

# Mastering the Strengths of Data

Improving Mastercard Inc.'s performance using economic indicators and purchase data

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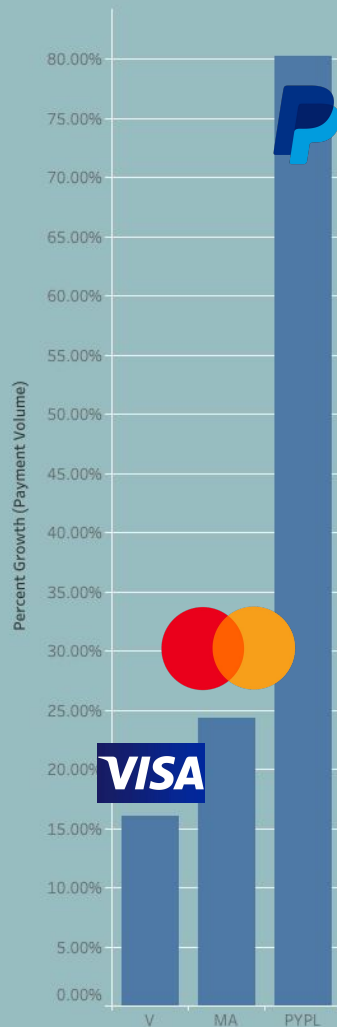


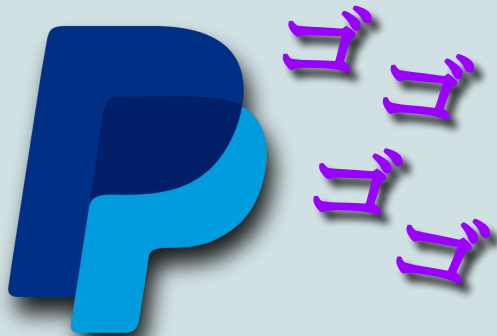
# Motivation: Main Competitors

In terms of payment volume, MasterCard is growing faster than its main competitor, Visa.

However, it faces new competition in the form of PayPal, which is swiftly closing the distance between itself and MasterCard.

Payment Volume Growth 2021/2019 by Company





MA's growth underperforms PayPal's because PYPL's primary focus is conducting transactions over the internet. Over the COVID pandemic, much commerce has shifted online.

## Mastercard SpendingPulse™ U.S. Snapshot – September 2021

	Sales Growth September 2021 vs. 2020	Sales Growth September 2021 vs. 2019
Total Retail Sales (ex. Auto & Gas)	+5.4%	+11.5%
Total Retail Sales (ex. Auto)	+8.1%	+12.2%
E-commerce Sales	+11.5%	+72.4%
<b>By Sector</b>		
Apparel	+56.0%	+15.6%
Department Stores	+20.8%	+15.5%
Electronics & Appliances	+18.0%	+16.5%
Grocery	+3.3%	+14.0%
Jewelry	+55.3%	+56.9%
Luxury (excluding jewelry)	+63.8%	+12.0%
Restaurants	+44.1%	+30.7%



SpendingPulse™

**Source:** Mastercard SpendingPulse, which measures overall retail sales across all payment types, including cash and check.

**Where should Mastercard  
direct resources to  
improve its payment  
volume?**





# Opportunity: COVID's silver lining

Use of Cash/Checks is slowly  
diminishing



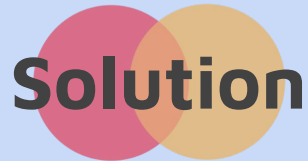
As a result, credit/debit cards are  
gaining market share among  
consumers and merchants





Market to merchants with greater efficiency, based on:

- Retail sector (Apparel, Groceries, Restaurants, etc.)
- Location (state/country)
- Customer demographic



Build a regression algorithm to predict the return on investment for marketing to a specific demographic of merchants: additional dollar spent to additional dollar in revenue

