Credit Catastrophe or Consultancy

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Agenda

Problem Statement
Economic Context
Analysis & Findings
Modelling
Forecasting
Strategy Guidance
Conclusion
Q&A

Aaran

Problem Statement

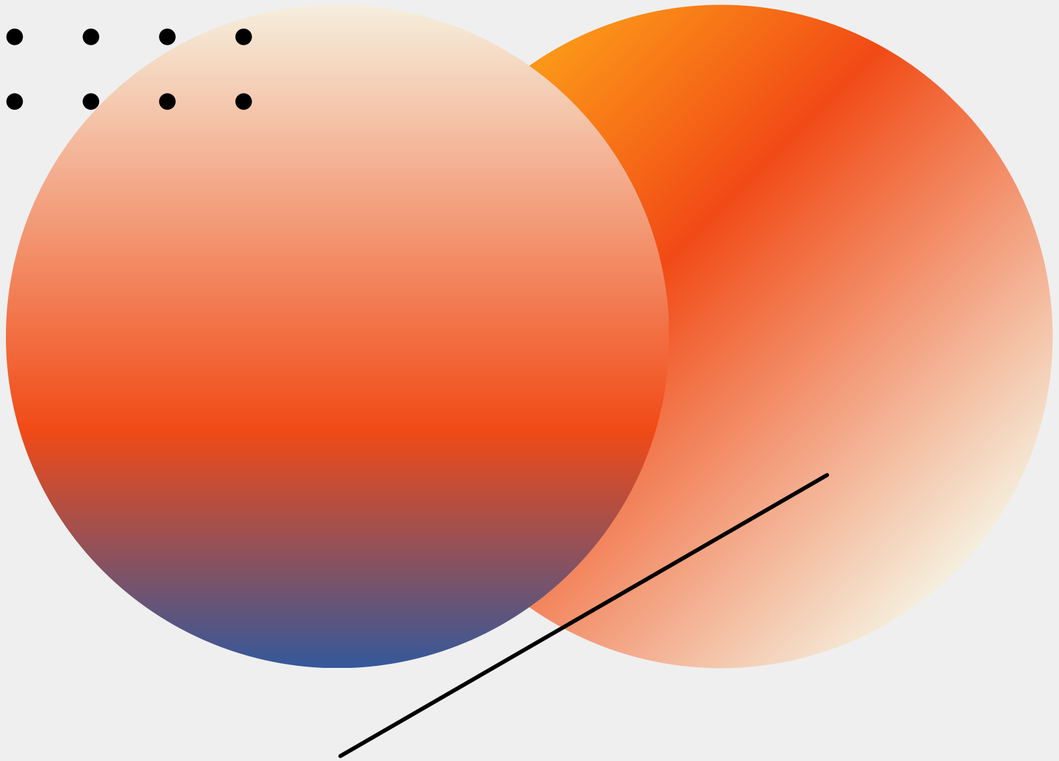
- In such turbulent times, a credit agency reached out to you explore trends in the market and try to identify factors that contribute to people not paying their bills and falling into debt.
- They would also want at least **a year's worth of forecasting of future** rates and debt levels to plan their marketing and strategy.
- Finally, the company would like to know cyclical trends that affect credit and how they can be leveraged to the company's advantage.

Audience

Bank specialising in consumer credit

e.g. credit cards

Ben



Data Collection

1. Bureau of Labor Statistics
2. Burea of Economic Analysis
3. FRED - St Louis FED
4. NYFED
5. Fed Reserve Board

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Economic Context

Exploratory Analysis

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Credit Growth:

- Sensitive to inflation across: food, energy & shelter
- Heavily negatively correlated to unemployment
- Generally pro-cyclical:
    - tends to improve when the economy is performing well
- Averages 5-6% per annum, around 1-2% ahead of nominal GDP

