

Post-Pandemic Futures

Progress Report on How COVID-19 is Changing SMU Libraries

Team Members



Project completed in fulfillment of SMU Master of Science in Data Science program's DS 6373 & DS 7330 course requirements.

Background

Spring 2020 - COVID-19 Response

- Buildings closed March 13 through July 6
- All services moved to virtual for Spring 2020



2020-2021 Academic Year COVID-19 Response

- SMU Flex
 - Red & Blue schedule
 - Only 50% of students on campus each day
 - Less people in class; More people in the library?
- Around 50% decrease in library seating
- Virtual consultations & instruction sessions
- Reduced hours
- Mask required



Question of Interest

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How did library user behaviors change during the COVID-19 pandemic?

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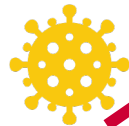


Actual Data:
Spring 2020, Fall 2020, Spring 2021



Pre-COVID Data:
Fall 2017 – Fall 2019

COVID-19 Pandemic Timeline



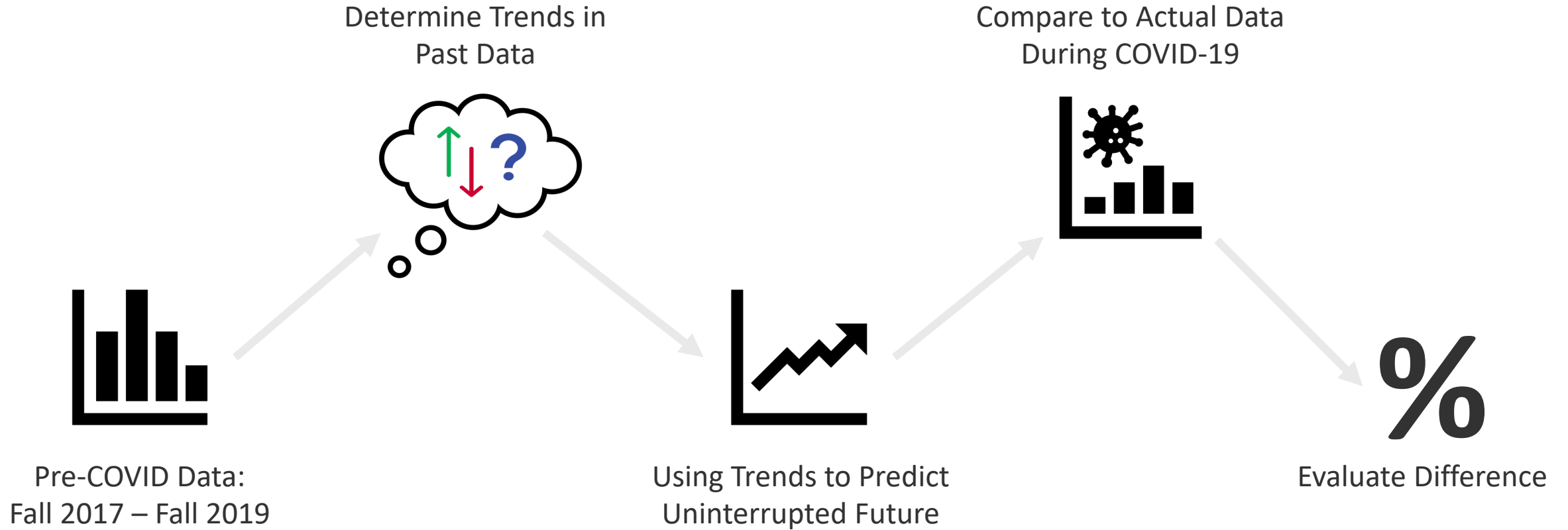
March 2020

Normal Timeline



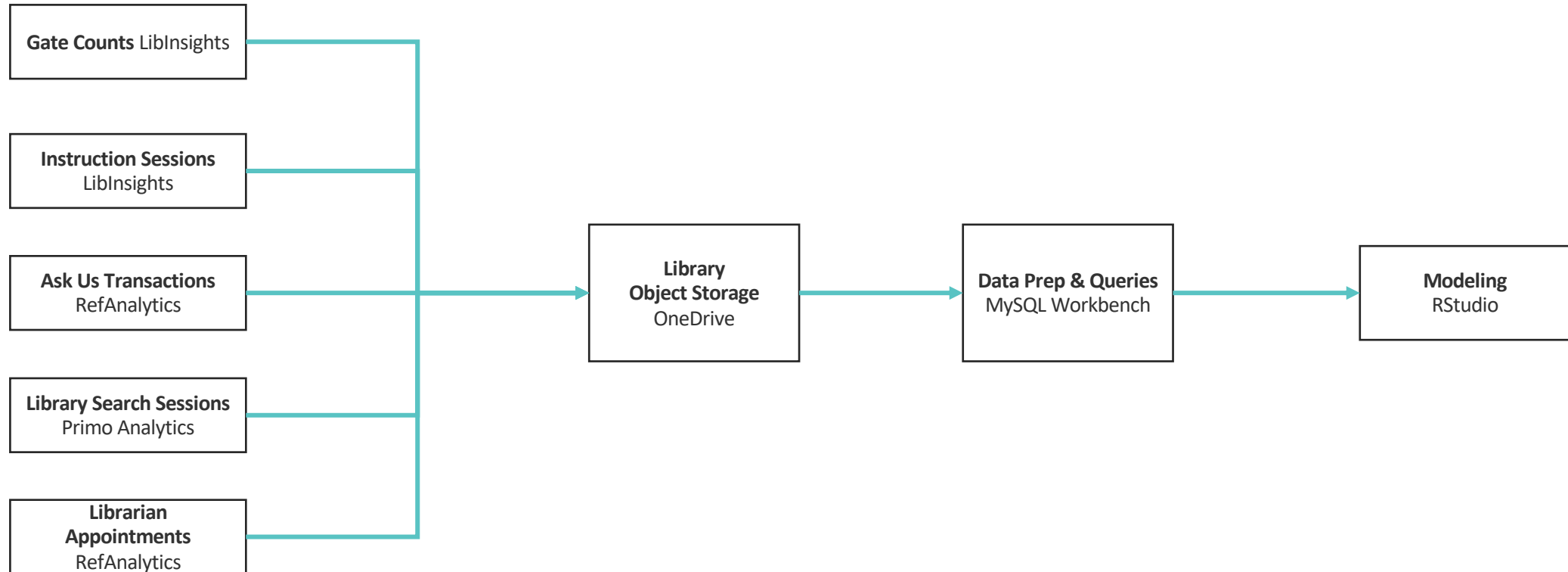
Forecasted Data:
Alternate COVID19-Free Universe

Steps



Methodology

Project Data Pipeline



About the Data

- Fall and Spring semesters only (most similar)
- Aggregated totals by day for each variable
- 602 observations
- Columns:
 - Semester
 - Week number in semester
 - Day of the week

