

IT4023E

Data Visualization

Showing Rank and Magnitude

GROUP 11

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4. Dashboard insights

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Overview

Objectives & Input Data



Overview

Objectives & Input Data



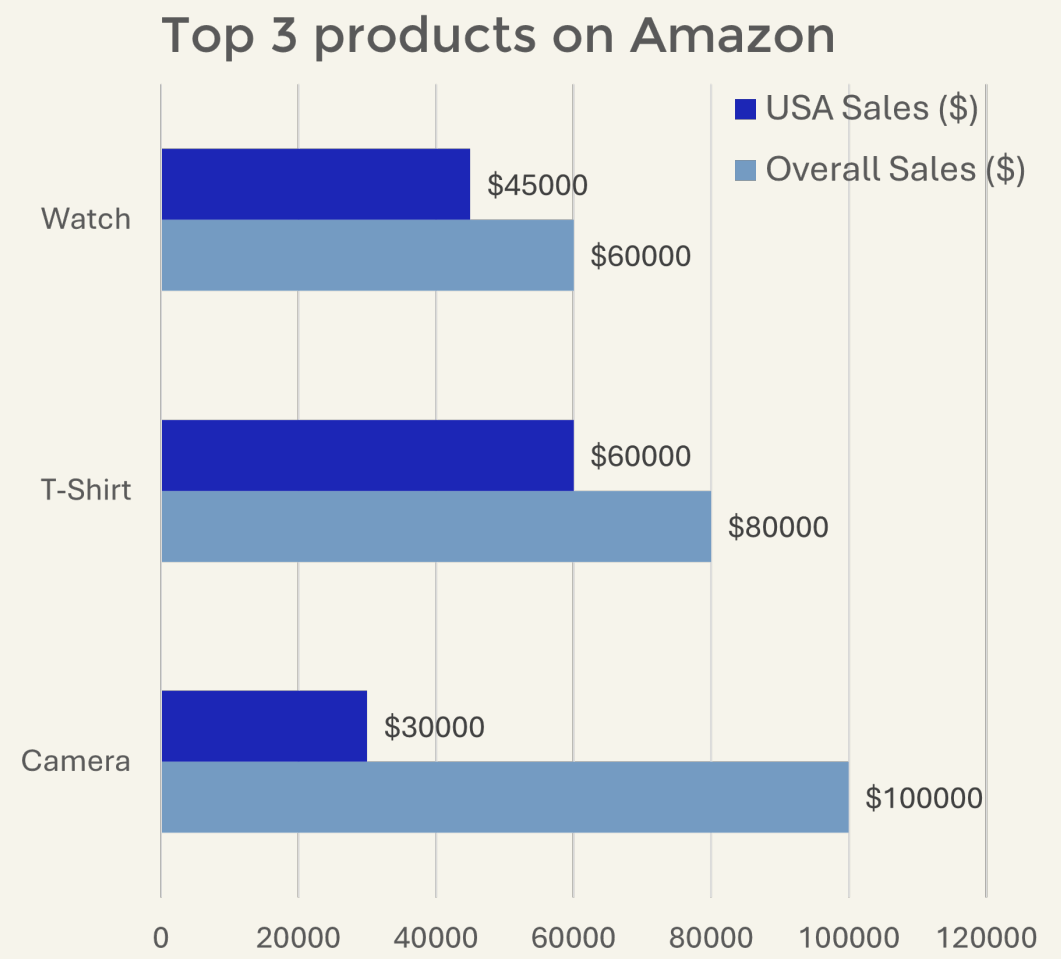
Overview

Objectives & Input Data



Overview

Objectives & Input Data



Getting data

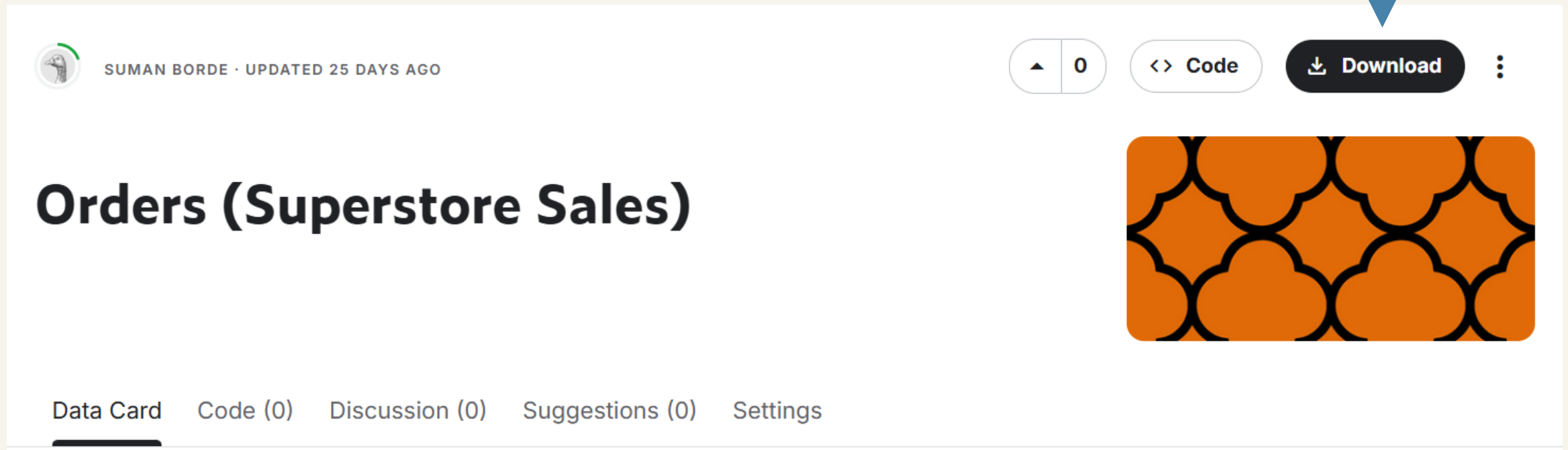
How to download data



Getting data

How to connect data

We used the dataset **Orders (Superstore Sales)** , obtained from [Kaggle](#)



The screenshot shows the Kaggle dataset page for "Orders (Superstore Sales)" by Suman Borde, updated 25 days ago. The page features a header with the user's profile, a rating of 0, a "Code" button, and a "Download" button. A blue arrow points to the "Download" button. The main title "Orders (Superstore Sales)" is displayed in large, bold text. Below the title, there is a decorative orange and black pattern. At the bottom, there is a navigation bar with tabs for "Data Card", "Code (0)", "Discussion (0)", "Suggestions (0)", and "Settings".

Getting data

How to connect data

Dataset content

	Customer Name	Customer Segment	Customer State	Order Date	Product Category	Product Name	Region	Discount	Profit	Sales
0	Darren Budd	Consumer	Texas	17/06/2007 12:00:00 AM	Office Supplies	Tennsco Snap-Together Open Shelving Units, Sta...	Central	0.07	(\$335)	\$12.636
1	Darren Budd	Consumer	Texas	17/06/2007 12:00:00 AM	Technology	232	Central	0.04	\$667	\$2.750
2	Marina Lichtenstein	Corporate	Michigan	17/06/2007 12:00:00 AM	Furniture	Hon Deluxe Fabric Upholstered Stacking Chairs,...	Central	0.08	(\$131)	\$1.244
3	Darren Budd	Consumer	Texas	17/06/2007 12:00:00 AM	Office Supplies	Acco Pressboard Covers with Storage Hooks, 14 ...	Central	0.08	(\$155)	\$240
4	Darren Budd	Consumer	Texas	17/06/2007 12:00:00 AM	Office Supplies	Assorted Color Push Pins	Central	0.08	\$2	\$78
5	Dorris Love	Home Office	North Carolina	17/06/2007 12:00:00 AM	Office Supplies	Rediform Wirebound "Phone Memo" Message Book, ...	South	0.05	(\$32)	\$189
6	Matt Collins	Consumer	Michigan	17/06/2007 12:00:00 AM	Technology	Memorex 4.7GB DVD+RW, 3/Pack	Central	0.03	(\$28)	\$166
7	Darren Budd	Consumer	Texas	17/06/2007 12:00:00 AM	Office Supplies	Tennsco Lockers, Gray	Central	0.06	(\$1.359)	\$654
8	Robert Waldorf	Home Office	Virginia	17/06/2007 12:00:00 AM	Office Supplies	IBM Multi-Purpose Copy Paper, 8 1/2 x 11", Case	South	0	\$246	\$725
9	Matt Collins	Consumer	Michigan	17/06/2007 12:00:00 AM	Technology	3285	Central	0.01	(\$60)	\$2.021