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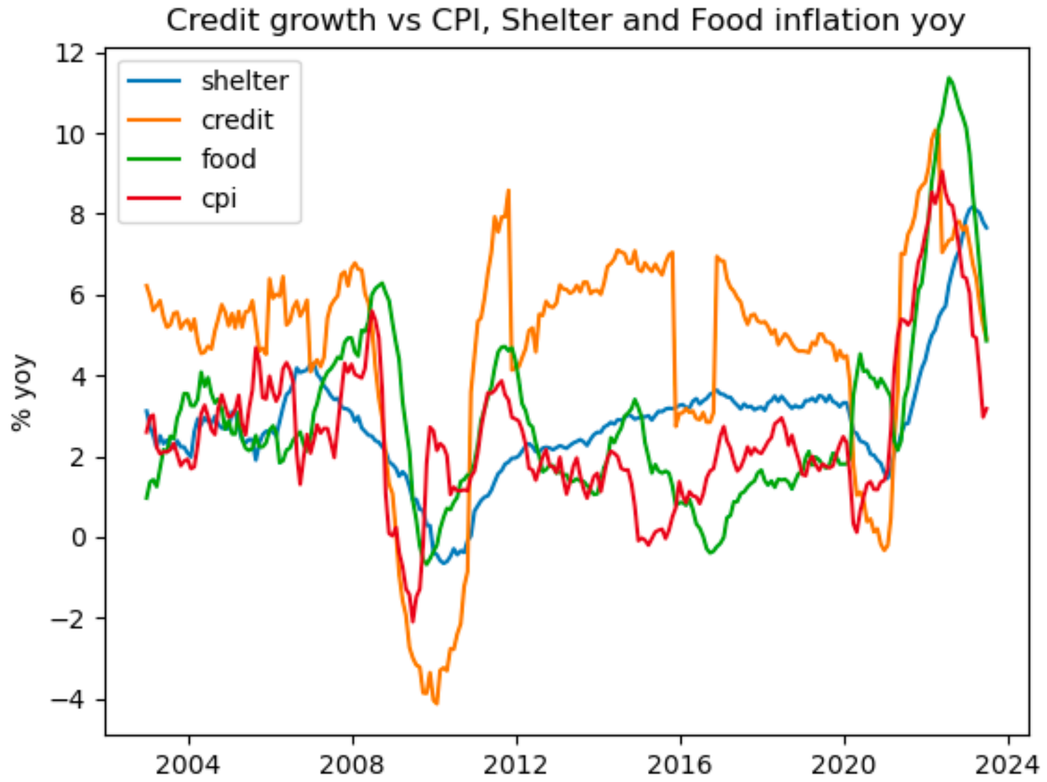
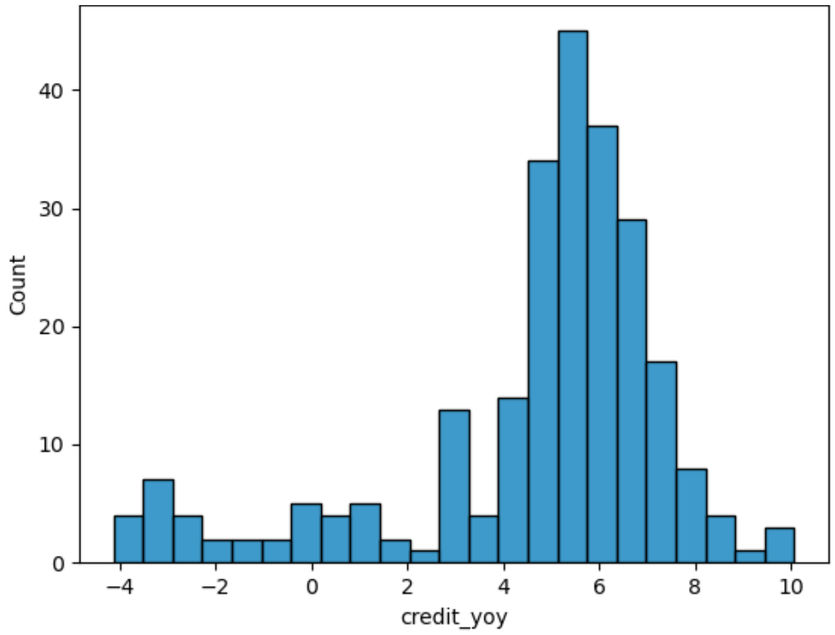
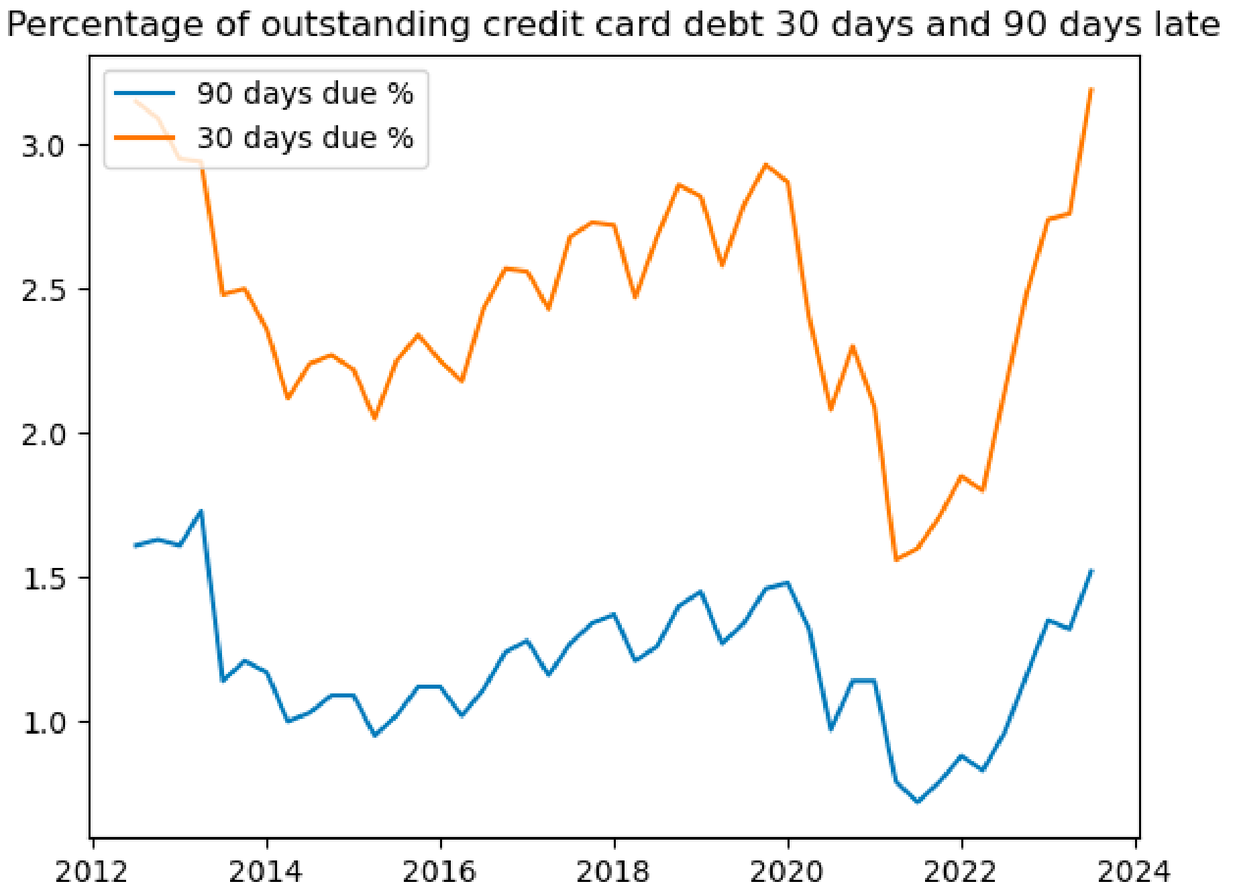




Credit Quality (30/90 day delinquencies):

- Tends to deteriorate as credit grows, usually with a lag

- The post COVID period particularly difficult due to:
  - Years of low/zero rates and available, cheap credit.
  - Increase in inflation
  - Debt service costs pressuring consumers



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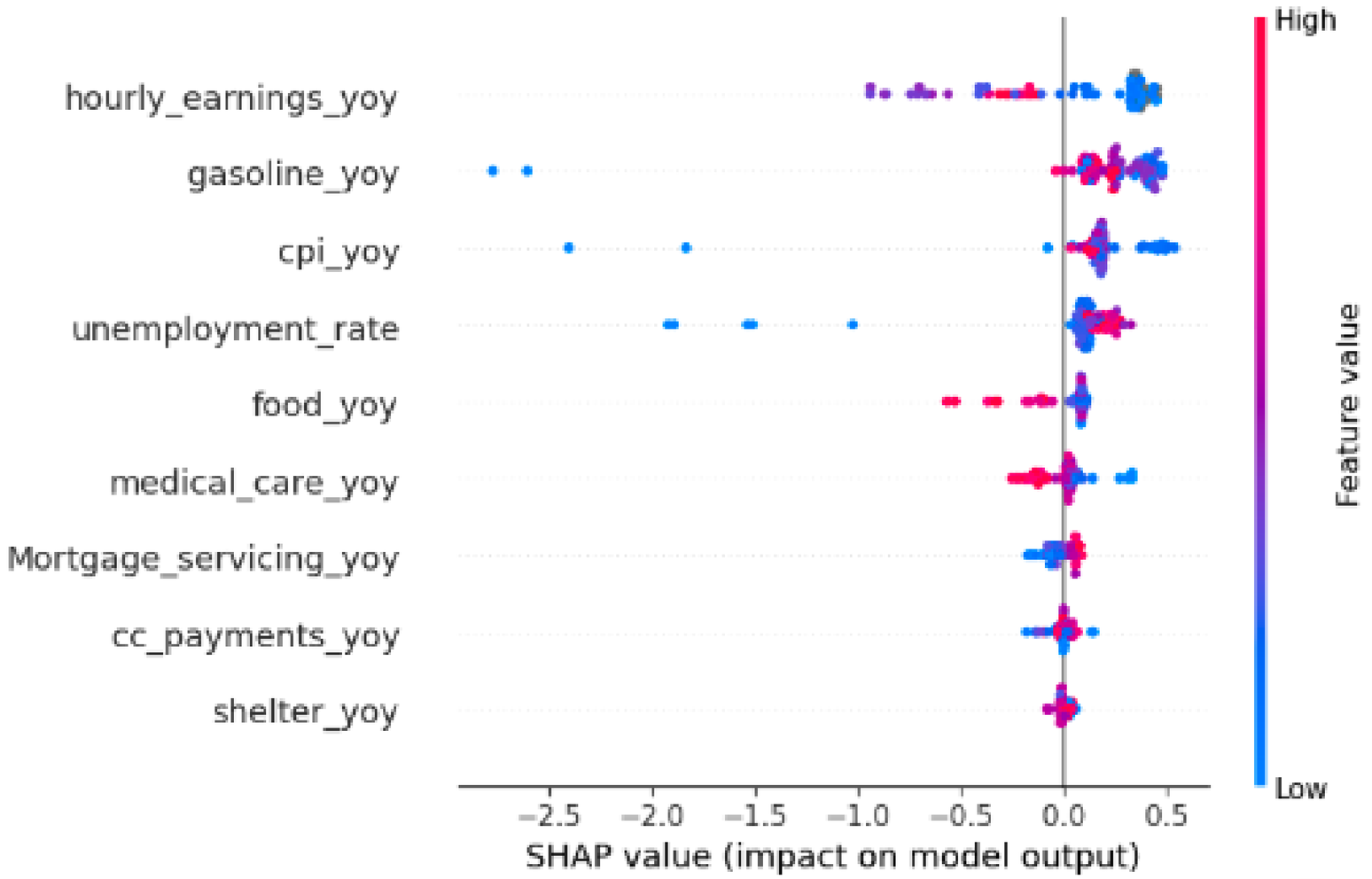
Credit Quality:

