Blue Chip Predict

Predicting Quarterly Revenue for Blue Chip Companies

Andrew Casey　　Oliver Taylor　　Corey Hermesch

Agenda

- Executive Summary

- The Data

- Exploration

- Modeling

- Conclusions

Executive Summary

Goal

- Predict next quarter's earnings for blue chip companies

Big Idea

- The world is unpredictable but increasingly connected

Findings

- Ten features correlated with all three companies

- Six features did NOT correlate with ANY company

Recommendations

- Method is a successful proof of concept

- Use this model to predict next quarter's revenue

The Data - Acquisition

80 Quarters (2003-2023)

- Target: total revenue adjusted for inflation for the next quarter
- 38 variables in 4 categories: Economic, Socioeconomic, Environmental, Political

17 Sources

- Federal Reserve Economic Data
- Bureau of Labor & Statistics
- Organization for Economic Cooperation and Development
- Manually gathered and assembled into one table

The Data - Preparation

year	quarter	revenue	median house-hold income	…
2023	2		81340	…
2023	1	41.47	81340	…
2022	4	44.00	79405	…
2022	3	39.39	78595	…
…	…	…	…	…
2003	2	40.58	63967	…
2003	1	40.82	63967	…

The Data - Preparation

- Adjust dollar amounts for inflation
  - 2003 Price x (2023 CPI / 2003 CPI) = 2023 Price

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year	quarter	revenue	median house-hold income	...
2023	2		82222.02	...
2023	1	41.92	81676.64	...
2022	4	45.23	81628.79	...
2022	3	40.49	80793.11	...
...	...	...	...	...
2003	2	60.53	106243.37	...
2003	1	67.40	105954.98	...

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- Shift target by one row

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The Data - Preparation

- Adjust dollar amounts for inflation
  - 2003 Price x (2023 CPI / 2003 CPI) = 2023 Price
- Shift target by one row
- Discard top row
- Split into 3 sets:
  - Train, test, top row

year	quarter	revenue	median house-hold income	…
2023	1		81676.64	…
2022	4	41.92	81628.79	…
2022	3	45.23	80793.11	…
…	…	…	…	…
2003	2	79.55	106243.37	…
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Exploration

Correlating Features

NON-Correlating Features

Method

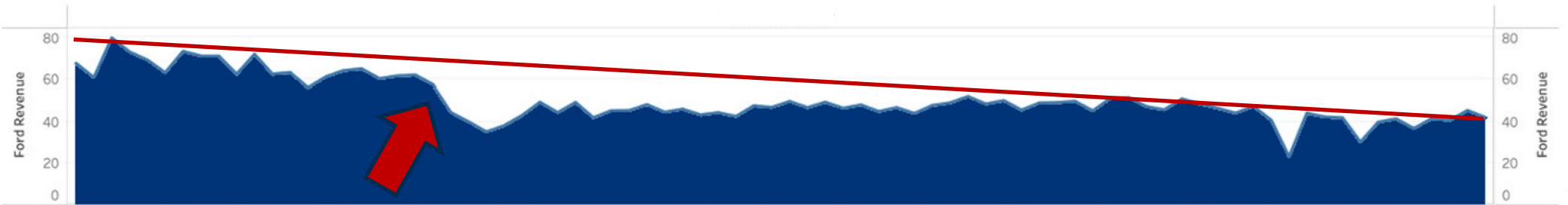# What Features Correlated with Revenue Across Companies?
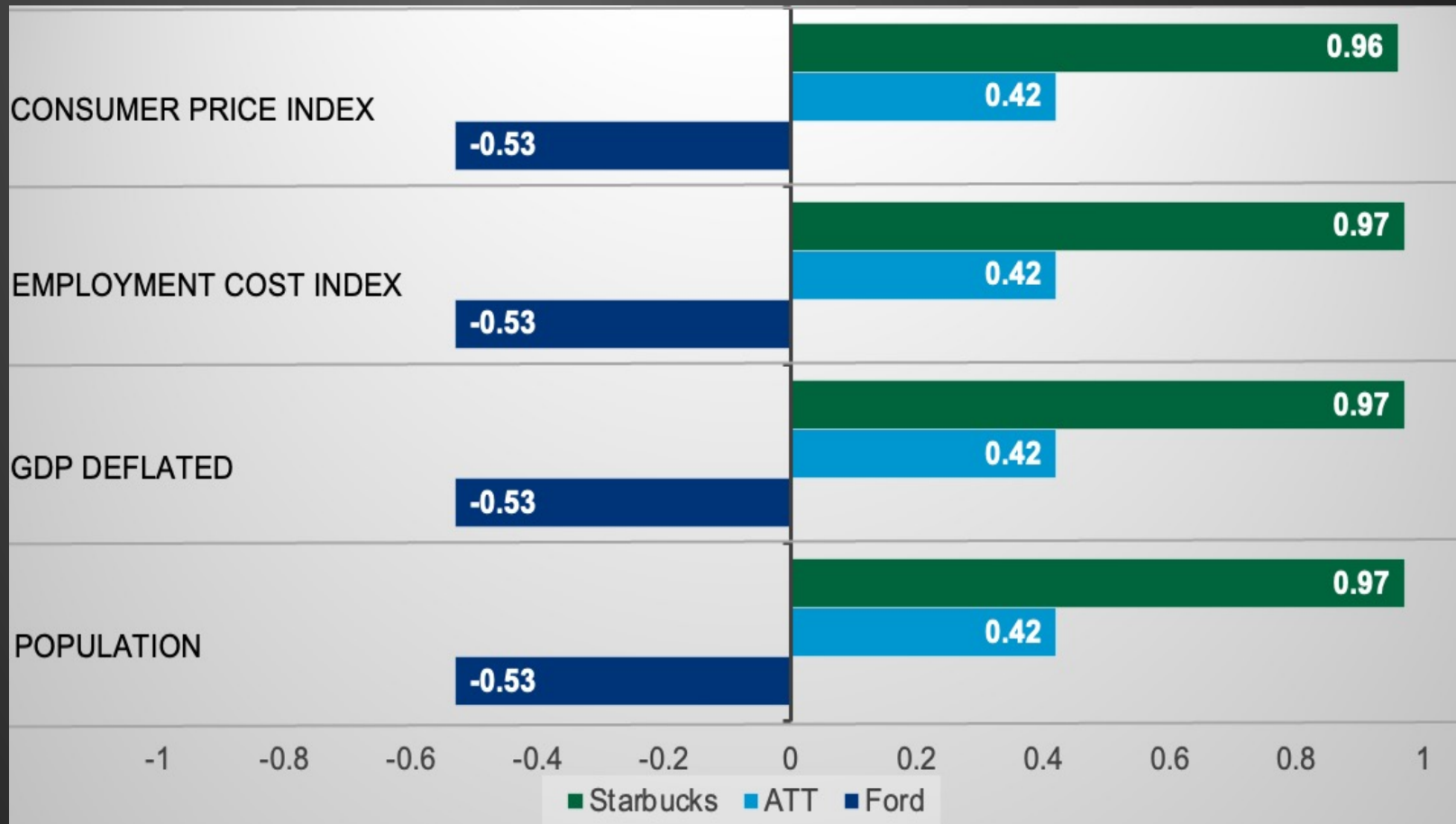
Inflation Adjusted Revenue 2003-2023