Data construction

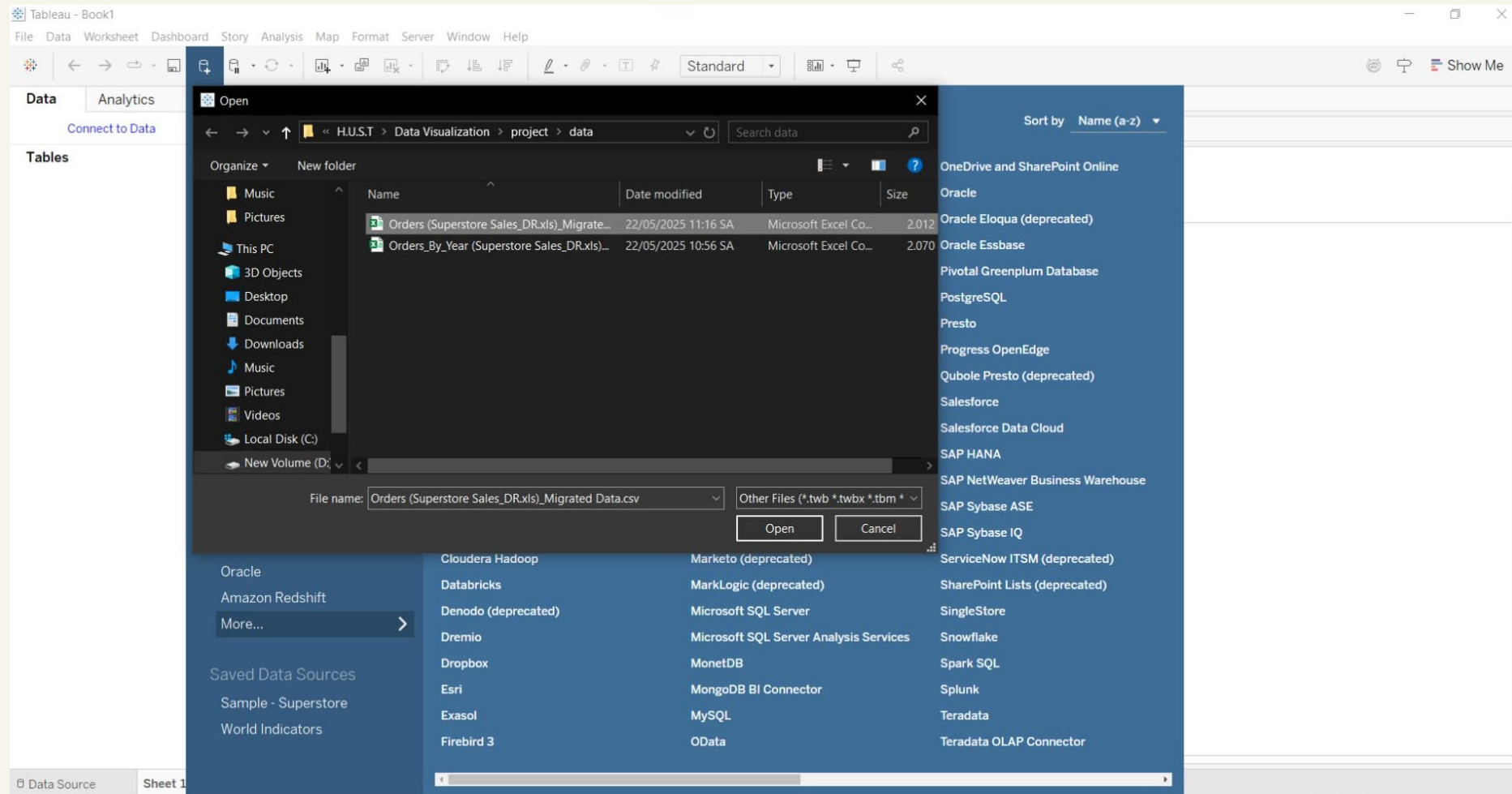
The way data is constructed



Data construction

The way data is constructed

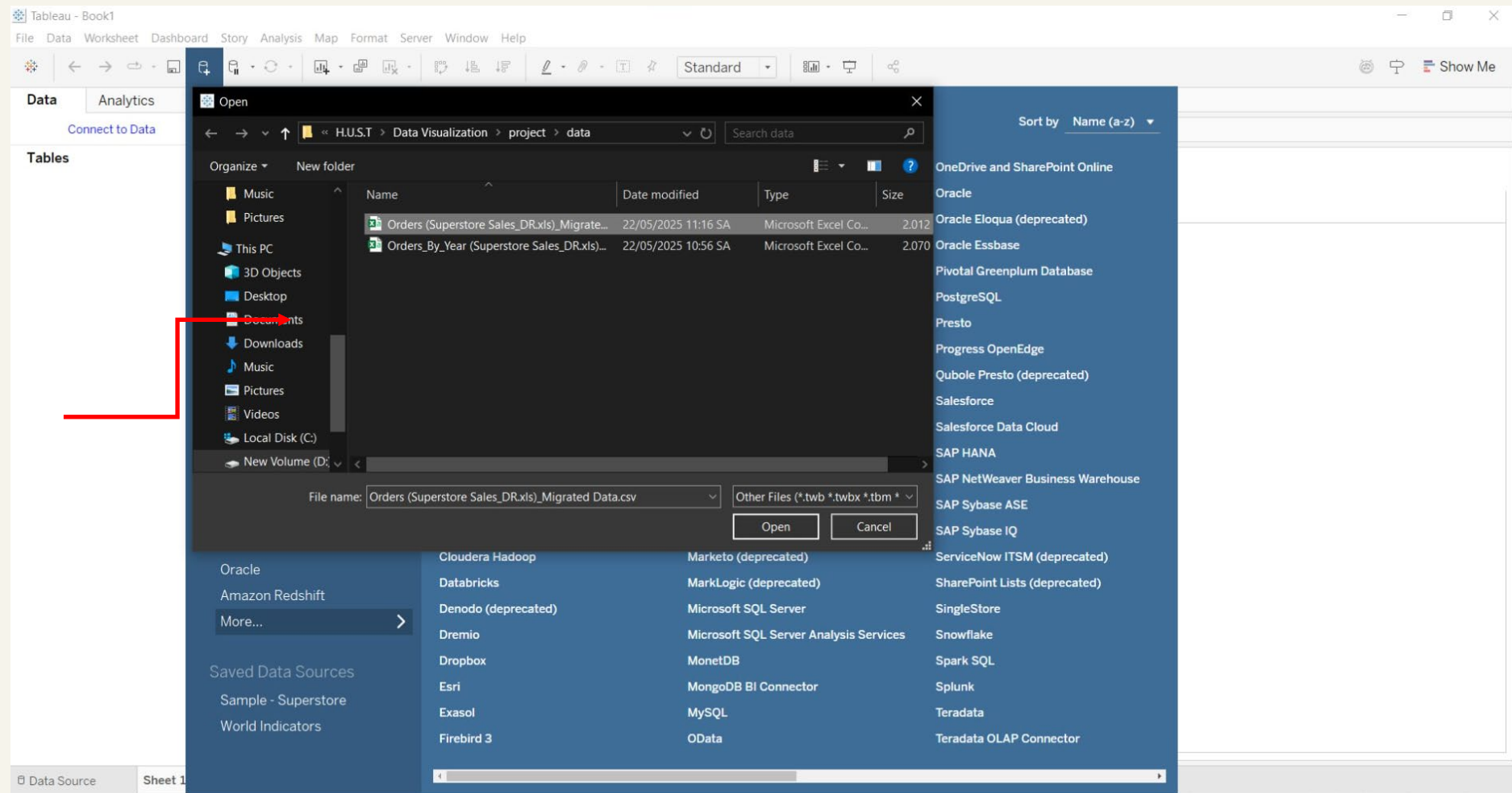
Step 1: Loading data



Data construction

The way data is constructed

Choosing data from
.csv file



Data construction

The way data is constructed

Step 2: Preprocessing

Convert Sales from
string type to
numerical type

\$25.456 → 25456

Sales Float

```
float(  
  REPLACE(  
    REPLACE([Sales], "$", ""), ".", ""  
  )  
)
```

The calculation is valid.

Apply

OK

Data construction

The way data is constructed

Format sales float
to currency
format

Default Number Format [Sales Float]

Automatic
Number (Standard)
Number (Custom)
Currency (Standard)
Currency (Custom)
Scientific
Percentage
Custom

Currency (Custom)
Decimal places:
0
Negative values:
(\$1234)
Display Units:
None
Prefix / Suffix:
\$
☒ Include thousands separators

Clear OK Cancel

Data construction

The way data is constructed

Edit Parameter [Select Category] ×

Name

Select Category

Properties

Data type

Float

Display format

1

Current value

Customer Segment

Value when workbook opens

Current value

Allowable values

☐ All

☒ List

☐ Range

Value	Display As
1	Customer Segment
2	Region
3	Year
Click to add	

☒ Fixed

☐ When workbook opens

Add values from ▼

Remove Selected

Cancel

OK



Data construction

The way data is constructed

Ranking by Sales



Rank of Sales

`RANK(SUM([Sales Float]))`

The calculation is valid.

