

CLIENT BACKGROUND

Our project partners are **Circle K**, a global convenience retailer with a network of more than 17,000 stores, and **Bruegmann**, a retail industry leader in display shelving trying to break into the US market

The project replaces Circle K wire shelves that hold shelf-ready candy packaging with two new Bruegmann shelves.



PROBLEM STATEMENT

Focus: comparing two design solutions for candy displays to a control system



Provides: assistance for the lack of internal resources to analyze data

Goals: measure economic and operational impacts of new solutions



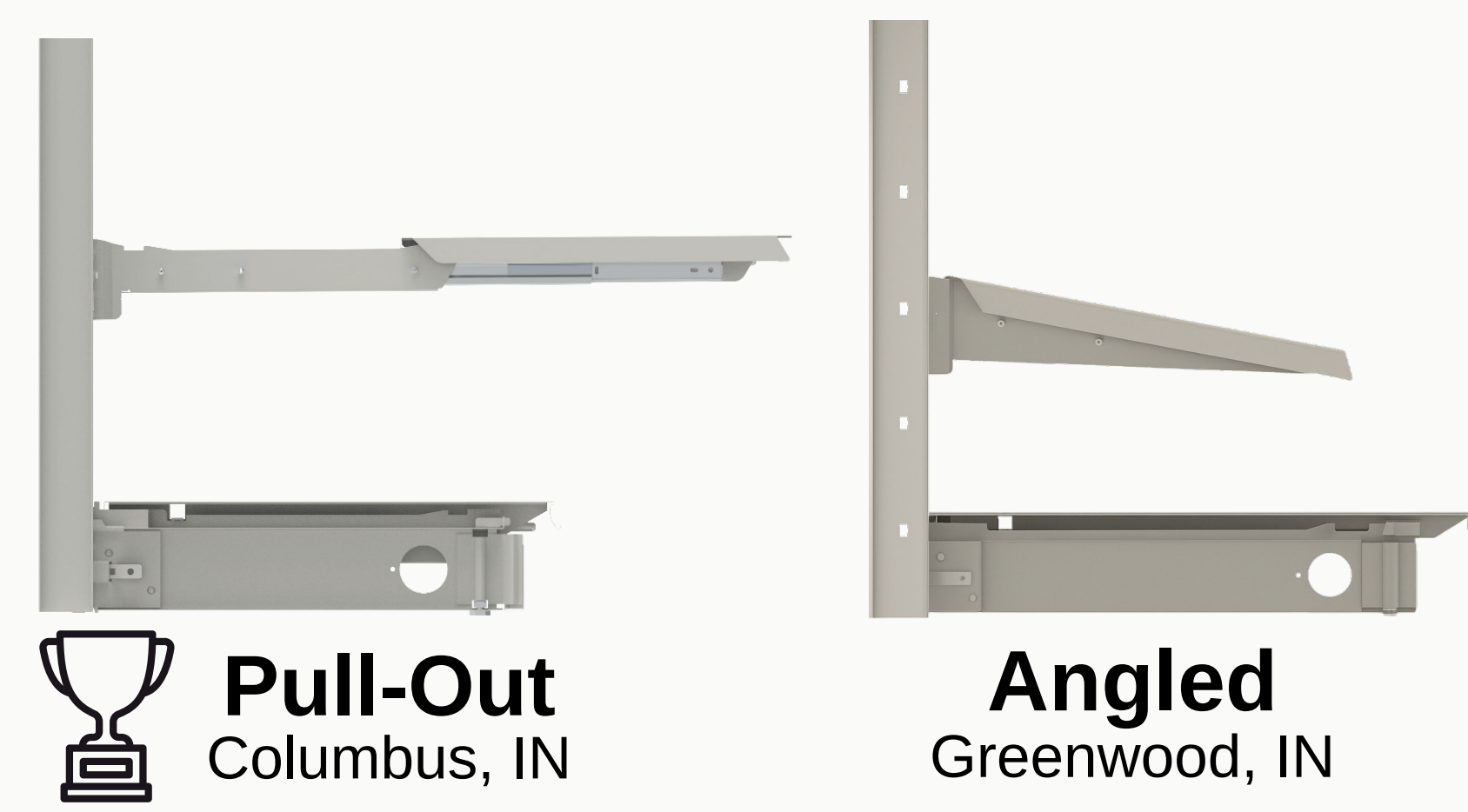
Project Champion: Katja Kirchner

Provides: data to make evidence-based decisions and data-driven recommendations

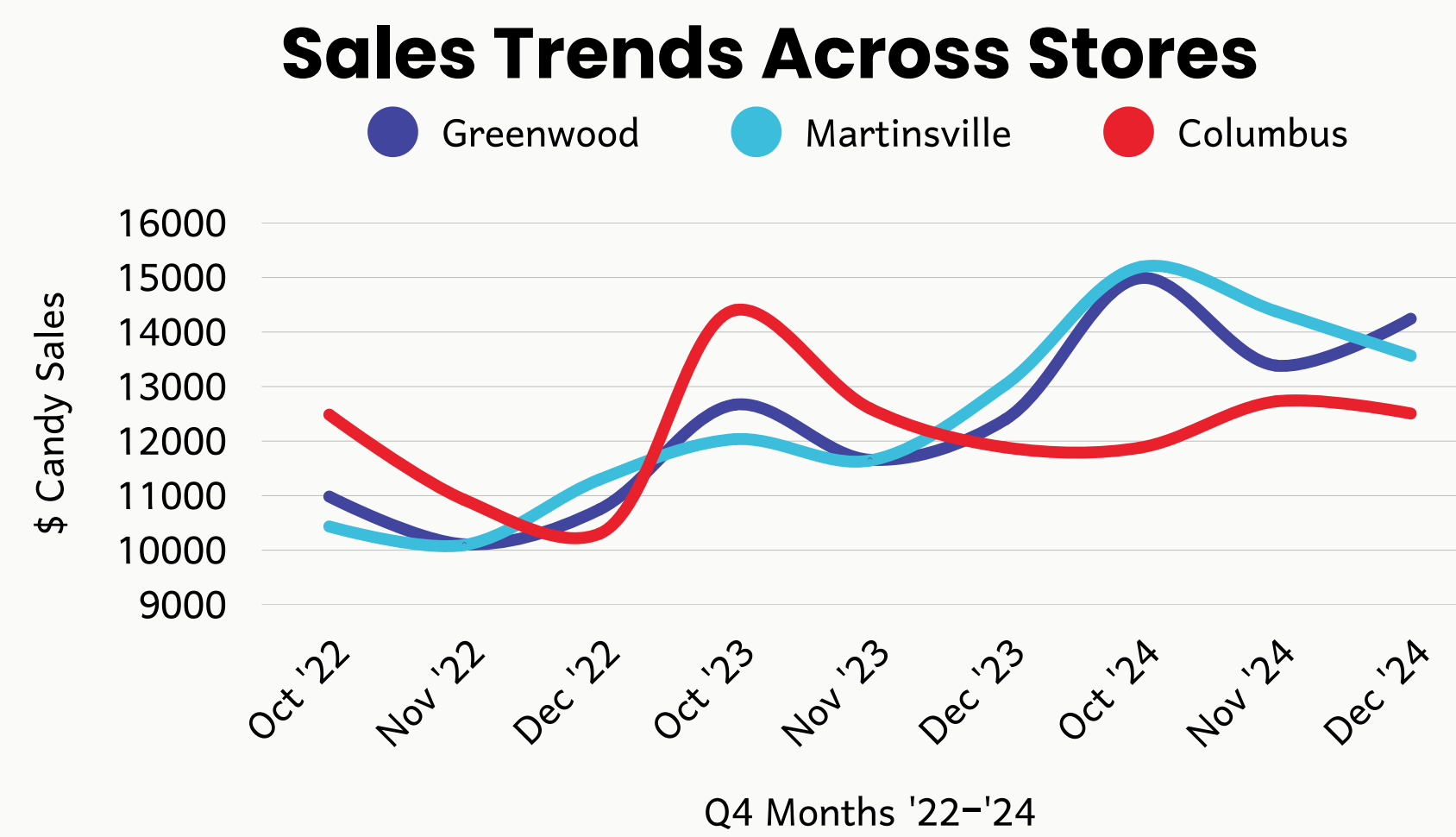
Goals: identify good, better, and best ranking of display system types for US market