SHAP values for credit delinquency

Growth in credit card servicing costs a significant driver of credit delinquency



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GDP 4 month lagging indicator of Credit Growth (62% correlation)

Dips and recoveries 2008 and 2020

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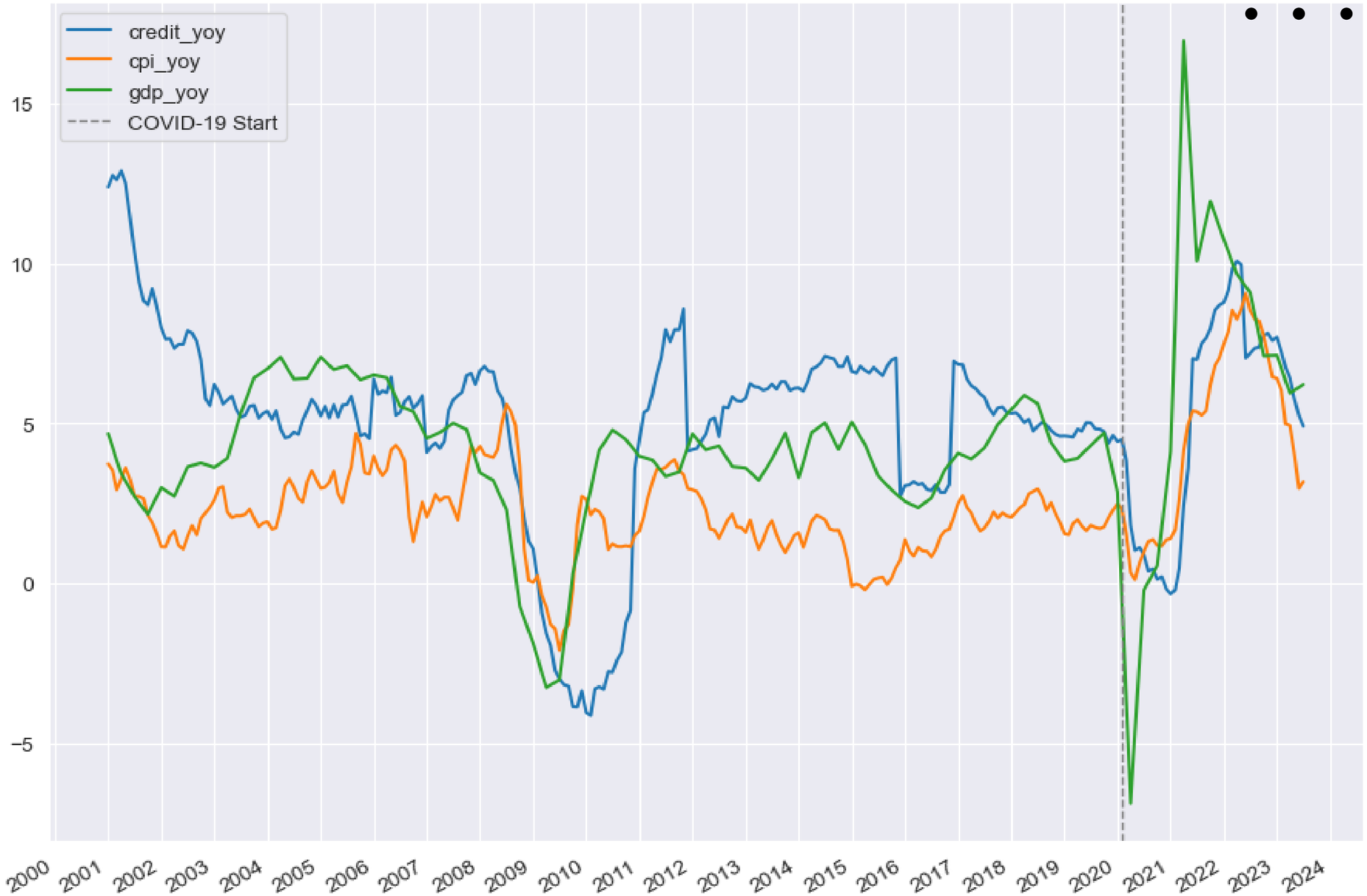
Credit Growth, CPI & GDP YoY



US COVID DATES

Stay-at-home orders
March 2020

1st Covid relief package (CARES act)
April 2020

2nd Covid relief package
Jan 2021

3rd Covid relief package (ARP)
March 2021

Summer 2021 - with vaccination rates increasing lockdowns are lifted

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Negative 31% correlation between savings as % of disposable income and Credit Growth

