

# Croq'Pain



## Case Study 2

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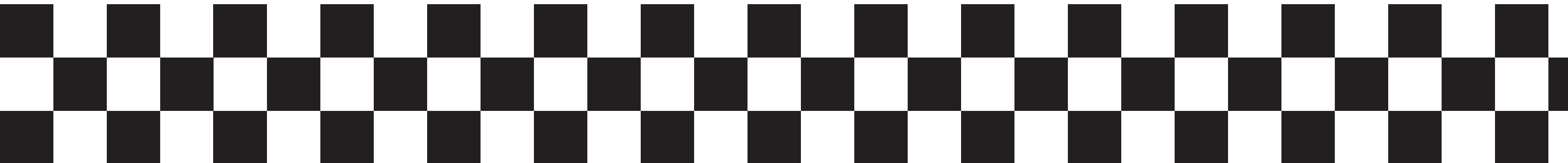
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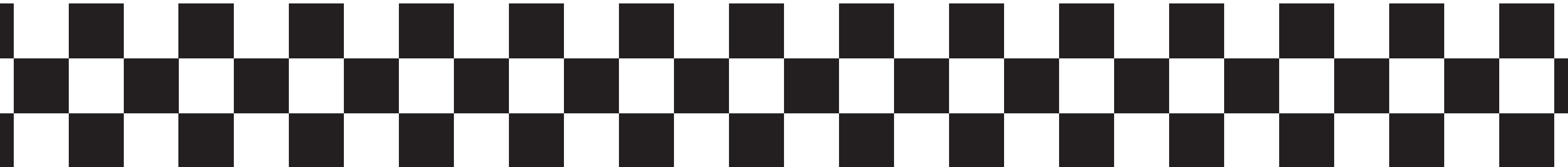


# Introduction

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- Croq' Pain is a French chain of restaurants, started as a response to American fast food.
  - *Keeping the speed but not sacrificing quality.*
- The first store was successful with businessmen and shoppers.
- Determine the ideal locations where Croq' Pain should open their stores.
- Fix & edit their current regression model:
  - Signs of Multicollinearity & Heteroscedasticity

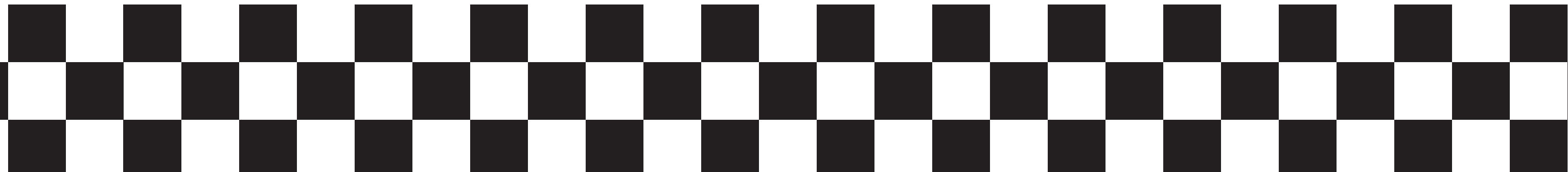


# Original Model Analysis

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- Too many explanatory variables with high p-values and no significance
- P15, P35, and P45 have a high correlation coefficient causing **multicollinearity**
- Used Variance Inflation Factor (VIF) to confirm:

SIZE	EMPL	total	P15	P25	P35	P45
1.152858	1.124262	251.351159	45.670193	12.292057	60.500390	103.262731
P55	INC	COMP	NCOMP	NREST	PRICE	CLI
16.327545	1.183307	1.305389	1.215359	1.217932	1.388799	1.323541



# Analysis

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- The explanatory variables of the earnings should be:

