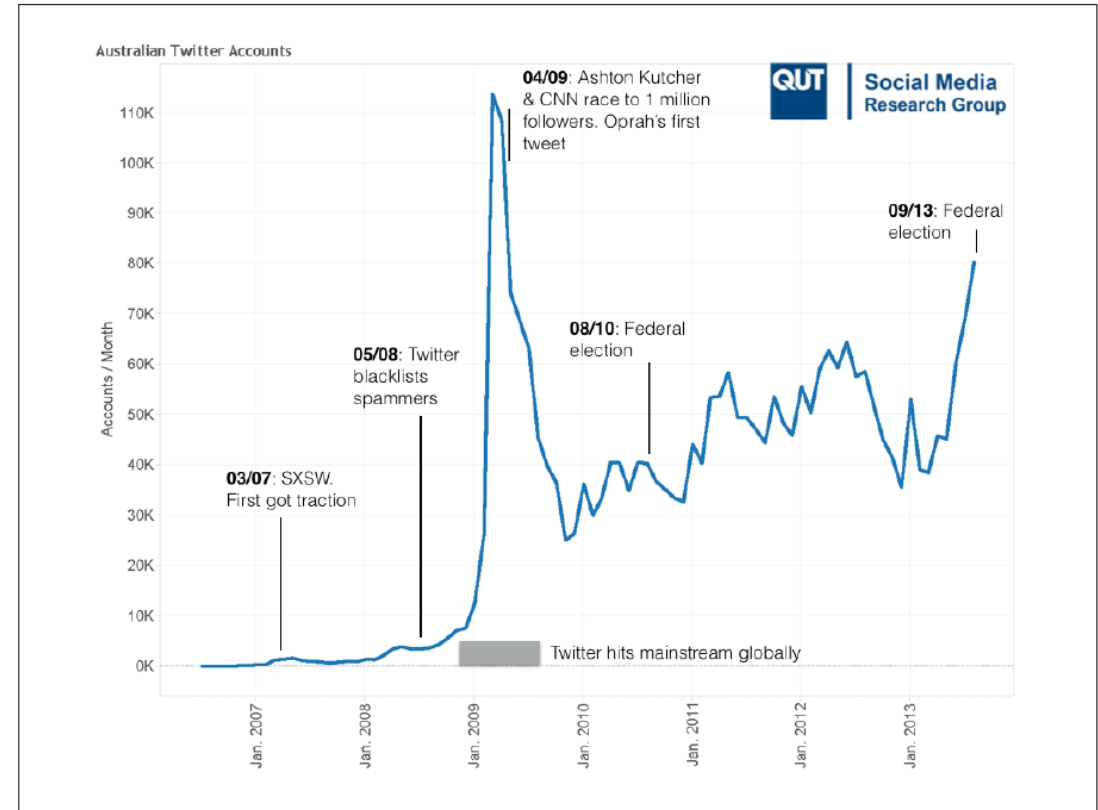
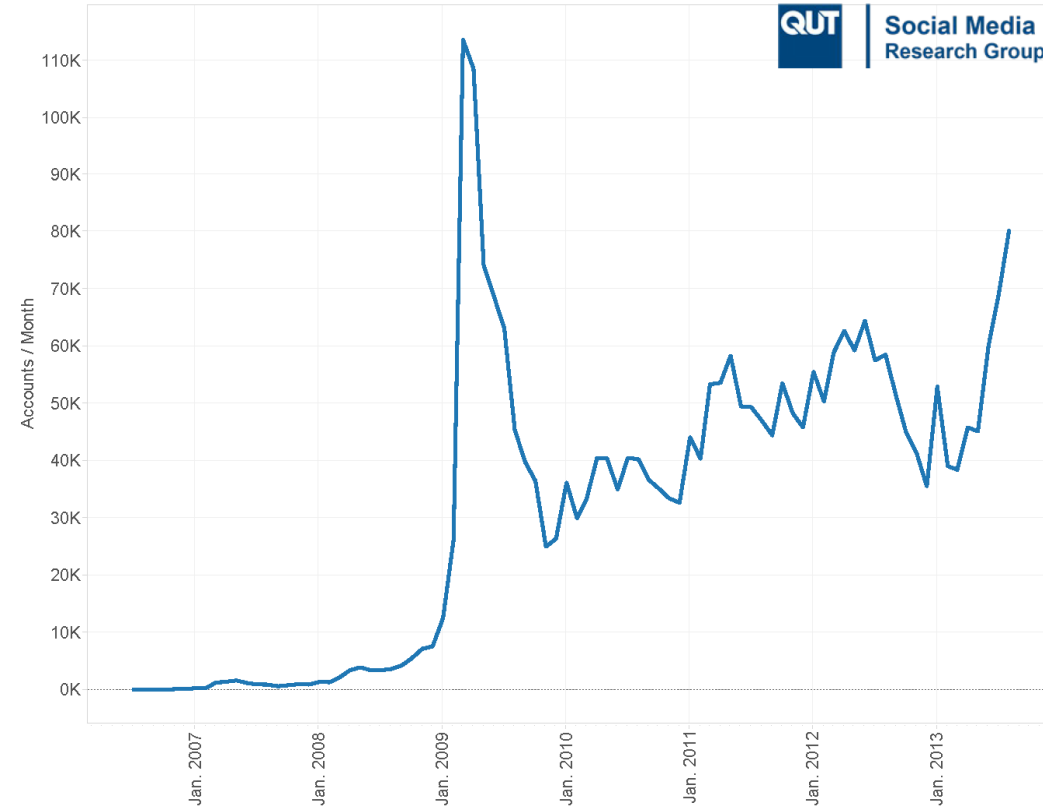


Distribution by customer segment



# Annotation

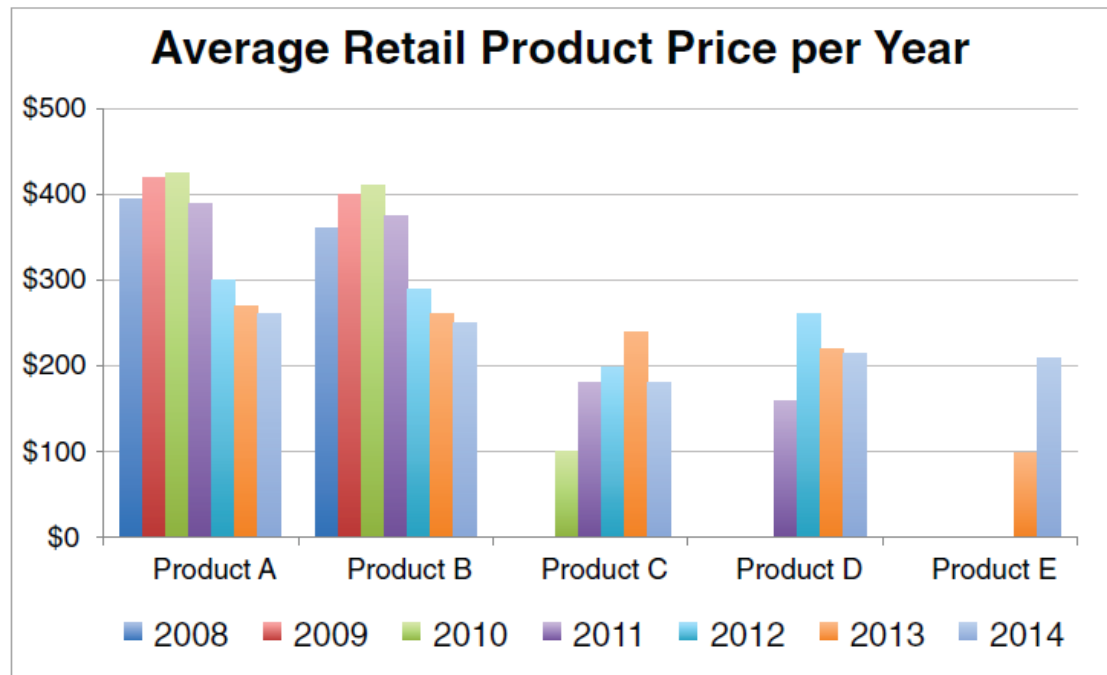
Australian Twitter Accounts



Before : Showing Data

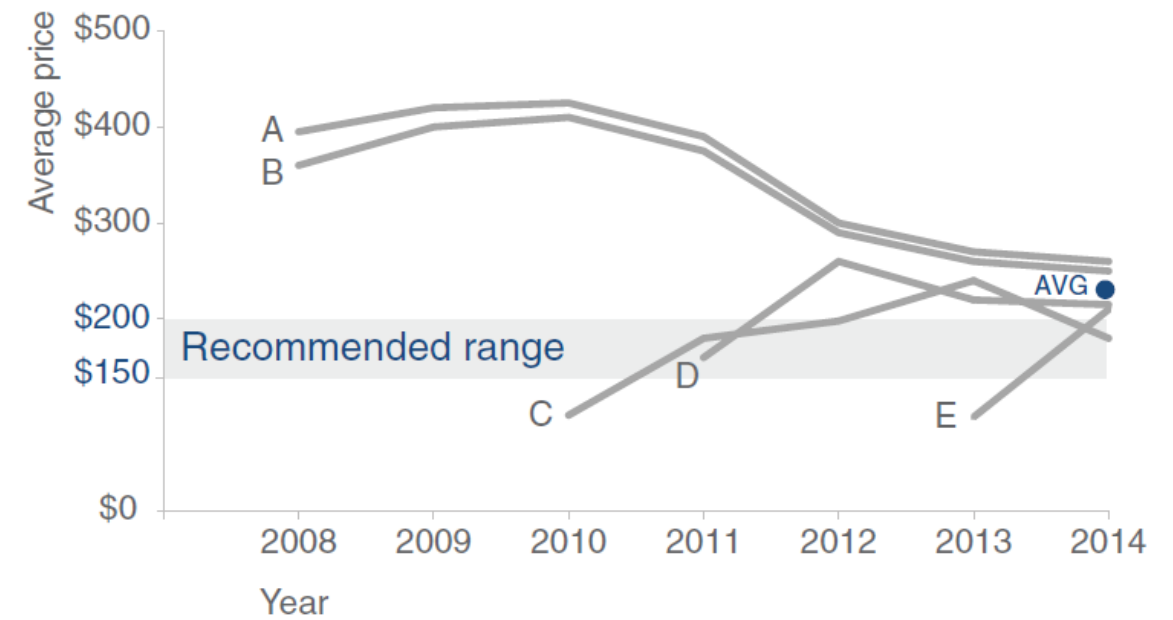
## After: **Storytelling with Data**

Price has declined for all products on the market since the launch of Product C in 2010