Default Table Calculation

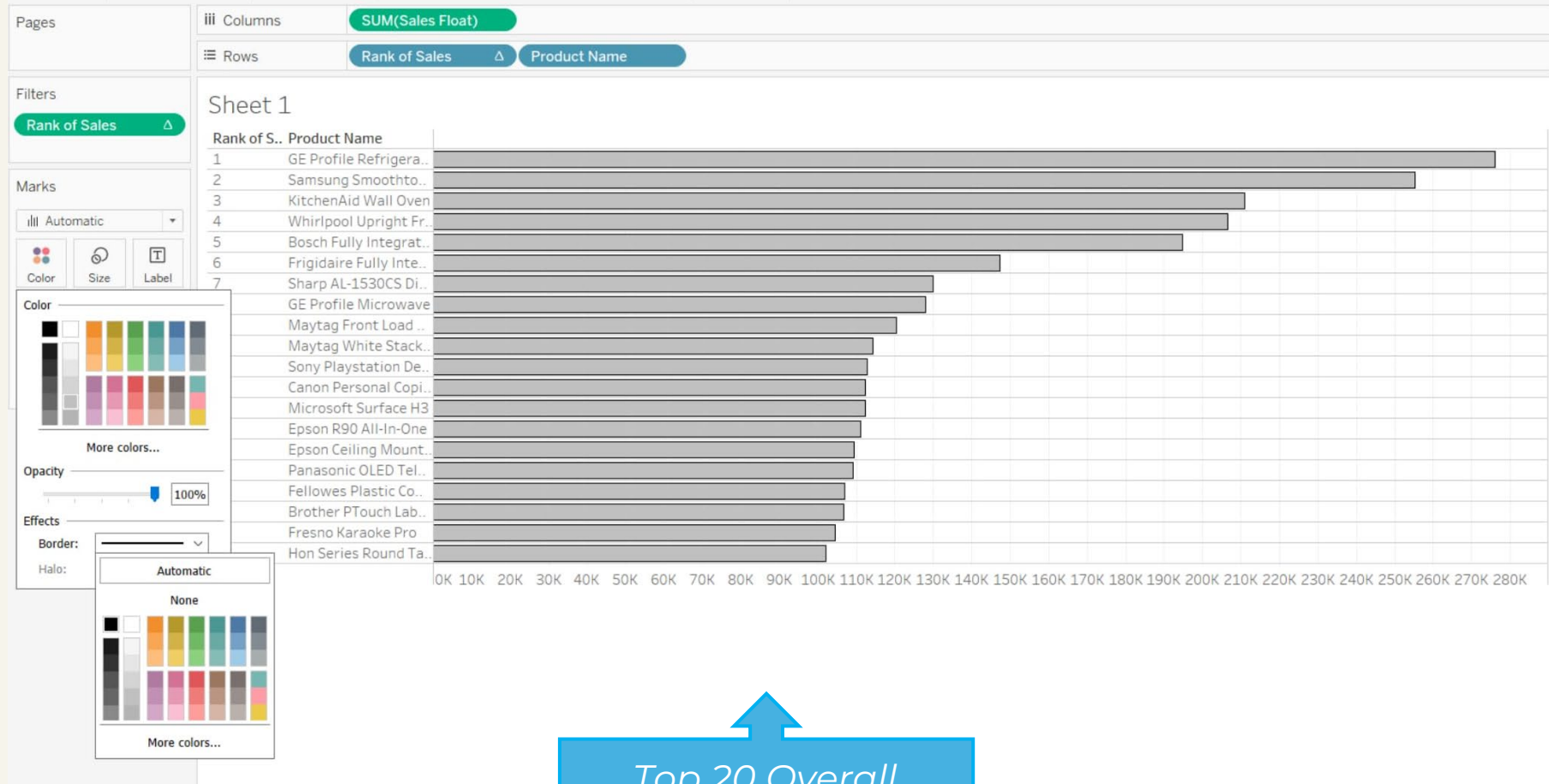
Apply

OK

Data construction

The way data is constructed

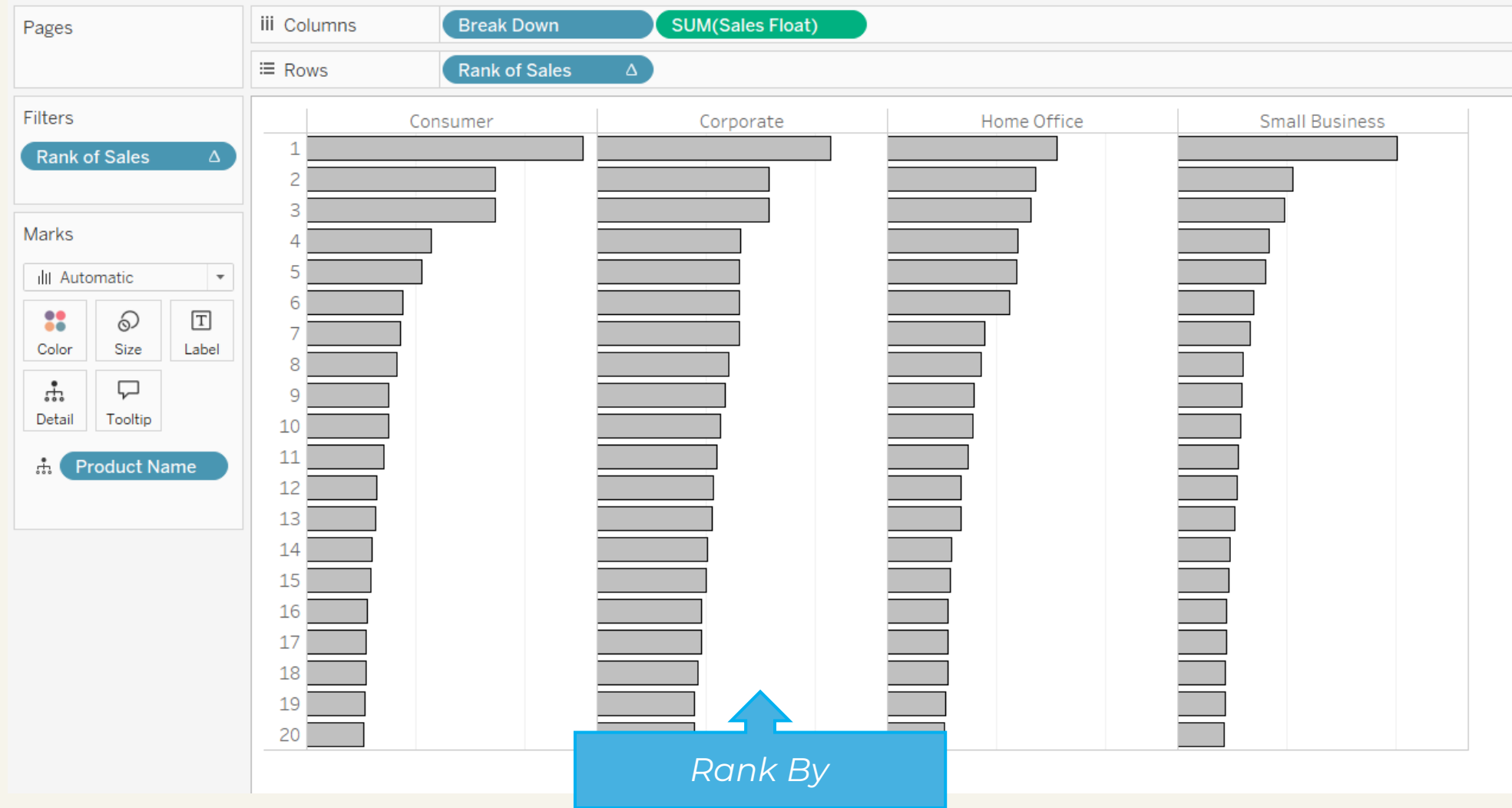
Step 3: Build and Format tables



Top 20 Overall

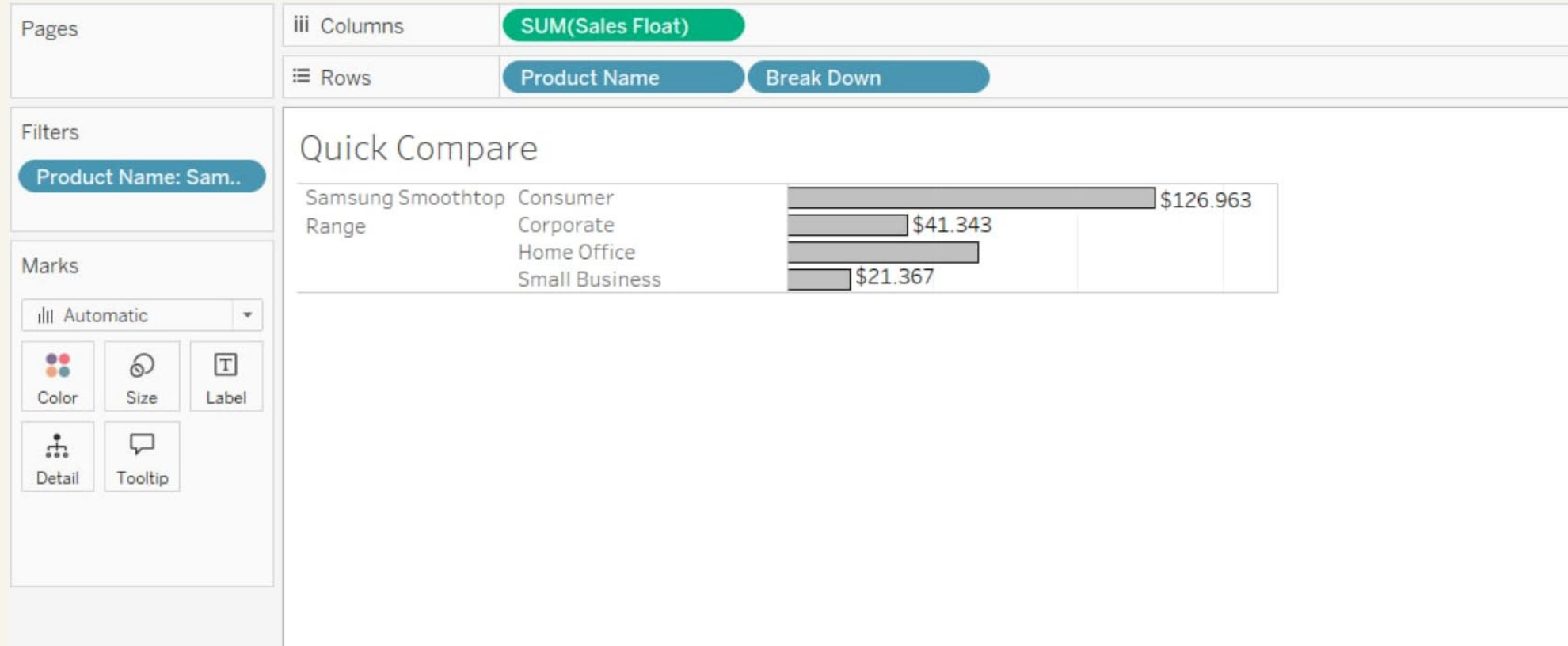
Data construction

The way data is constructed



Data construction

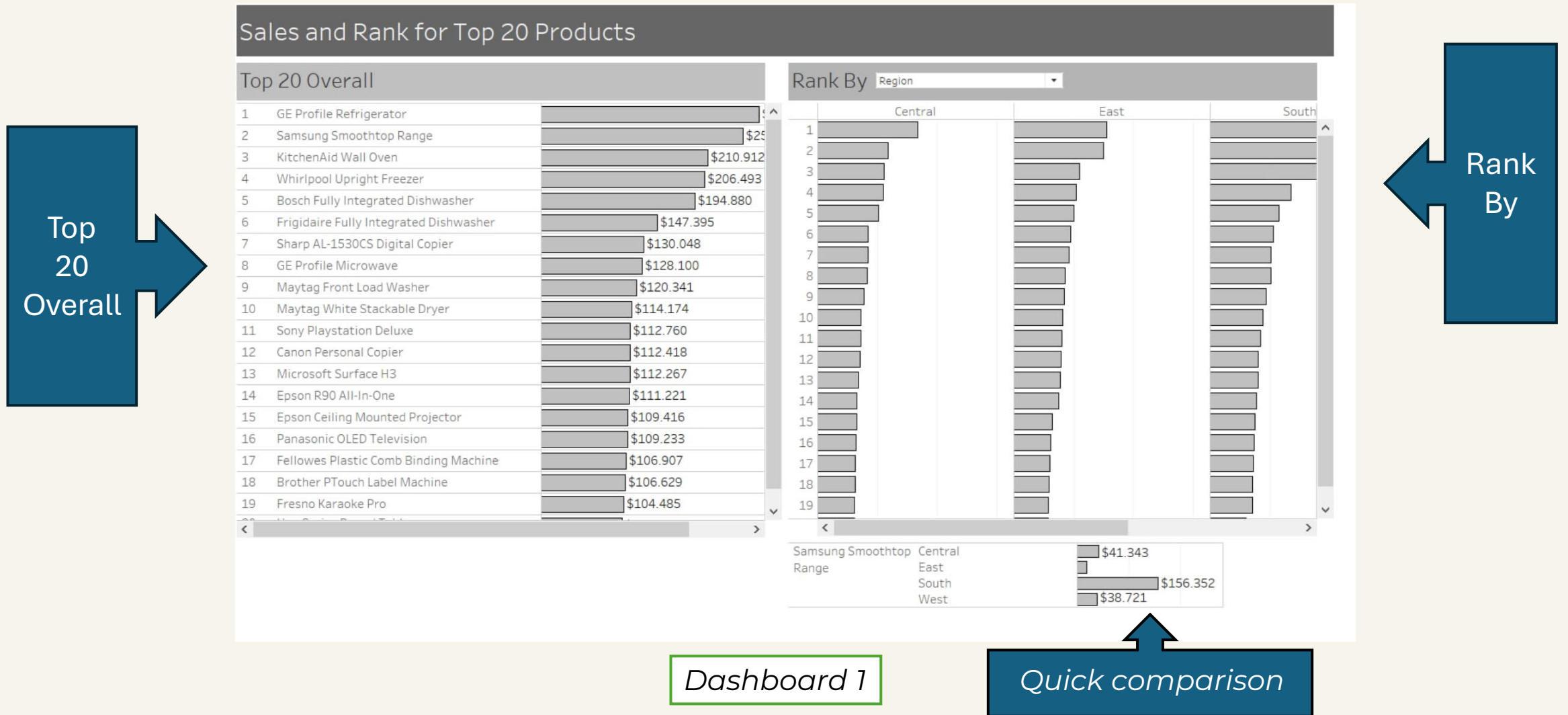
The way data is constructed



Quick comparison

Data construction

The way data is constructed



Data construction

The way data is constructed

Creating interactive working operation





×

Actions

Actions let you create interactive relationships between data, dashboard objects, other worksheets, and the web.

Show actions for

☒ This workbook ☐ This sheet

Name	Run On	Source	Fields	
 Hhlightight in Top 20	Hover	Top 20 Overall	Product Name	
 Select Product Nam	Select	Dashboard 1 (Top 20 Ov	All	
 Highlight Quick Corr	Hover	Quick Compare	Product Name	
 Hightlight Rank By t	Select	Dashboard 1 (Top 20 Ov	Product Name	

Add Action ▼

Edit

Remove

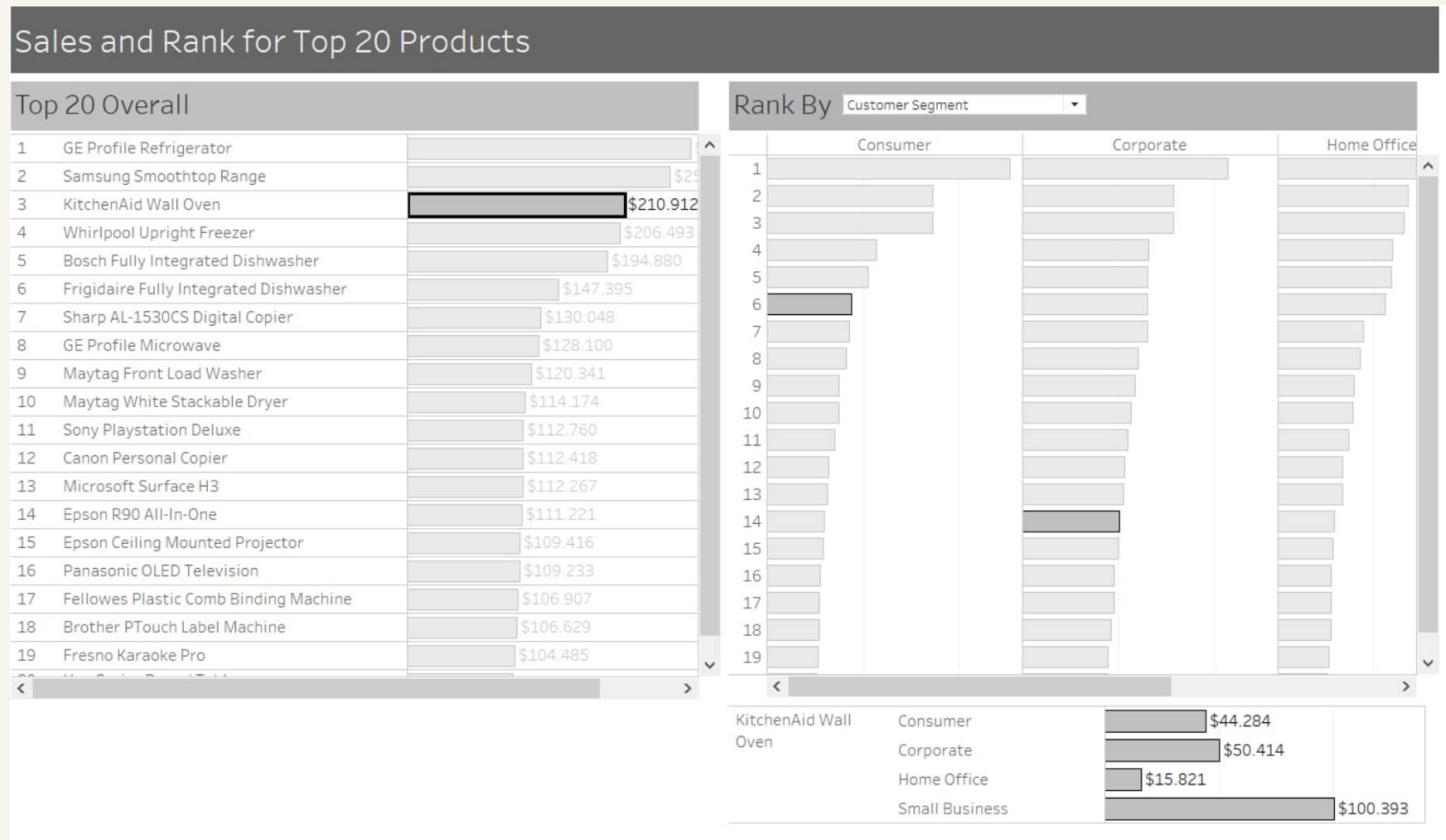
Cancel

OK

Data construction

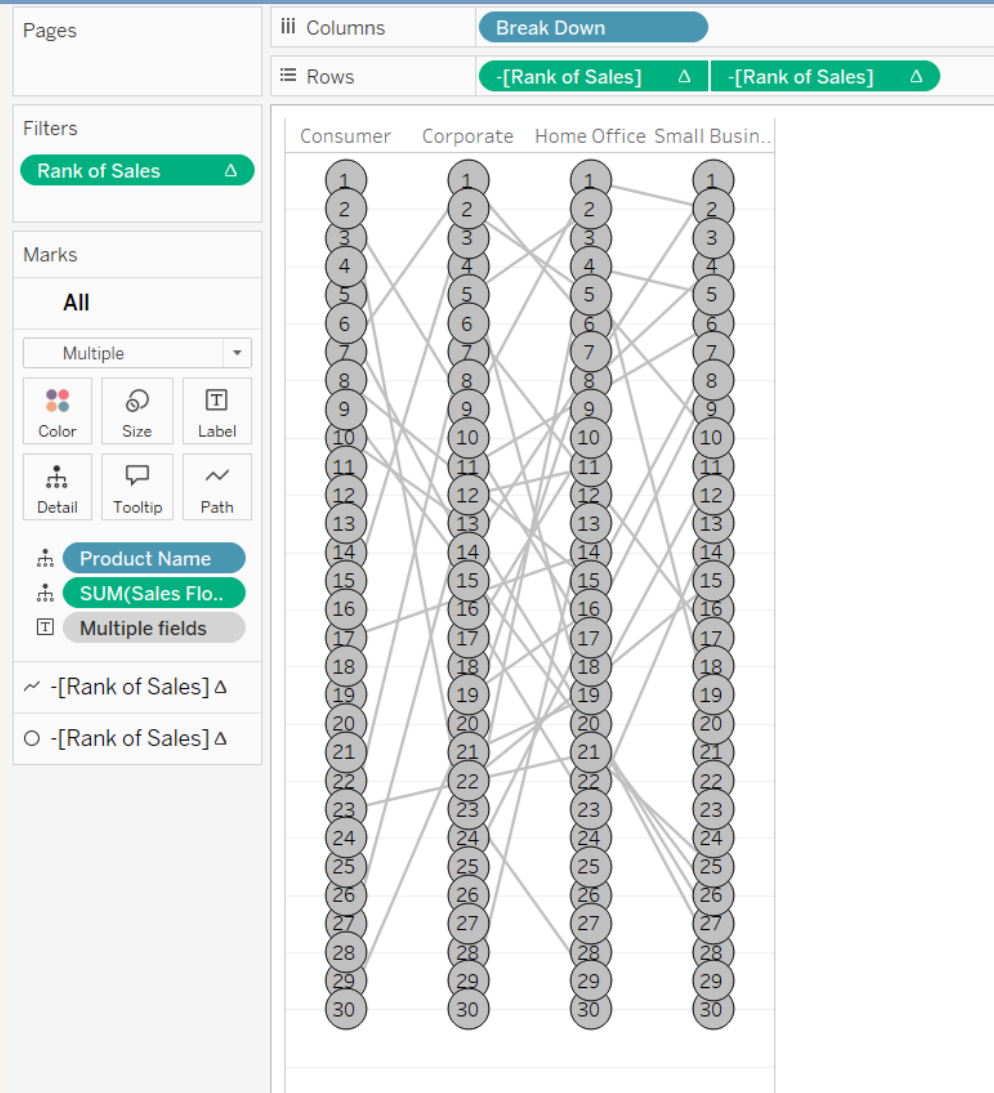
The way data is constructed

Complete Dashboard 1



Data construction

The way data is constructed



Build the Bump Chart

The bump chart consists of 2 components

1. The circle represents the rank of total sales by categories
2. The line represents the shift in the ranking across different fields

