

Superstore Meeting Information

Cover Page	Continue Current Customer Servic..	Stop Selling Unprofitable Pro..	Stop Selling Unprofitable Boo..	Stop Selling Unprofitable Hig..	Reduce Stock of Binders	Sales Trends Are Upwards	Keep Standard ..
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Application of Quantitative Data Displays and Techniques

4.08 Hands-on Assignment

Course: INFS 797
Dom Moran
Jan 17, 2025



Photo by Dennis Siqueira on Unsplash: <https://unsplash.com/photos/white-metal-shelf-with-food-packs-QnMeRW36-zY>

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\$51,180

was the total profit for Superstore Standard shipping mode orders in 2023, compared to \$36,546 in 2021.

This shows that Superstore is recovering well from the pandemic and should **continue its current customer service practices** to keep customers satisfied and continuing to shop at Superstore.

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Dashboard 2 - Table

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Profit Ratio by Sub-Category

Sub-Category	
Accessories	0.2505
Appliances	0.1694
Art	0.2405
Binders	0.1516
Bookcases	-0.0315
Chairs	0.0811
Copiers	0.3721
Envelopes	0.4228
Fasteners	0.2846
Furnishings	0.1453
Labels	0.4390
Machines	0.0182
Paper	0.4339
Phones	0.1358
Storage	0.0948
Supplies	-0.0251
Tables	-0.0853

Profit Ratio by Region

Region	
Central	0.07923
East	0.13715
South	0.11934
West	0.14977

Profit Ratio by Region by Year

Region	Order Date			
	2020	2021	2022	2023
Central	0.0052	0.1139	0.1348	0.0512
East	0.1404	0.1349	0.1127	0.1574
South	0.1144	0.1166	0.1891	0.0720
West	0.1342	0.1468	0.1287	0.1759

Between 2020 and 2023, in all regions, the **profit ratio** (proportion of sales that are profit) was **never above 0.2**. In addition to continuing current customer service practices and policies, Superstore should consider **removing unprofitable products** from store shelves to increase profits.

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Dashboard 3 - Heatmap

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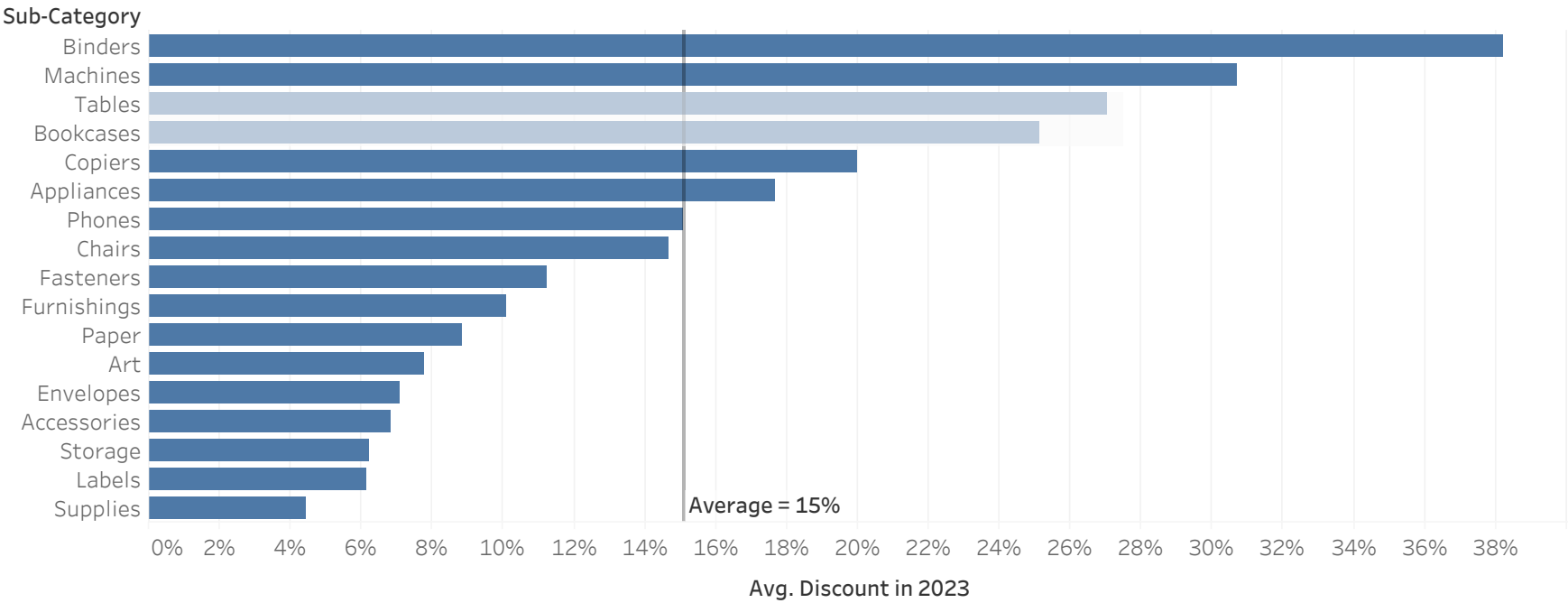
Bookcases, supplies, and tables were unprofitable sub-categories overall from 2020 to 2023, so Superstore should stop selling unprofitable products in those sub-categories.

