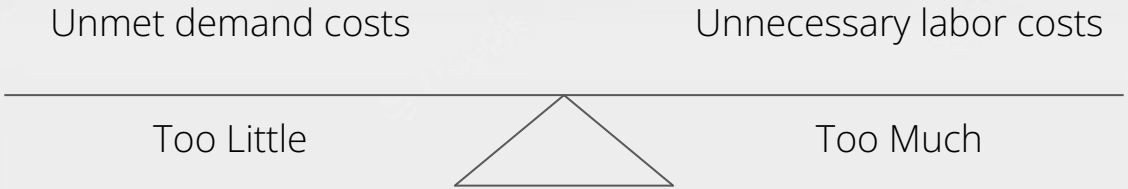
Problem

How much toothpaste do I stock?



Data

Store	Date	Weekly_Sales	Holiday_Flag	Temperature	Fuel Price	CPI	Unemployment
int	str	float	int	float	float	float	float

One product:
Toothpaste

$3 per unit

Unmet demand cost: $2 per unit

Labor cost: $19 / hr, 1 hr / stock 100 units

$0.19 per unit

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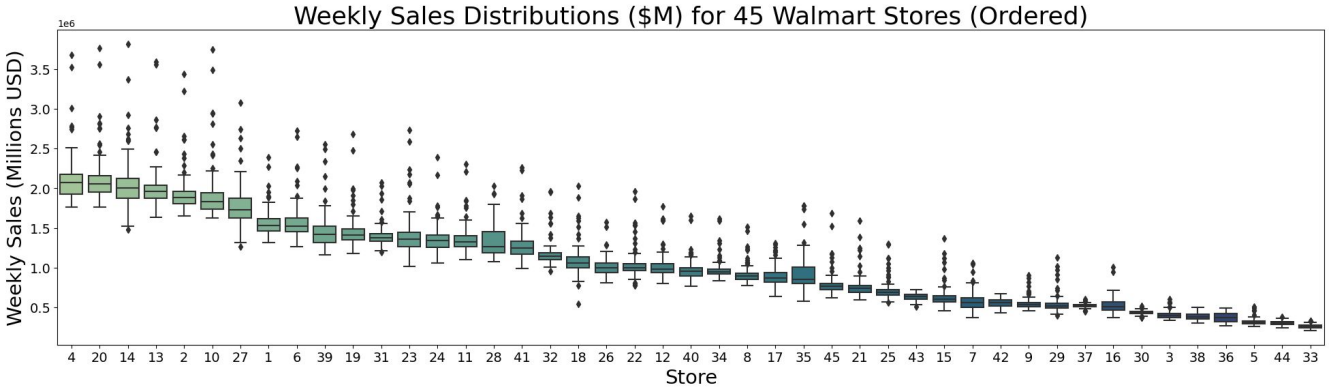
Why care?

Walmart profits: $140B+ annually

Optimizing how much product we stock per store per week scales to save billions of dollars per year

Even within 45 stores there is such variability



Approach

Weekly Revenue

Stocking costs

Unmet demand

"How good is this prescription?"

$$c(z, y) = min(3z, y) - z(\frac{19}{100}) - 2min(3z - y, 0)$$

z = our prescription
y = actual weekly sales

Current prescription methods

- SAA
- Regress and Compare
- Store Baseline

The tricks up our sleeve

- CART for Prescription
- ORT

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Key Insights

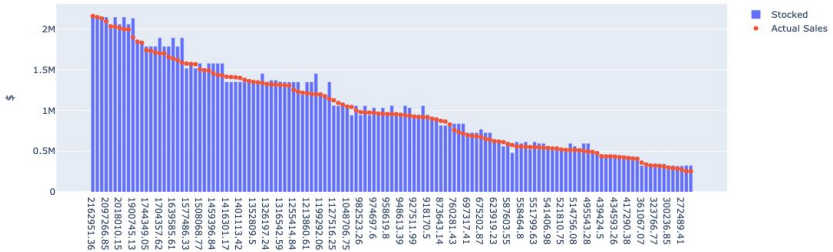
SAA Stocked vs Actual Sales

SAA: $537,652.92 / week

CART Stocked vs Actual Sales

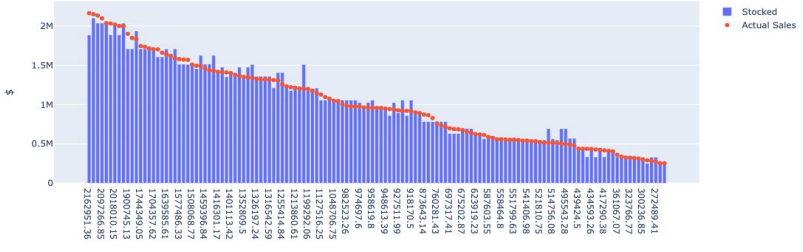
CART: $896,813.69 / week

R&C Stocked vs Actual Sales



R&C: $837,430.68 / week

ORT Stocked vs Actual Sales



ORT: $915,831.93 / week

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