Starbucks Revenue

Ford Revenue

ATT Revenue
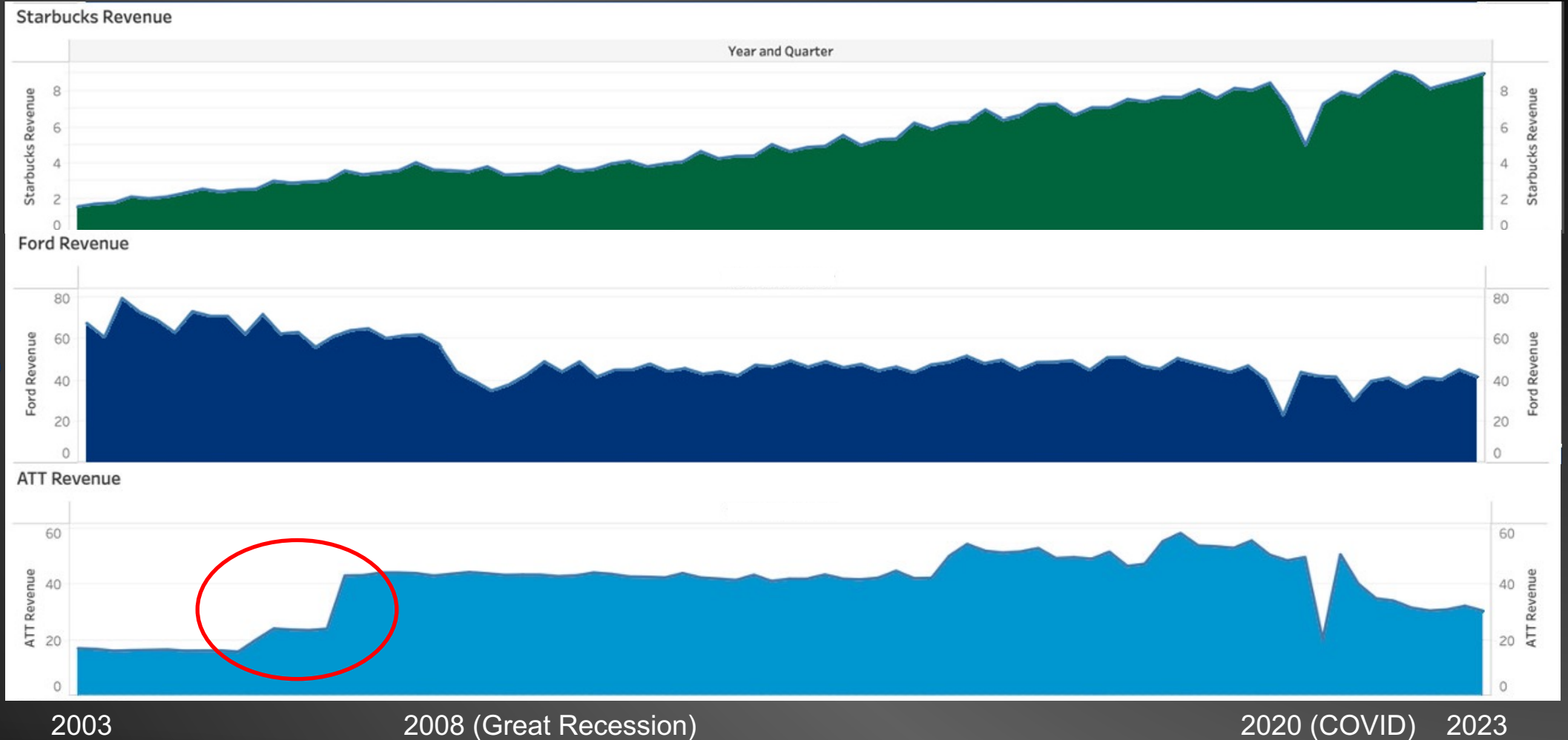
2003   2008 (Great Recession)   2020 (COVID)   2023