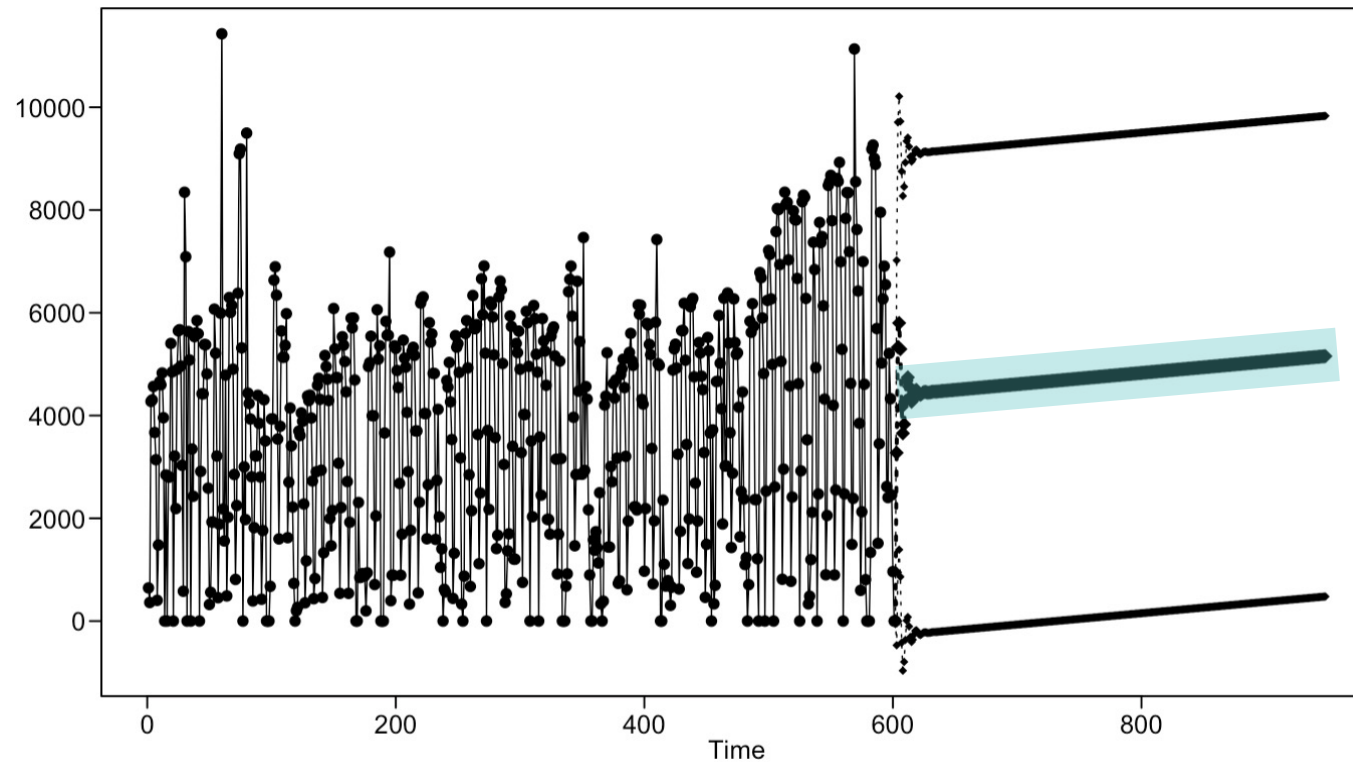
Modeling the Trend



Signal Plus Noise

Example: Signal Plus Noise Model Gate Counts

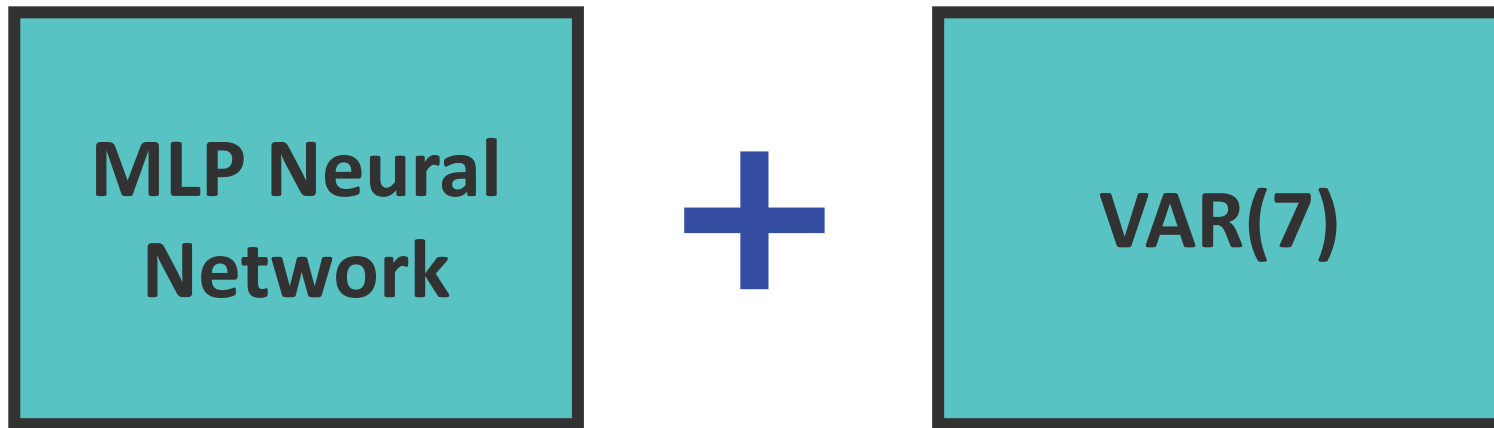
gate counts = 3069.9 + 2.199(days)