Metrics: ROI, Sales Impact, Labor Cost, Holding Capacity & Employee Satisfaction

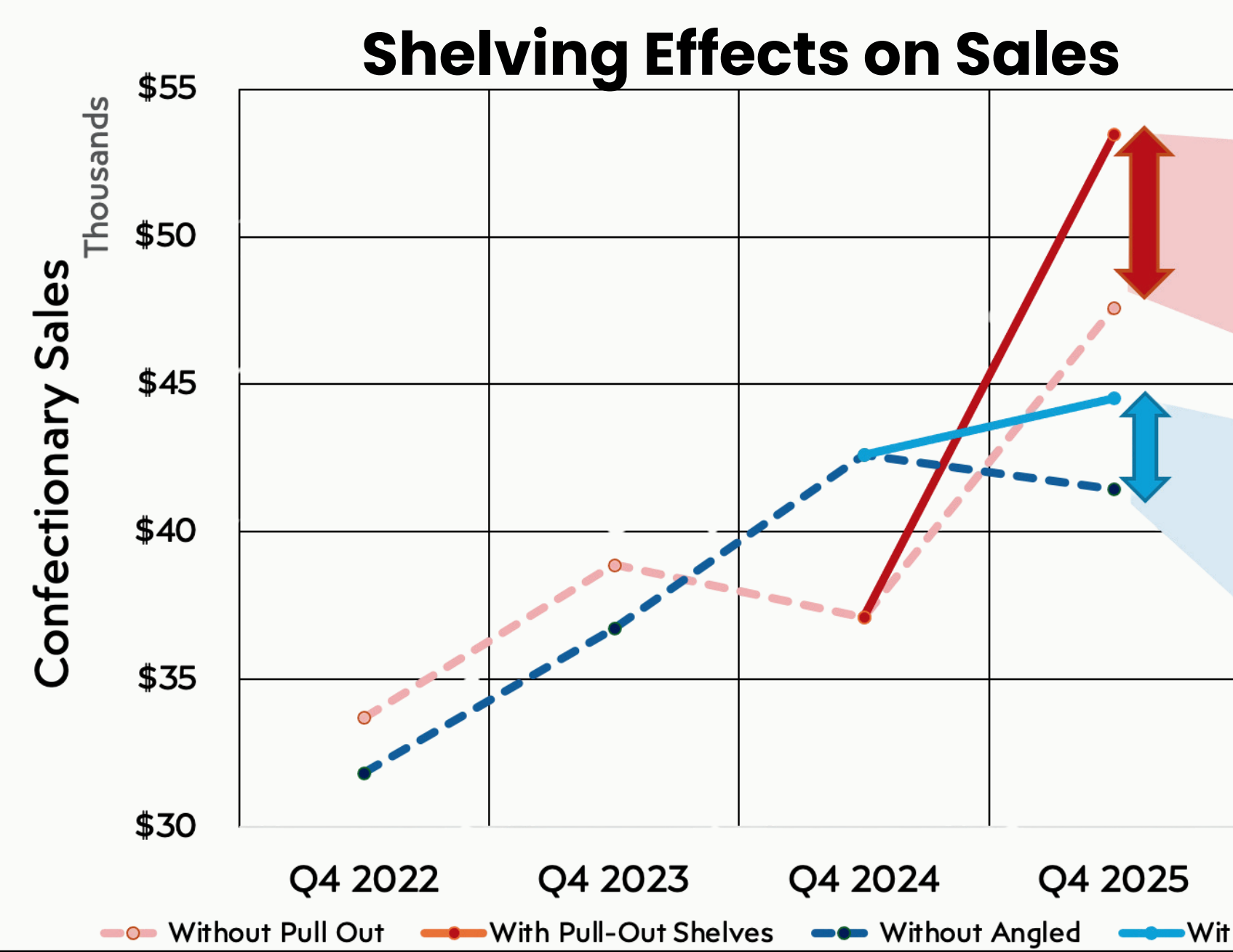
SHELVING TYPES



PARALLEL TREND ANALYSIS

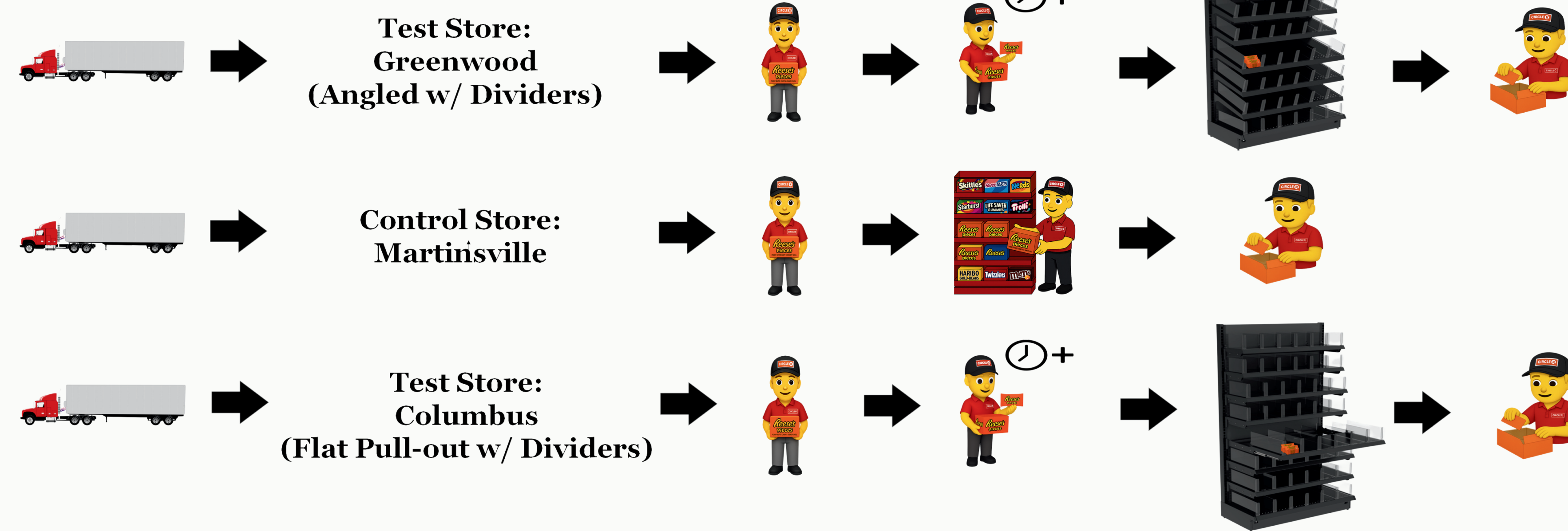


DIFFERENCE IN DIFFERENCE ANALYSIS



- Measures the impact of a shelving solution by comparing normal sales changes over time
- Compares test and control stores before and after installation
- Accounts for: seasonality, macroeconomic shifts, shared trends

SYSTEM MODEL



APPROACHES & RESULTS

ROI

Angled Shelving : Pull-Out Shelving
\$1242, 4 months : \$1545, 4 months

- Used to evaluate the financial impact of the shelving solutions
- ROI = (Net gains from shelves - Cost of shelves) / Cost of shelves

TIME STUDY

- Simulated employee stocking
- Shelf-Ready Packaging: 14.25 sec/box
- Estimated \$13/hour, 240 restocks/quarter
- Angled Shelving ~ \$28/qtr increase
- Pull-Out ~ \$25/qtr increase in labor cost