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Dashboard 4 - Bar Chart

Cover..	Continue Current Customer Servic..	Stop Selling Unprofitable Pro..	Stop Selling Unprofitable Boo..	Stop Selling Unprofitable Hig..	Reduce Stock of Binders	Sales Trends Are Upwards	Keep Standard Class Option	Appli ance..
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Avg. Discount in 2023 per Sub-Category, Corporate Segement



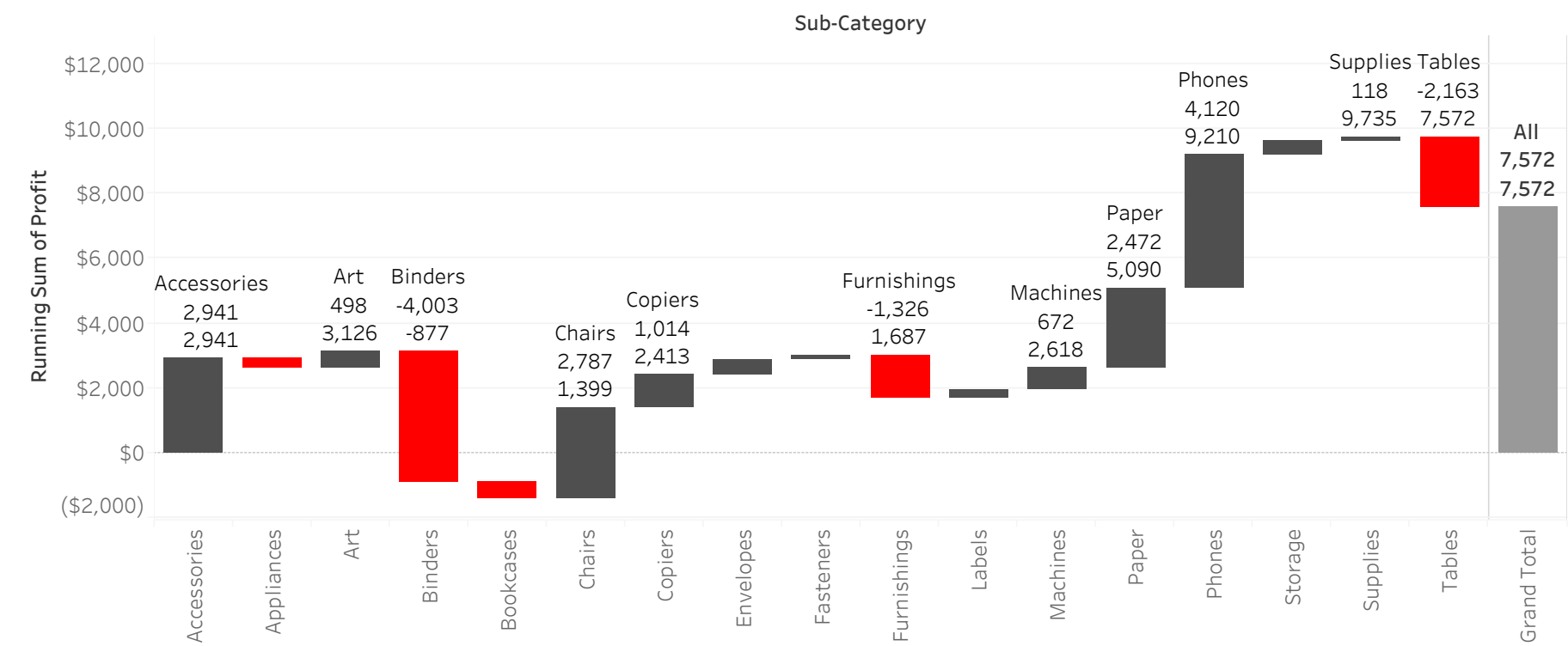
In 2023, in the corporate segment, the average discount over all sub-categories was about **15%**. Superstore should **continue offering discounts** on **profitable** and **highly discounted** items to please customers, and it should reduce its stock of unprofitable highly discounted items such as **bookcases** and **tables**.