Data construction

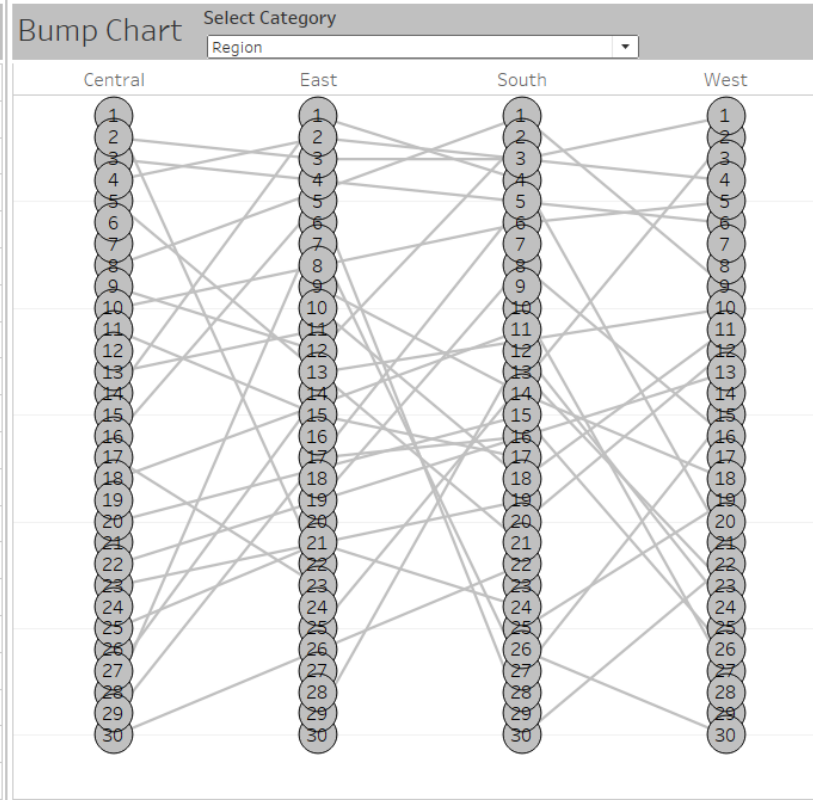
The way data is constructed

Visualize With Bump Chart

Top 20 Overall

1	GE Profile Refrigerator	\$275.941
2	Samsung Smoothtop Range	\$255.304
3	KitchenAid Wall Oven	\$210.912
4	Whirlpool Upright Freezer	\$206.493
5	Bosch Fully Integrated Dishwasher	\$194.880
6	Frigidaire Fully Integrated Dishwasher	\$147.395
7	Sharp AL-1530CS Digital Copier	\$130.048
8	GE Profile Microwave	\$128.100
9	Maytag Front Load Washer	\$120.341
10	Maytag White Stackable Dryer	\$114.174
11	Sony Playstation Deluxe	\$112.760
12	Canon Personal Copier	\$112.418
13	Microsoft Surface H3	\$112.267
14	Epson R90 All-In-One	\$111.221
15	Epson Ceiling Mounted Projector	\$109.416
16	Panasonic OLED Television	\$109.233
17	Fellowes Plastic Comb Binding Machine	\$106.907
18	Brother PTouch Label Machine	\$106.629
19	Fresno Karaoke Pro	\$104.485
20	Hon Series Round Tables	\$102.008

Bump Chart



Dashboard 2

Quick comparison

Data construction

The way data is constructed

Creating interactive working operation

×

Actions

Actions let you create interactive relationships between data, dashboard objects, other worksheets, and the web.

Show actions for

☒ This workbook

☐ This sheet

Name	Run On	Source	Fields
Hlghtlight in Top 20	Hover	Top 20 Overall	Product Name
Highlight Quick Corn	Hover	Quick Compare	Product Name
Highlight1	Hover	Bump Chart	Product Name
Hightlight Rank By b	Select	Dashboard 1 (Top 20 Ov	Product Name
Highlight Product Na	Select	Dashboard 2 (Top 20 Ov	Product Name

Add Action ▼

Edit

Remove

Cancel

OK

Data construction

The way data is constructed

Complete Dashboard 2

Visualize With Bump Chart

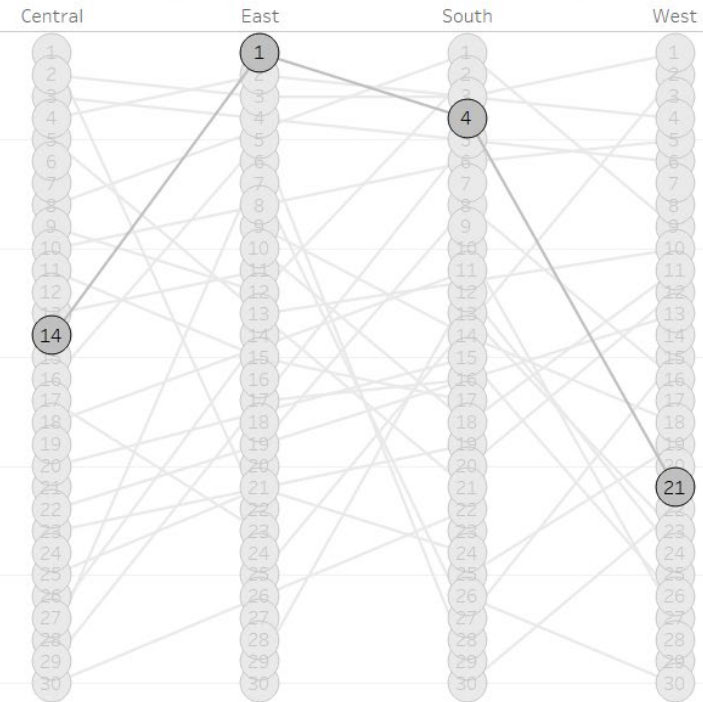
Top 20 Overall

1	GE Profile Refrigerator	\$275.941
2	Samsung Smoothtop Range	\$255.304
3	KitchenAid Wall Oven	\$210.912
4	Whirlpool Upright Freezer	\$206.493
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18	Brother PTouch Label Machine	\$106.629
19	Fresno Karaoke Pro	\$104.485
20	Hon Series Round Tables	\$102.008