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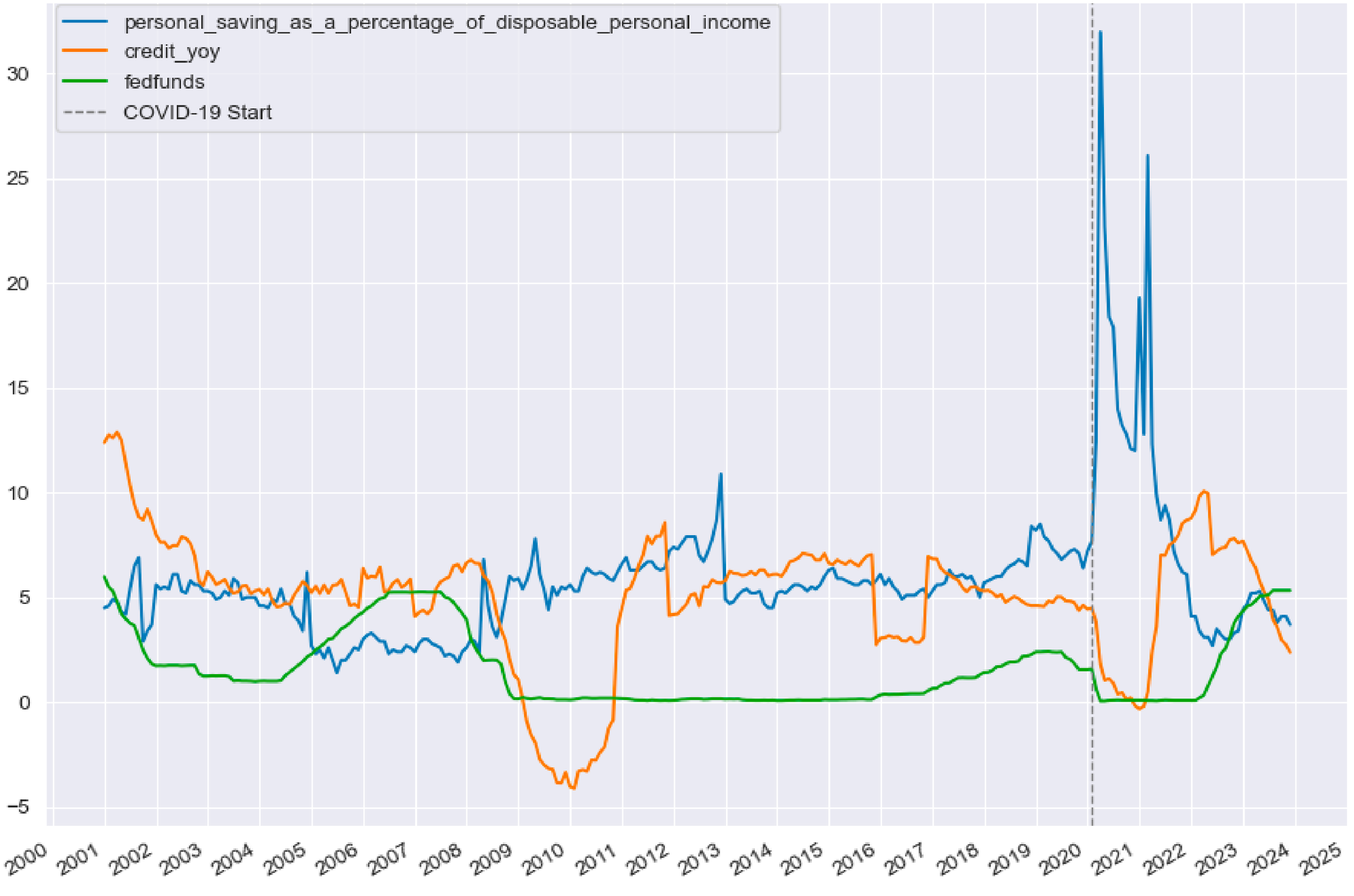
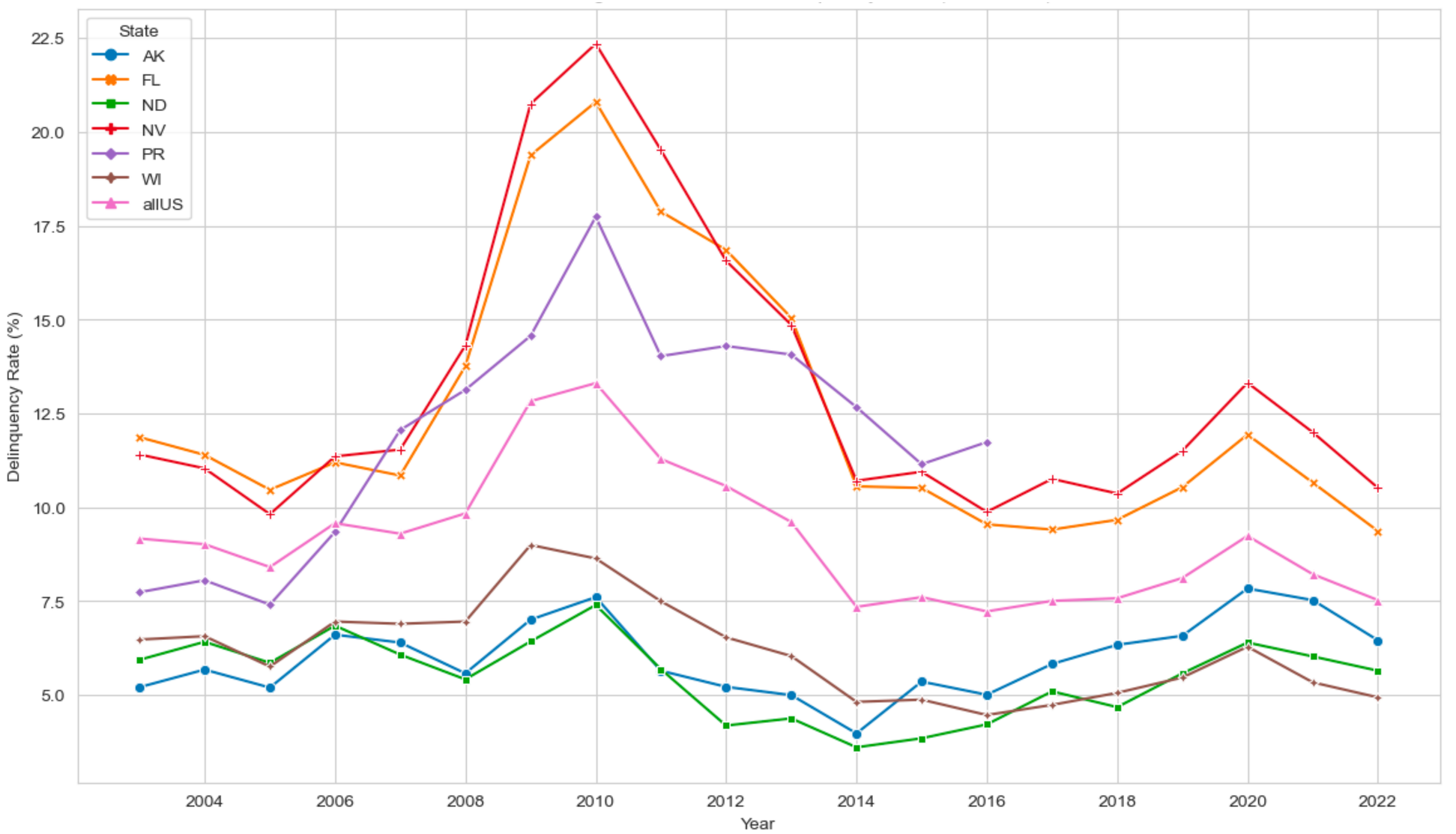
Credit Growth and Savings as % of Disposable Income



GDP 4 month lagging indicator of Credit Growth (62% correlation)