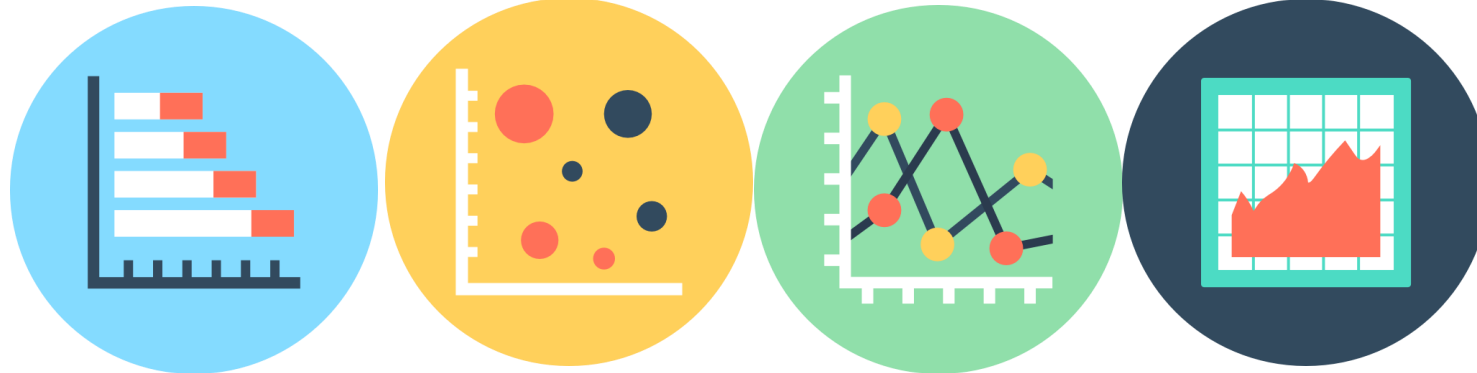
To be competitive, we recommend introducing our product *below the \$223 average price point* in the **\$150–\$200 range**

Retail price over time

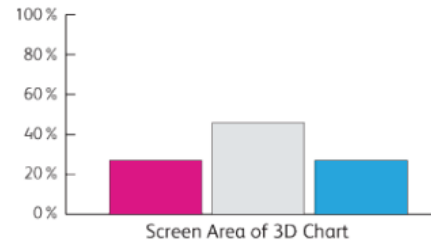
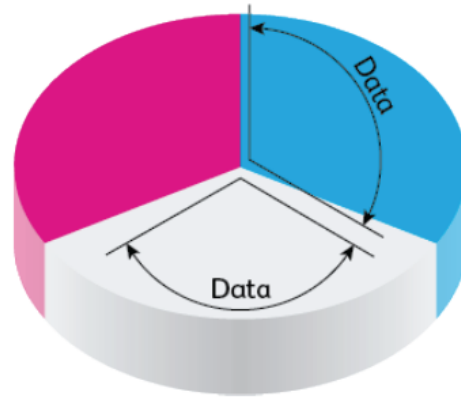
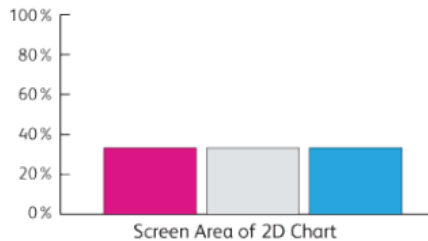
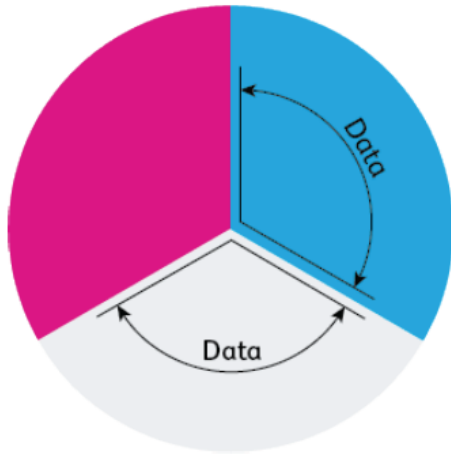




## CASE STUDY: Alternatives to pies



# Pie Chart?? Think Twice



- Some critics have come crashing down hard on pie charts.
- **Edward Tufte** says
  - “the only thing worse than a pie chart is several of them.”
- **Stephen Few** says
  - “save the pies for dessert”.
- **Cole Nussbaumer** says
  - “Death to pie charts.”

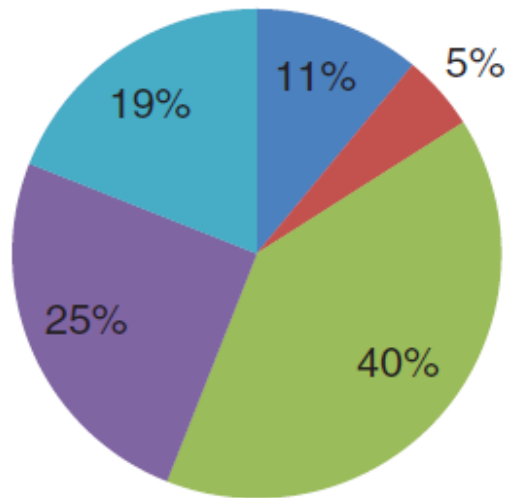
Before: Showing Data

# Alternatives to pies

## Survey Results

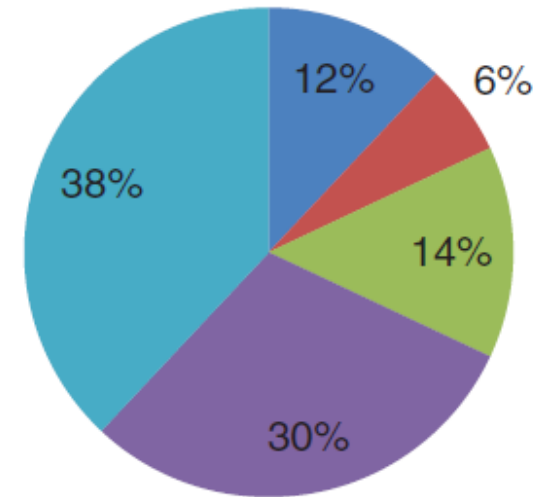
PRE: How do you feel about doing science?

■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited



POST: How do you feel about doing science?

■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited





## Alternative #1: show the numbers directly

Pilot program was a success

After the pilot program,

68%

**of kids expressed interest towards science,**  
compared to 44% going into the program.

Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).

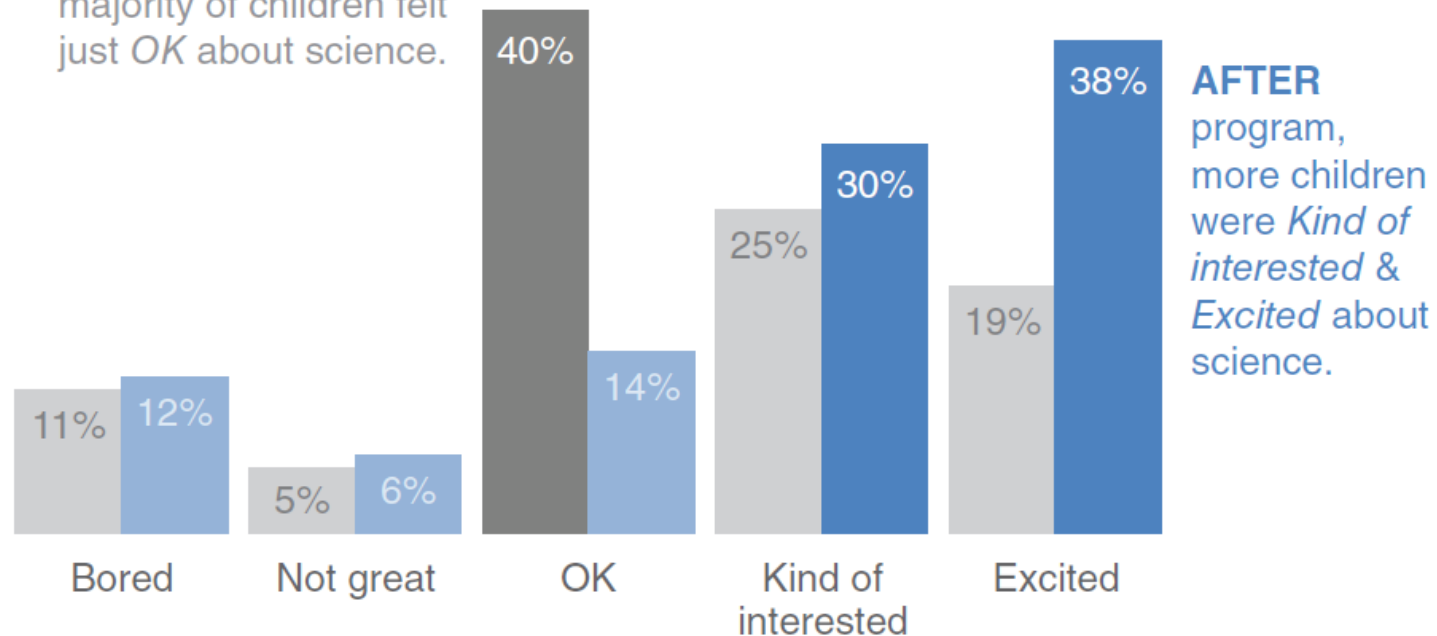
# After: Storytelling with Data

## Alternative #2: simple bar graph

### Pilot program was a success

How do you feel about science?