Slope: 2.199251

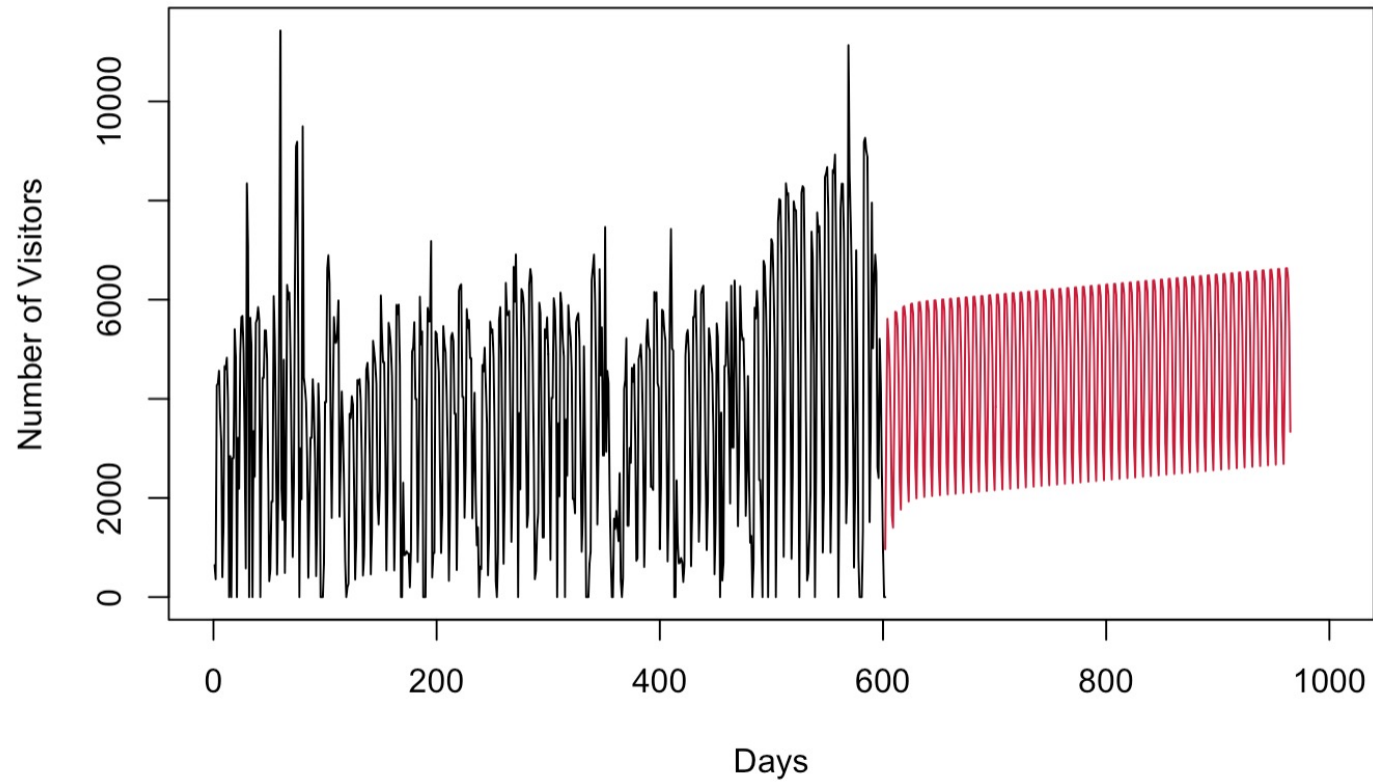
Evidence to suggest that the number of visitors to Fondren Library was increasing over time prior to the pandemic