Inflation Adjusted Revenue 2003-2023
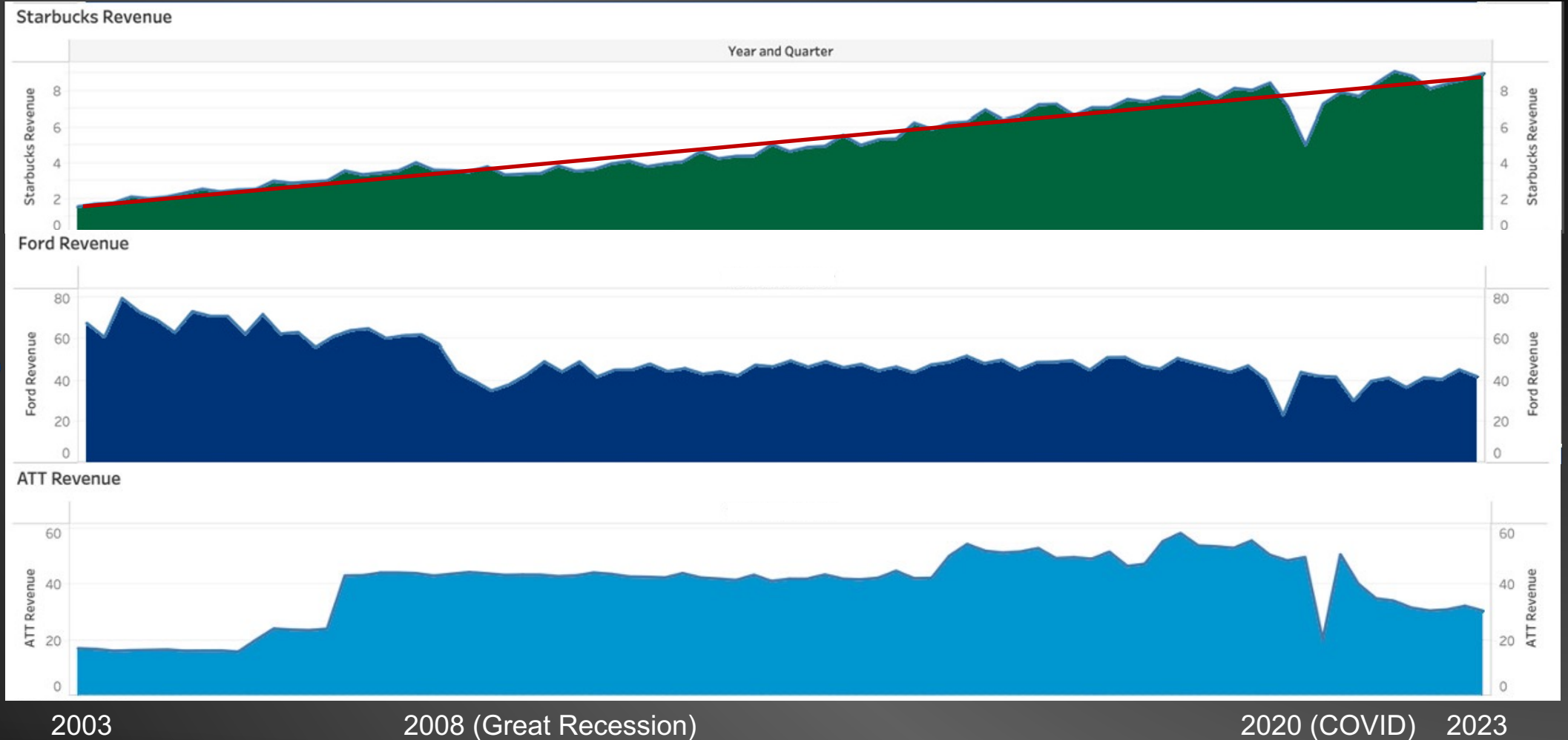
Starbucks Revenue