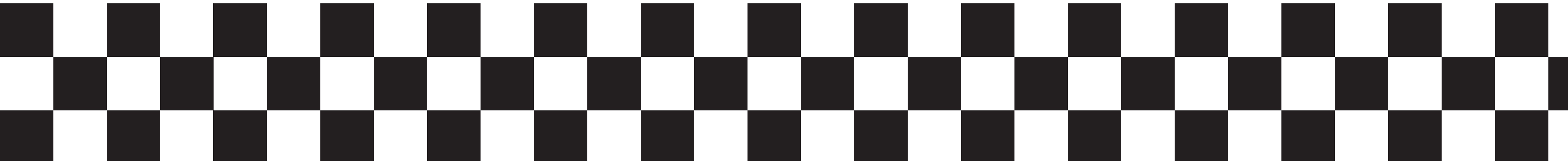
**Capital Invested (K)**

**Average Income (INC)**

**Natural Log of the Size of the Store (SIZE)**

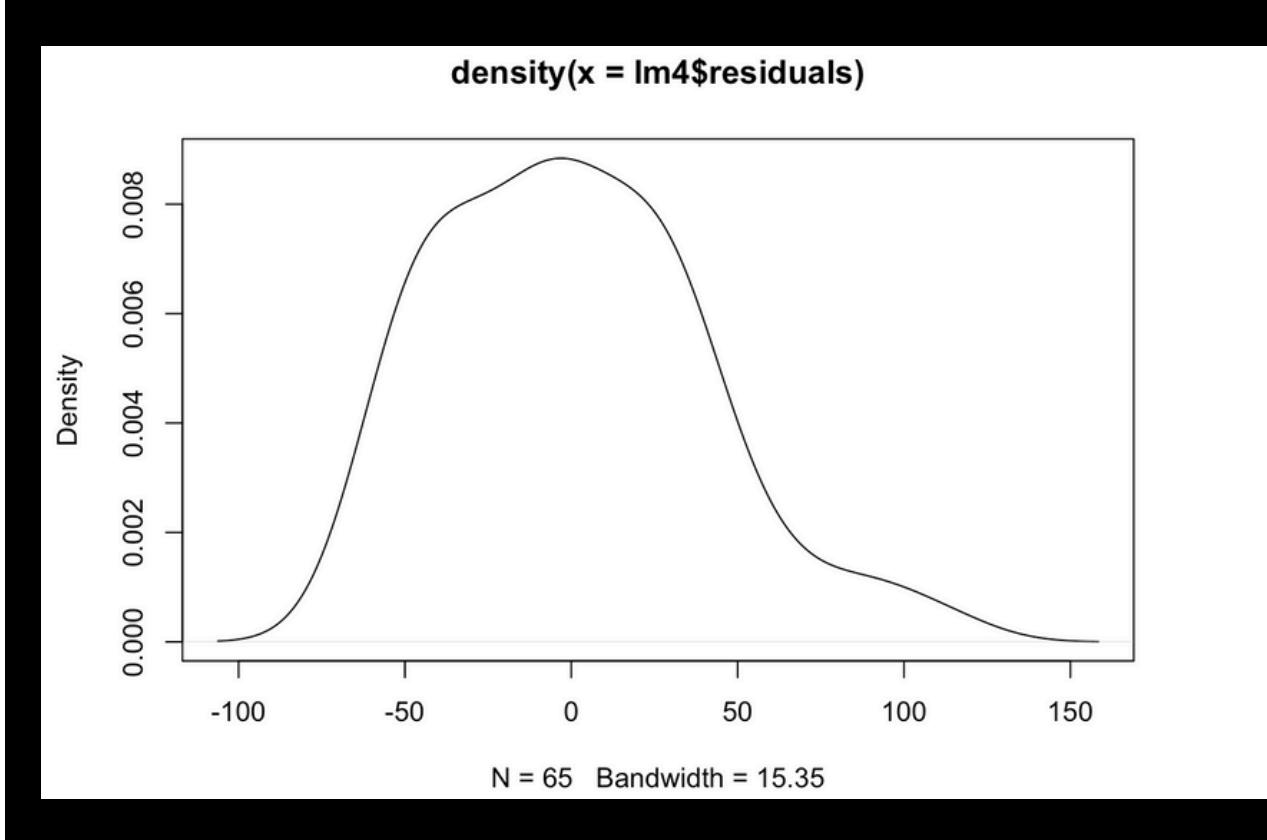
**Natural Log of the Numbers of non Restaurants (NREST)**