Bump Chart

Select Category

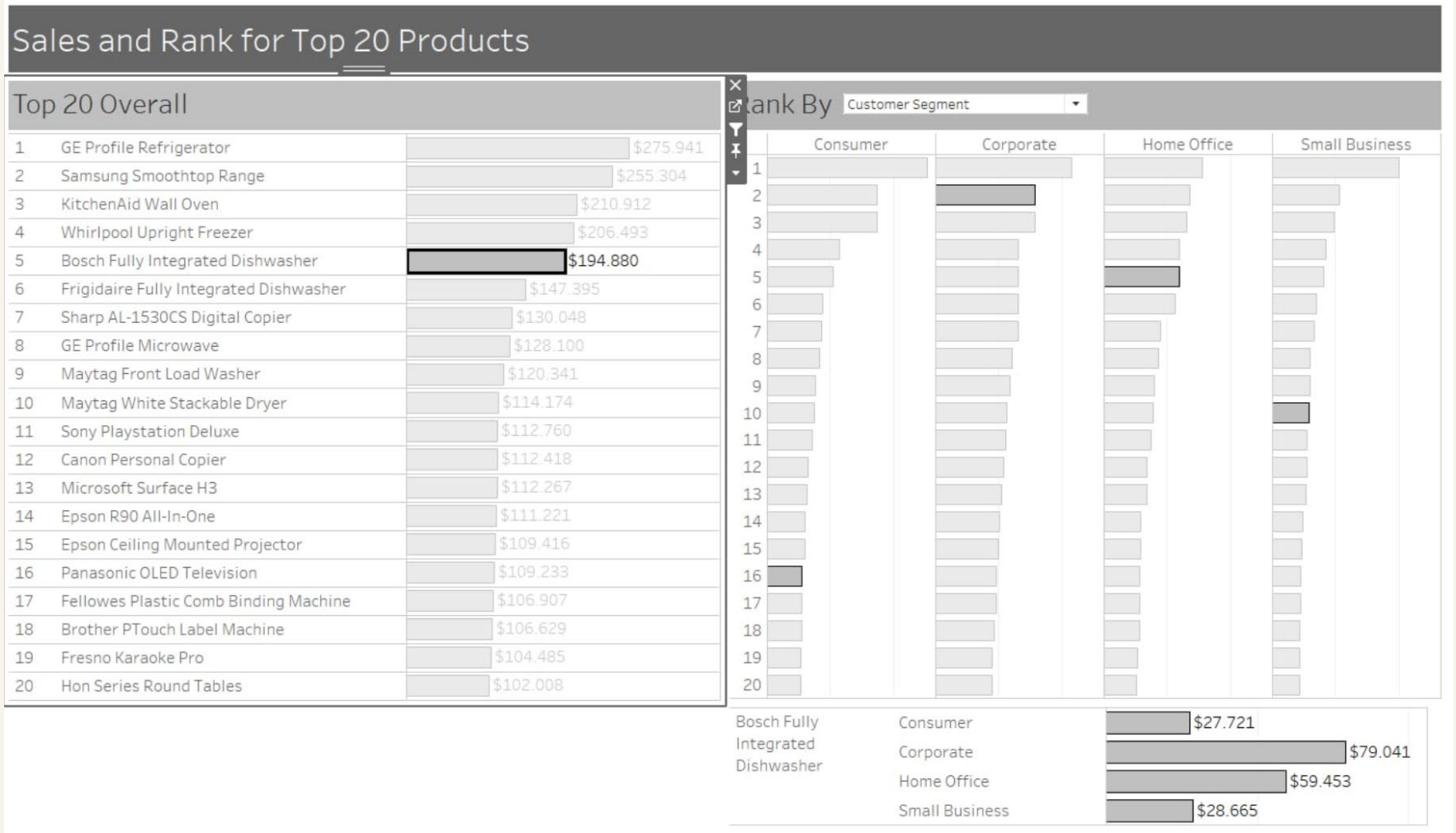
Region



Data construction

The way data is constructed

Dashboard 1



Data construction

The way data is constructed

Dashboard 2

Visualize With Bump Chart

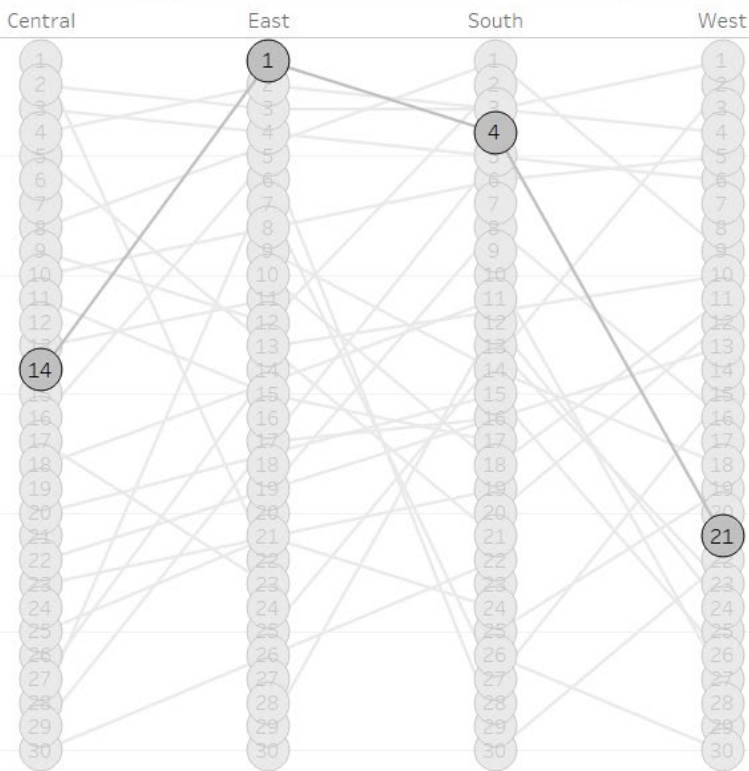
Top 20 Overall

1	GE Profile Refrigerator	\$275.941
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Bump Chart

Select Category

Region



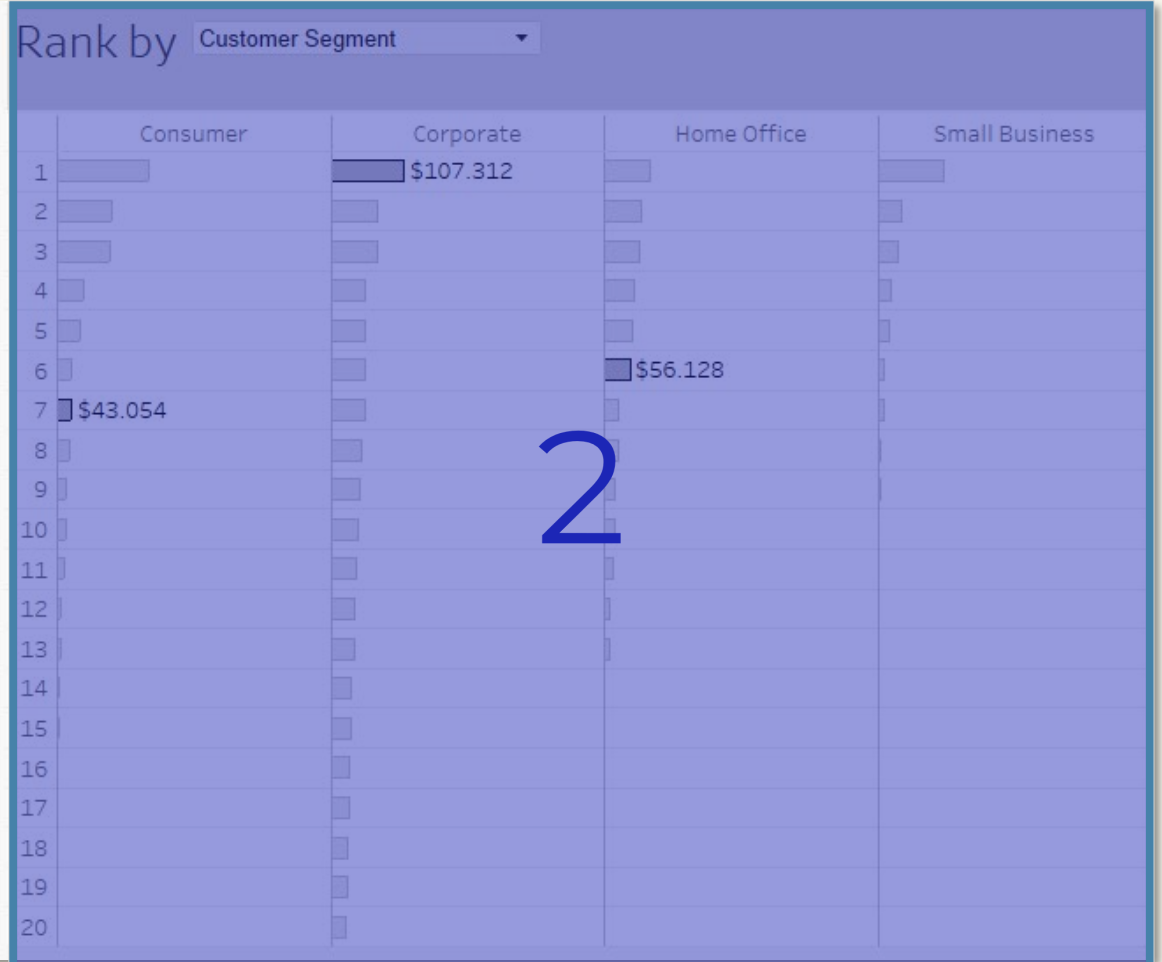
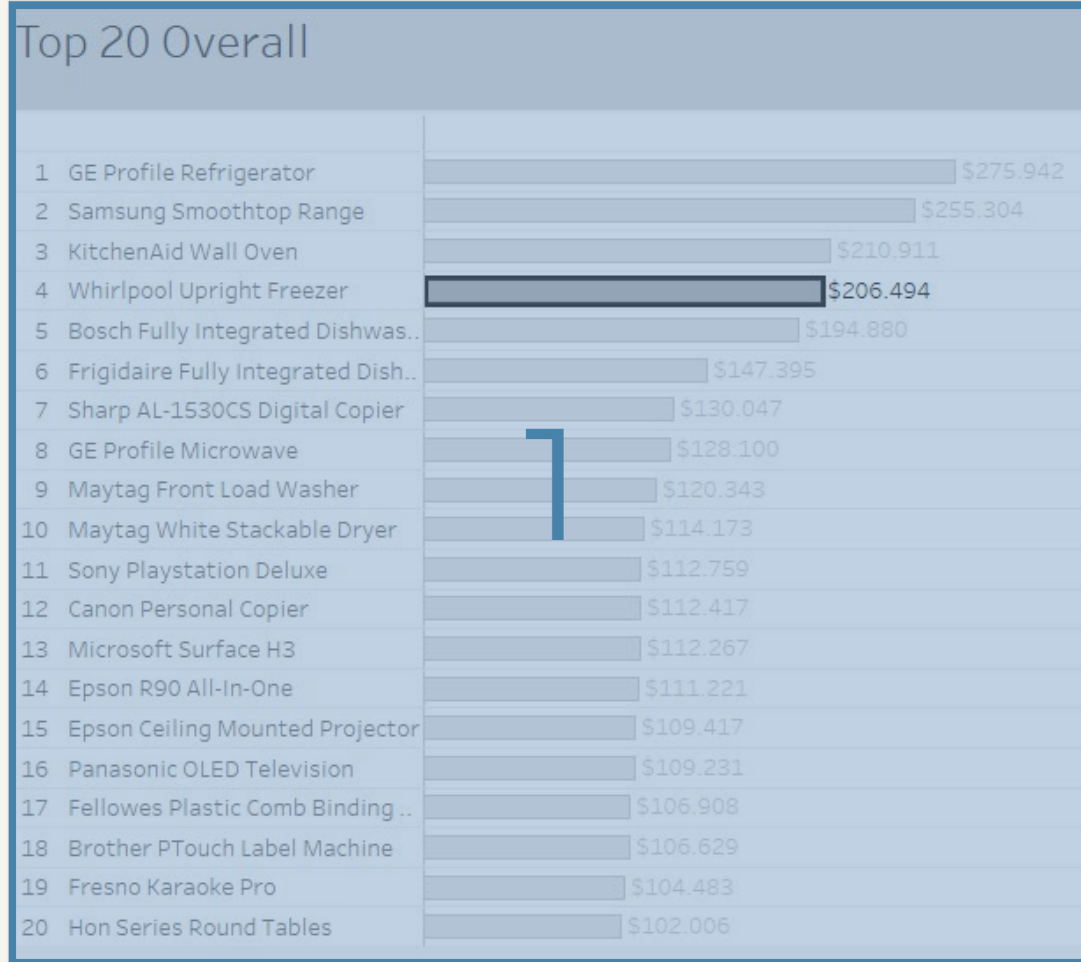
Dashboard Insights

Components & Idea Behinds



Dashboard Insights

Components & Idea Behinds



The overall sales bar chart

Why bar chart?



Straightforward



Clarity

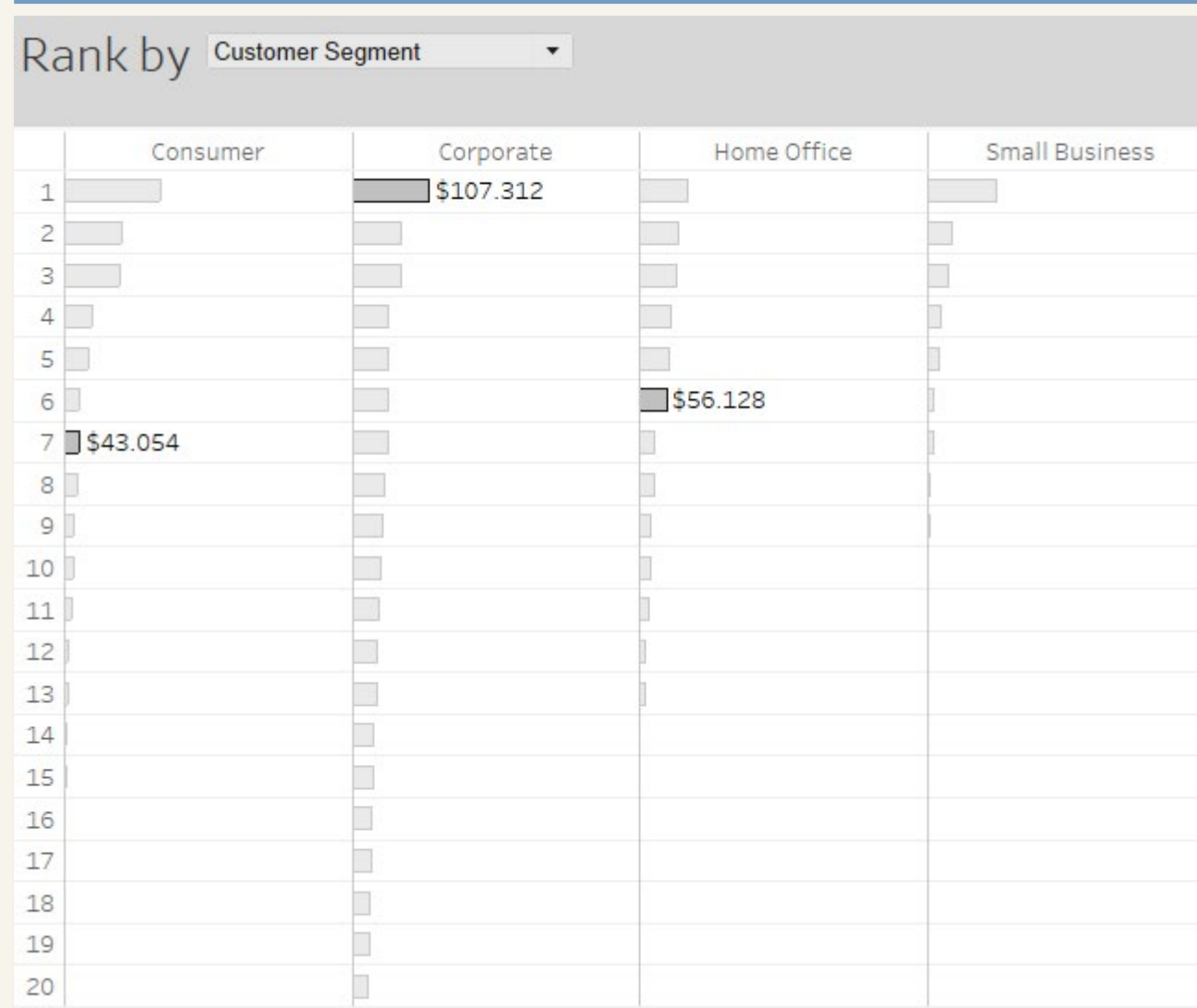
→ The bars make it easy to see how much larger or smaller a particular product's sales are compared to another product without showing mark labels

Top 20 Overall

1	GE Profile Refrigerator	\$275.942
2	Samsung Smoothtop Range	\$255.304
3	KitchenAid Wall Oven	\$210.911
4	Whirlpool Upright Freezer	\$206.494
5	Bosch Fully Integrated Dishwas..	\$194.880
6	Frigidaire Fully Integrated Dish..	\$147.395
7	Sharp AL-1530CS Digital Copier	\$130.047
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11	Sony Playstation Deluxe	\$112.759
12	Canon Personal Copier	\$112.417
13	Microsoft Surface H3	\$112.267
14	Epson R90 All-In-One	\$111.221
15	Epson Ceiling Mounted Projector	\$109.417
16	Panasonic OLED Television	\$109.231
17	Fellowes Plastic Comb Binding ..	\$106.908
18	Brother PTouch Label Machine	\$106.629
19	Fresno Karaoke Pro	\$104.483
20	Hon Series Round Tables	\$102.006

Dashboard Insights

Components & Idea Behinds



Ranked seventh among individual consumers

Ranked first within the corporate segment

Ranked sixth in the small office segment

Not even in the top 20 in the small business segment

→ Showing the quantity of each part when breakdown by selected category

→ This approach works for virtually anything that you want to rank (e.g. Customer Segment)