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Dashboard 5 - Waterfall Chart

Co nt..	Stop Selling Unprofitable Pro..	Stop Selling Unprofitable Boo..	Stop Selling Unprofitable Hig..	Reduce Stock of Binders	Sales Trends Are Upwards	Keep Standard Class Option	Appliances/Labels Quantities Vary	Increase ..
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Contribution of Each Sub-Category to Total 2023 Profits (Central Region)



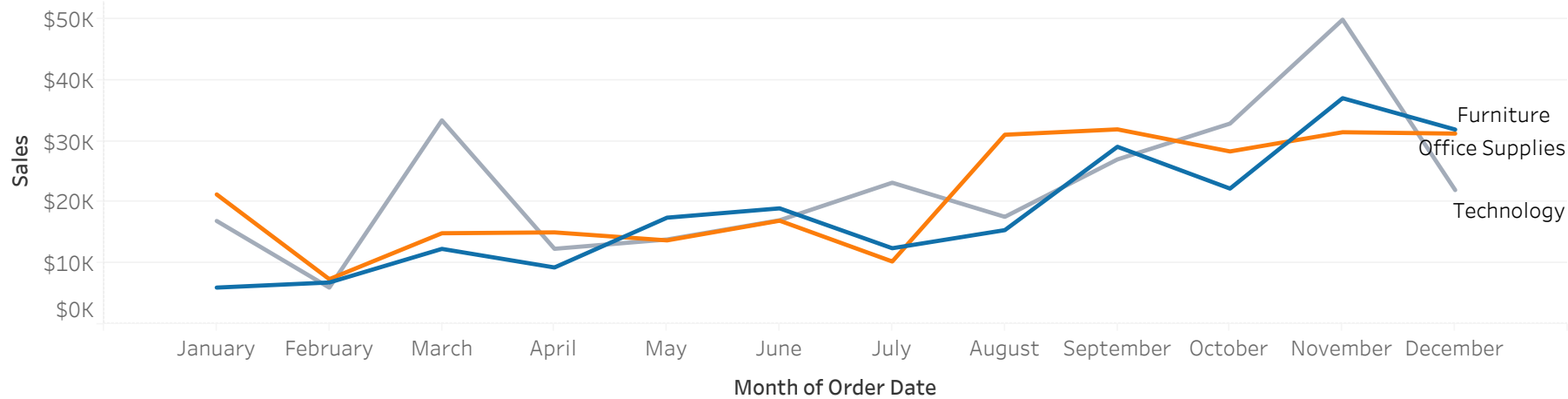
We previously saw that bookcases, supplies, and tables are not particularly profitable, and this visualization of each subcategory’s contribution to 2023 profits in the Central region confirms our previous finding. **Bookcases** and **tables** contributed a net loss overall, and **binders** also contributed a major loss for Superstore of **\$4,003**. Therefore, Superstore should also reduce its stock of binders.