# Success metrics:

## Technical:

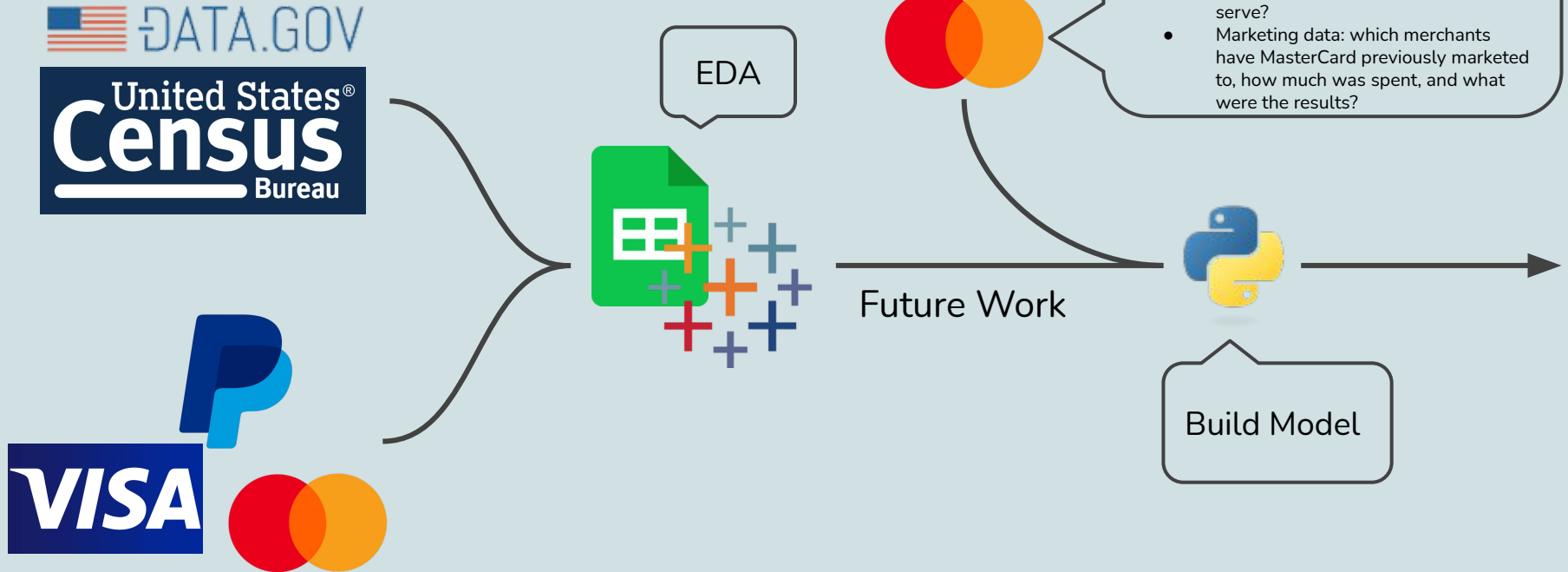
The model achieves a high  $r^2$  coefficient, and allows MasterCard to market to merchants most likely to join its network.

## Non-technical:

If MasterCard's growth accelerates significantly, the project can be considered a success.

Growth can be defined as an increase in the number of merchants accepting MasterCard, or just MasterCard's payment volume.

# Methodology





# Data for Preliminary EDA

Data collected from:

- Data.gov: Retail sectors by state
  - 3020 datapoints; 5 states near New York; 9 months
  - Relevant features: State, Date, Business Sector, Sales
- US Census Bureau: Retail sectors nationwide
  - Relevant features: Business Type, Date, Sales Volume
- Press releases from MasterCard and its competitors
  - Relevant features: Payment Volume, Business Quarter



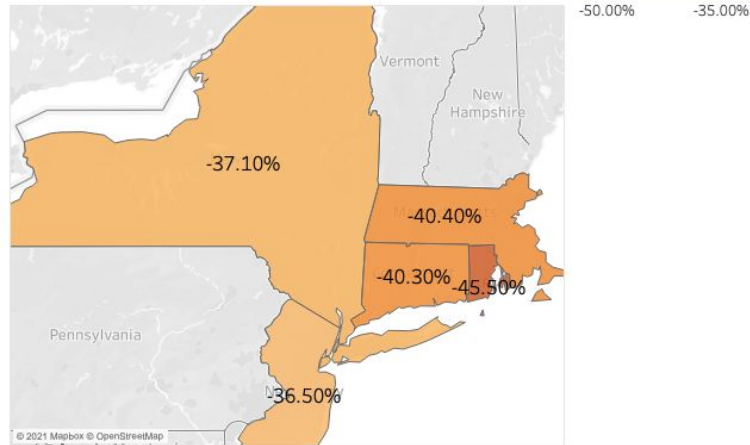
# Preliminary Findings



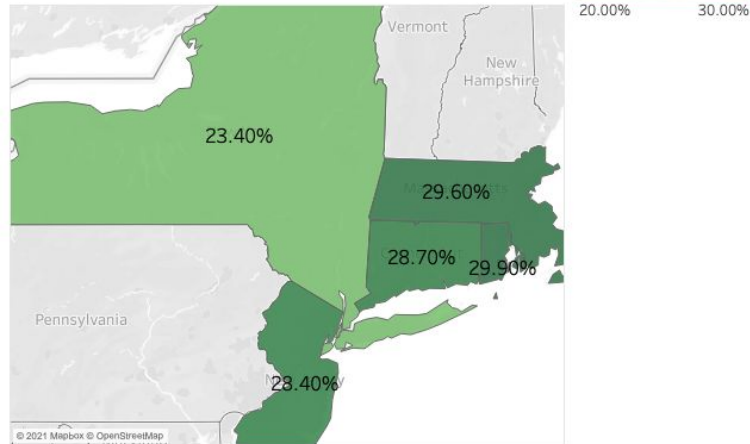
# Deeper Valley; Higher Peak

Smaller states' economies are more volatile; larger states are more stable.