Dashboard Insights

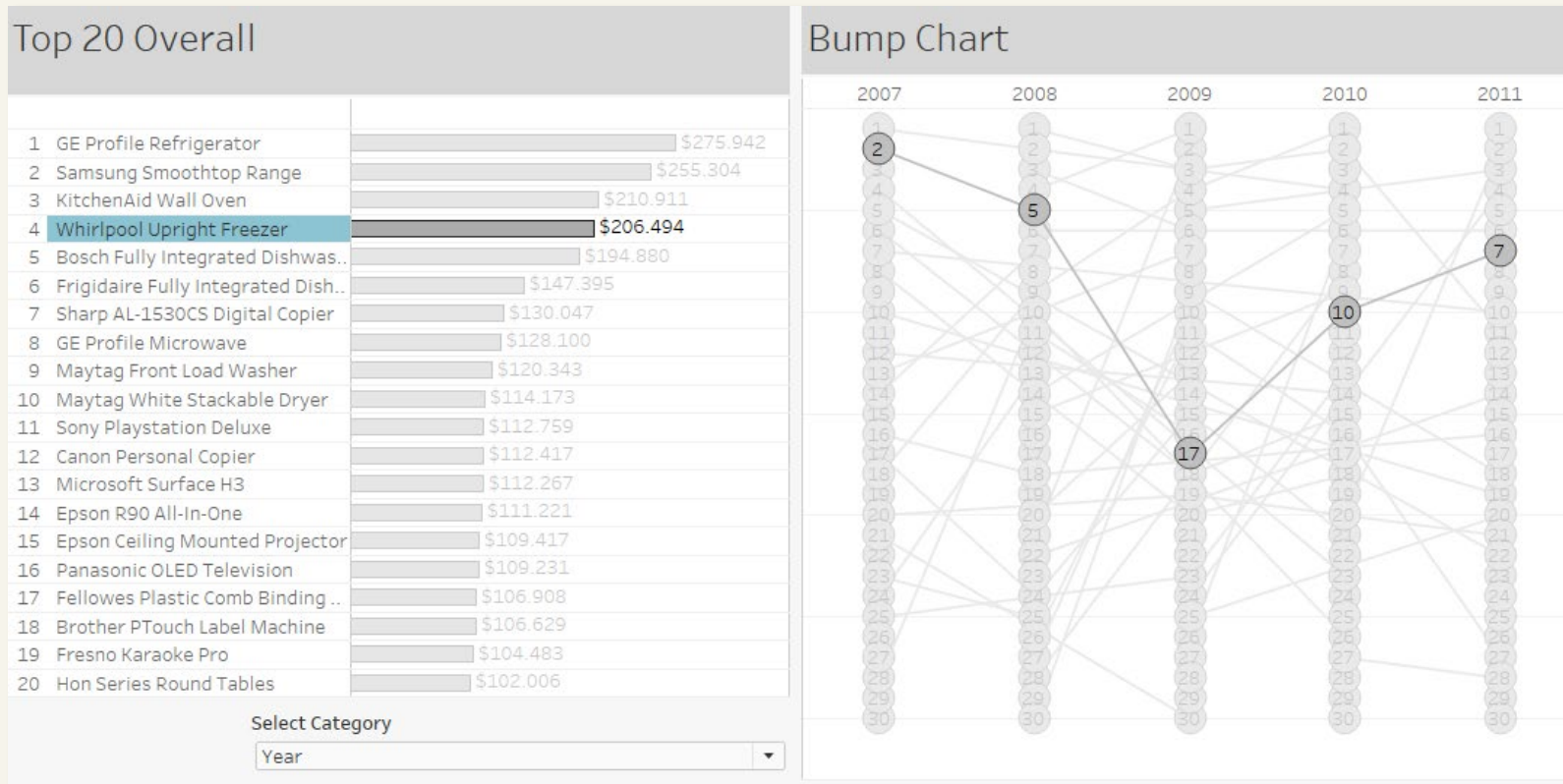
Components & Idea Behinds

Top 20 Overall		Rank by Region			
		Central	East	South	West
1	GE Profile Refrigerator		\$77.683		
2	Samsung Smoothtop Range				
3	KitchenAid Wall Oven				
4	Whirlpool Upright Freezer			\$67.595	
5	Bosch Fully Integrated Dishwas..				
6	Frigidaire Fully Integrated Dish..				
7	Sharp AL-1530CS Digital Copier				
8	GE Profile Microwave				
9	Maytag Front Load Washer				
10	Maytag White Stackable Dryer				
11	Sony Playstation Deluxe				
12	Canon Personal Copier				
13	Microsoft Surface H3				
14	Epson R90 All-In-One		\$32.827		
15	Epson Ceiling Mounted Projector				
16	Panasonic OLED Television				
17	Fellowes Plastic Comb Binding ..				
18	Brother PTouch Label Machine				
19	Fresno Karaoke Pro				
20	Hon Series Round Tables				

Dashboard Insights

Components & Idea Behinds

Bump chart



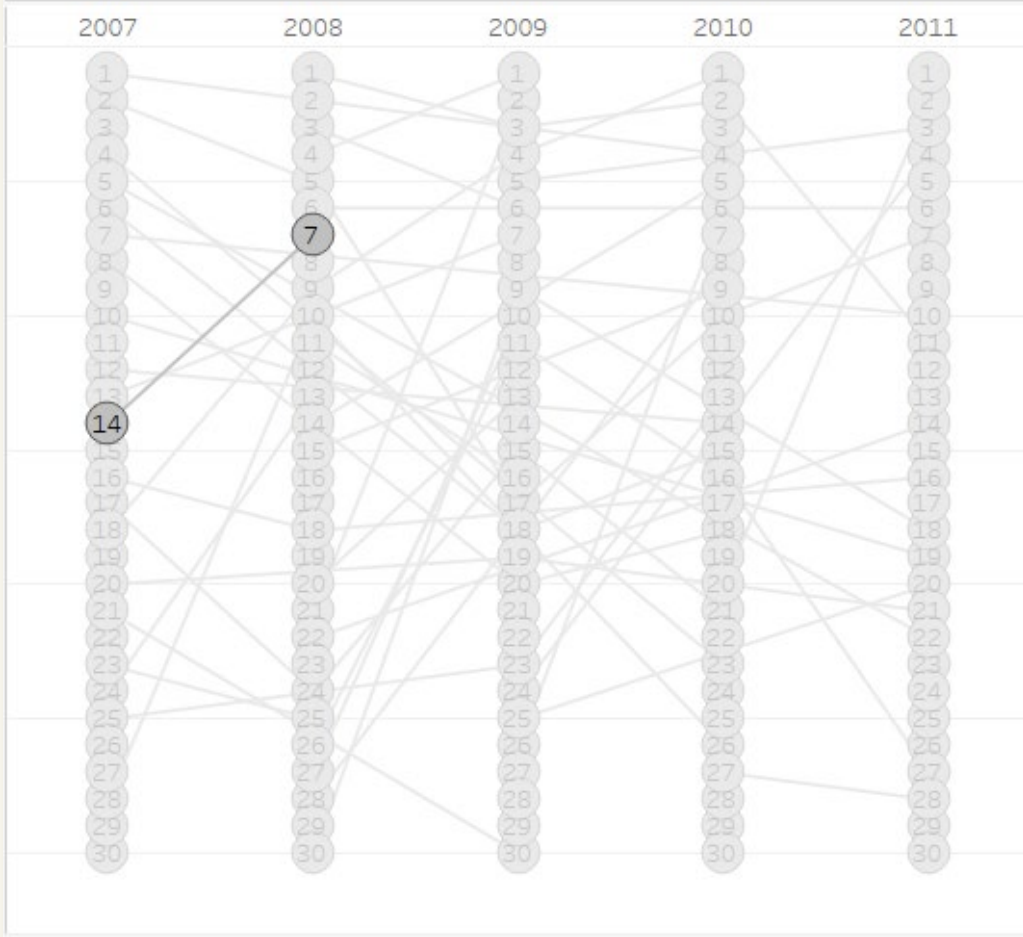
This chart helps compare the ranking of multiple observations rather than the values itself.

We use the bump chart when rank is the only thing of importance.

Dashboard Insights

Components & Idea Behinds

Bump Chart



Drawbacks

- Only shows **trends**, not **magnitude**
- Couldn't tell the **difference** between **sales** and **products**
- Only capable when the **magnitude isn't important.**

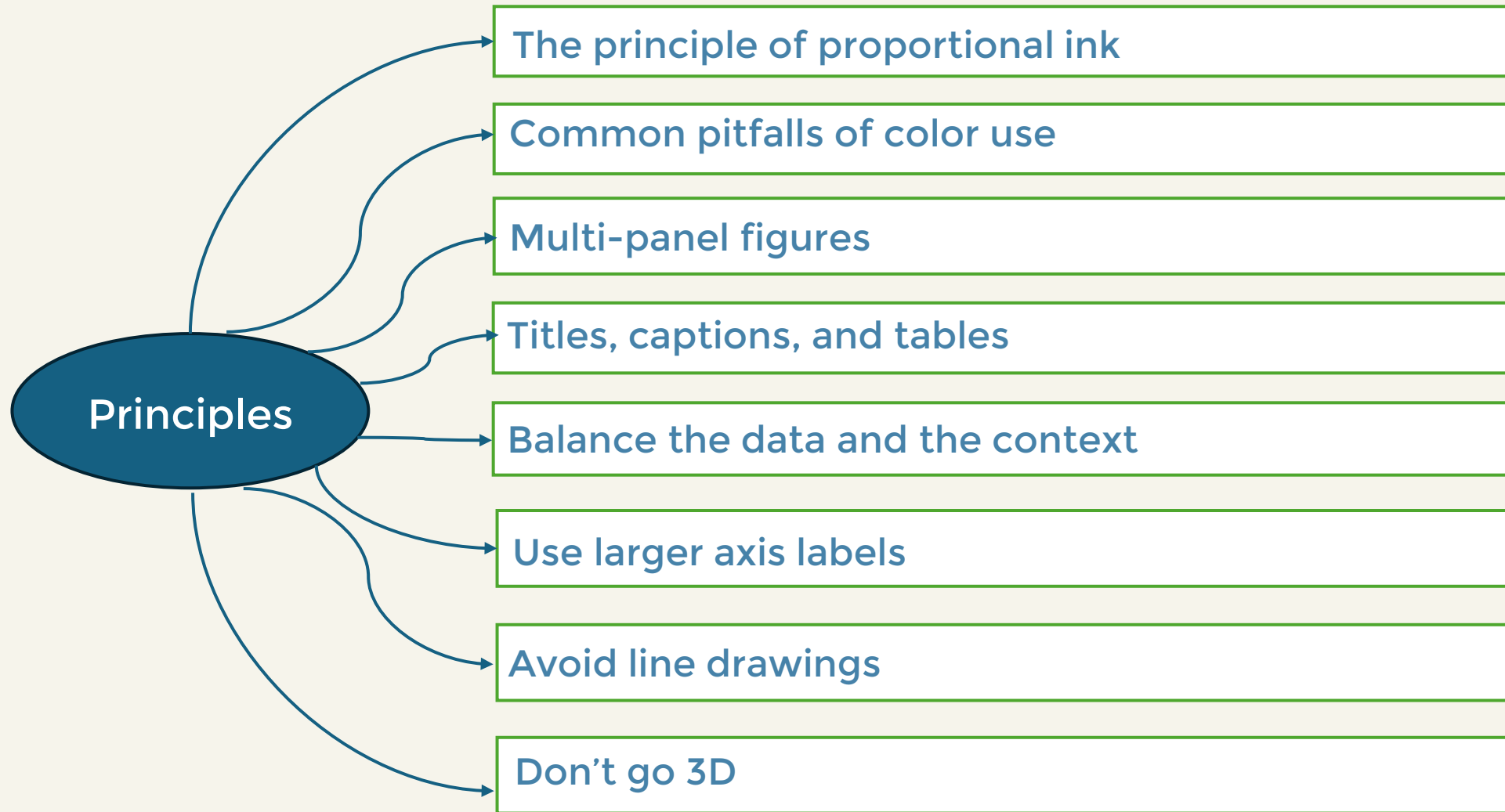
Discussion

Principles & Advices



Discussion

Principles



Discussion

Principles

The principle of proportional ink

1	GE Profile Refrigerator	\$275.941
2	Samsung Smoothtop Range	\$255.304
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4	Whirlpool Upright Freezer	\$206.493
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11	Sony Playstation Deluxe	\$112.760
12	Canon Personal Copier	\$112.418
13	Microsoft Surface H3	\$112.267
14	Epson R90 All-In-One	\$111.221

Discussion

Principles

Common pitfalls of color use

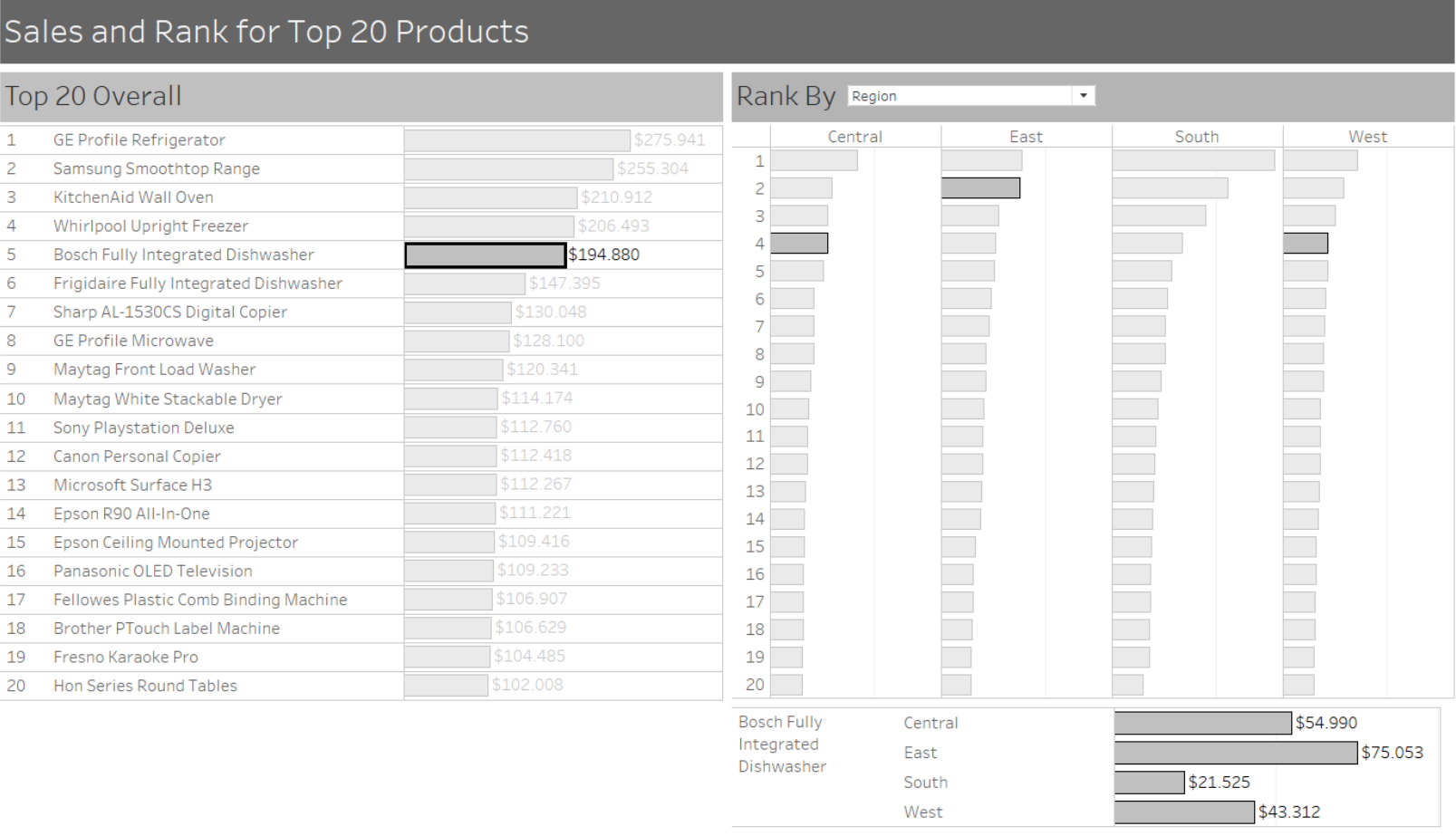
1	GE Profile Refrigerator	\$275.941
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3	KitchenAid Wall Oven	\$210.912
4	Whirlpool Upright Freezer	\$206.493
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10	Maytag White Stackable Dryer	\$114.174
11	Sony Playstation Deluxe	\$112.760
12	Canon Personal Copier	\$112.418