Dips and recoveries 2008 and 2020

States with Highest & Lowest Delinquency



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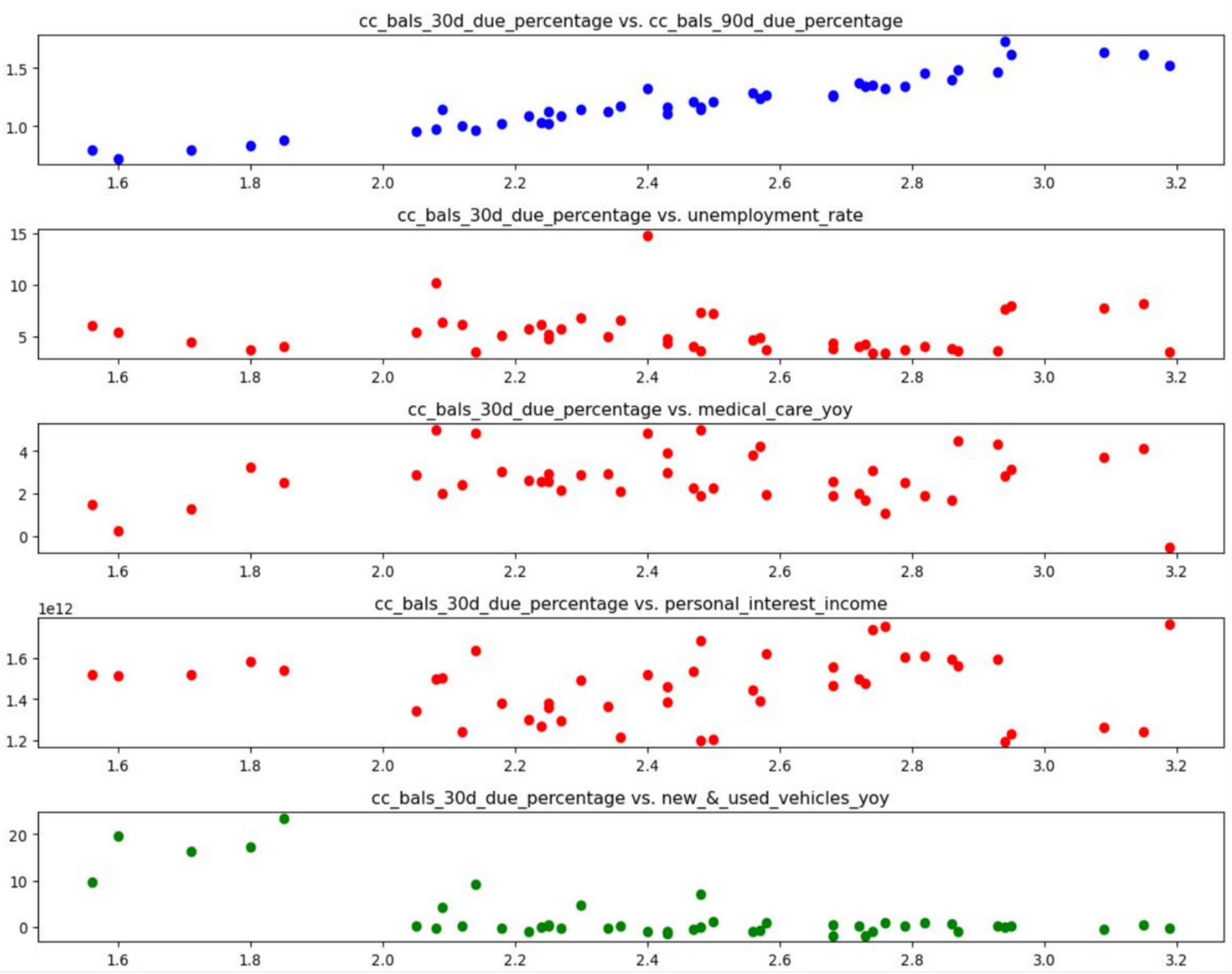
Delinquency rates (% of people that do not pay their monthly bills) was one of our target variables.



Car purchases showed significant correlation with delinquencies **and** FedFunds rate (base interest rate)

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Modeling Delinquency

SARIMAX Analysis

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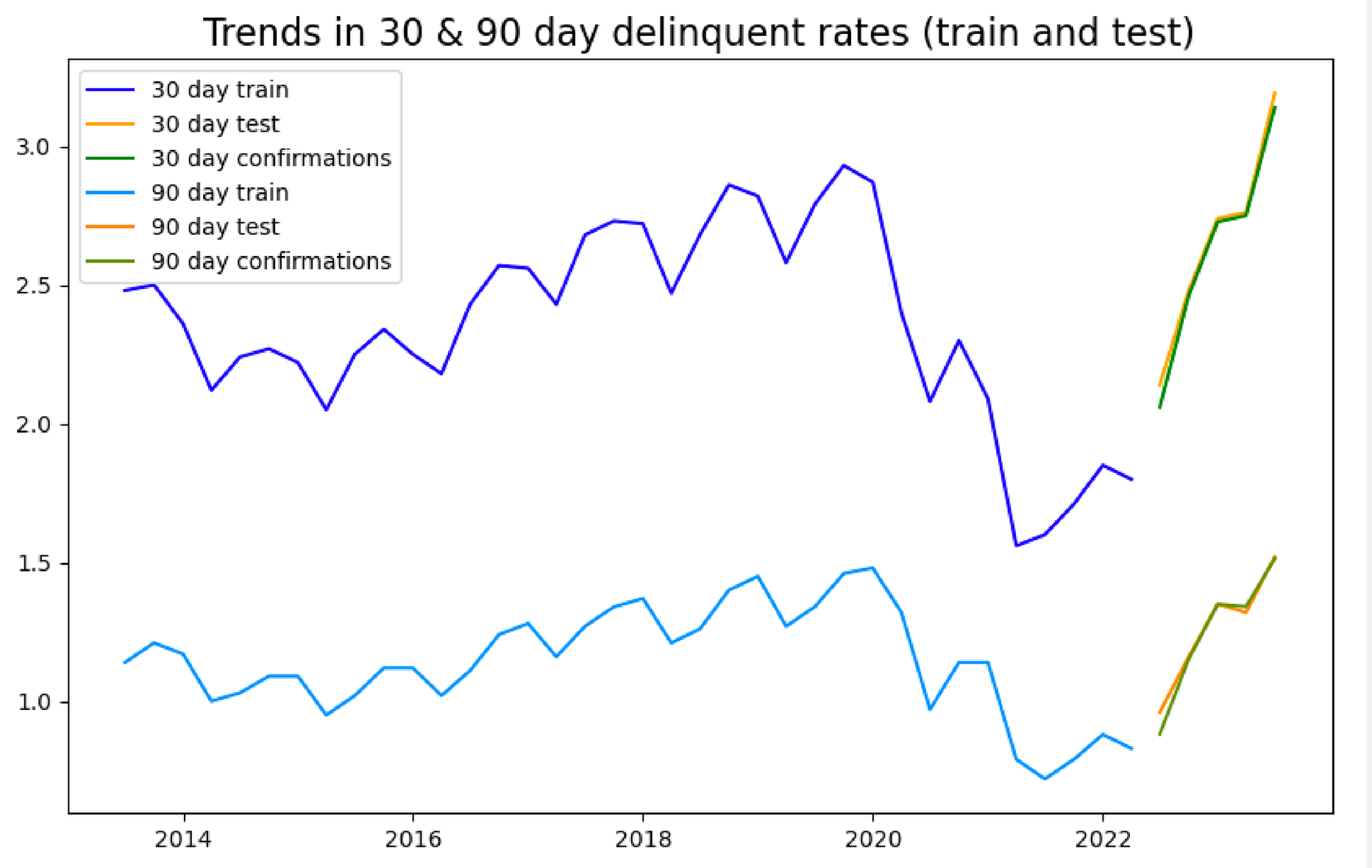
Model


Trends in 30 & 90 day delinquent rates (train and test)
30 day train
30 day test
30 day confirmations
90 day train
90 day test
90 day confirmations
3.0
2.5
2.0
1.5
1.0
2014
2016
2018
2020
2022