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Dashboard 6 - Line Chart

Stop ..	Stop Selling Unprofitable Boo..	Stop Selling Unprofitable Hig..	Reduce Stock of Binders	Sales Trends Are Upwards	Keep Standard Class Option	Appliances/Labels Quantities Vary	Increase Discounted First-..	Consi der ..
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Category Trends by Month, 2023



All three trends seem to be going generally upwards. Each category’s **December** sales are **higher than** the **January** sales, though sales do both increase and decrease throughout the year for each category.

Technology has relatively high, sharp peaks in terms of sales. Because of these peaks, the technology sales trend seems to **follow** the furniture and office supplies **sales trends less closely** than those two trends follow each other.

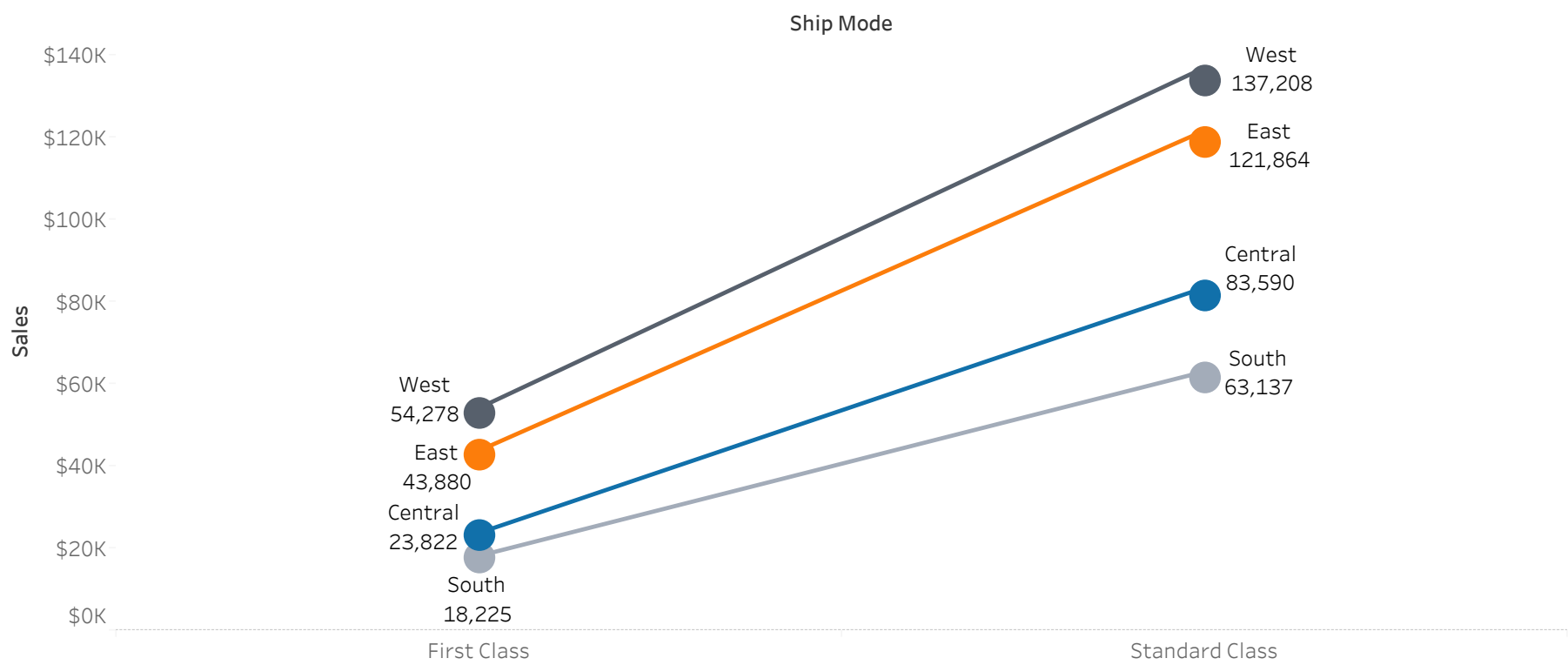
To increase December technology sales, Superstore could increase advertising for new phones and other devices as Christmas gifts.