**BEFORE** program, the majority of children felt just *OK* about science.

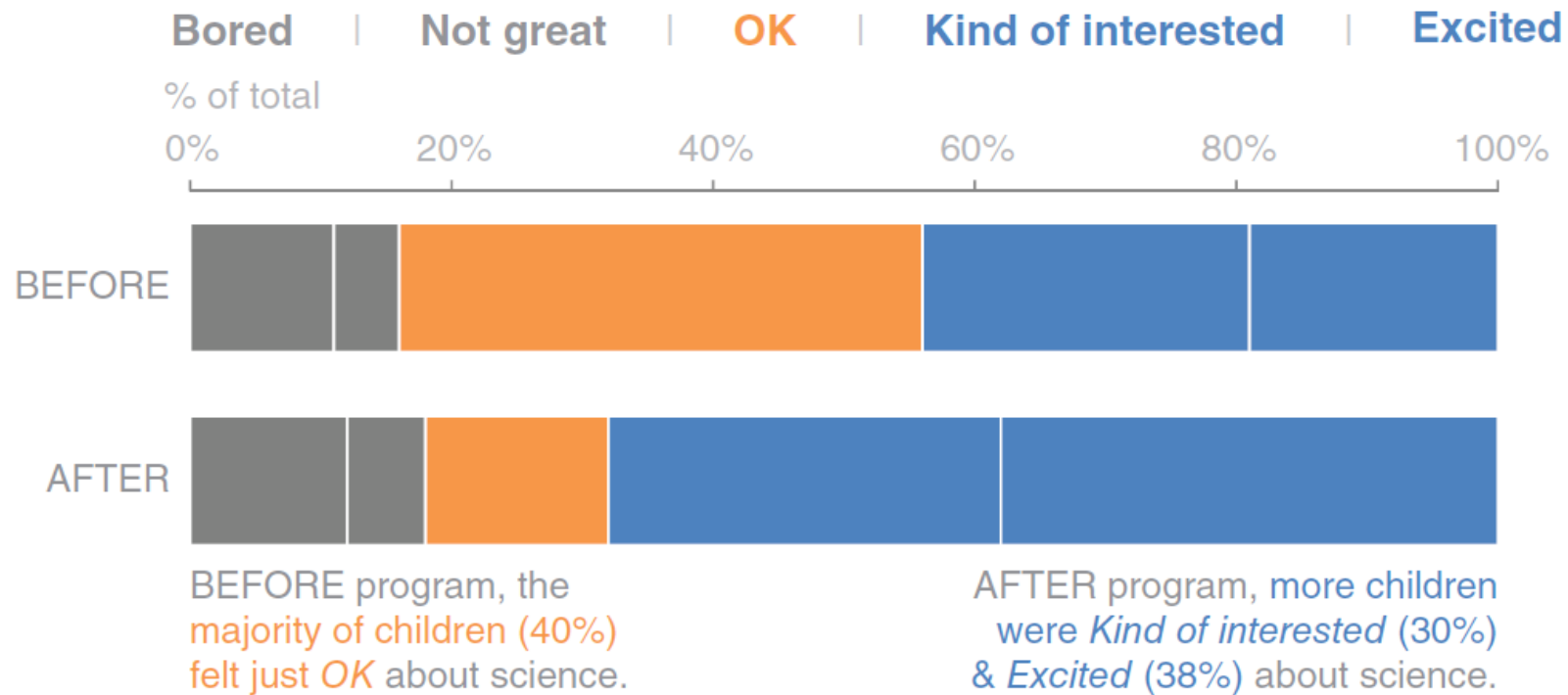


Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).

## Alternative #3: 100% stacked horizontal bar graph

### Pilot program was a success

How do you feel about science?



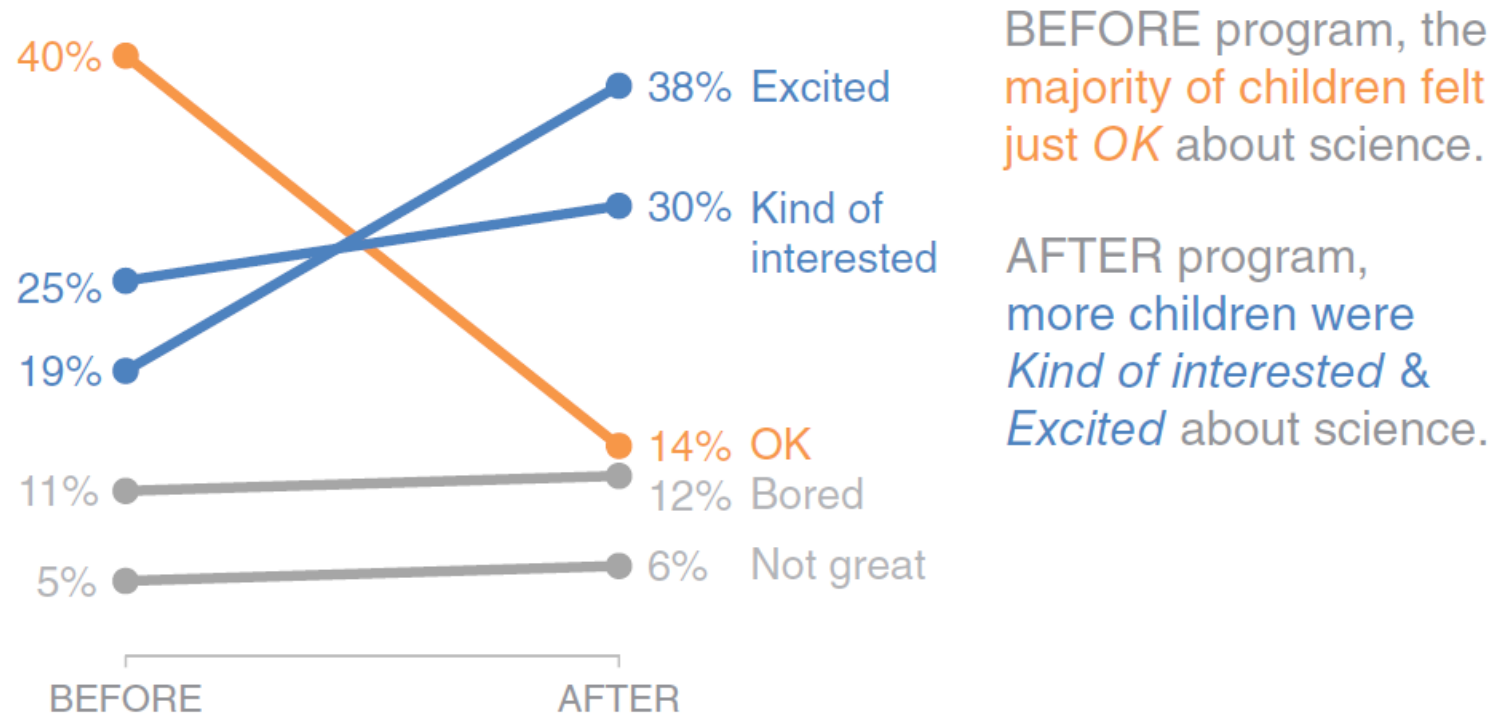
Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).

# After: Storytelling with Data

## Alternative #4: slopegraph

### Pilot program was a success

How do you feel about science?



Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).

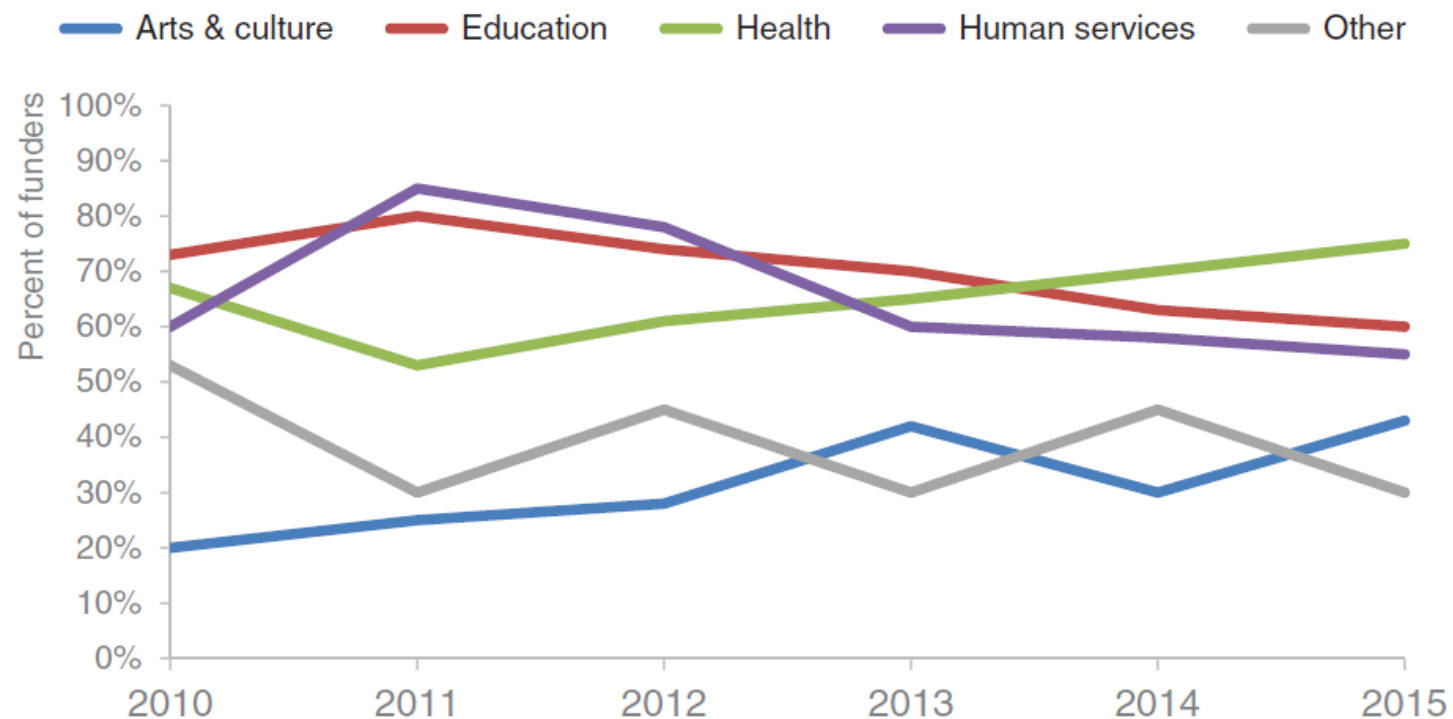
# CASE STUDY:

