



From Cluster To Counter

A Segmented Approach To Planogram Design

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Problem Statement



Small Regional Key Accounts

Optimal Planogram

- Tailored to common store specificities
- Streamlined creation process
- Economically viable level of granularity
- Compatibility with current planograms



Undifferentiated Standard Planogram



Unviable to be store-specific



Art & Science

Data

Historic Sales data



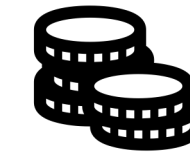
Product Attributes



Customers



Profitability



Income



Education



Age

Pilot set of **157** Regional Key Accounts

Methodology

Order Of Entry Per Store

1



Historical Sales Data
EQ
COGS
Store
Brand
Format
Size

2



Velocity Per SKU

Derived metric

Sales

Fixed time frame

3



Order Of Entry

"Prioritized sequence in which **products** should be allocated shelf space within a planogram"

New Metric: Profitability X Velocity = **Profit per week**
(\$/Unit) (Units/Week) \$/Week

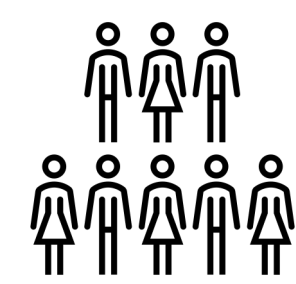
Currently used in creating Planograms

Planograms are now designed with **profitability** in mind, not only velocity

Segmentation

Data Preprocessing

Top-Down Processing



Census Data

Selected 18 features out of the 565 available



Shopper Demographics

Bottom-Up Processing



Historical Sales Data

Engineered composite features to capture trends



Relationship with CCSWB

Model Selection

K-Means Clustering

Simplicity and Speed



Assumes spherical clusters



Binary Assignment

VS

Gaussian Mixture Models

Flexible cluster shape

Probabilistic Assignment

Computationally Intensive

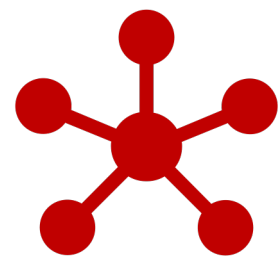
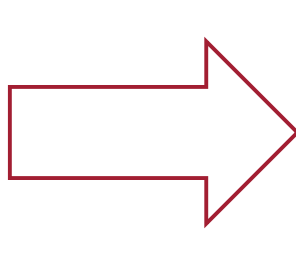
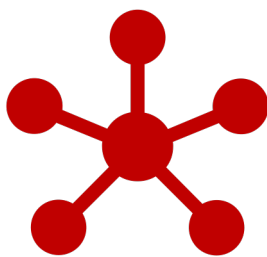
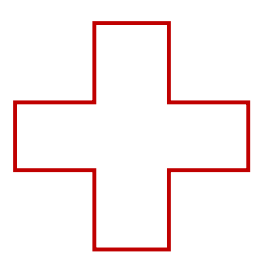
Produces clusters better aligned with business knowledge

Order Of Entry Per Segment

OOE per Store

Cluster Assignment

OOE per Segment



Wisdom Of The Crowds

Tradeoff: Optimal vs Robust

Profit-Based Ranking



Maximizes returns



Is highly sensible to outliers

VS

Ranked Majority Voting



Robust to Outliers



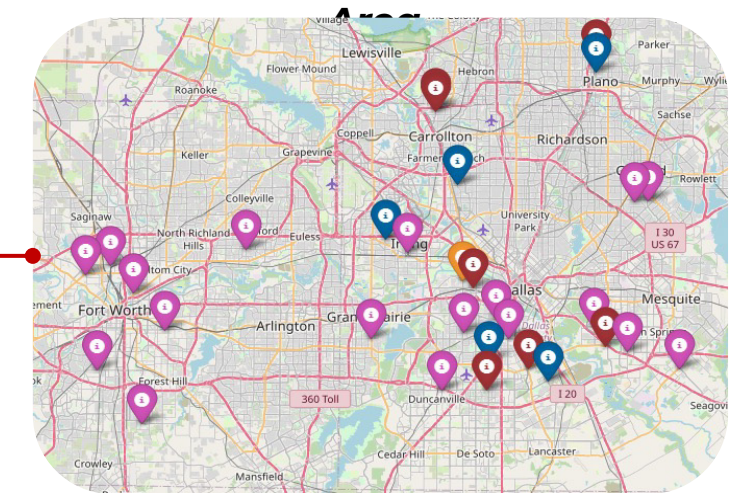
Profit is not maximized

No clear winner, so both methods are retained in the final pipeline

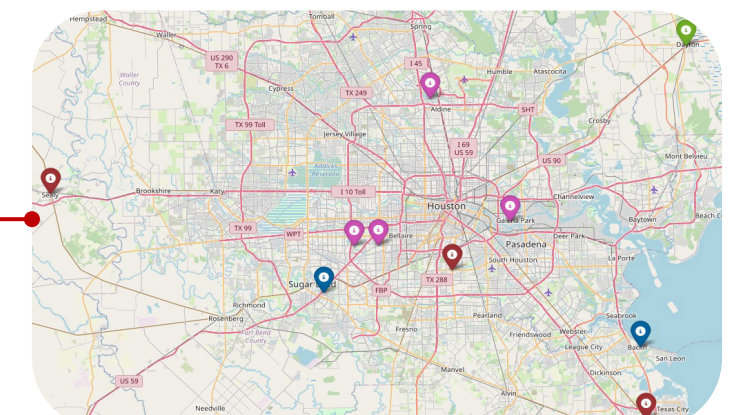
Segmentation

Clusters = 5

Focus On: Dallas Fort-Worth Area



Focus On: Houston Area



Impact

Direct Impact

+ \$1.4 Million
+ 15%

In Gross Profit
Across the 157
Stores

Modular Pipeline

- Modular design to ensure integration with current and future systems
- New Inputs can be provided without hindering scalability

Indirect Impact

Knowledge Transfer Sessions

- Avoid the loss of acquired informal knowledge

Project Spillover

- Sociodemographic features now available at the census Tract level
- Developed best practices for Geospatial data manipulation

Standard Planogram