Ford Revenue

ATT Revenue

Year and Quarter

2003   2008 (Great Recession)   2020 (COVID)   2023

Inflation Adjusted Revenue 2003-2023

Inflation Adjusted Revenue 2003-2023

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2003   2008 (Great Recession)   2020 (COVID)   2023

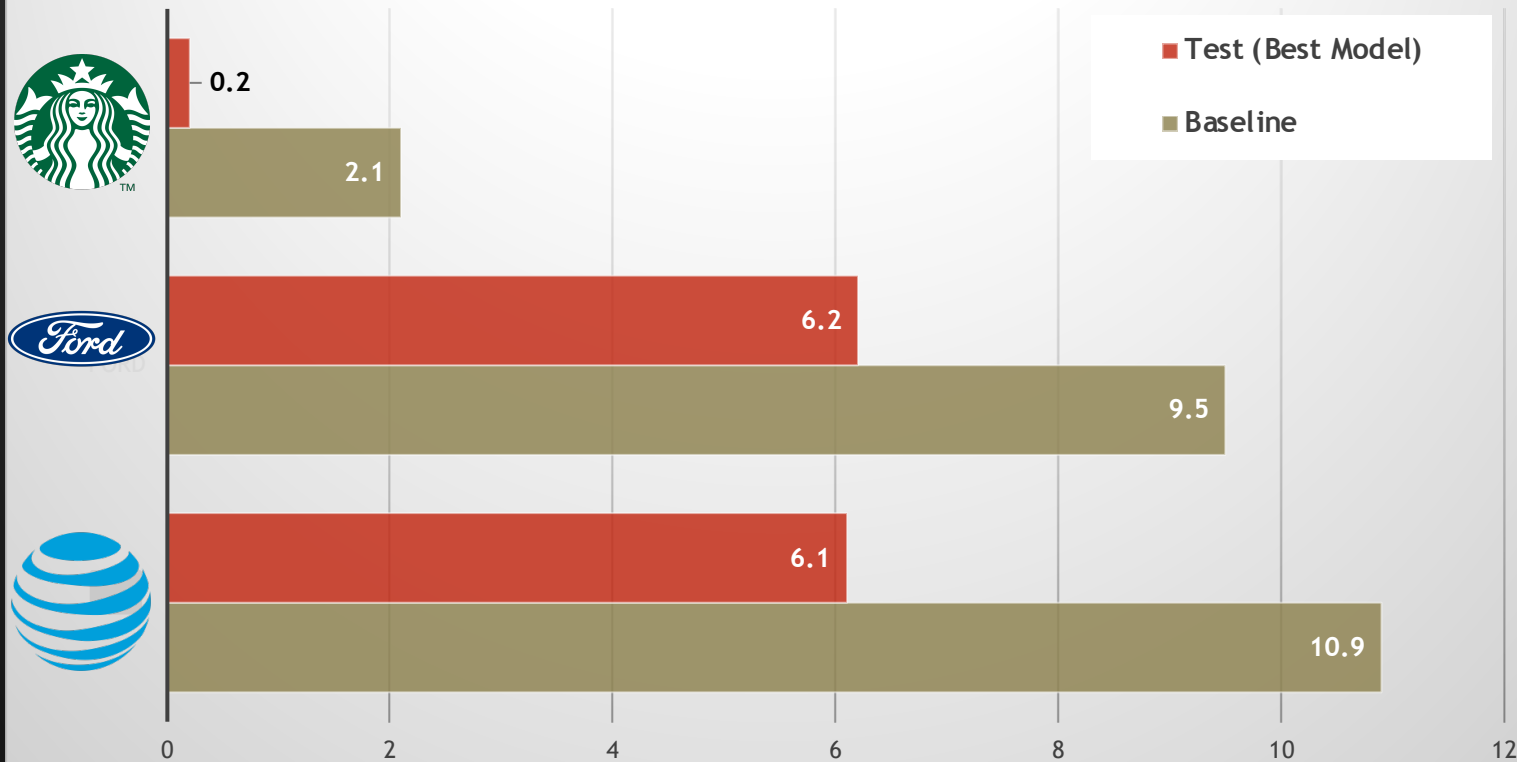# Which Features did NOT Correlate to any Company?