Quarterly Labor Cost

Pull-Out	\$36.90
Angled	\$39.76
Control	\$12.35

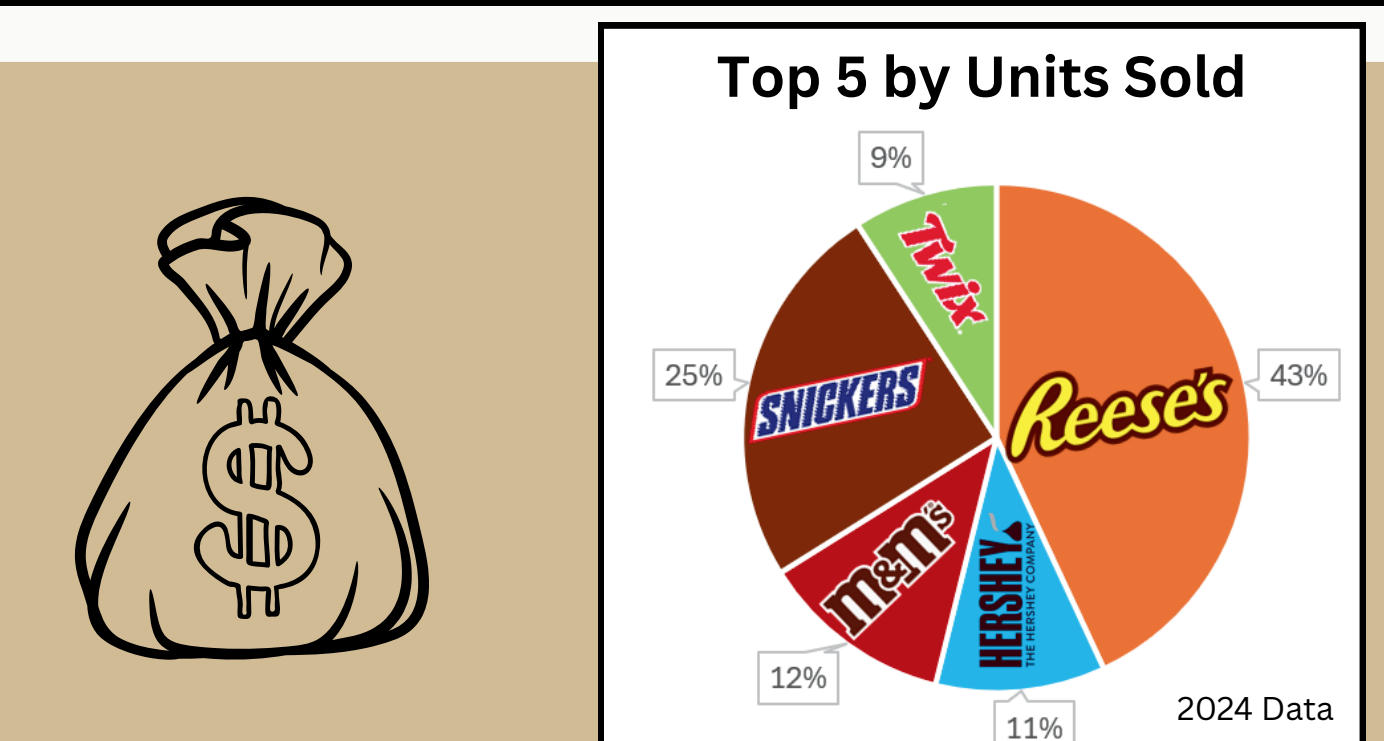
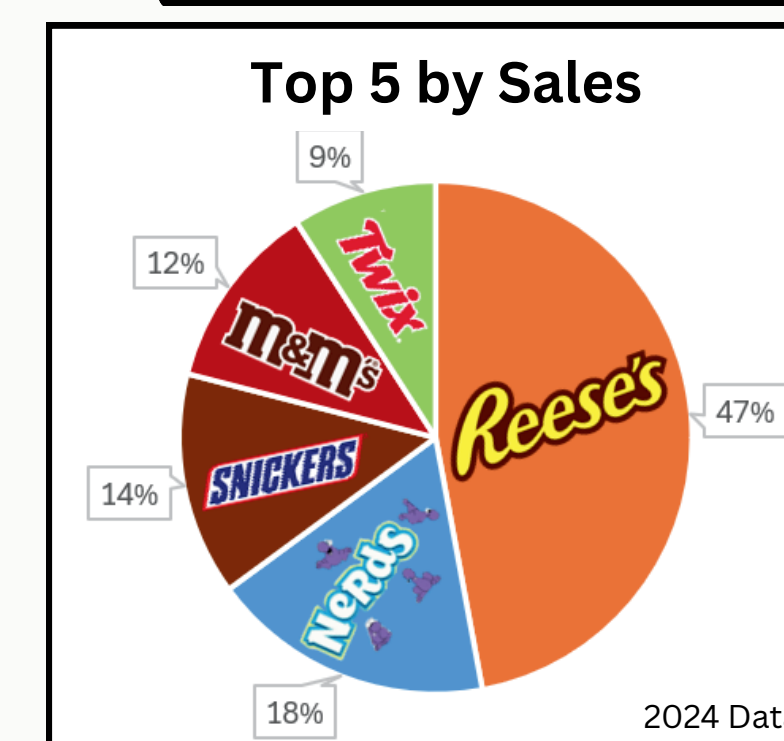
SUBJECTIVE SURVEYS