Only use gray color,
designing for
Color-Vision deficiency

Discussion

Principles

Multi-panel figures



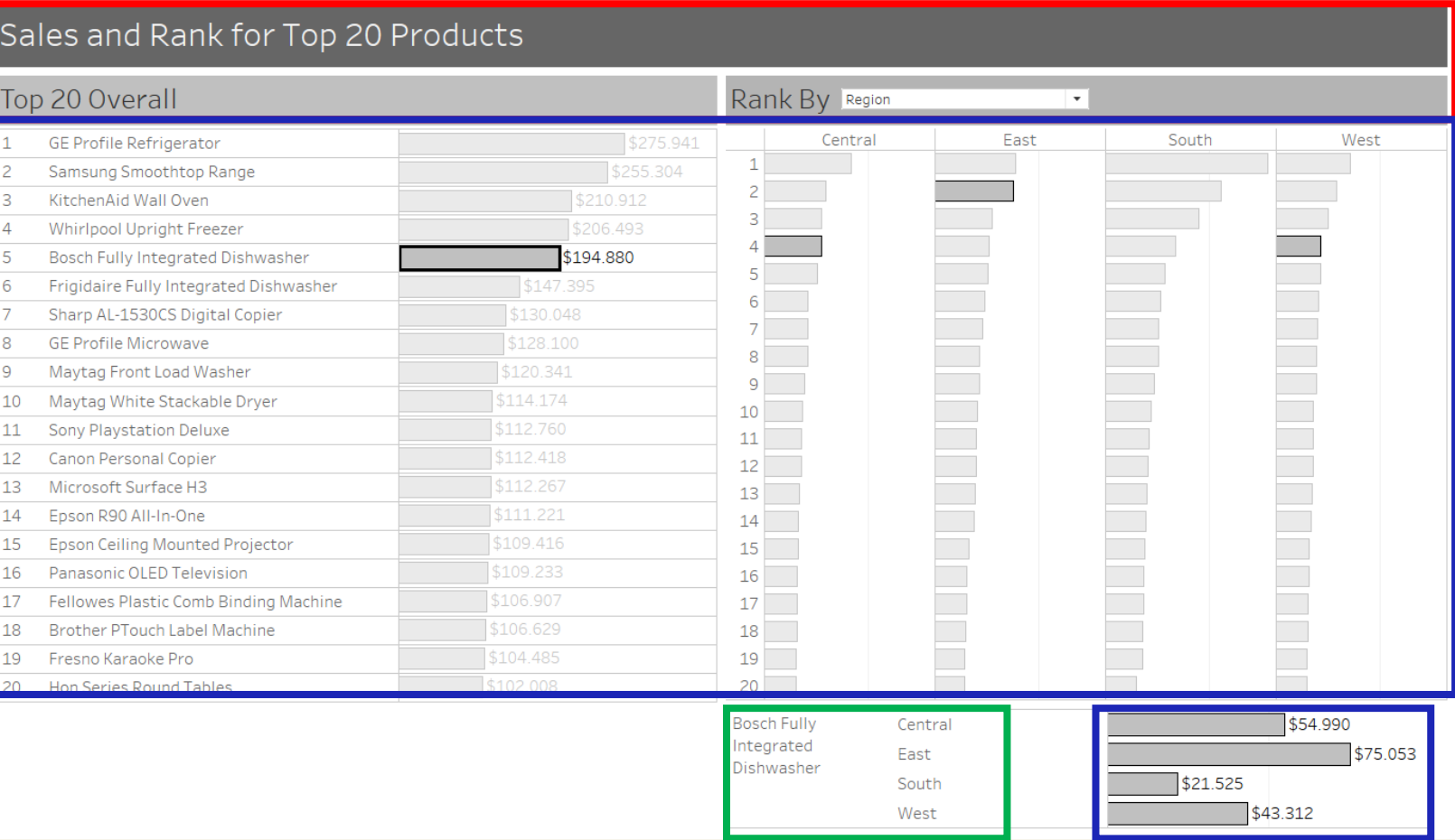
Dashboard 1 is an example of **Compound figures**

Discussion

Principles

Titles, captions, and tables

Title



Table

Caption

Discussion

Principles

Balance the data and the context

1	GE Profile Refrigerator	<div></div>	\$275.941
2	Samsung Smoothtop Range	<div></div>	\$255.304
3	KitchenAid Wall Oven	<div></div>	\$210.912
4	Whirlpool Upright Freezer	<div></div>	\$206.493
5	Bosch Fully Integrated Dishwasher	<div></div>	\$194.880
6	Frigidaire Fully Integrated Dishwash..	<div></div>	\$147.395
7	Sharp AL-1530CS Digital Copier	<div></div>	\$130.048
8	GE Profile Microwave	<div></div>	\$128.100
9	Maytag Front Load Washer	<div></div>	\$120.341
10	Maytag White Stackable Dryer	<div></div>	\$114.174

The grid view is densely spaced, bad view

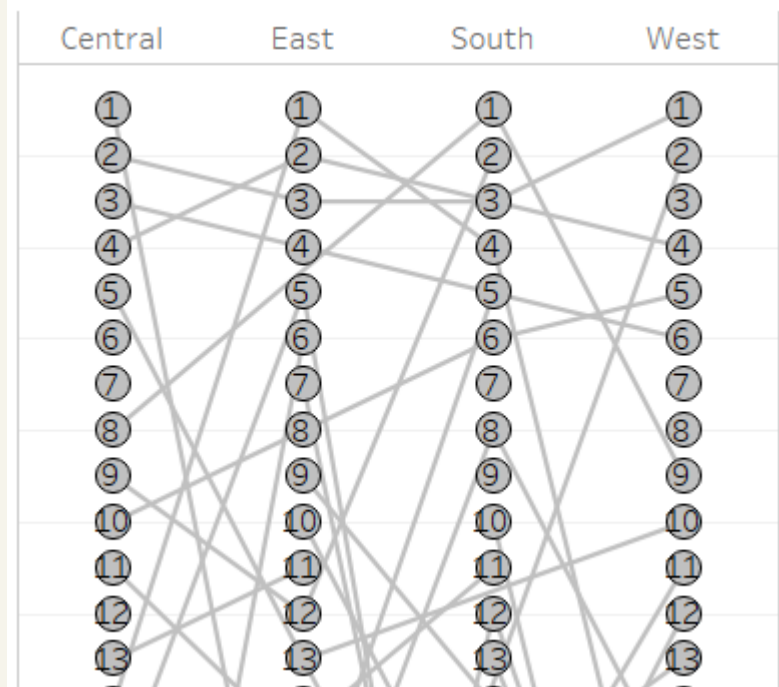
1	GE Profile Refrigerator	<div></div>	\$275.941
2	Samsung Smoothtop Range	<div></div>	\$255.304
3	KitchenAid Wall Oven	<div></div>	\$210.912
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7	Sharp AL-1530CS Digital Copier	<div></div>	\$130.048
8	GE Profile Microwave	<div></div>	\$128.100
9	Maytag Front Load Washer	<div></div>	\$120.341
10	Maytag White Stackable Dryer	<div></div>	\$114.174

Better view without grid

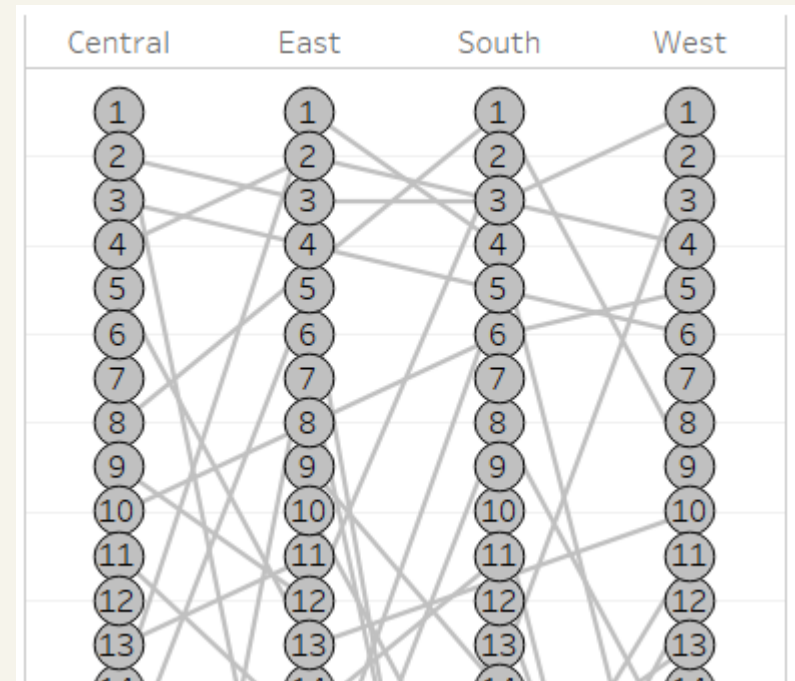
Discussion

Principles

Use larger axis labels



Small labels, bad view



Larger labels, better view

Discussion

Principles

Avoid line drawings

1	GE Profile Refrige..		\$275.941
2	Samsung Smootht..		\$255.304
3	KitchenAid Wall O..		\$210.912
4	Whirlpool Upright..		\$206.493
5	Bosch Fully Integr..		\$194.880
6	Frigidaire Fully In..		\$147.395
7	Sharp AL-1530CS ..		\$130.048
8	GE Profile Microw..		\$128.100
9	Maytag Front Loa..		\$120.341
10	Maytag White Sta..		\$114.174

Bad view

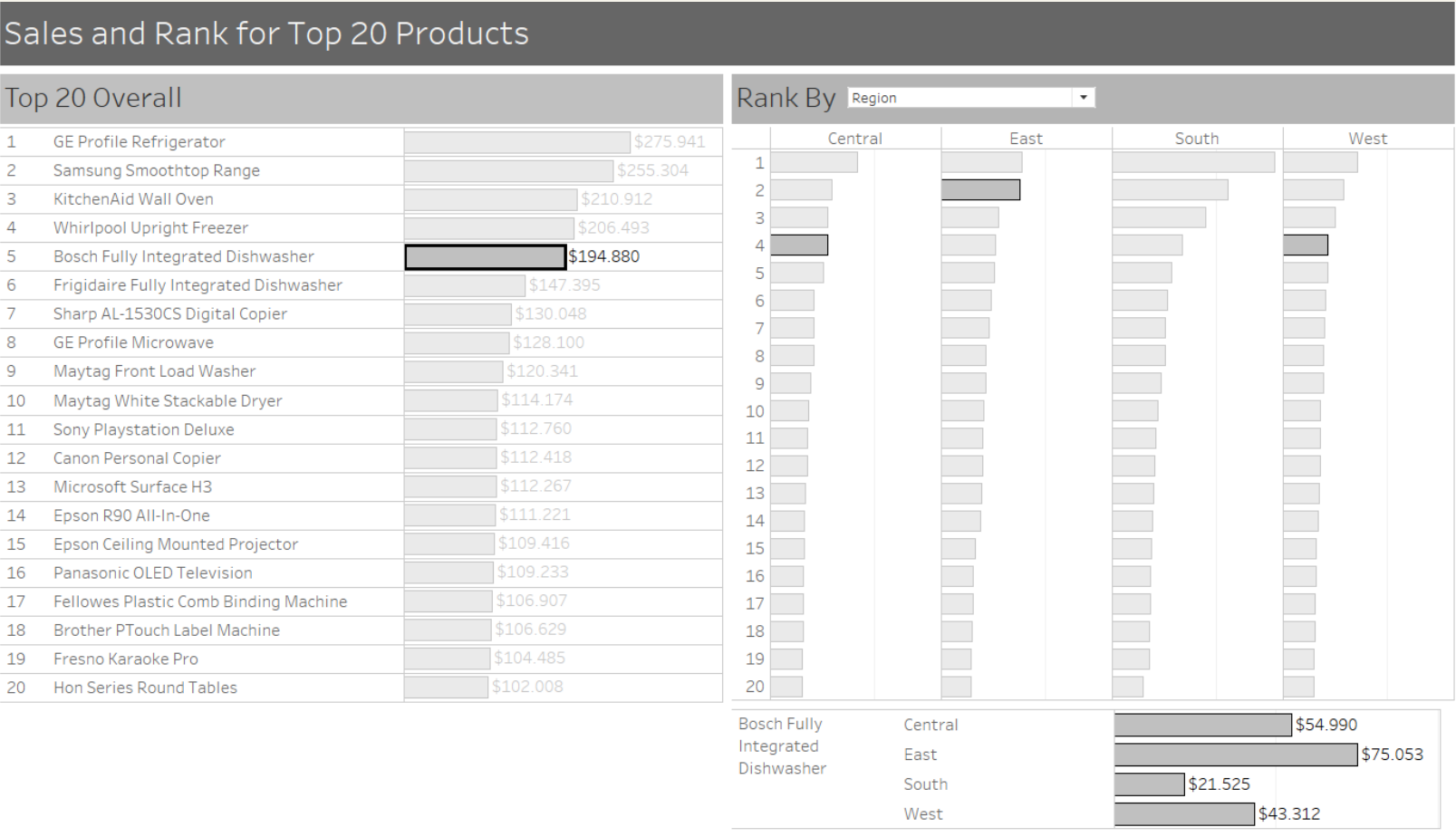
1	GE Profile Refrige..		\$275.941
2	Samsung Smootht..		\$255.304
3	KitchenAid Wall O..		\$210.912
4	Whirlpool Upright..		\$206.493
5	Bosch Fully Integr..		\$194.880
6	Frigidaire Fully In..		\$147.395
7	Sharp AL-1530CS ..		\$130.048
8	GE Profile Microw..		\$128.100
9	Maytag Front Loa..		\$120.341
10	Maytag White Sta..		\$114.174