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Dashboard 7 - Slopegraph

Stop ..	Stop Selling Unprofitable Hig..	Reduce Stock of Binders	Sales Trends Are Upwards	Keep Standard Class Option	Appliances/Labels Quantities Vary	Increase Discounted First-..	Consider Oregon Expansion	Appe ndix
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Changes in Sales From First Class to Standard Class by Region, 2023



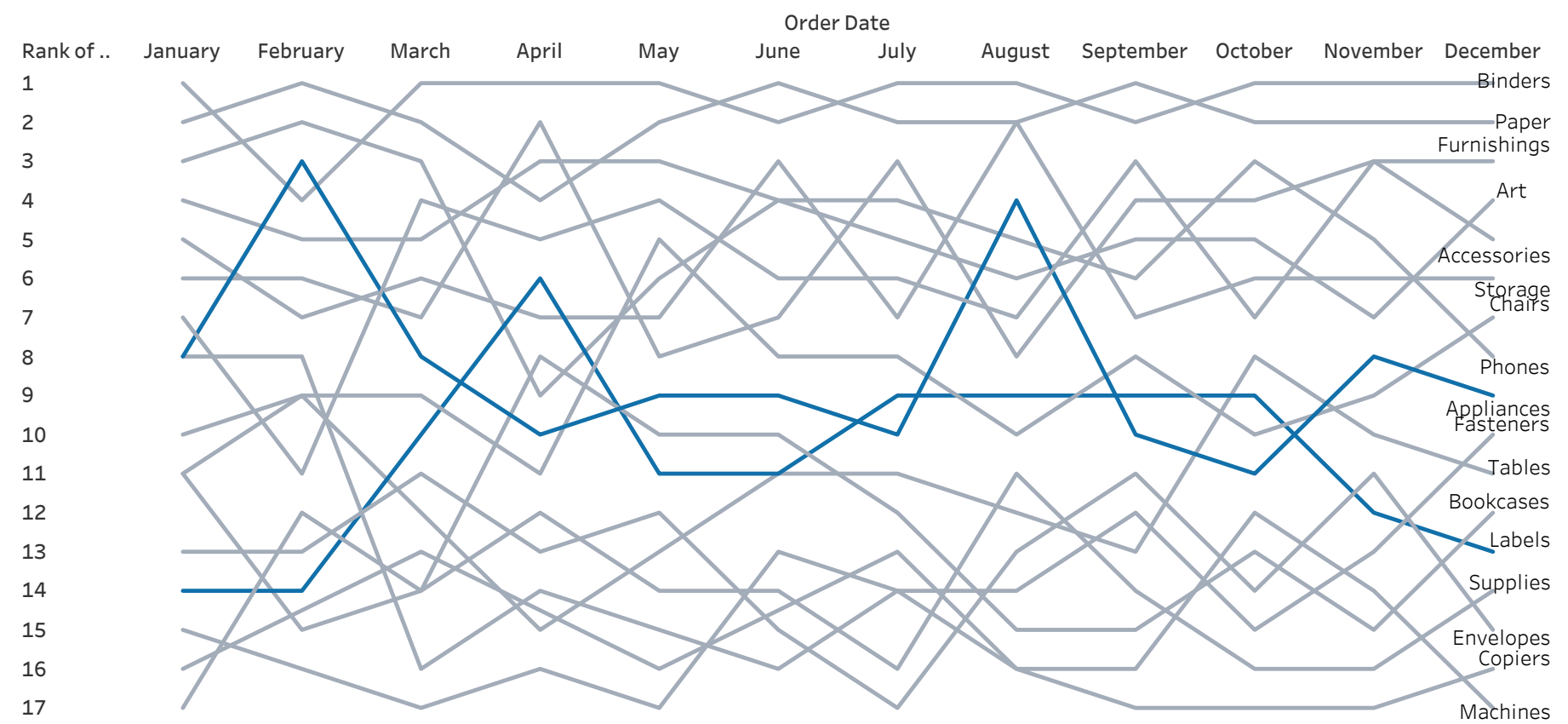
In every region, **Standard Class**-shipped orders bring in **more sales** than **First Class**-shipped orders. Superstore should continue to make Standard Class shipping an option for customers who shop online.

