

# KPN Formulas

## Retail Shops Case Study

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# Retail Shops Case Study

## Revenue, Formulas, and Features

- Introduction
  - Data
  - Research questions
- Analysis
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  - Results
- Conclusion
  - Takeaways
  - Next steps



# Introduction

## Shop Data

### Formulas

- KPN, KPN XL, Telfort

### Response

- Committed Revenue

### Features

- no. residents, no. companies, no. retail shops
- Avg. house value, avg. house size

\*None time-varying



# Introduction

## Research Questions

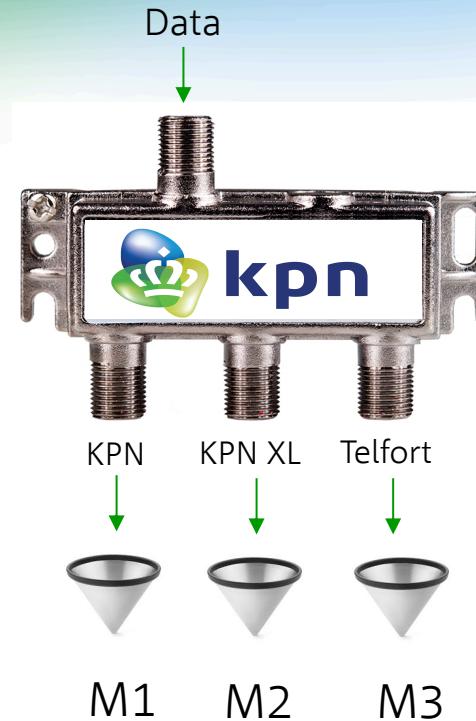
1. For each shop formula, which features meaningfully impact avg. revenue?
2. Which Telfort shops should we convert to KPN? The € impact?
3. Which five KPN shops should we convert to KPN XL? The € impact?

# Analysis Approach

## Linear Regression

1. Sort by shop formula
2. Filter to meaningful features
3. Interpret Results

$$M_i: Avg\_Rev_i = C_0 + C_{1,i}F_{1,i} + C_{2,i}F_{2,i} + \dots$$



# Analysis Results

## Model Overview

- 139 shops
- Statistically significant model
- 10 significant features retained
- Explains approximately 73% of the variation in shop average revenue

# Analysis Results

## Important Features

### KPN (95 shops)

- Shop average (coefficient = 7288, p-value = 0.00)
- Closet KPN shop in km (- 42, 0.01)
- Number of companies in area (- 0.05, 0.04)
- Number of residents in place of sale (0.005, 0.12)

### Telfort (29 shops)

- Shop average (1790, 0.00)
- Number of retail shops in area (-0.30, 0.22)
- Number of residents in place of sale (0.008, 0.17)

### KPN\_XL (15 shops)

- Number of retail shops in area (2.00, 0.02)
- Number of companies in area (-0.36, 0.02)
- Average house value in area (35.58, 0.01)

# Results

## Shop Conversion: Telfort to KPN

1. Maastricht: €5916 increase
  2. Helmond: €5740 increase
  3. Breda: €5676 increase
  4. Almelo: €5569 increase
  5. Enschede: €5534 increase
- \* Model predicts increased revenue for all shops

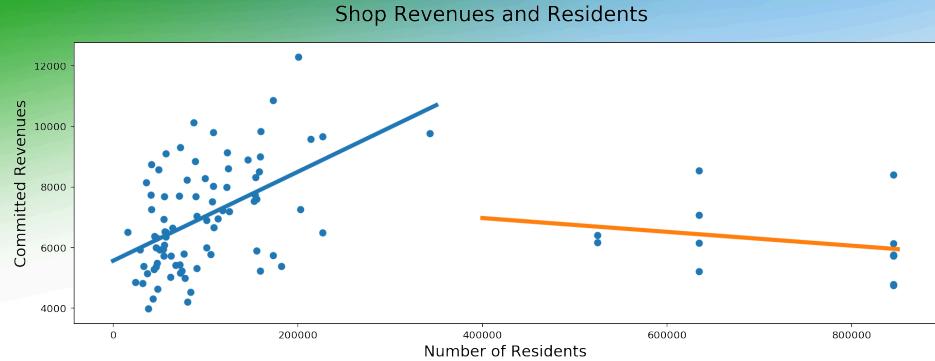
# Results

## Shop Conversion: KPN to KPN XL

1. Amersfoort: €1576 increase
2. Goes: €1012 increase
3. Havelte: €670 increase
4. Rotterdam (CL704): €578 increase
5. Arnhem (AH007): €562 increase

# Retail Shops Case Study

## Conclusion: Not so Fast



### Concerns

- Association is not causation; e.g. surfing and ice cream
- Oversimplification: “confounding” variables; e.g. plants and First Law

### Action/Recommendation

- Must be now: empirical option--convert highest grossing shops
- Future: model diagnostics, further analysis, conversations

# Thanks! Questions?