Better view

Discussion

Principles

Don't go 3D



All tables, dashboards are displayed in 2D

Advices

Don't try to understand everything

Focus on important products only and
its core issues

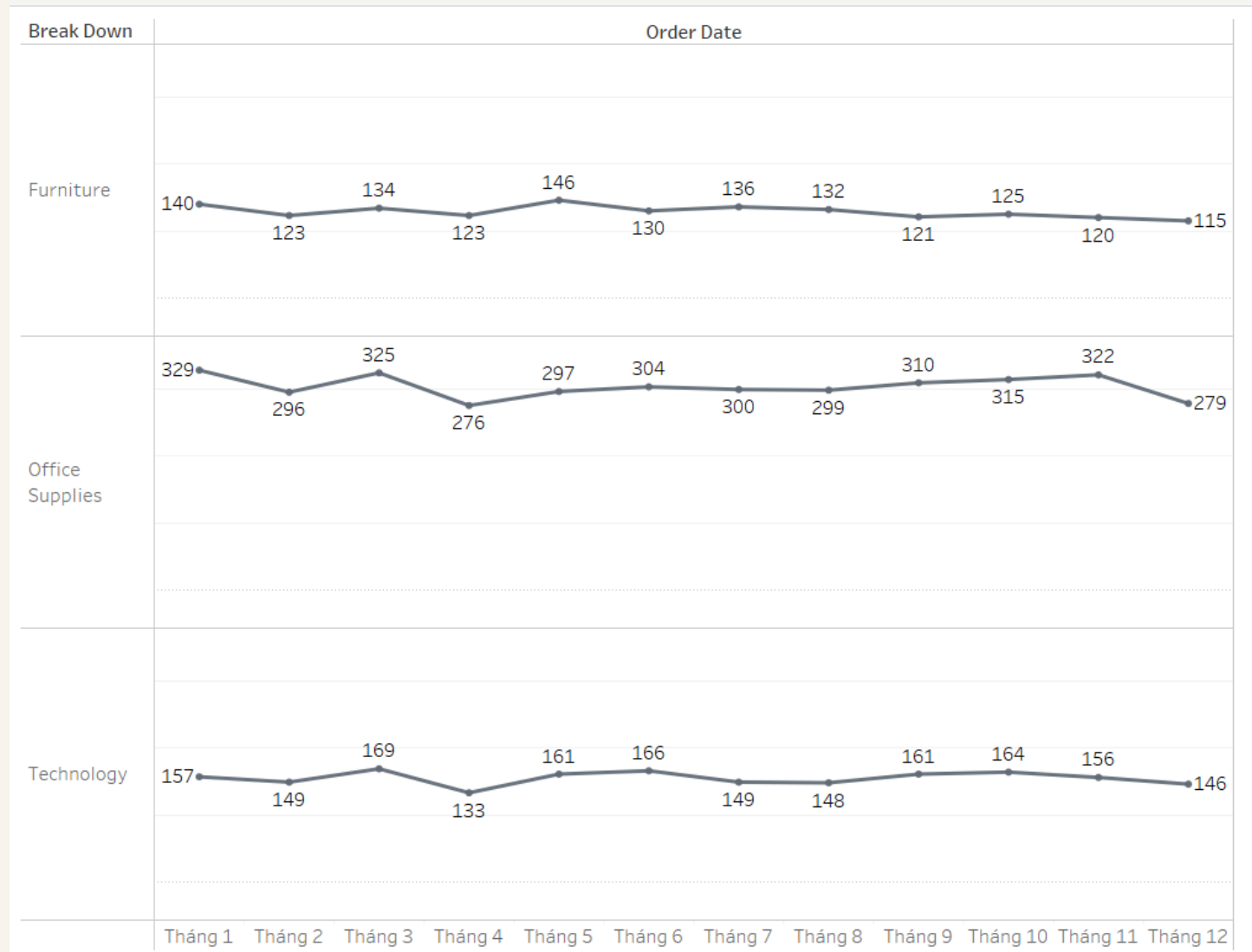
Other Approaches

Some works, some doesn't



Other approaches

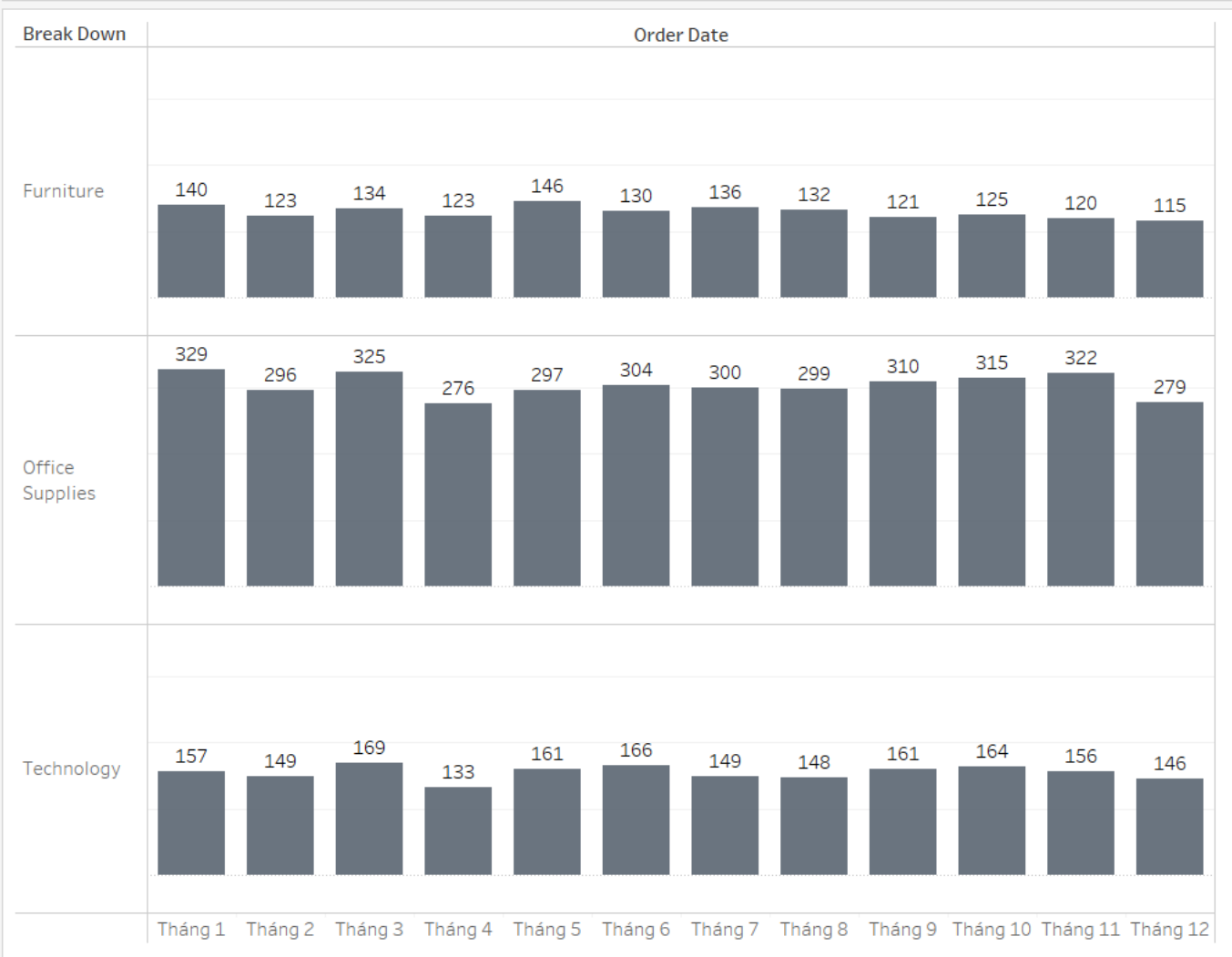
Some works, some doesn't



This line chart can shows order trends, growths, seasonality over time

Other approaches

Some works, some doesn't



Bad visualization with bar chart

Other approaches

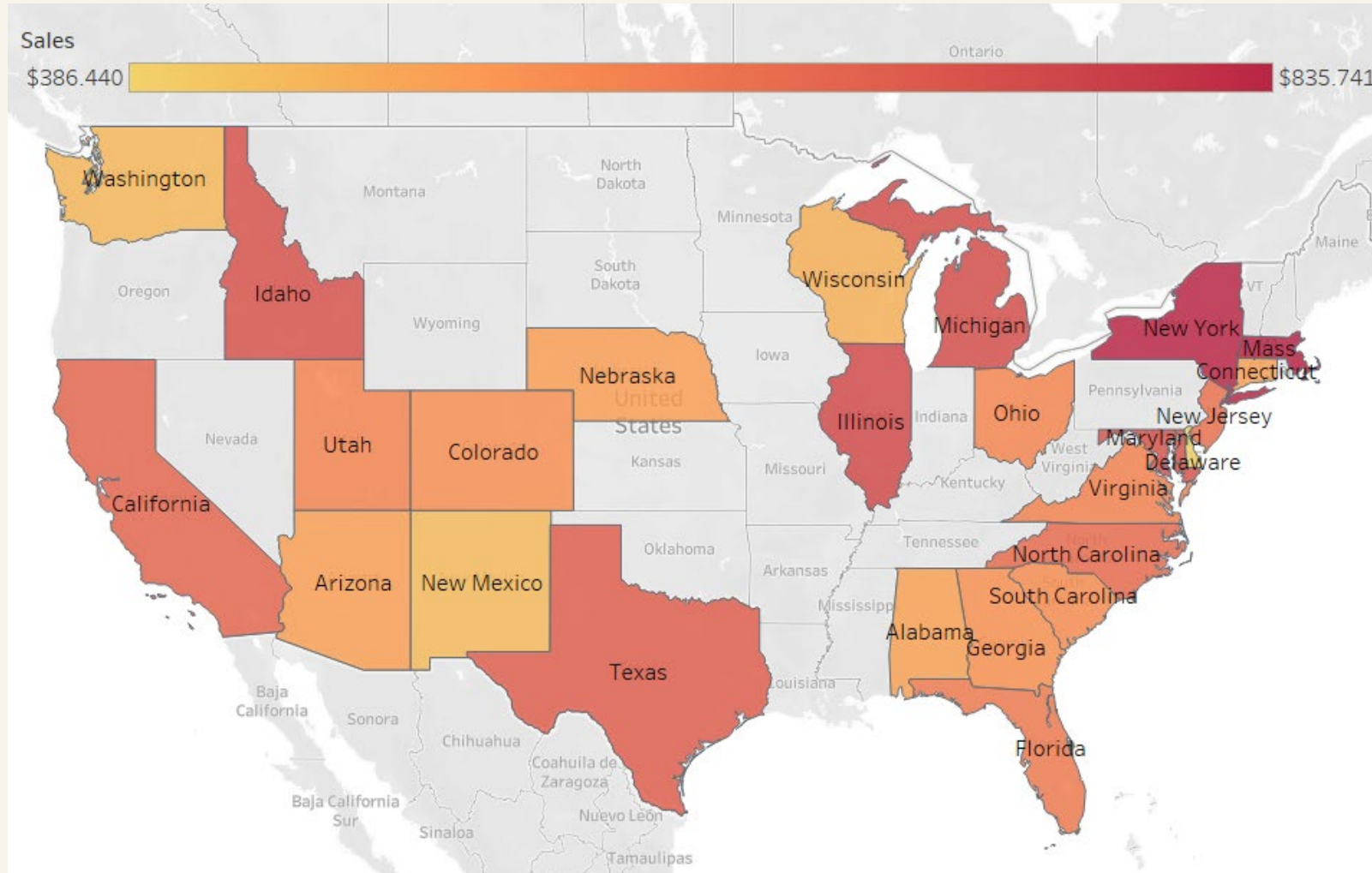
Some works, some doesn't

Rank ..	Customer State	
1	Mass	\$835.741
2	New York	\$831.648
3	Illinois	\$739.938
4	Michigan	\$724.796
5	Idaho	\$716.114
6	Maryland	\$710.286
7	Texas	\$680.918
8	California	\$657.255
9	North Carolina	\$645.288
10	New Jersey	\$625.862
11	Florida	\$601.613
12	Virginia	\$579.132
13	Utah	\$575.449
14	Ohio	\$568.705
15	South Carolina	\$551.898
16	Colorado	\$544.599
17	Georgia	\$542.208
18	Nebraska	\$509.839
19	Arizona	\$507.533
20	Connecticut	\$503.317
21	Alabama	\$501.548
22	Wisconsin	\$469.074
23	Washington	\$451.956
24	New Mexico	\$445.892
25	Delaware	\$386.440

Use bar chart to view the performance between states can be hard to track

Other approaches

Some works, some doesn't



This map can show the business efficiency for each state, highlighting the districts that perform worst to best

THANK YOU
For your Attention!

Any Questions