## Strategies for avoiding the spaghetti graph



# Spaghetti graph

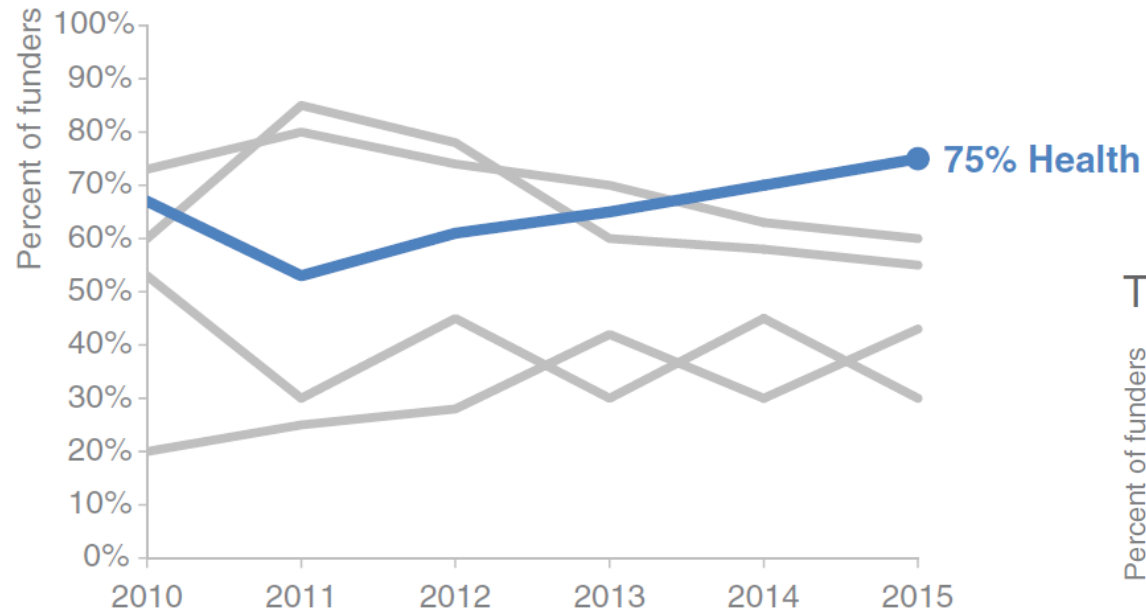
## Types of non-profits supported by area funders



Data is self-reported by funders; percents sum to greater than 100 because respondents can make multiple selections.

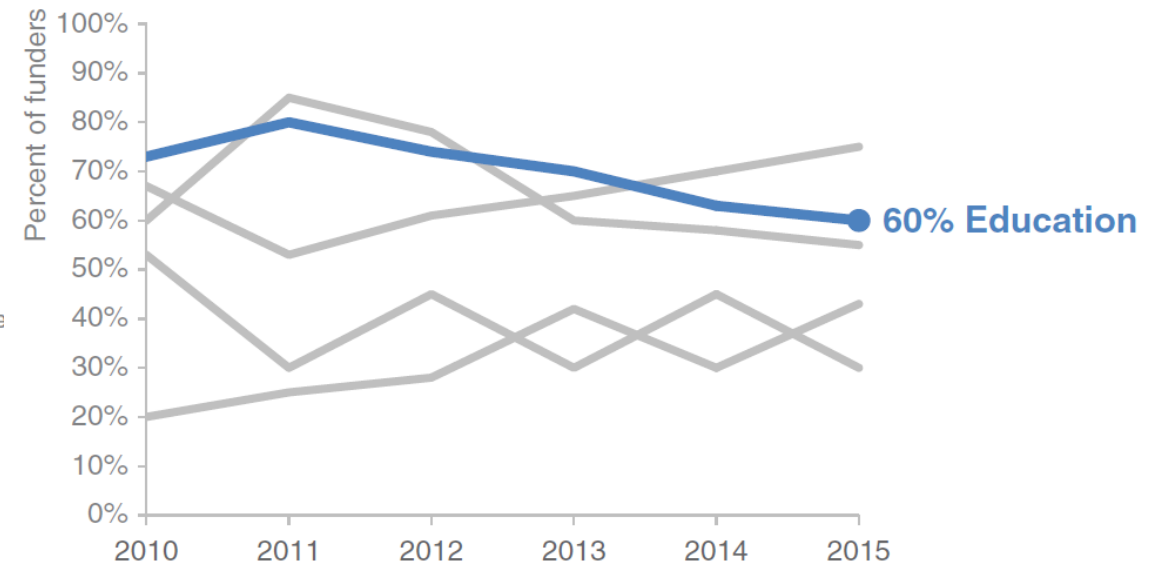
# Emphasize a single line at a Time

Types of non-profits supported by area funders



Data is self-reported by funders; percents sum to greater than 100 because respondents can make multiple

Types of non-profits supported by area funders

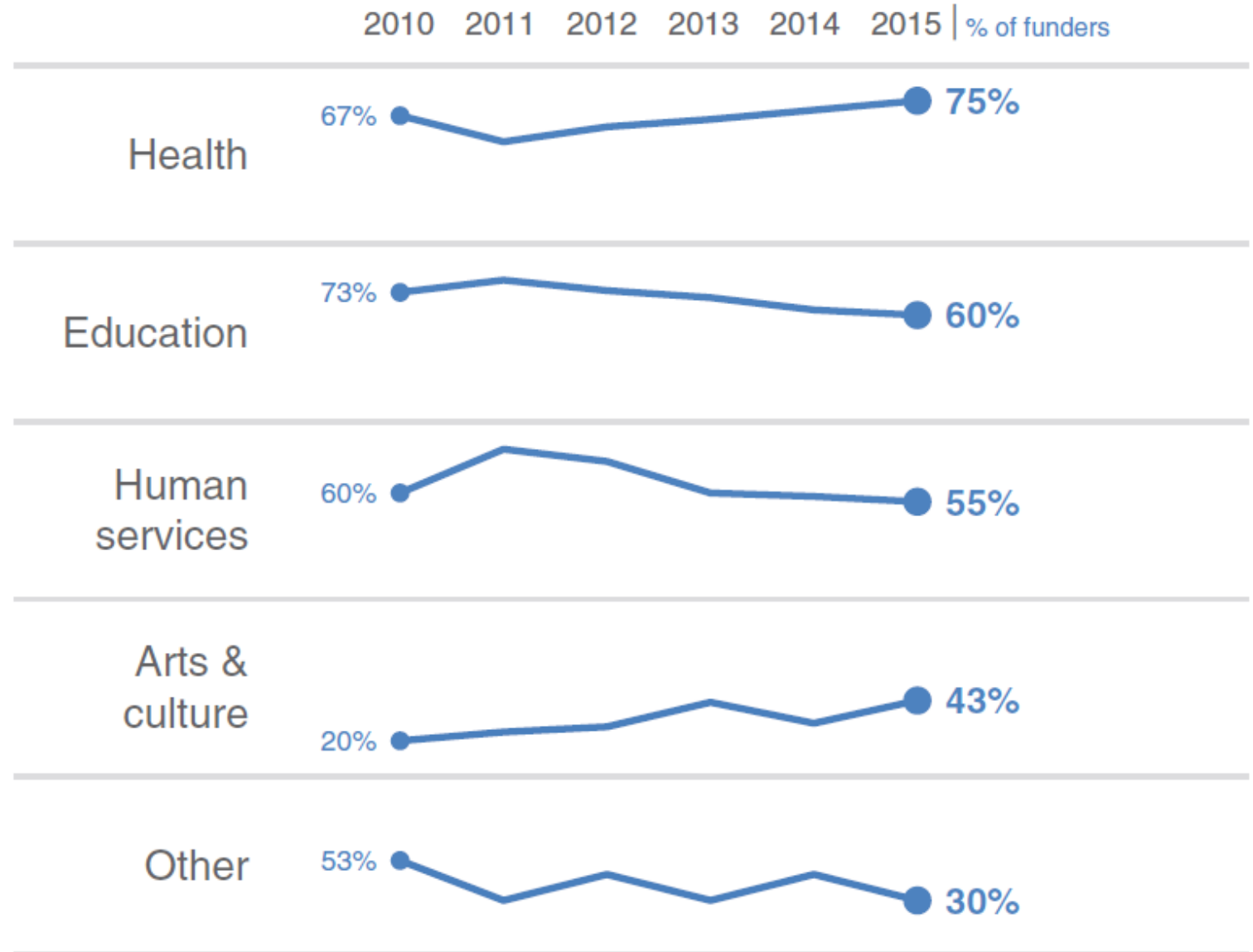


Data is self-reported by funders; percents sum to greater than 100 because respondents can make multiple selections.

Separate  
spatially

Pull the lines apart  
vertically

## Types of non-profits supported by area funders

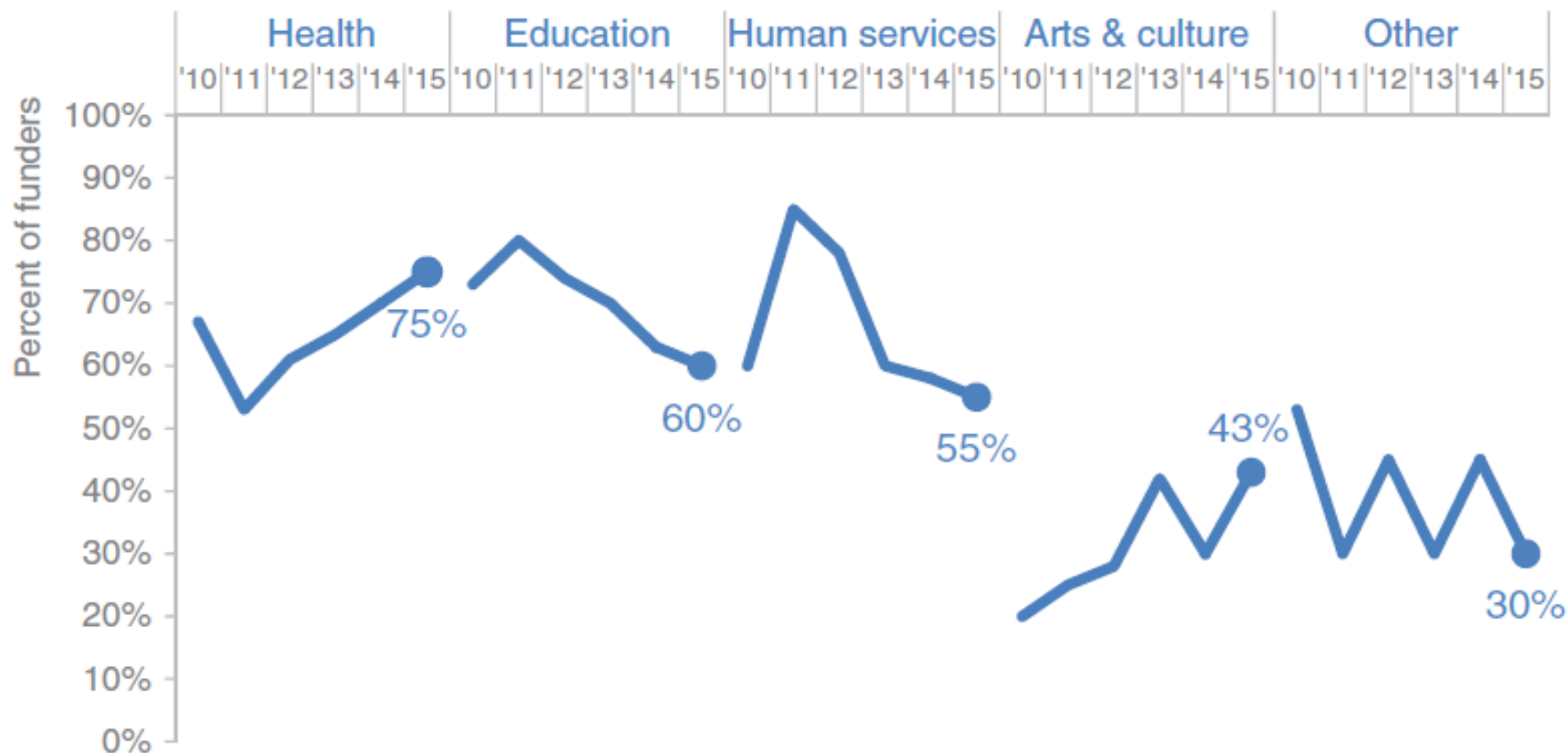


Data is self-reported by funders; percents sum to greater than 100 because respondents can make multiple selections.