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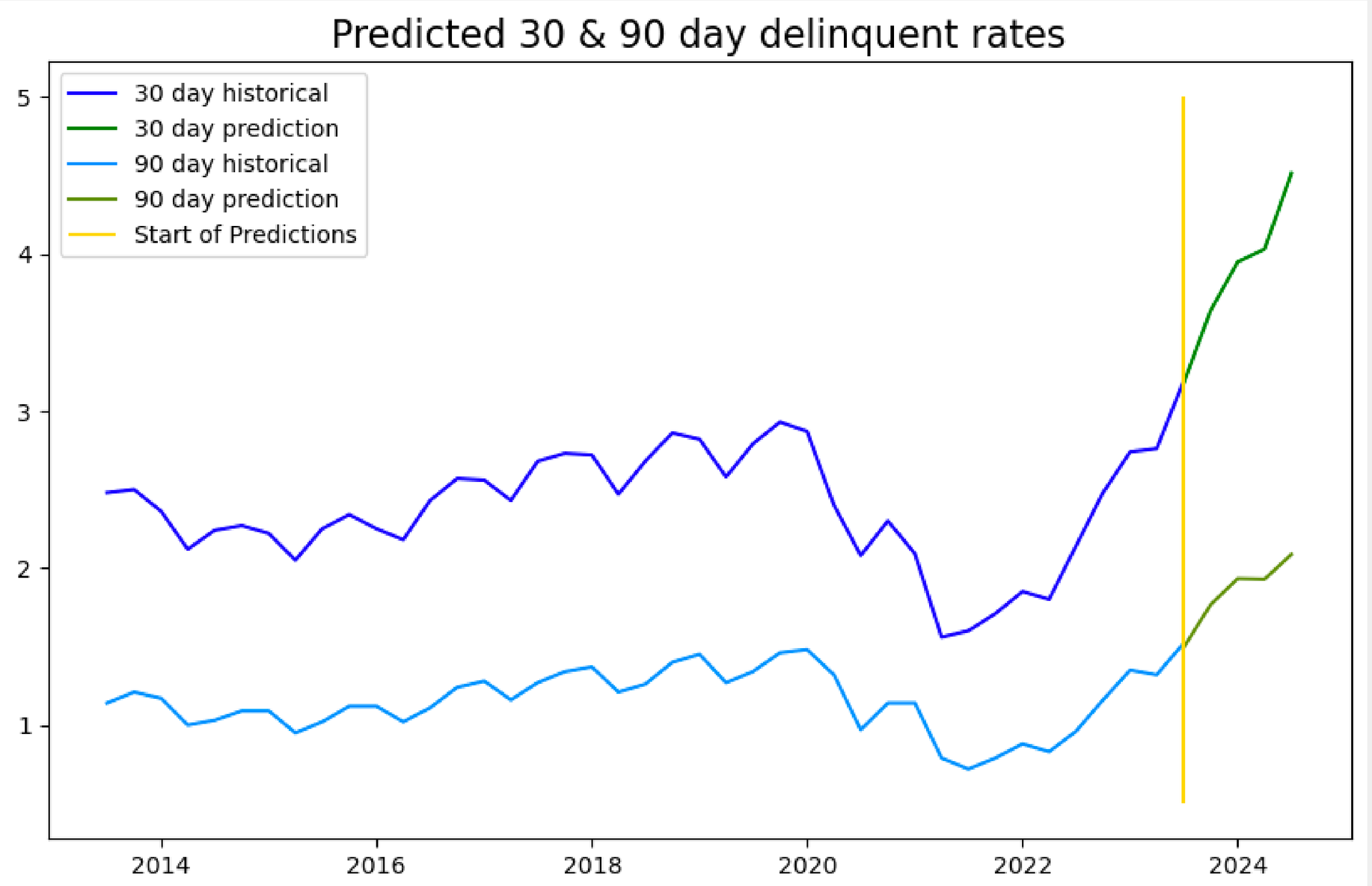
Forecasting 12 months Ahead



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Modeling Credit Growth

SARIMAX Analysis

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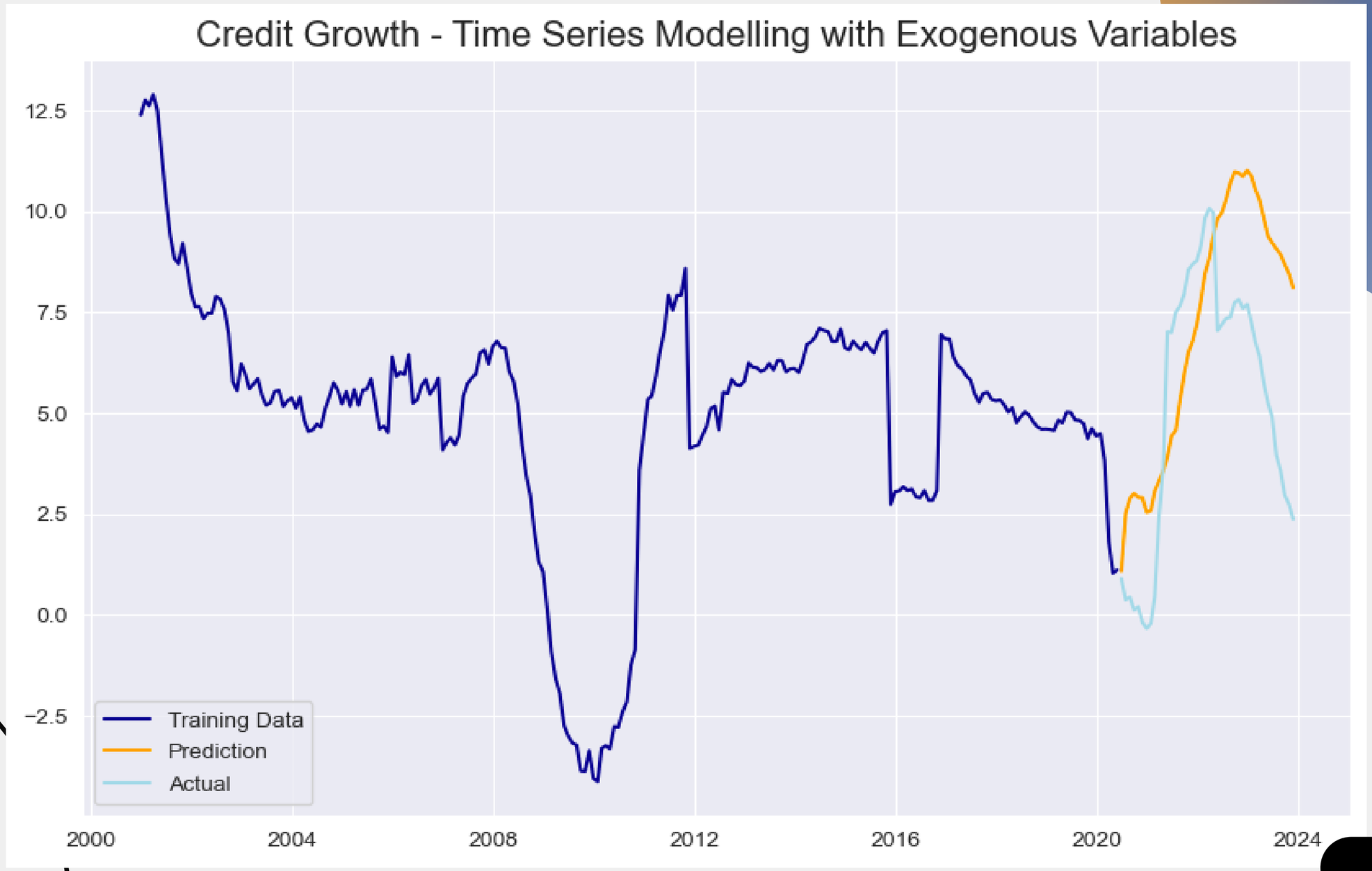
Credit Growth - Time Series Modelling with Exogenous Variables
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
2000
2004
2008
2012
2016
2020
2024
Training Data
Prediction
Actual