Forecasting with an Ensemble Model

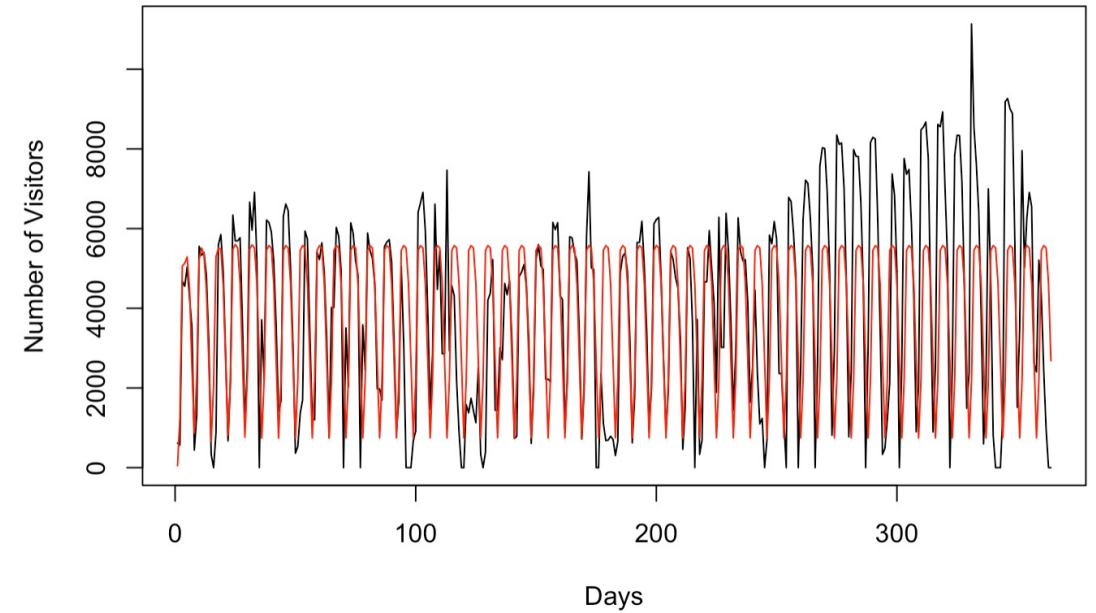
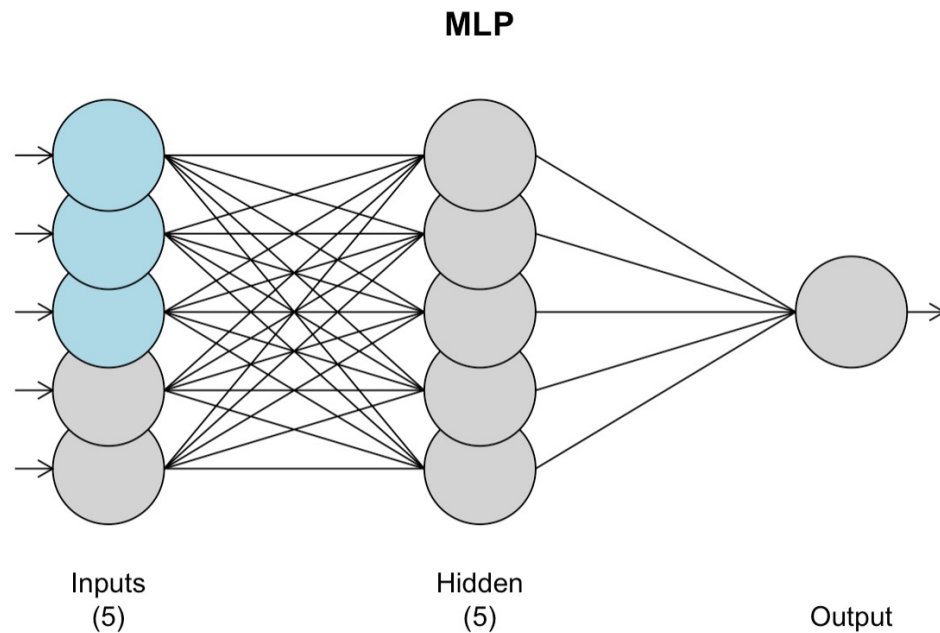