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Dashboard 8 - Bumpchart

Stop ..	Reduce Stock of Binders	Sales Trends Are Upwards	Keep Standard Class Option	Appliances/Labels Quantities Vary	Increase Discounted First-..	Consider Oregon Expansion	Appendix	Appen dix ..
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Sub-Category Quantity Ranking per Month, 2023



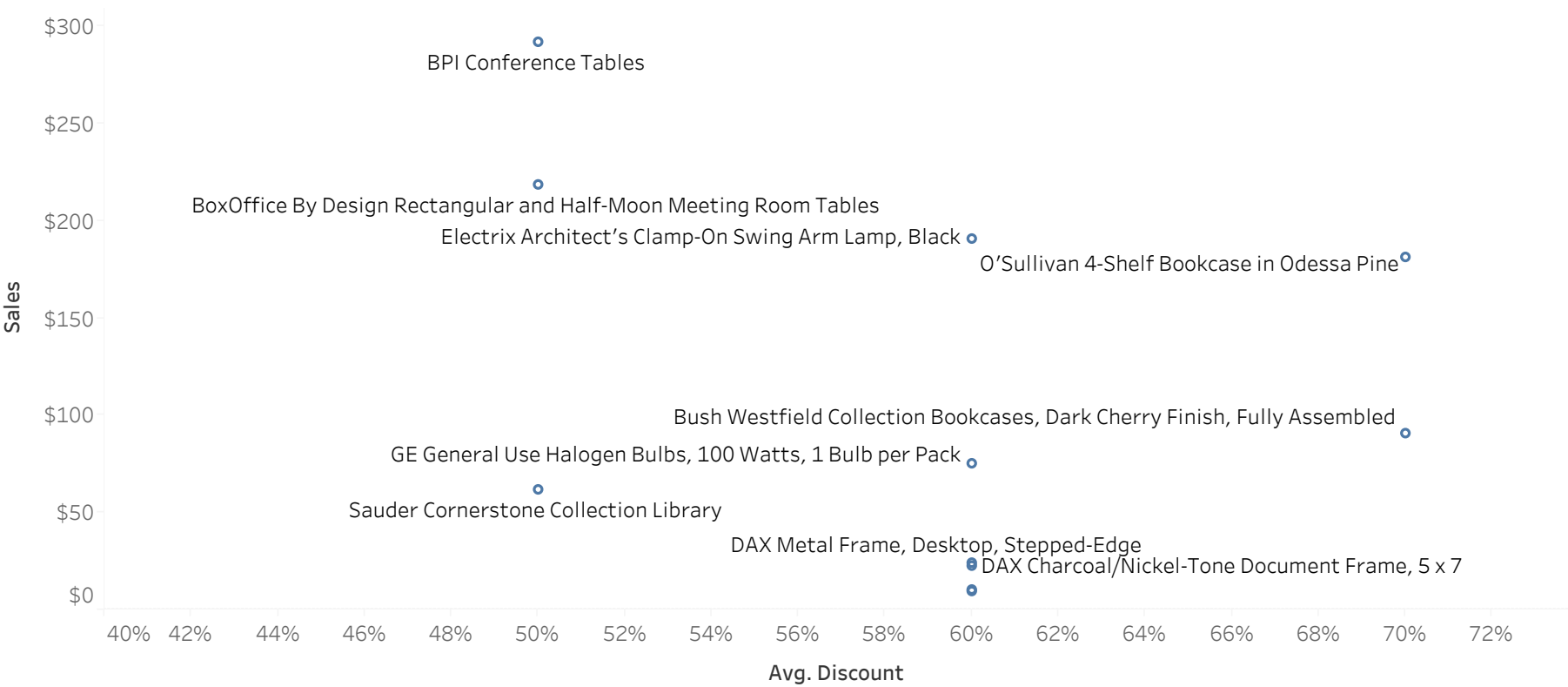
Appliances and labels are two sub-categories that were particularly dynamic in terms of quantity of items sold in 2023. It would be interesting to explore the February to April quantity ranking change for labels.