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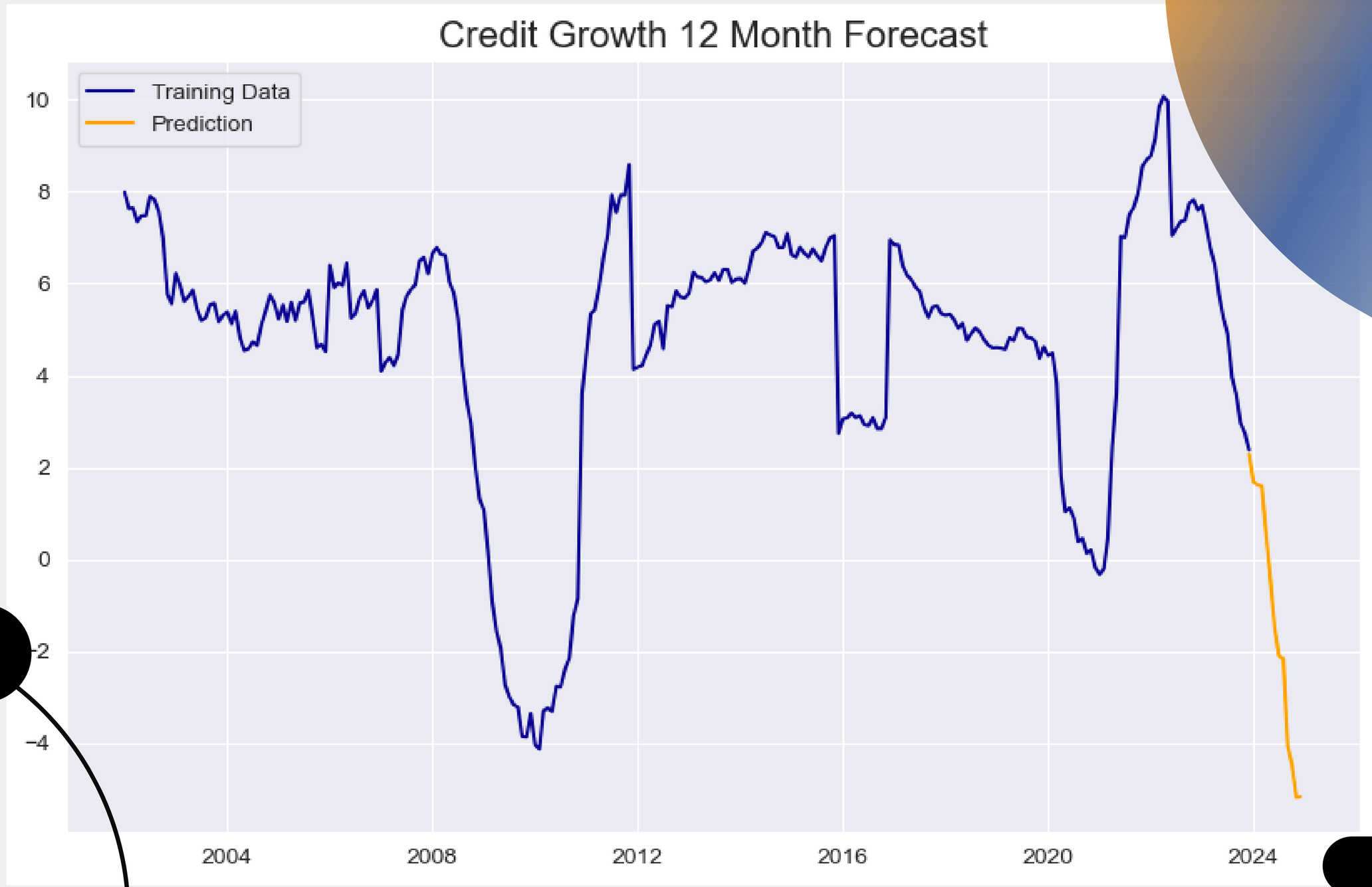
Credit Growth 12 Month Forecast
Training Data
Prediction
10
8
6
4
2
0
−2
−4
2004
2008
2012
2016
2020
2024

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Further Modeling

Regression

Random Forests

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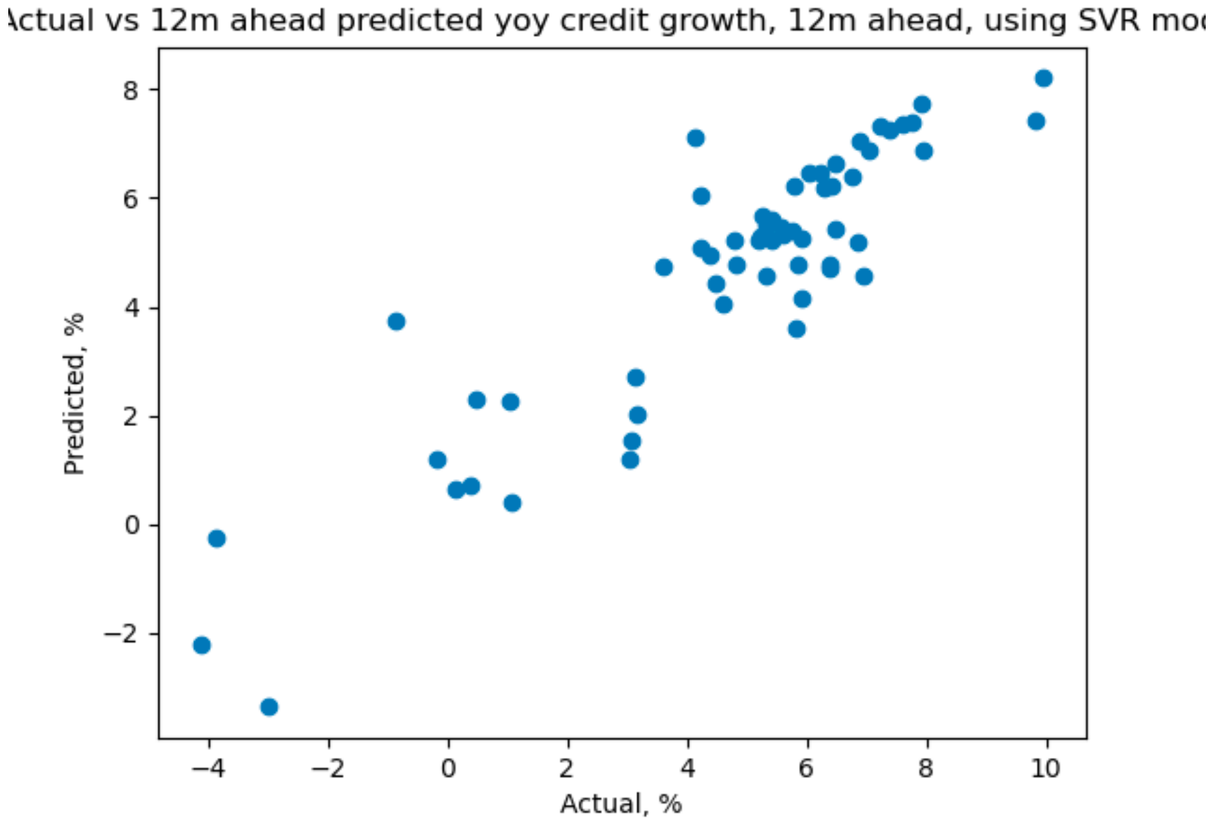
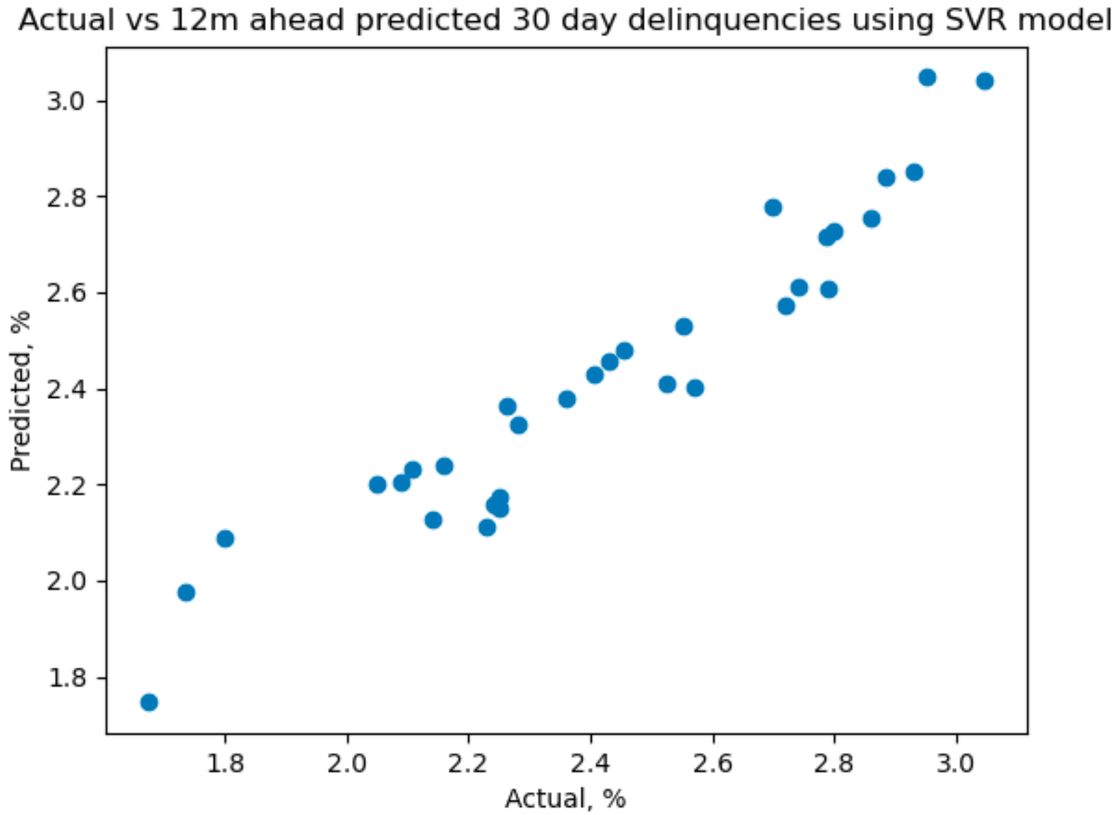
Using SVR, 0.8 cross-validation score predicting 12 month forward credit growth and delinquency credit levels.