VAR(7) Model – Forecasts for Visitors

Spring 2020, Fall 2020, & Spring 2021

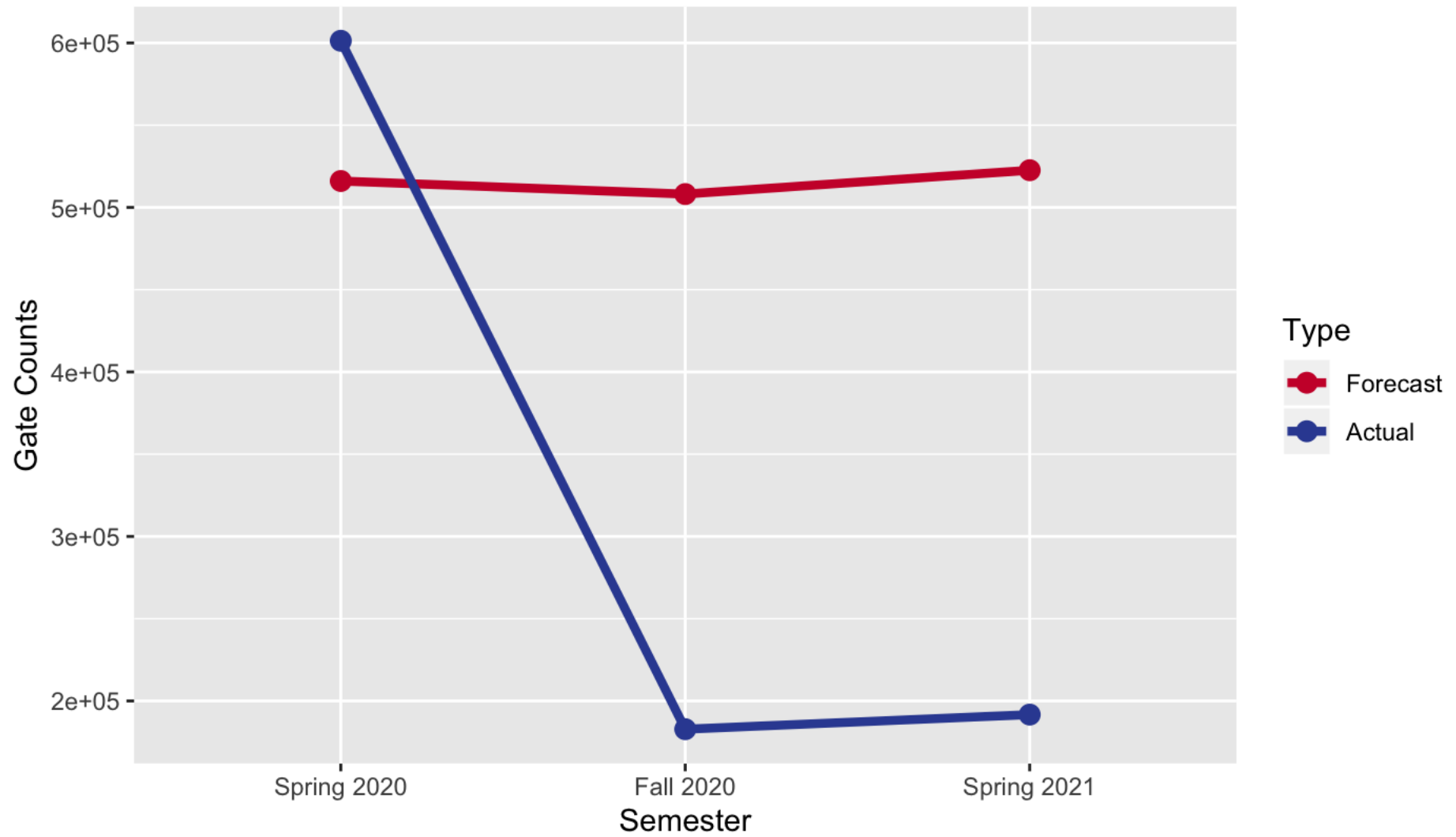


Multilayer Perceptron (MLP) Neural Network Model