Exploration

Method

- Import all 38 features and quarterly revenue

- Adjust dollar amounts for inflation

- Statistically test each feature for significance

- Send statistically significant features to KBest selector

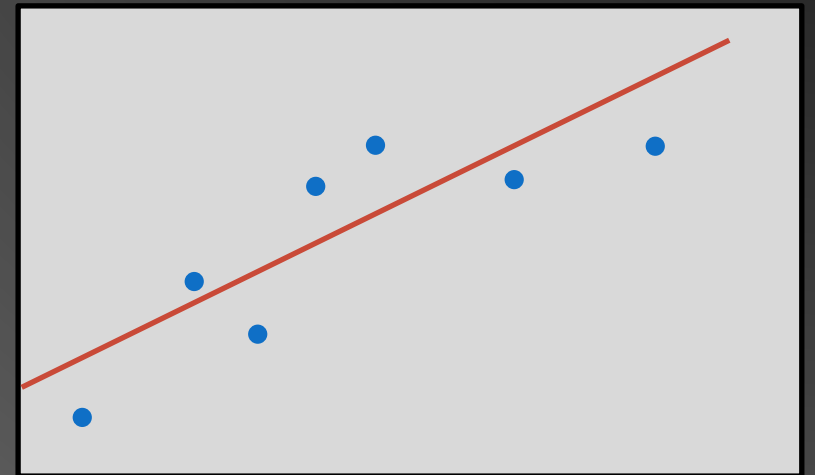- Move KBest-top features to modeling

Company	Model Features	Unique Features
Starbucks	19	2
Ford	15	3
AT&T	13	2

Modeling

RMSE Metrics for Company Model
(in Billions)

Legend:
- Test (Best Model)
- Baseline

Company	Test (Best Model)	Baseline
Starbucks	0.2	2.1
Ford	6.2	9.5
AT&T	6.1	10.9

Regression: Line of Best Fit

Modeling

RMSE Metrics for Company Model
(in Billions)

Legend:
- Test (Best Model)
- Baseline

Starbucks:
- Test (Best Model): 0.2
- Baseline: 2.1

Ford:
- Test (Best Model): 6.2
- Baseline: 9.5

AT&T:
- Test (Best Model): 6.1
- Baseline: 10.9

X-axis: 0, 2, 4, 6, 8, 10, 12
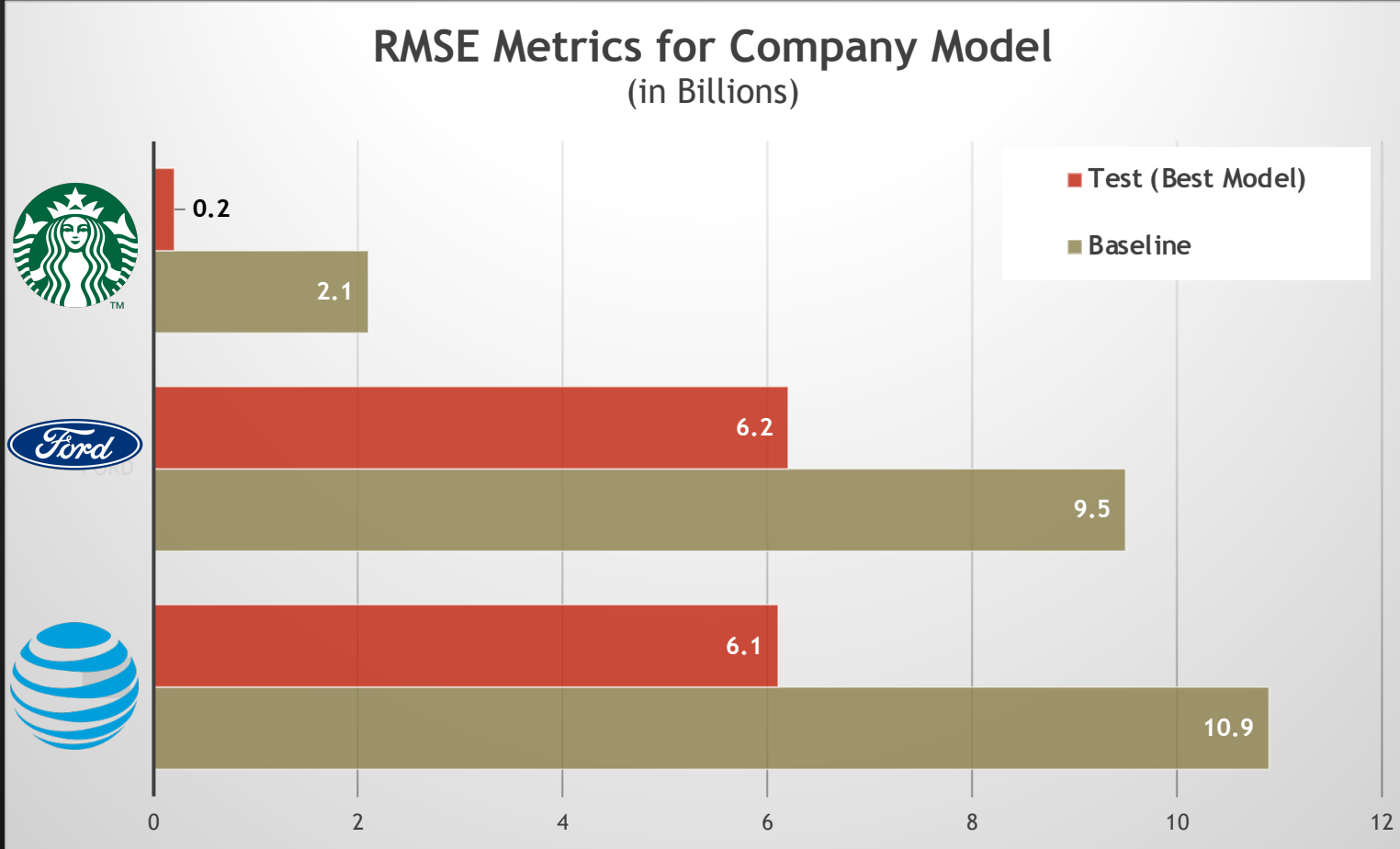
Regression: Line of Best Fit