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Dashboard 9 - Scatter Plot

Reduce Stock of B..	Sales Trends Are Upwards	Keep Standard Class Option	Appliances/Labels Quantities Vary	Increase Discounted First-..	Consider Oregon Expansion	Appendix	Appendix (continued)
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Sales vs. Discount for First-Class Furniture Products

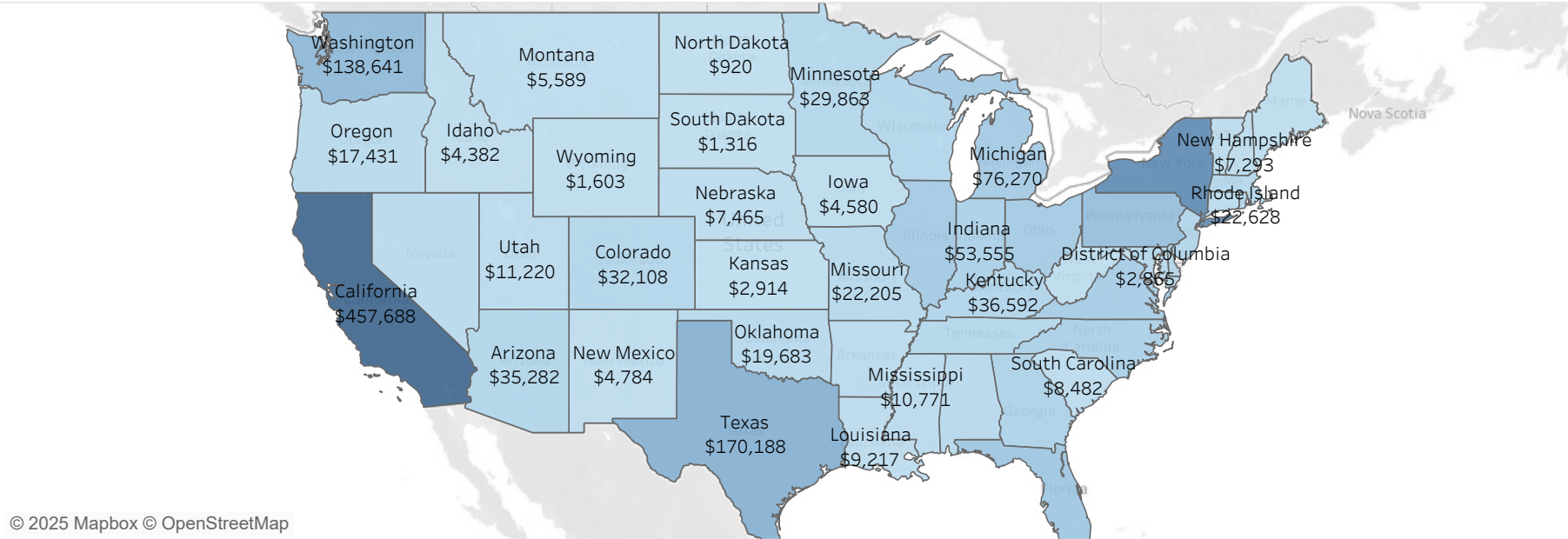


These are the **First Class**-shipped **furniture** products that Superstore **discounts** for **50% or more** but that have only brought in **\$500 or fewer** in **sales**. Management should speak with the product managers for these products and effectively work towards an increase in sales.

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Dashboard 10 - Geographic Heat Map

Reduce Stock of B..	Sales Trends Are Upwards	Keep Standard Class Option	Appliances/Labels Quantities Vary	Increase Discounted First-..	Consider Oregon Expansion	Appendix	Appendix (continued)
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Here we can see Superstore’s **total 2020-2023 sales** in each state. If Superstore is looking to open new stores, it should first consider **Oregon**. In neighboring California and Washington, Superstore is already a proven success with 2020-2023 sales totals of **well over \$100,000** in each state.

Therefore, expansion in Oregon may be less risky than in some other states with low sales numbers.

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Reduce Stock of B..	Sales Trends Are Upwards	Keep Standard Class Option	Appliances/Labels Quantities Vary	Increase Discounted First-..	Consider Oregon Expansion	Appendix	Appendix (continued)
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For the first visualization, I did simple text and numbers because there are only two numbers being looked at in that case. The use of preattentive attributes such as color and size emphasizes the numbers themselves, the corresponding years, and the recommendation to continue current customer service practices.

For the second visualization, I used tables because the audience is a mix of people in terms of interests and knowledge who would be looking for different metrics. Moreover, tables can provide the exact numerical values in which this audience is interested. At first I tried to fit all of the data into one table, but after this turned out not to fit on one page without making scrolling necessary, I split the data into three tables (across sub-categories, across regions, across regions by year).