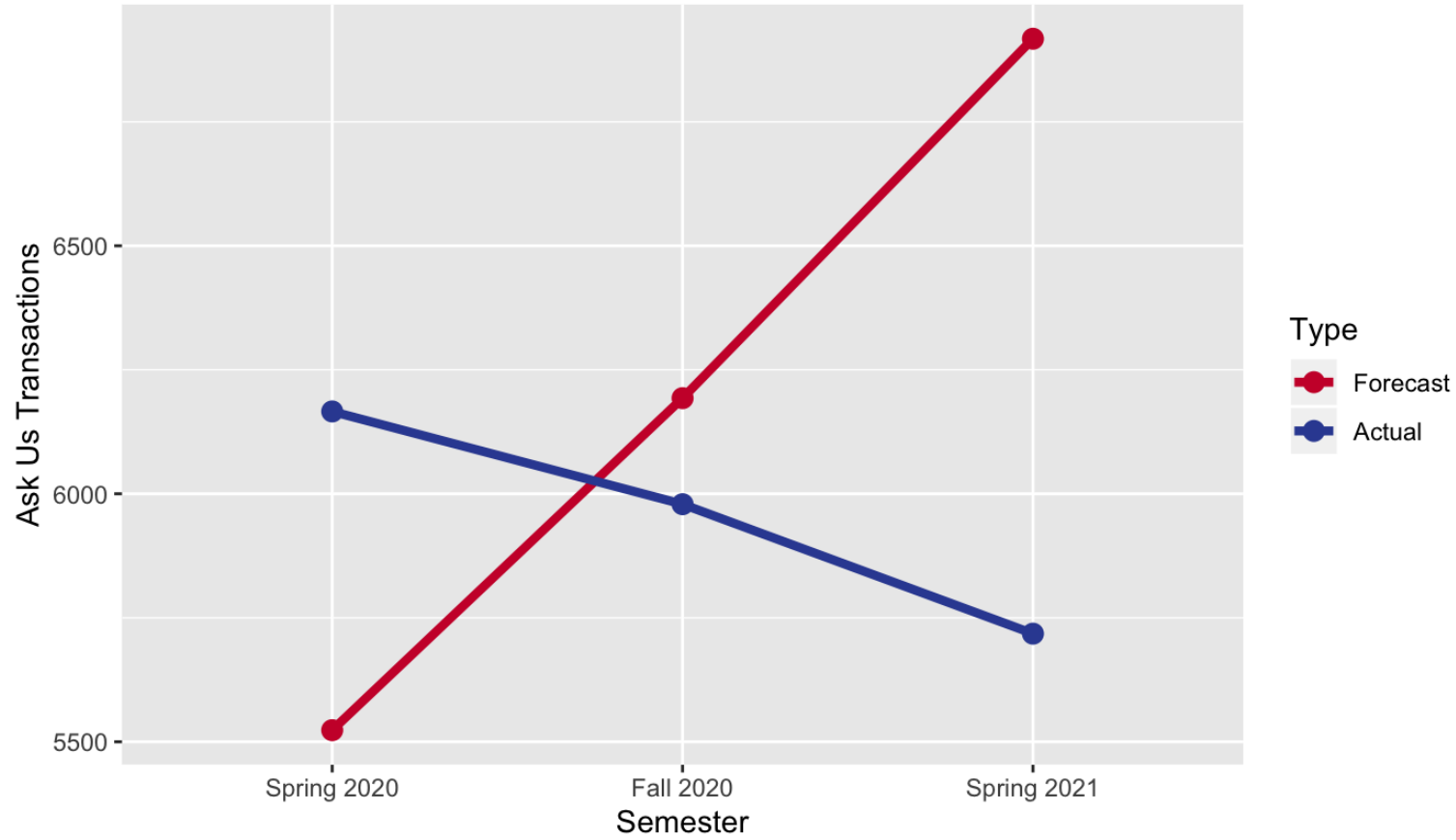


Results

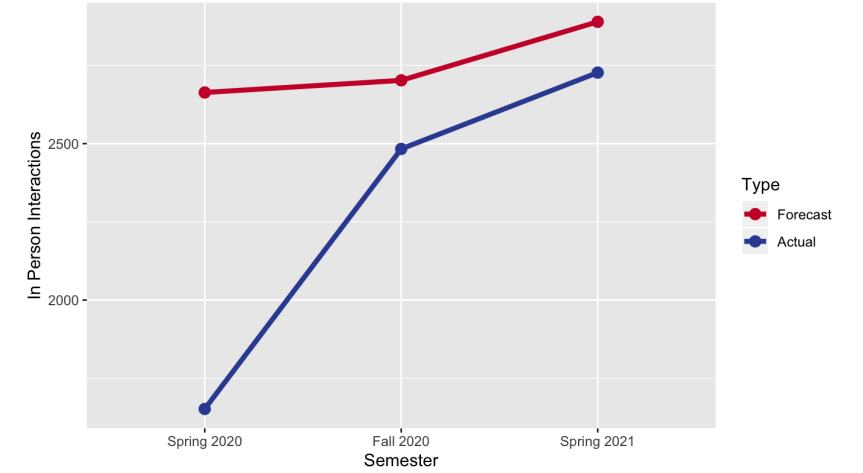
Gate Counts: Forecast vs Actual