RMSE: Root Mean Square Error
• Lower is Better

Modeling

RMSE Metrics for Company Model
(in Billions)

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Starbucks:
- Test: 0.2
- Baseline: 2.1

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- Test: 6.2
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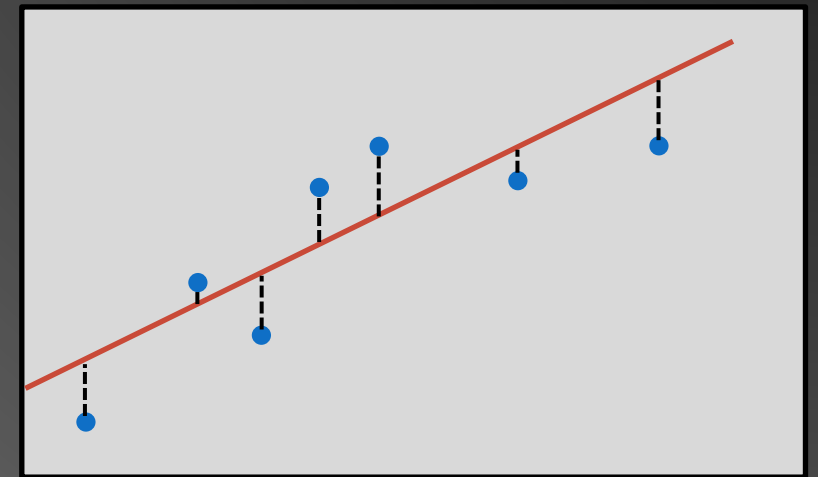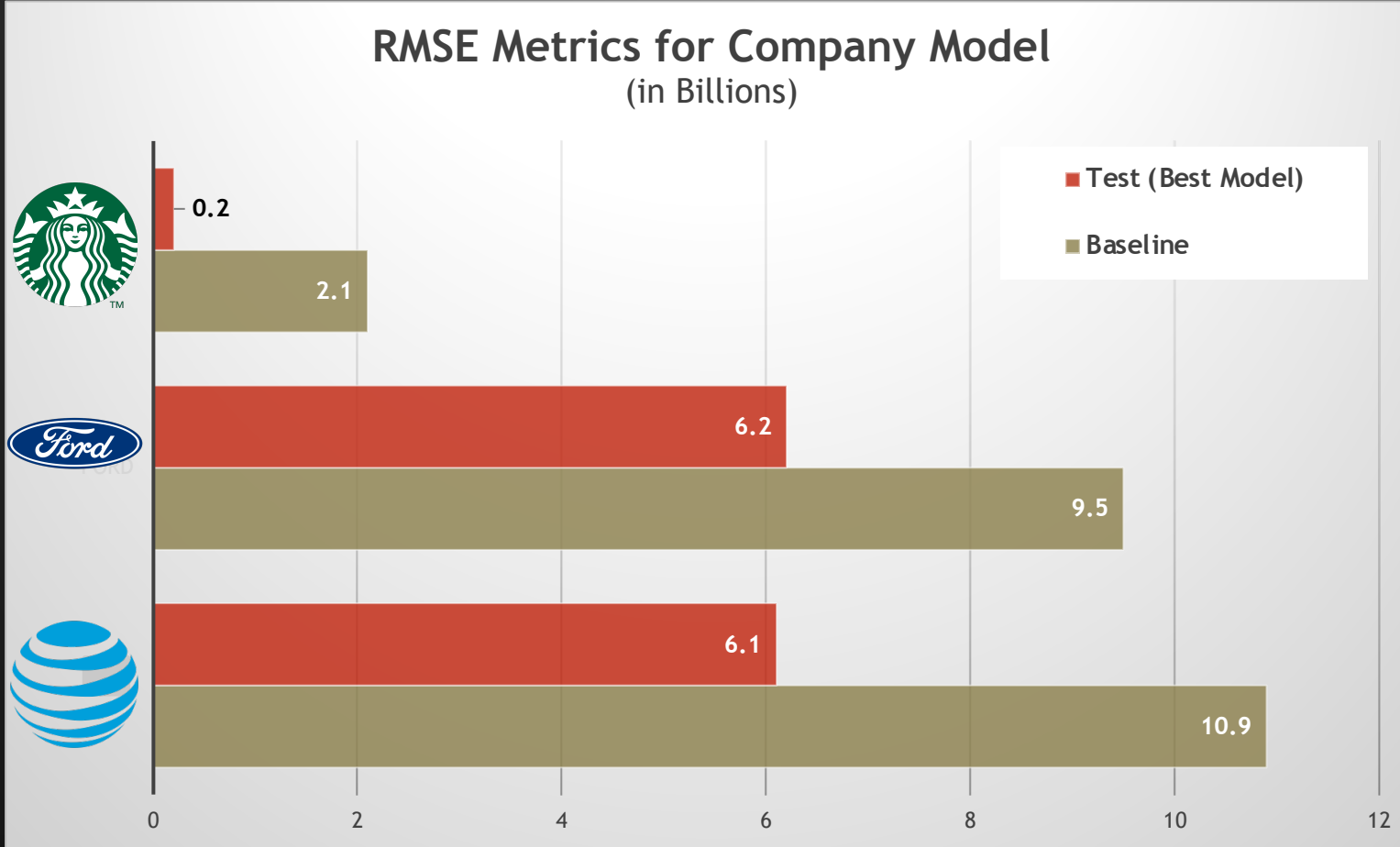
Regression: Line of Best Fit