# Pull the lines apart horizontally

## Types of non-profits supported by area funders

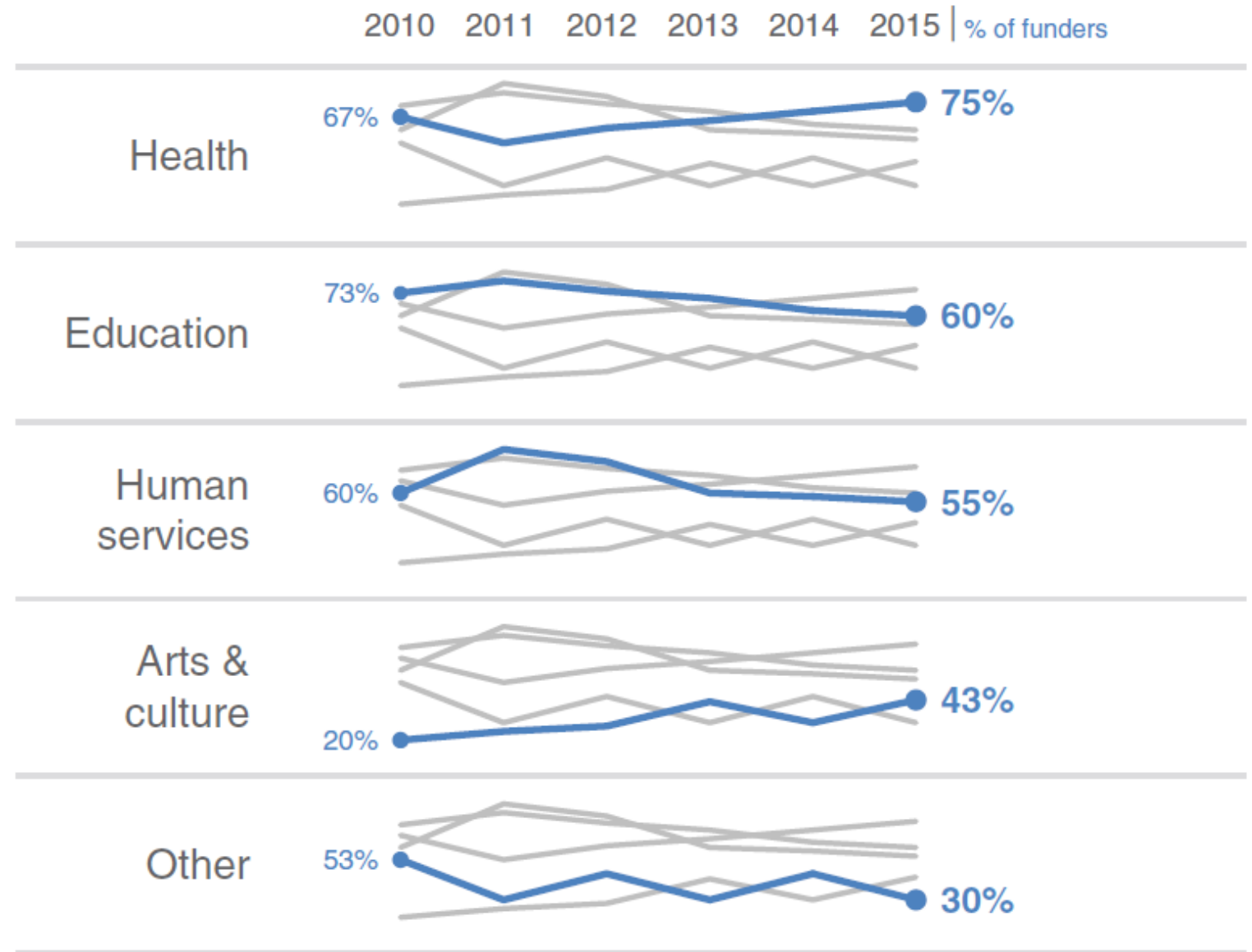


Data is self-reported by funders; percents sum to greater than 100 because respondents can make multiple selections.

# Types of non-profits supported by area funders

Combined approach

Combined approach, with vertical separation

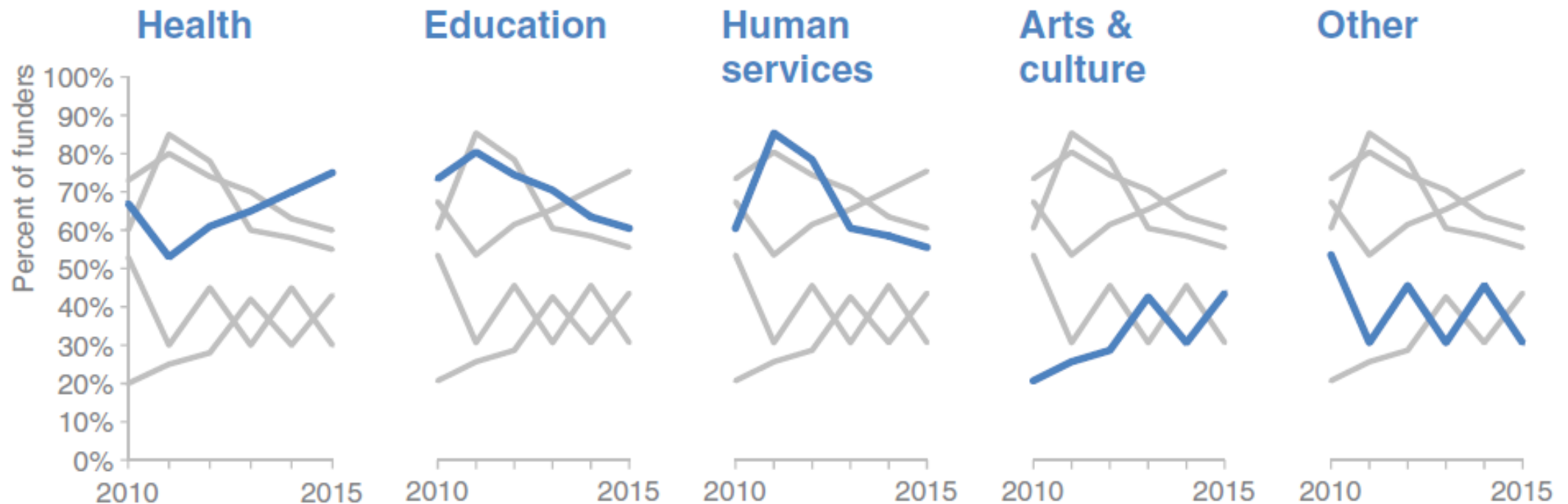


Data is self-reported by funders; percents sum to greater than 100 because respondents can make multiple selections.

# Combined approach

Combined approach, with horizontal separation

Types of non-profits supported by area funders



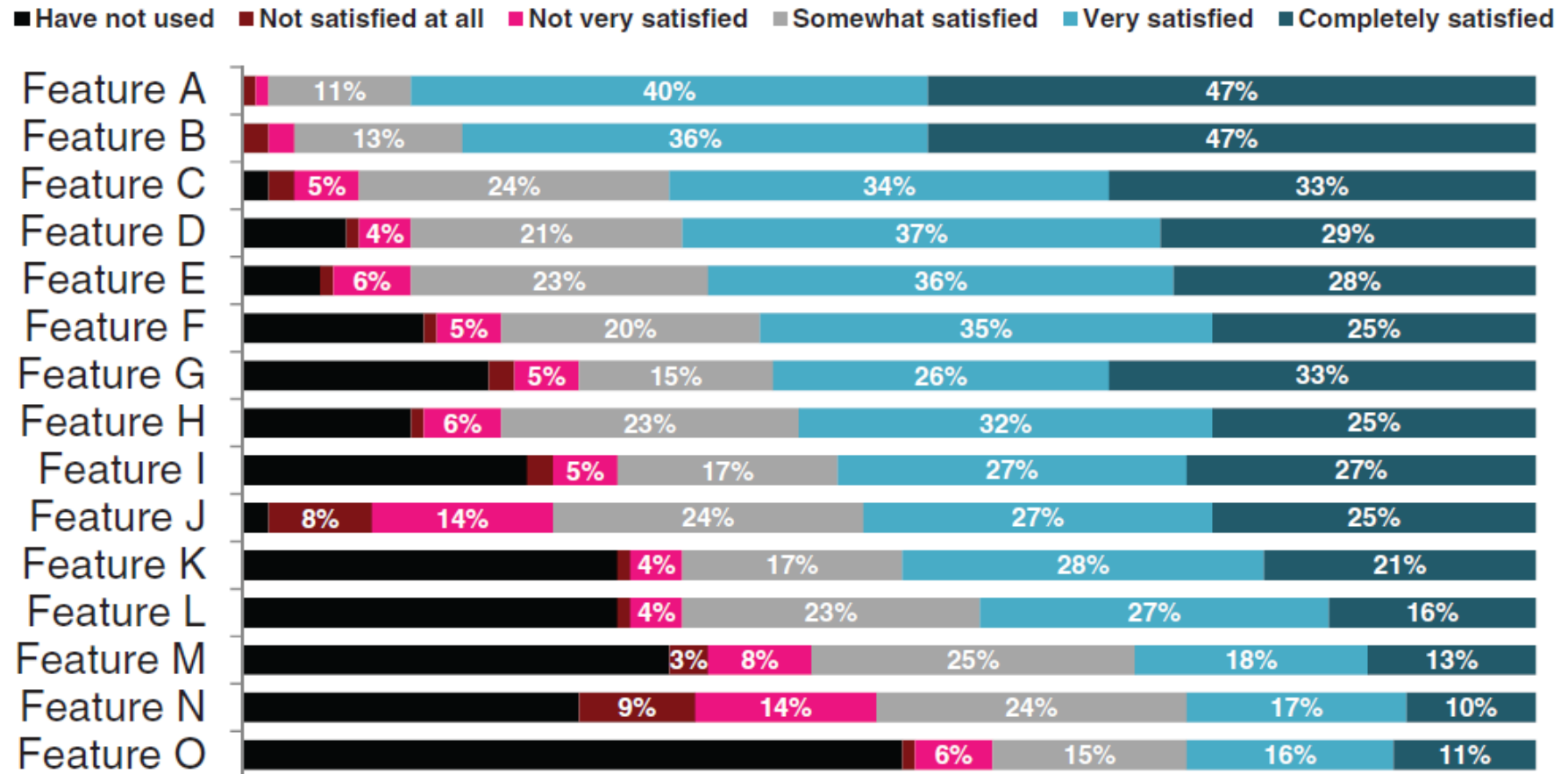
Data is self-reported by funders; percents sum to greater than 100 because respondents can make multiple selections.