**Natural Log of the Total Population (total)**

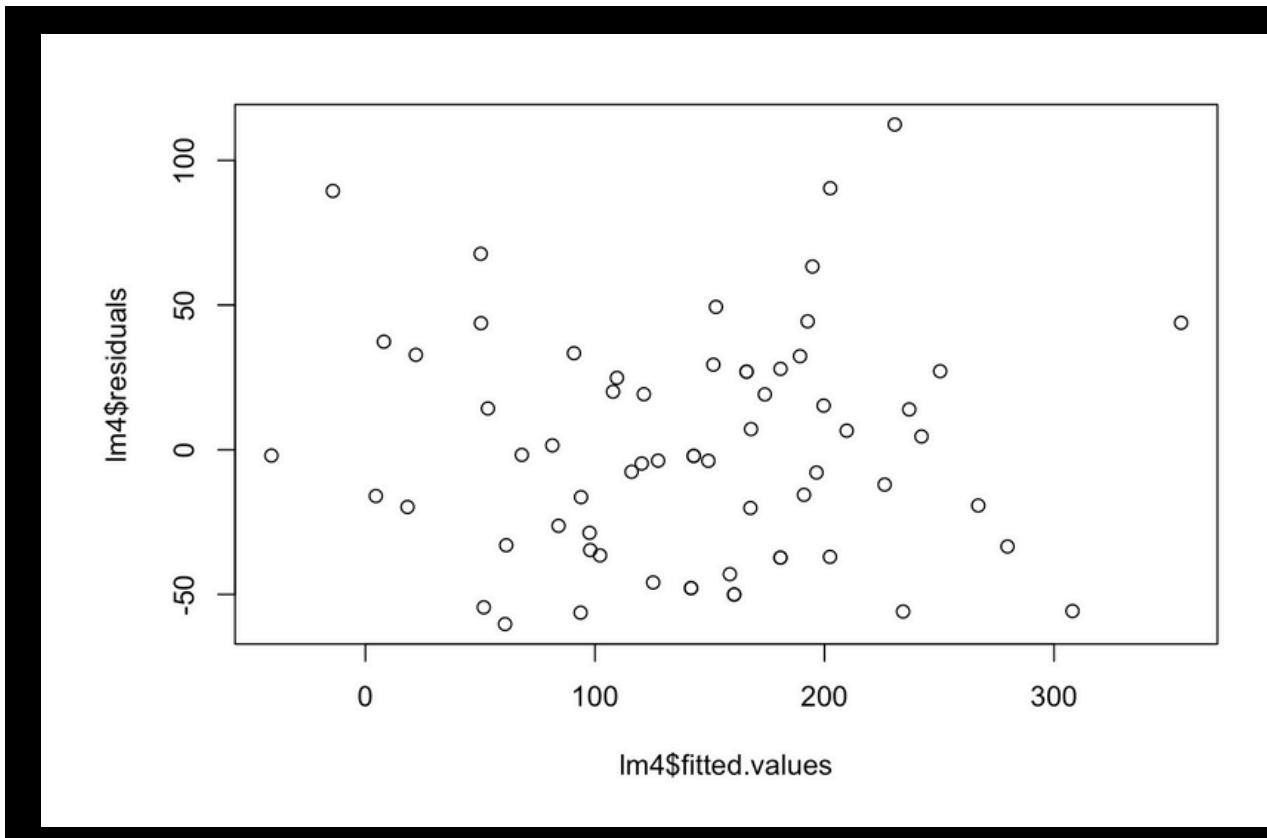


# Analysis: Validating the Model

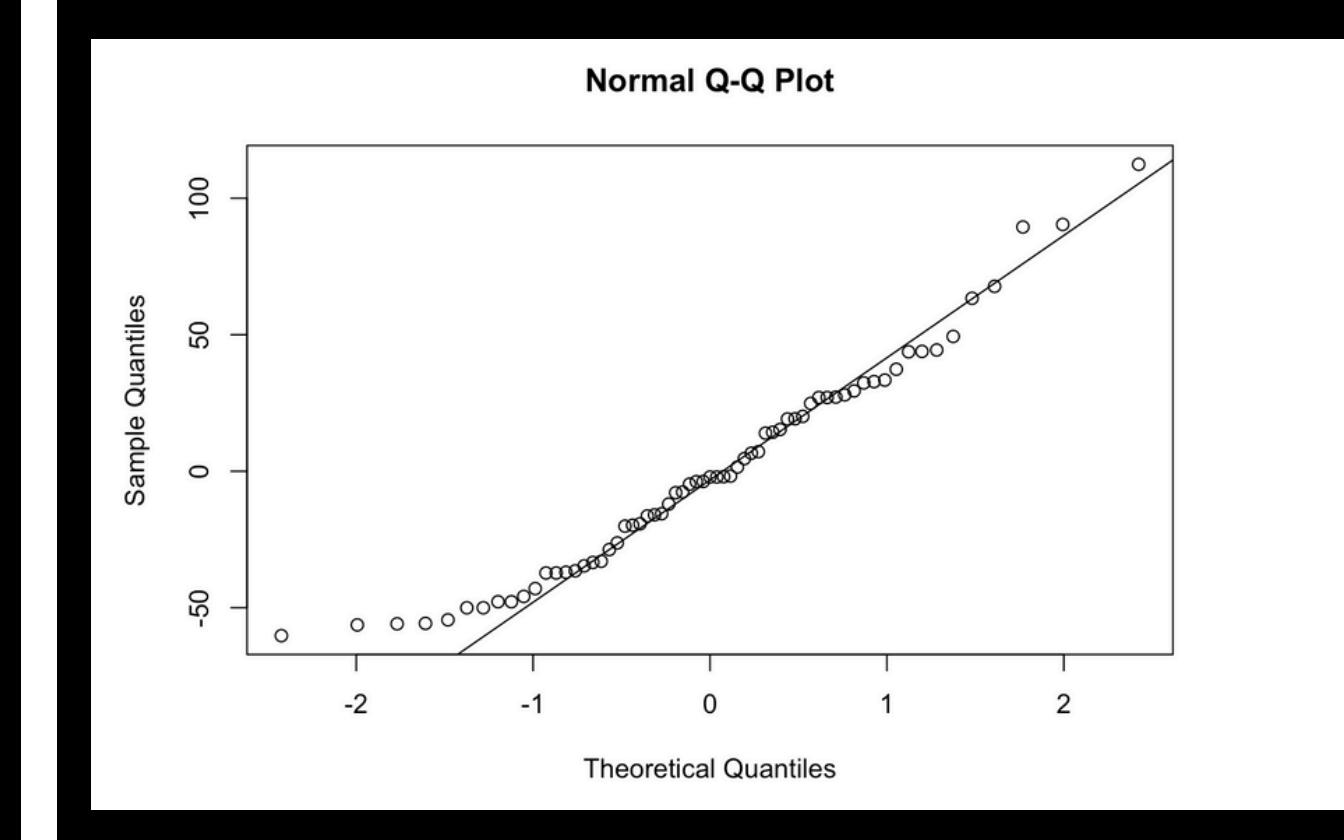
Normal Distribution



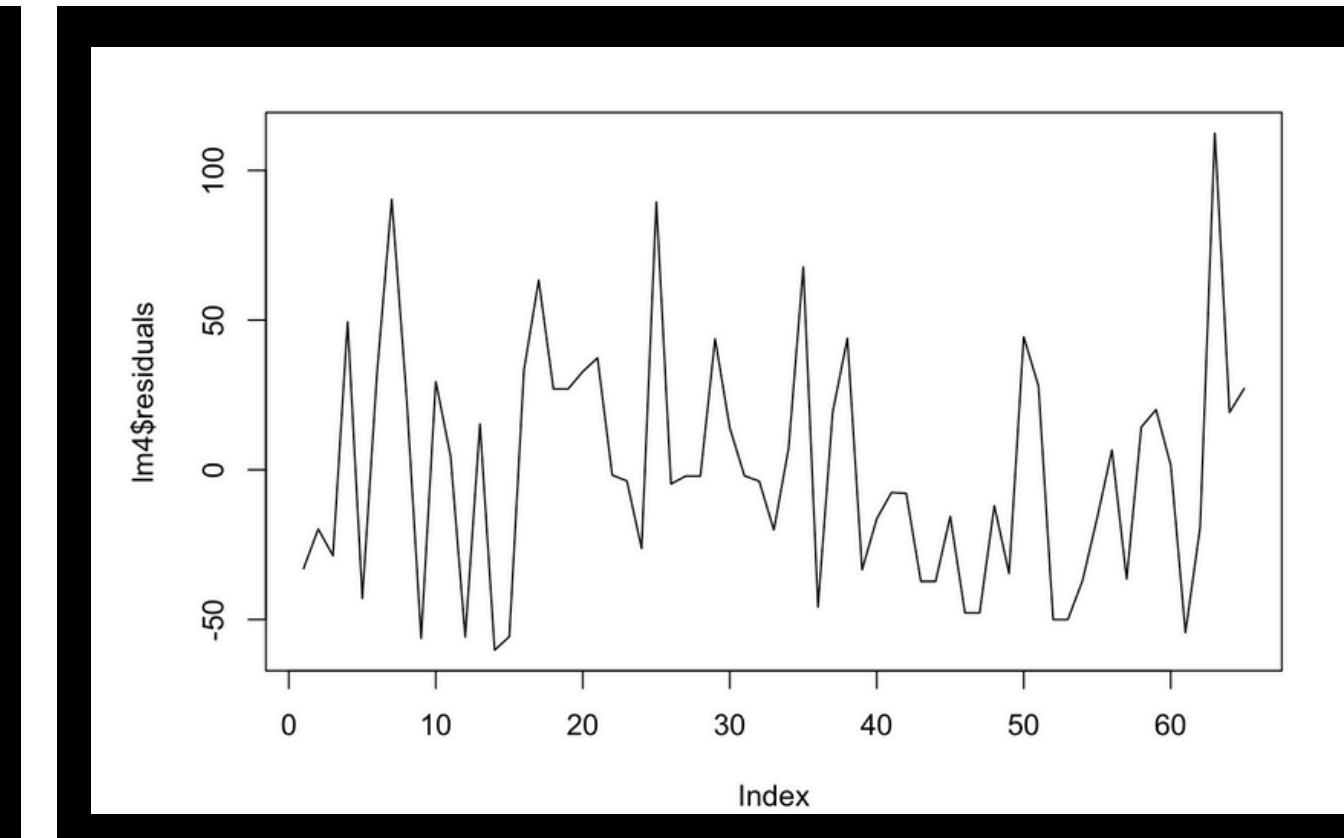
Homoscedasticity



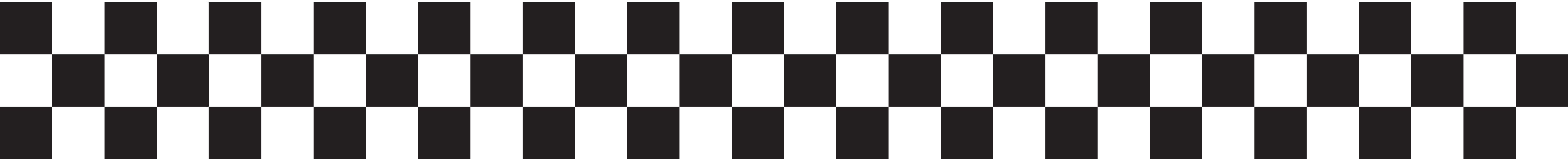
Points are diagonally scattered



No Autocorrelation



# 03 Findings



# Findings

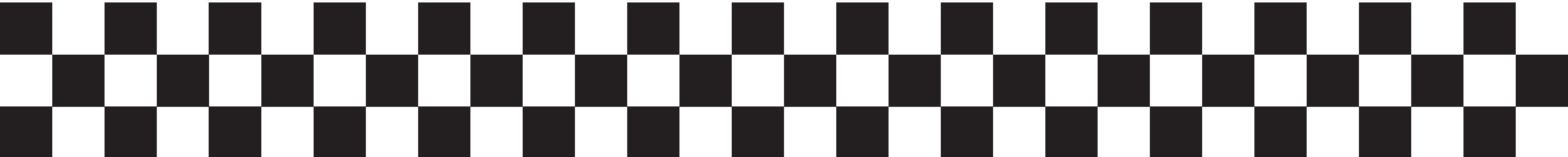