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Best Regression Model on Test:
• LassoLars

Neural Network Model

Input Layer   Hidden Layer   Output Layer

RMSE Metrics for Company Models
(in Billions)

- Neural Network Model
- Best Regression Model
- Baseline

Starbucks: 0.4, 0.2, 2.1
Ford: 5.4, 6.2, 9.5
AT&T: 4.9, 6.1, 10.9
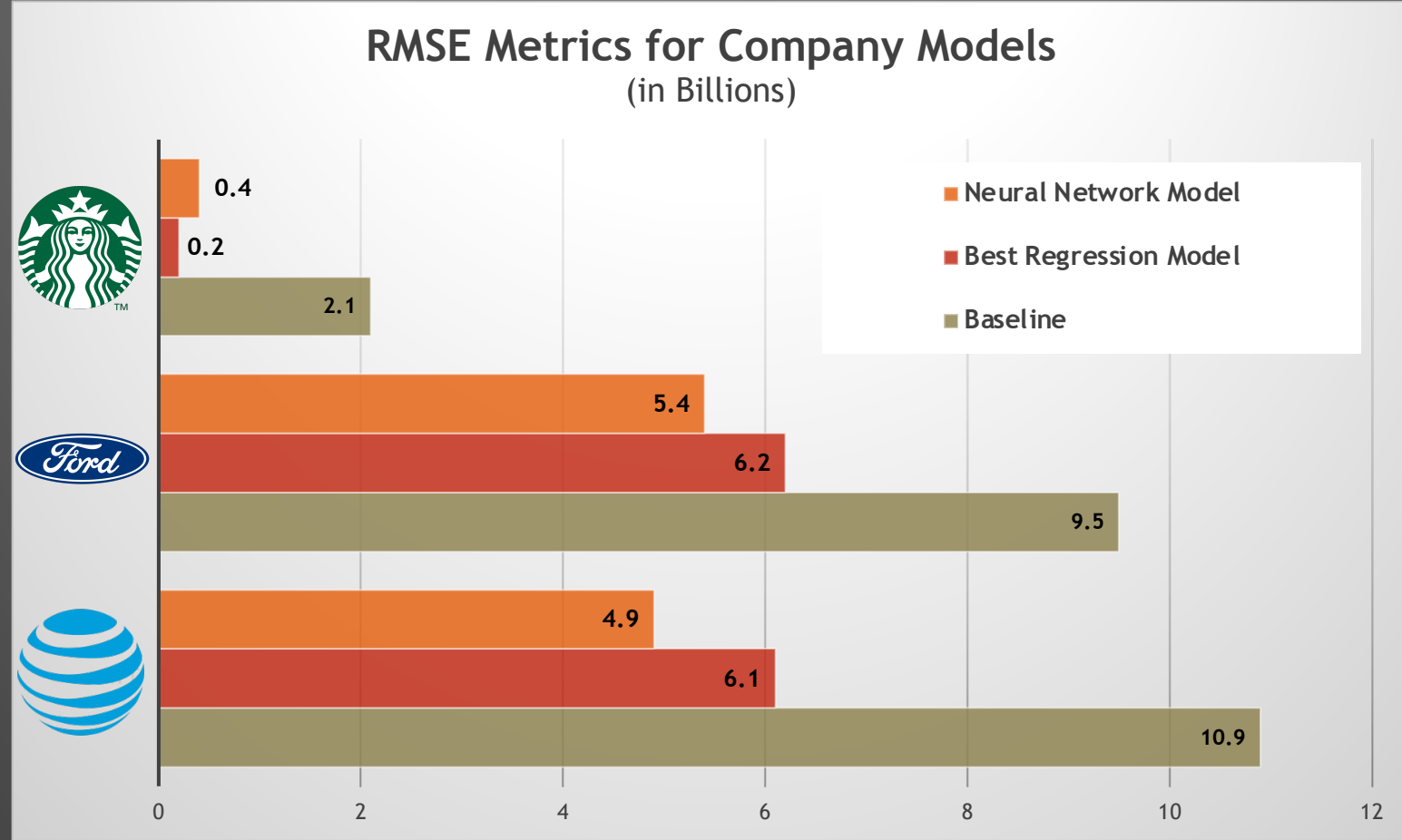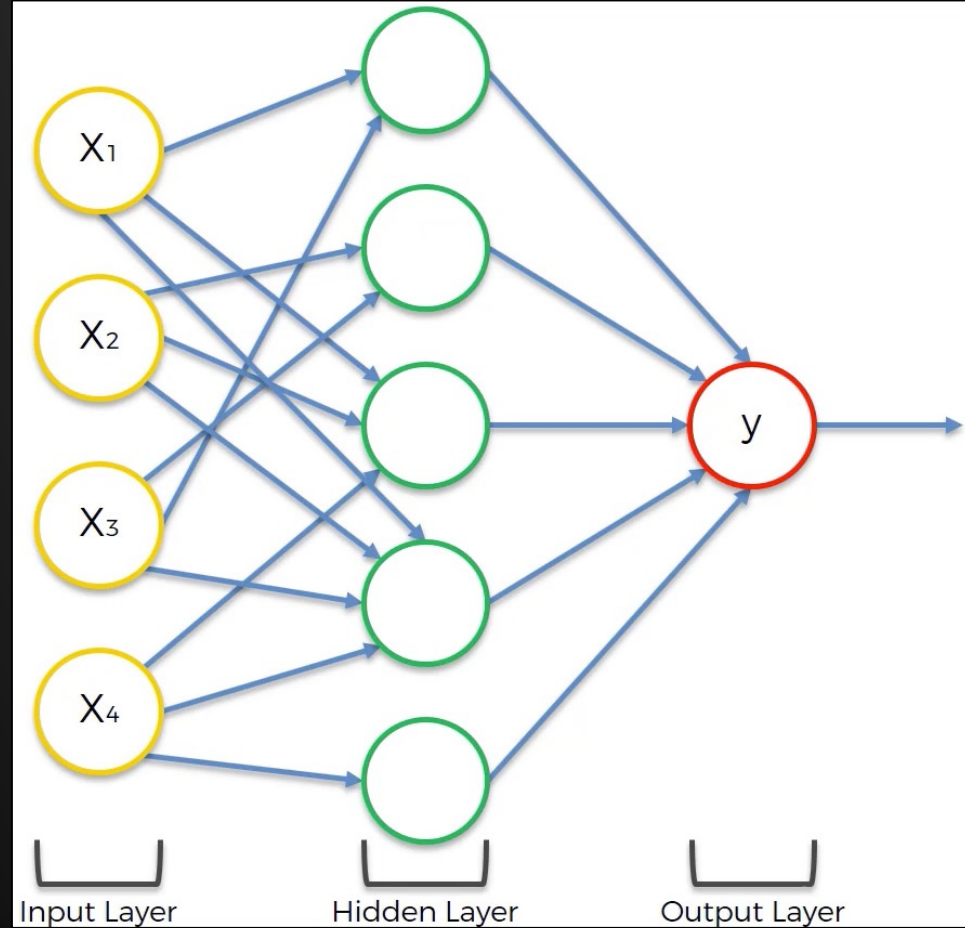
The Ultimate Test

Company	Regression Model Prediction	Neural Net Model Prediction	Actual Revenue
Starbucks	$ 8.91B	$ 9.00B	$ 9.17B
Ford	$ 40.96B	$ 43.70B	$ 44.95B
AT&T	$ 35.07B	$ 31.02B	$ 29.92B

Conclusion

Next Steps

- Complete this method for additional companies

- Add more data

- Account for mergers

Recommendations

- Use this method to optimize operations and marshal resources to meet demand

The world is unpredictable, but it is also increasingly connected.

Thank You!

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https://github.com/Project-Apollo-Forecast/Project-Apollo