# CASE STUDY: Logic in order



# User satisfaction, original graph

How satisfied have you been with each of these features?

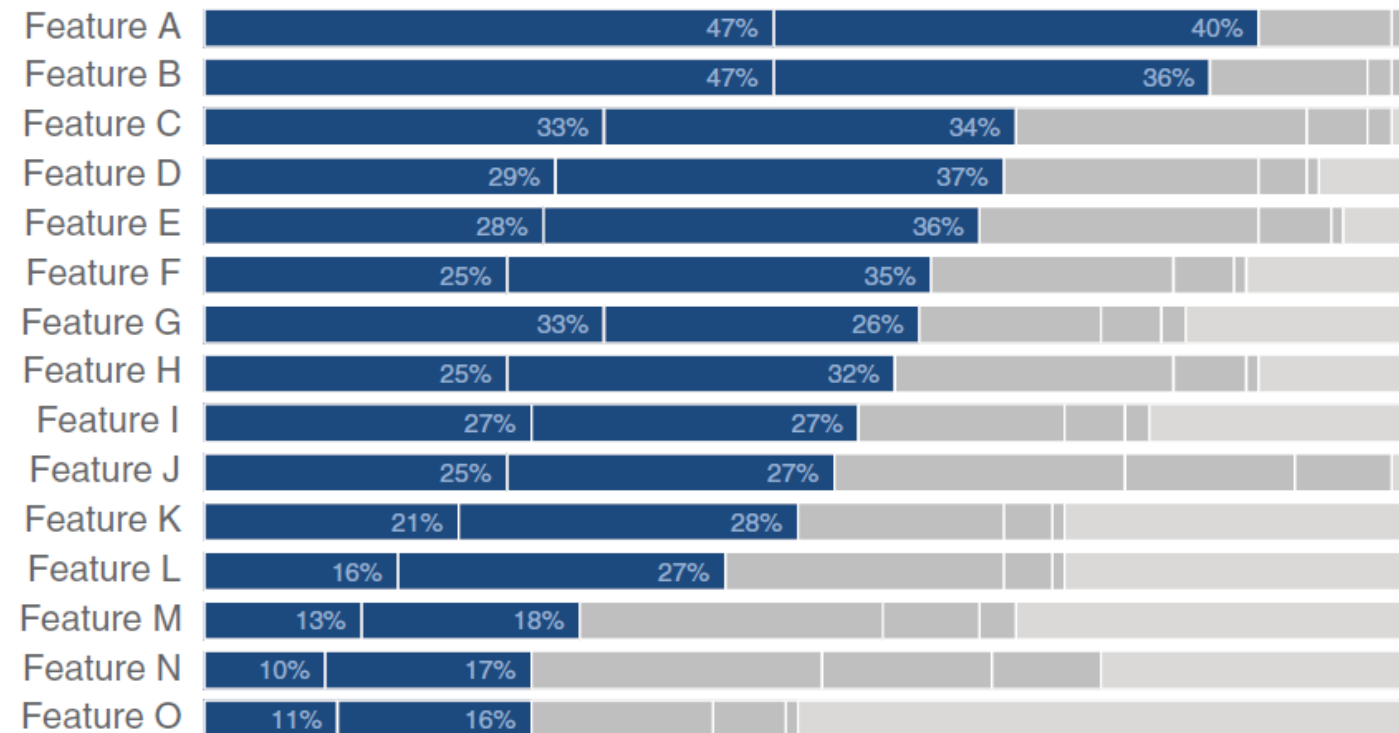


# Highlight the positive story

## Features A & B top user satisfaction

### Product X User Satisfaction: **Features**

■ Completely satisfied ■ Very satisfied ■ Somewhat satisfied ■ Not very satisfied ■ Not satisfied at all ■ Have not used



Responses based on survey question "How satisfied have you been with each of these features?".

Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent?

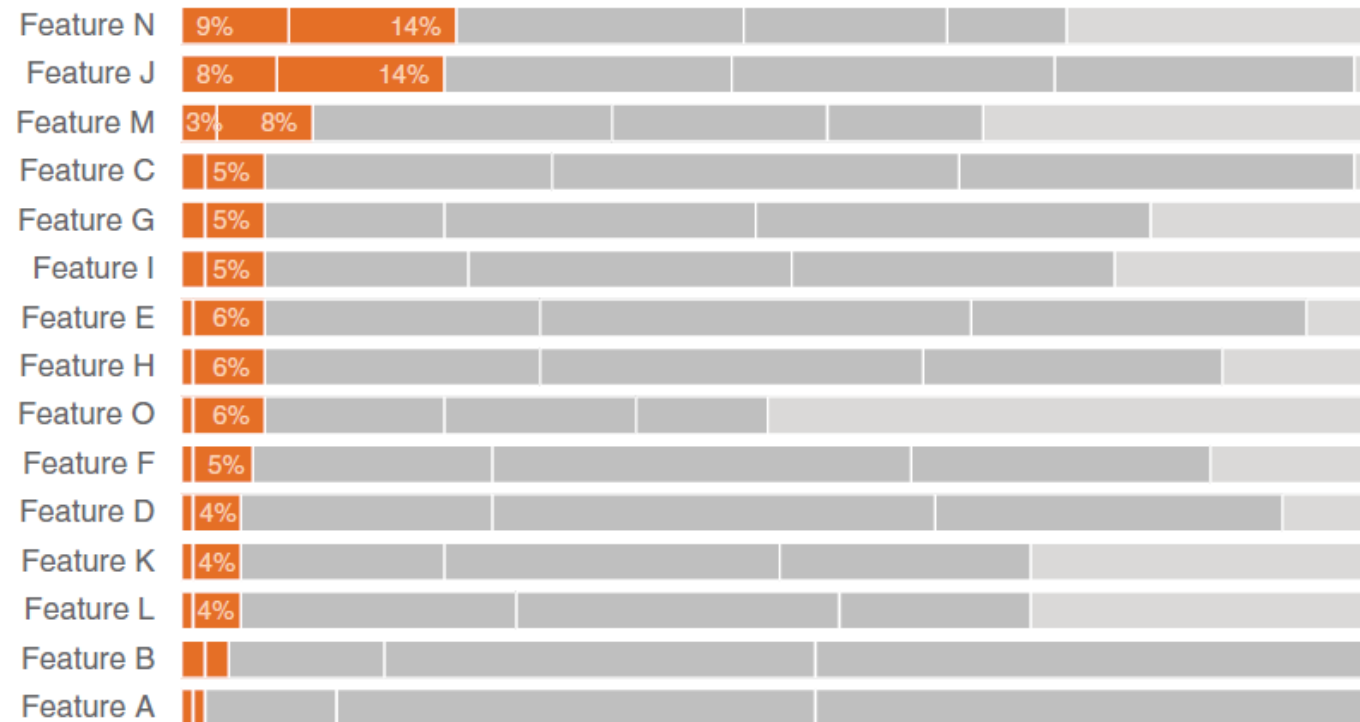
Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?

# Highlight dissatisfaction

## Users least satisfied with Features N & J

### Product X User Satisfaction: **Features**

■ Not satisfied at all ■ Not very satisfied ■ Somewhat satisfied ■ Very satisfied ■ Completely satisfied ■ Have not used



Responses based on survey question "How satisfied have you been with each of these features?".