- Taken to poll employee satisfaction
- NASA-TLX and SART
- Initial impressions are positive, particularly toward aesthetic
- Stocking took longer but not burdensome

Question	Method
Does any aspect of this job feel overwhelming or cause you to actively make decisions and demand your attention?	NASA TLX
How much coordination does this task require if any to restock ready packaging. Will dividers and pullout systems help with this?	NASA TLX
Do you ever feel pressed for time like you must rush certain steps in process?	NASA TLX
Does this task require extra effort to maintain accuracy; Goal for this question is to see if having to organize brand name after installation will cause adverse responses?	NASA TLX

ERGONOMIC STUDY

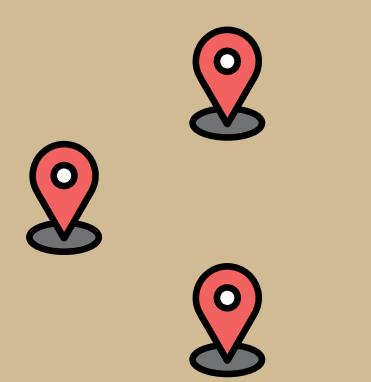
- Angled Shelving required an awkward reach to comply with FIFO
- Pull-Out shelving was better but likely to have products fall behind shelves, necessitating reach



References



TEST STORES



LIMITING FACTORS



- Fixed planograms
- Employee adherence to system changes
- Data availability



- Shelving designs
- Shipping and installation timeline

DISCUSSION

Data

- Researched public sales data for '22
- Given sales data for '23 & '24 for Q4
- Purdue generated 2025 future data

Format

- Q4, project study duration
- By month for degrees of freedom

Generated data

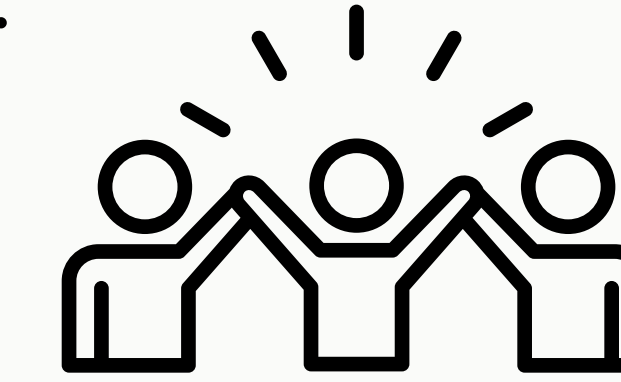
- Followed year-to-year sales trends
- Adjusted & analyzed for success by industry KPIs (5-10%)

CONCLUSION

The DiD analysis requires more data than was provided. Based on other approaches, if Circle K implements the Pull-Out Shelving, they'll see a boost in sales, employee satisfaction, and operational efficiency.

Future implementation

- Integrate shelving on larger scale
- Evaluate effect on damaged candy
- Evaluate inventory & holding capacity
- Evaluate impact on customers
- Train employees on best utilization



RECOMMENDATIONS

Based on our real-world analysis, **Circle K** should implement the Pull-Out Shelving Solution region-wide and **Bruegmann** should pitch the Pull-Out Shelves to American convenience stores. Critical shelf redesign is needed to prevent candy from falling off the back of displays and for planogram specifics.

Once data is procured, Purdue will have provided a blueprint. This will lay out:

- Data required
- DiD Model operation
- Graphs and ROI output interpretation