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- Based on our regression model, **3 out of 10** restaurants should have been opened in 1994.
  - Store 51 (26.1%)
  - Store 57 (31%)
  - Store 60 (37.3%)
- **Outlier:** Store 58 predicted as having a predicted performance ratio of **12.6%** → Actual performance ratio of 22%
  - Store 58 was the highest earner, but had high capital investment



Linear Regression isn't **PERFECT!!!**

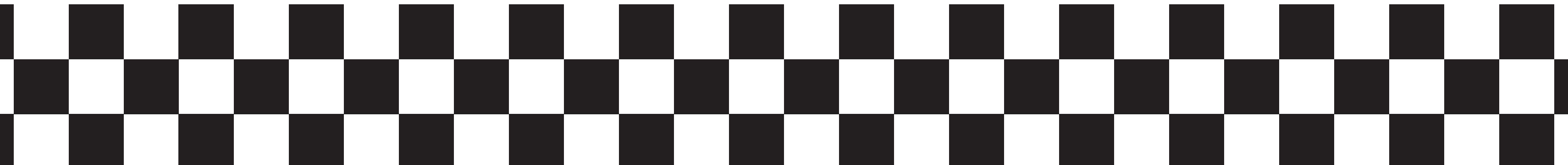
# 04 Recommendations



# Recommendations

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- 3 New Optimal Locations in 1996:
  - Montpellier (42.1%)
  - Dijon (31.9%)
  - Toulouse (34.6%)
- Croq’Pain should focus on busy middle class workers in need of a quick meal
- Important to consider and contextualize non-quantifiable factors to get a more holistic prediction of a business’ success



Thank You!  
Any Questions?