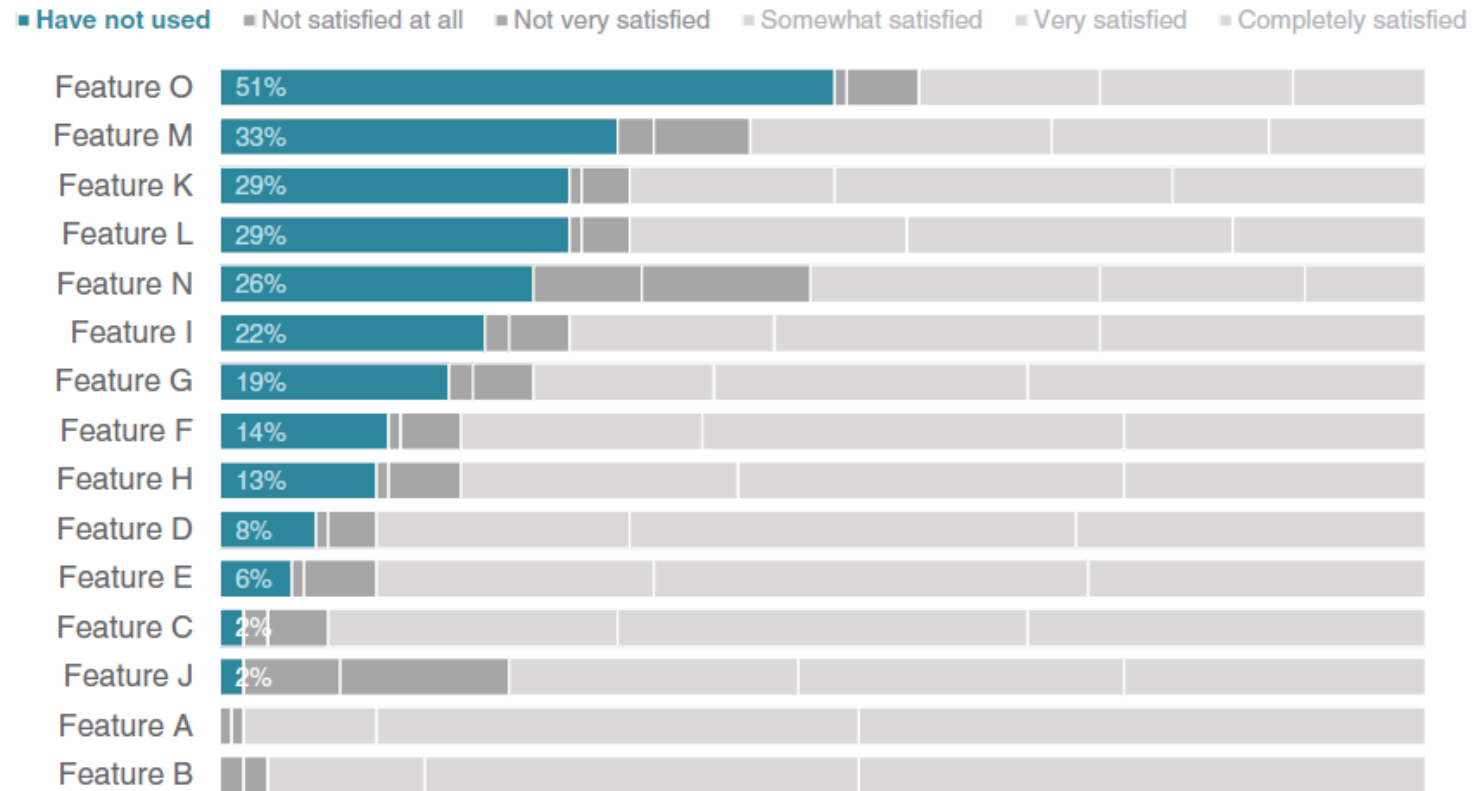
Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent?

Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?

# Focus on unused features

## Feature O is least used

### Product X User Satisfaction: **Features**



Responses based on survey question "How satisfied have you been with each of these features?".

Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent?

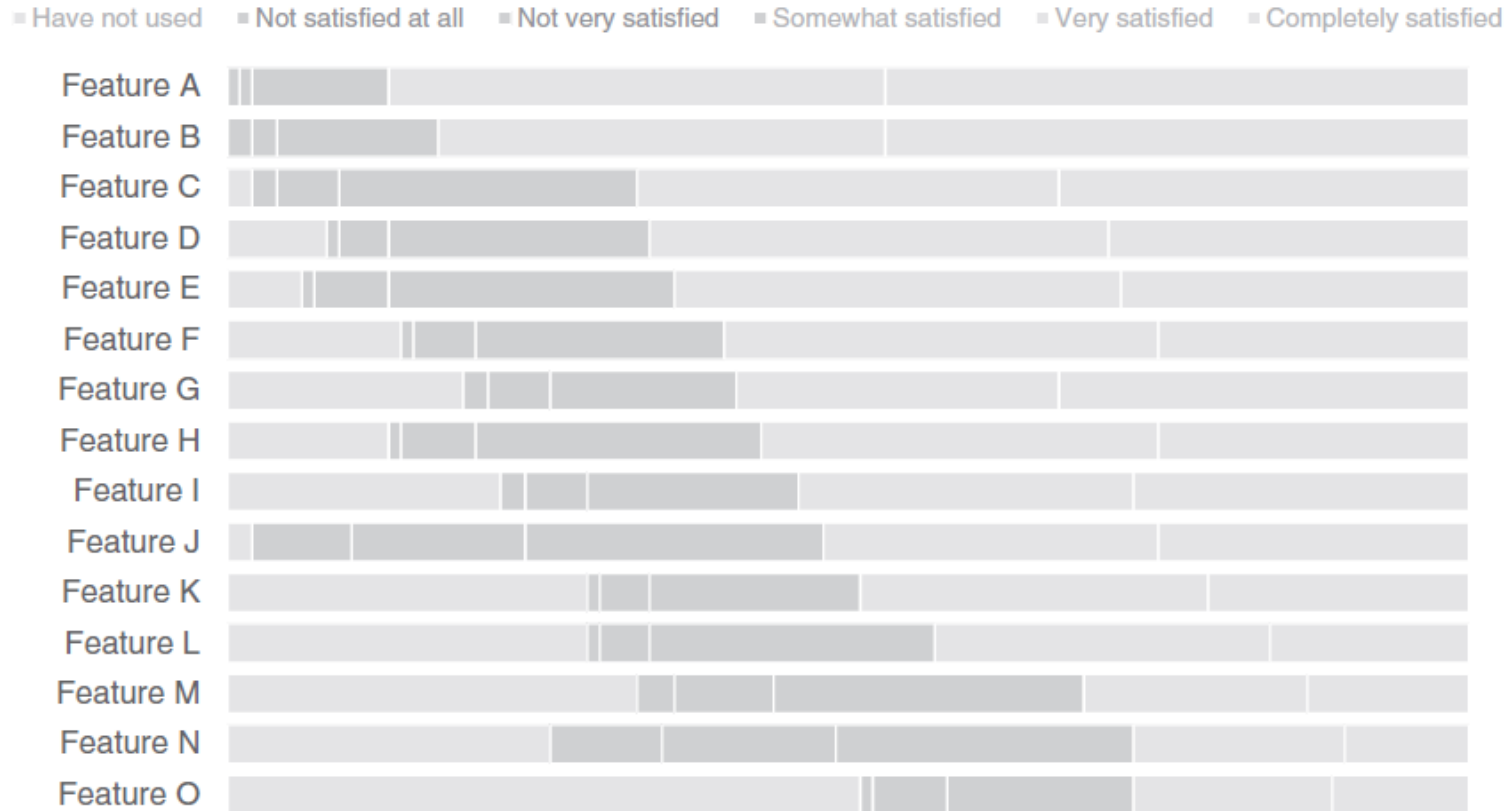
Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?



# Set up the graph

## User satisfaction varies greatly by feature

### Product X User Satisfaction: **Features**



Responses based on survey question "How satisfied have you been with each of these features?".

Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent?

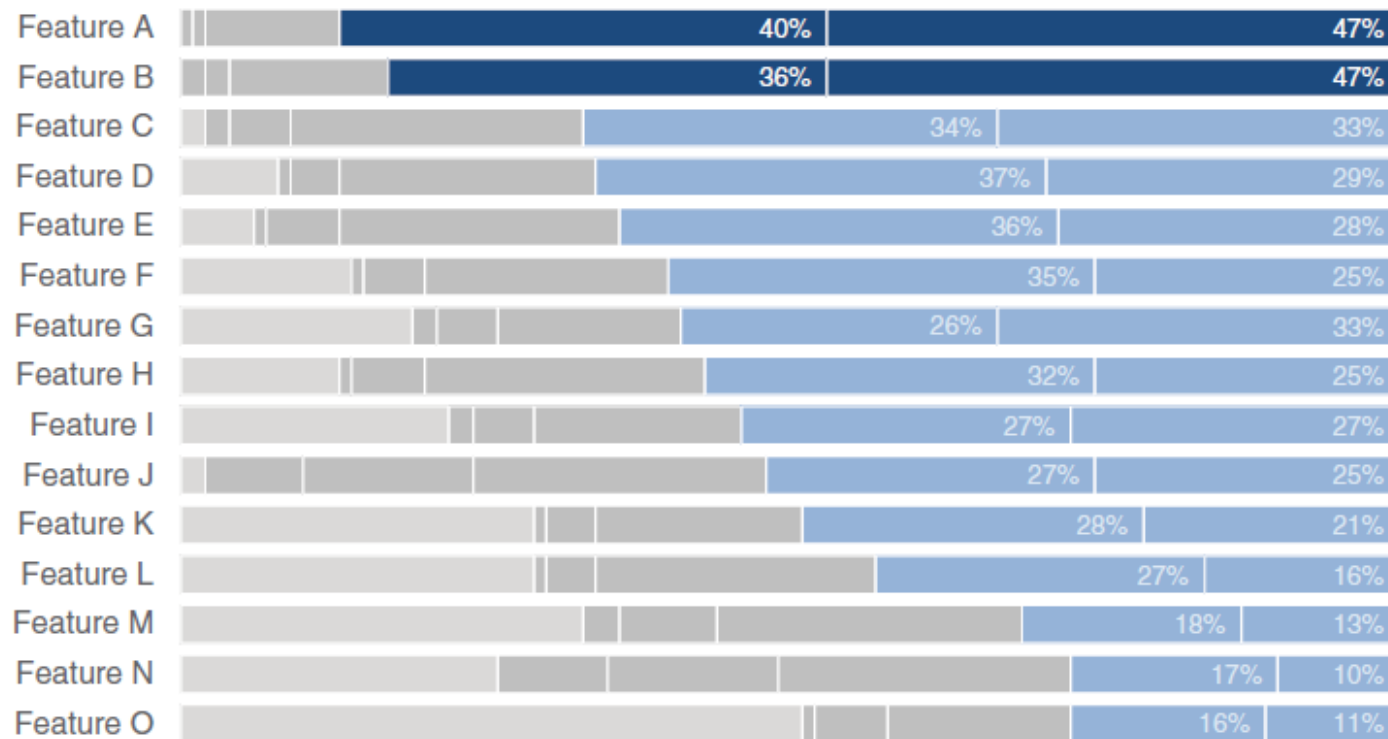
Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?

# Satisfaction

## User satisfaction varies greatly by feature

### Product X User Satisfaction: **Features**

■ Have not used ■ Not satisfied at all ■ Not very satisfied ■ Somewhat satisfied ■ **Very satisfied** ■ **Completely satisfied**



Features A and B continue to top user satisfaction

Responses based on survey question "How satisfied have you been with each of these features?".

Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent?