For the third visualization, I did a heatmap because a heatmap is just a table that encodes each cell with color based on the magnitude of a particular variable. This matched up exactly with the description for #3, which is that the visualization must be the same as #2 but with color cues to indicate a variable’s magnitude.

For the fourth visualization, I used a bar chart because it is a visualization that can depict magnitudes and be sorted. A bar chart can be made without labels for the magnitudes, which makes it easier to look at the whole and avoid getting buried in details. It is also easy to add a reference line to indicate the average of all magnitudes on a bar chart.

For the fifth visualization, I used a waterfall chart because waterfall charts show how various parts of a whole contribute to that whole. In this case, the chart shows how each sub-category’s 2023 Central region profit contributes to the total 2023 Central region profit.

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For the sixth visualization, I used a line chart because line charts are appropriate for showing trends over time. Line charts are good for capturing the big picture and the overall shape of each trend rather than digging into the fine details. It is also easy to take multiple series, encode each one as a line, and compare them over time.

For the seventh visualization, I used a slopegraph because slopegraphs are ideal for comparing increases and decreases in the Y-axis variable between two X-axis variable values. The X-axis variable values could be periods of time, or, as in this case, they could even be categorical variable values.

For the eighth visualization, I used a bumpchart because bumpcharts show how rankings of a quantity by a certain variable change over time. The rankings and their changes over time are encoded as lines, which can be highlighted simply by changing the line colors around.

For the ninth visualization, I used a scatterplot because scatterplots are ideal for exploring relationships between 2 quantitative variables, such as discount and sales.

For the tenth visualization, I used a geospatial heat map because the state-level analysis requires a geospatial map, and the sales amount color encoding is well-suited for a heat map.