Recession after COVID lockdowns by State



Recovery after reopening by State



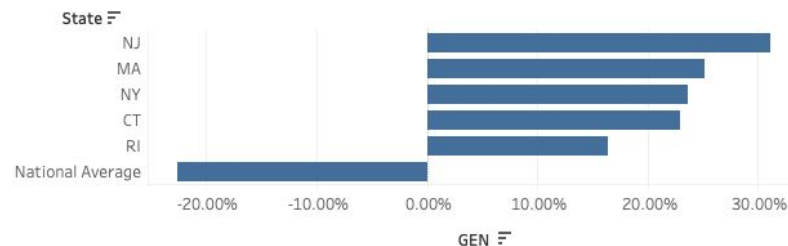


# States vs. National Average

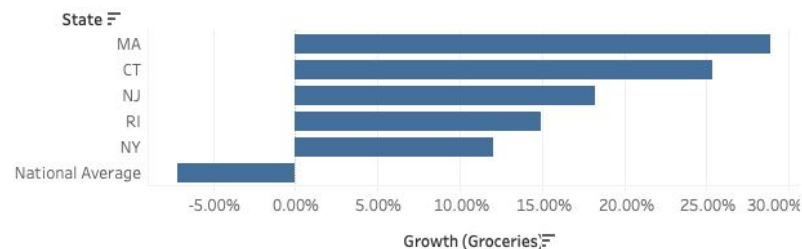
Massachusetts seems to show the most potential across the board for marketing to retailers.

However, out of all 5 states in the data set, New Jersey appears most promising when marketing to General Retail merchants in particular.

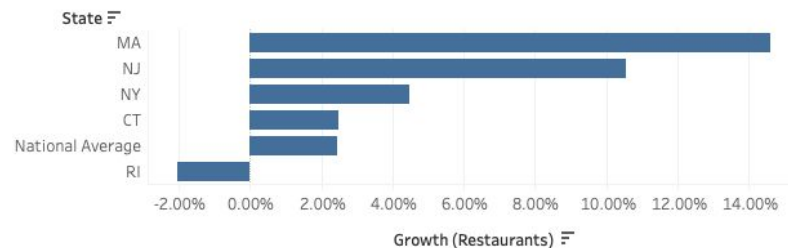
Growth in General Retail Sector by State (Jan 2020 - Jul 2021)



Growth in Grocery Sector by State (Jan 2020 - Jul 2021)

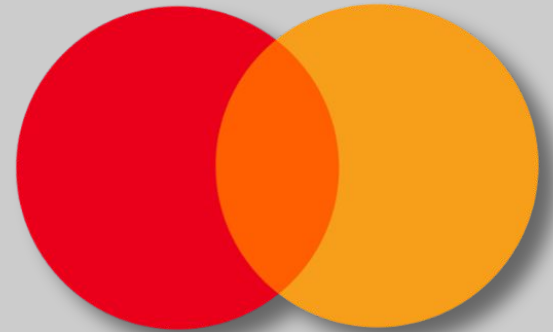


Growth in Restaurant Sector by State (Jan 2020 - Jul 2021)



# Conclusion

Recruit more merchants into  
MasterCard's network!



A blue-tinted photograph of a rocket launch. A large plume of white smoke and fire is visible at the base of the rocket. The Visa logo is overlaid in the center. On the left side, there are three overlapping circles in red, orange, and yellow. In the bottom right, there is a black rectangular box containing yellow text.

# VISA

- HASTA LA VISA.  
- BABY.

# Thank you!

Questions?





## **Appendix**

**Basically all the slide fragments I cut**





# The Problem

How can MasterCard improve its recovery in the US?

[Note: Visa has an 8-year headstart on MA]

Network Effect; as credit card service grows, it becomes exponentially more useful, and grows even more. [rewrite this]



# Substitutes

Cash (COVID - cash down)

Checks (Checks down)

Find new merchants to expand  
MasterCard's network.

Utilize MasterCard's proprietary  
datasets to determine how well  
marketing to merchants in different  
economic sectors (e.g. apparel,  
groceries, luxury, restaurants) can  
improve growth



# Proposed Solution

Inputs: Sector, location (state/country), demographic

Output: Marketing cost to accept vs. how much additional revenue/income merchant provides

Marketing: to merchants (advertising)