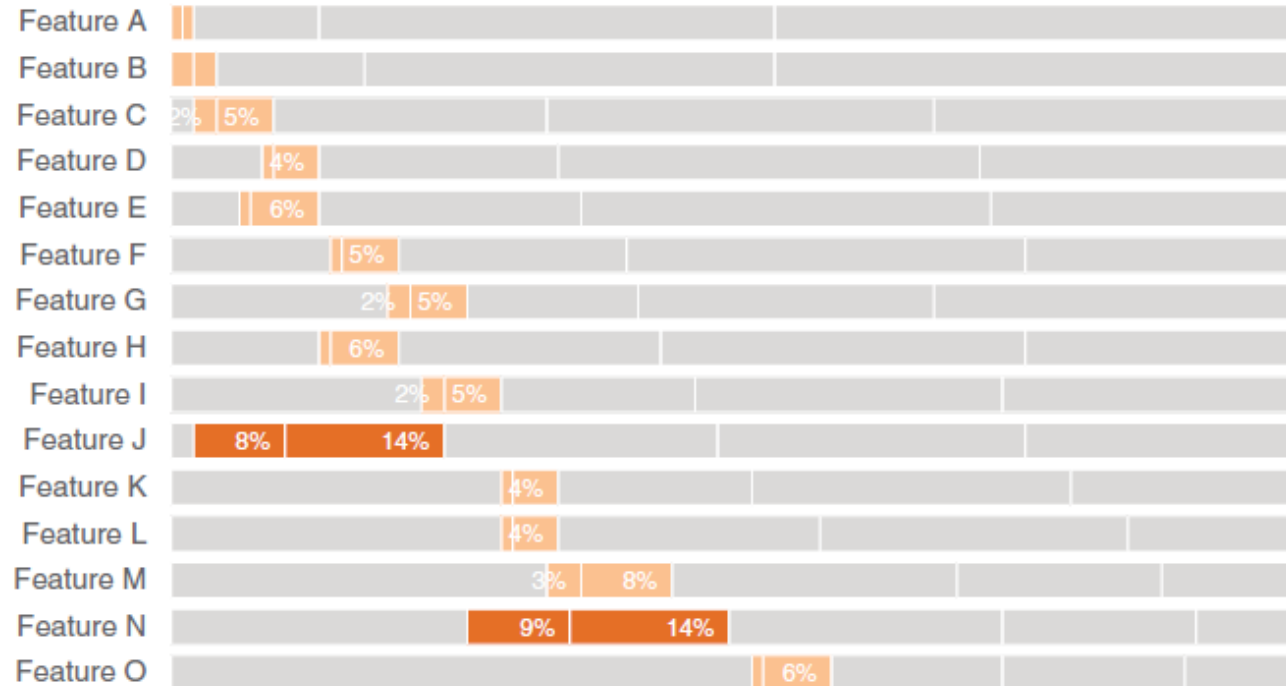
Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?

# Dissatisfaction

## User satisfaction varies greatly by feature

### Product X User Satisfaction: **Features**

■ Have not used ■ **Not satisfied at all** ■ **Not very satisfied** ■ Somewhat satisfied ■ Very satisfied ■ Completely satisfied



Users are least satisfied with Features J and N; what improvements can we make here for a better user experience?

Responses based on survey question "How satisfied have you been with each of these features?".

Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent?

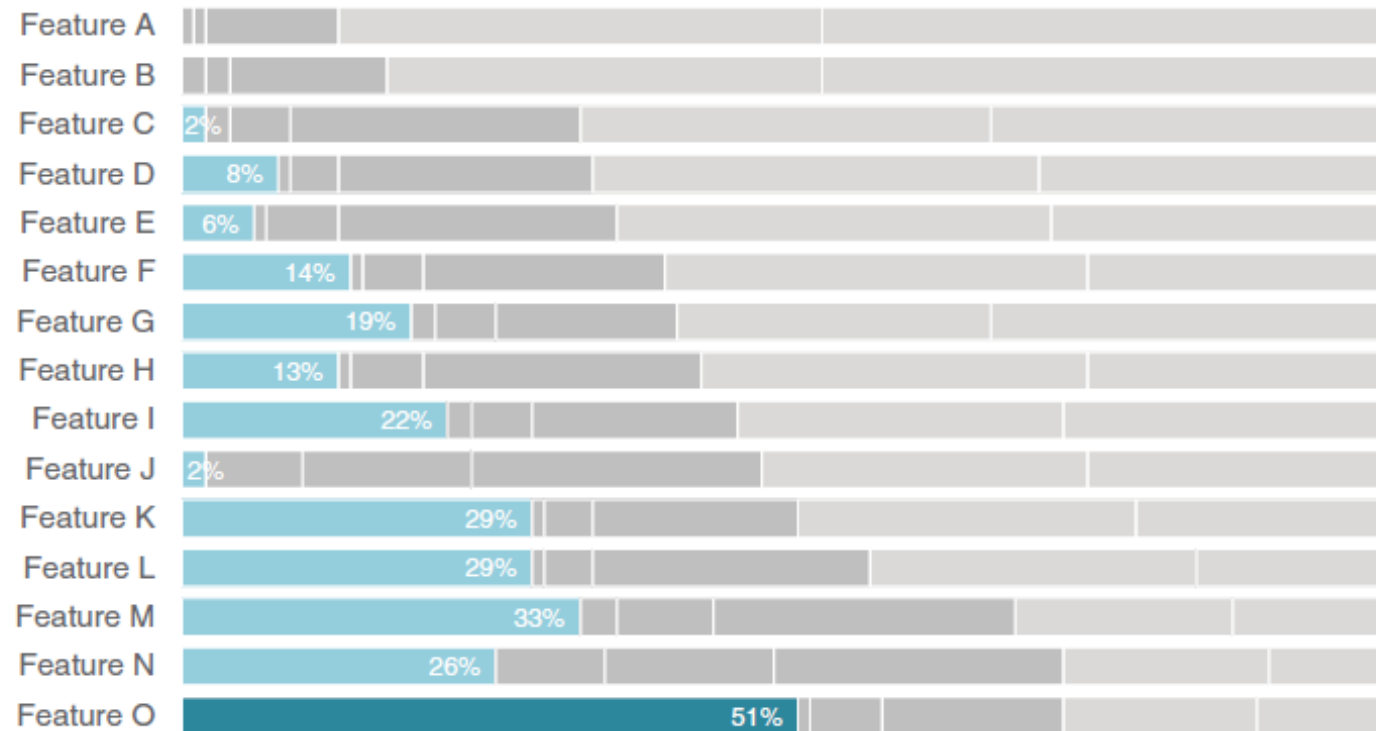
Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?

# Unused features

## User satisfaction varies greatly by feature

### Product X User Satisfaction: **Features**

■ Have not used ■ Not satisfied at all ■ Not very satisfied ■ Somewhat satisfied ■ Very satisfied ■ Completely satisfied



Feature O is least used. What steps can we proactively take with existing users to increase utilization?

Responses based on survey question "How satisfied have you been with each of these features?".

Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent?

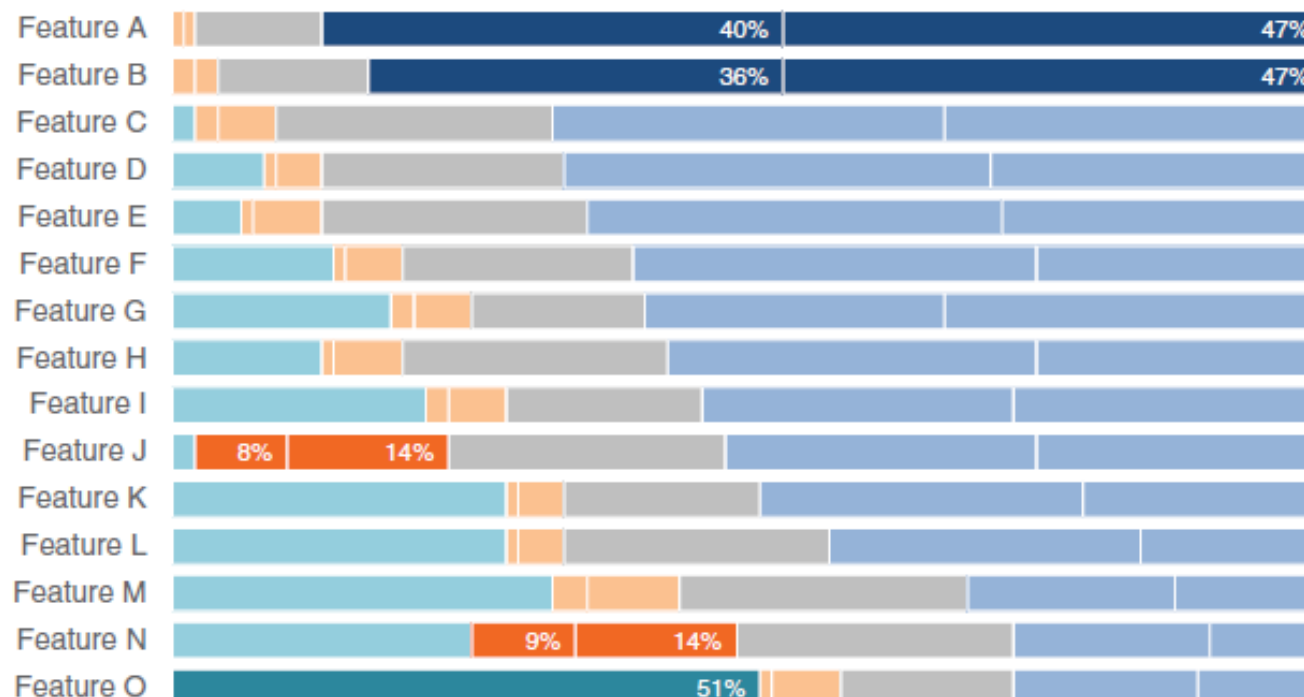
Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?

# Comprehensive visual

## User satisfaction varies greatly by feature

### Product X User Satisfaction: **Features**

■ Have not used ■ Not satisfied at all ■ Not very satisfied ■ Somewhat satisfied ■ Very satisfied ■ Completely satisfied



Features A and B continue to top user satisfaction

Users are least satisfied with Features J and N; what improvements can we make here for a better user experience?

Feature O is least used. What steps can we proactively take with existing users to increase utilization?

Responses based on survey question "How satisfied have you been with each of these features?".

Need more details here to help put this data into context: How many people completed survey? What proportion of users does this represent? Do those who completed survey look like the overall population, demographic-wise? When was the survey conducted?

## Approaching **FINISHING** Line

You know you've achieved perfection in design,  
NOT when you have nothing more to add,  
BUT when you have nothing more to take away.

-Antoine de Saint-Exupery

# Summary

- Tale = Data + Story
- Graph = Data + Visual
- Art = Visual + Story
- **Tale + Graph + Art = Storytelling**
- Storytelling with data instead of Showing Data