The models forecast growth and delinquency to moderate from currently high levels into 2024





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Recomendations

Credit Growth
Over next 12 months

Delinquencies
Over next 12 months

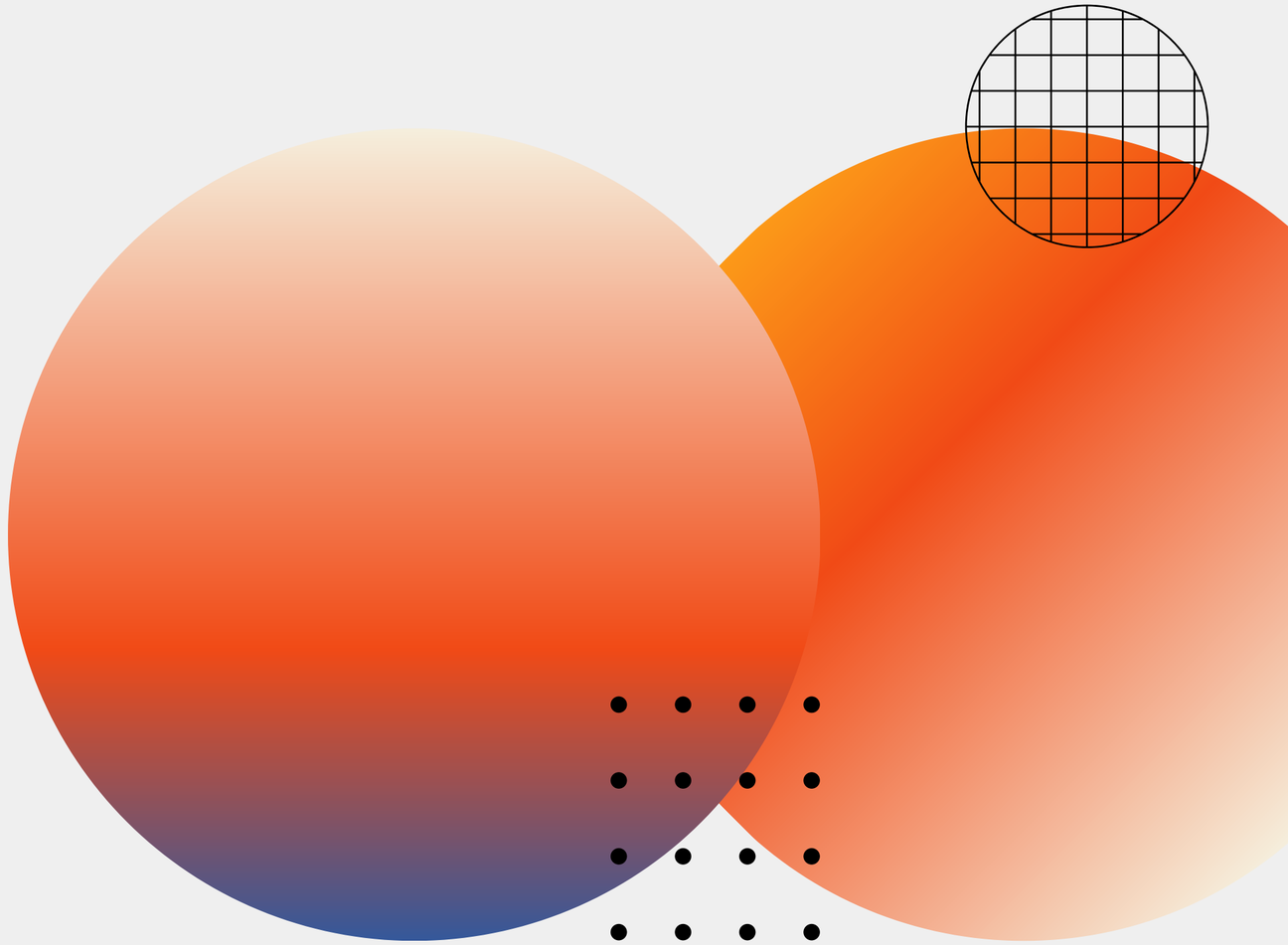
Rarely see
increasing credit growth without rise in delinquencies

Be selective
and conservative with new lending

Restrict lending
to new/ lower quality borrowers -> focused on existing, low risk borrowers

Increase rates
to offset higher delinquencies

Steve

Thank you

Do you have any questions?