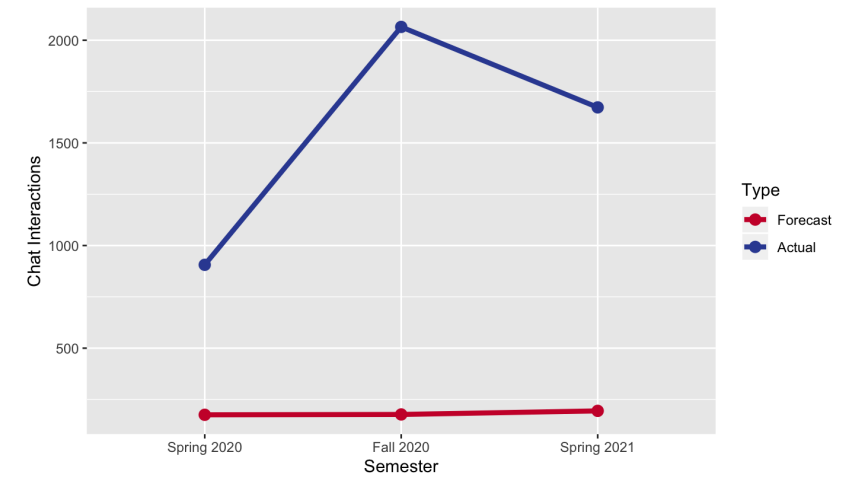
Ask Us Transactions: Forecast vs Actual



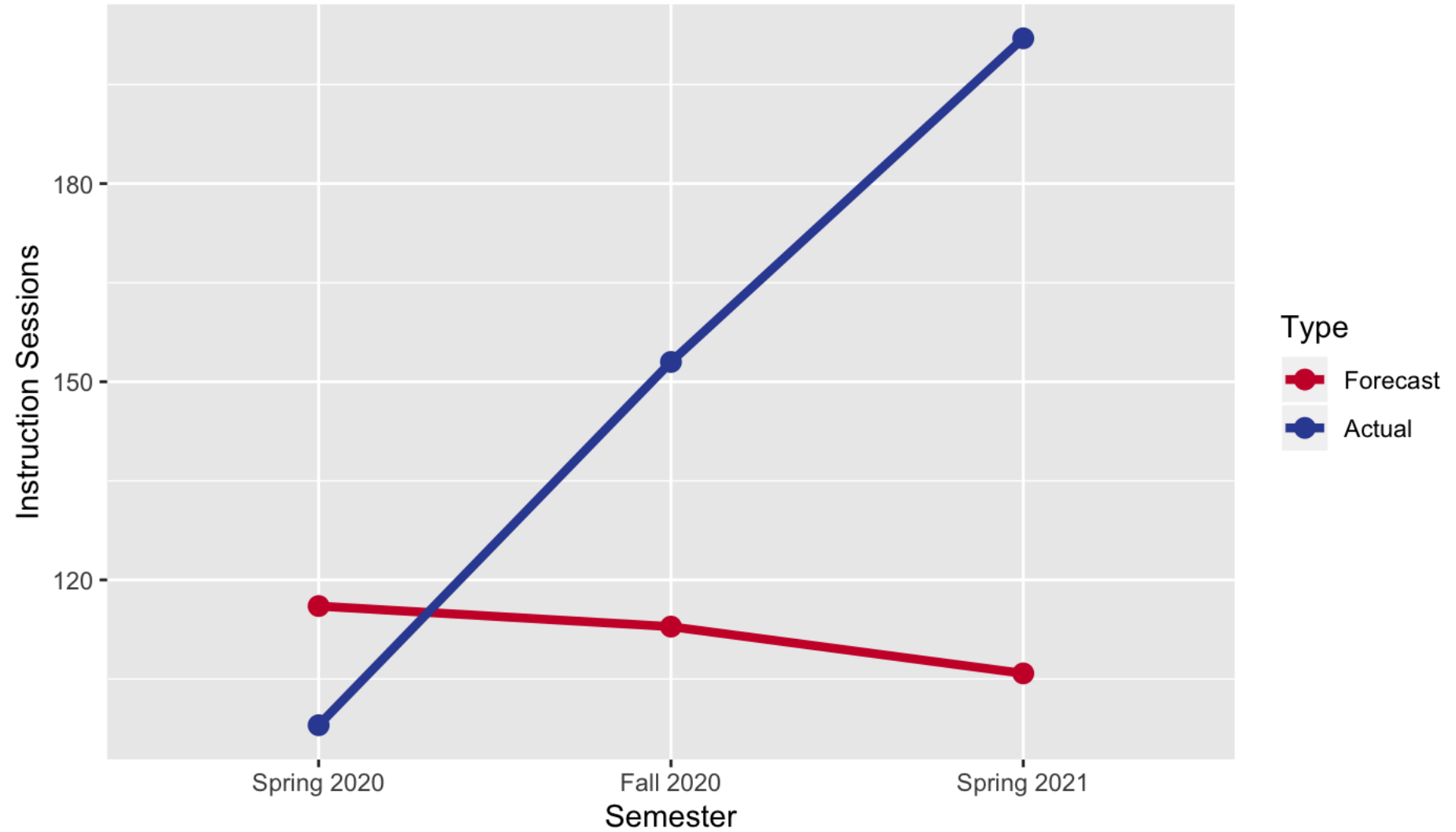
In Person Interactions: Forecast vs Actual



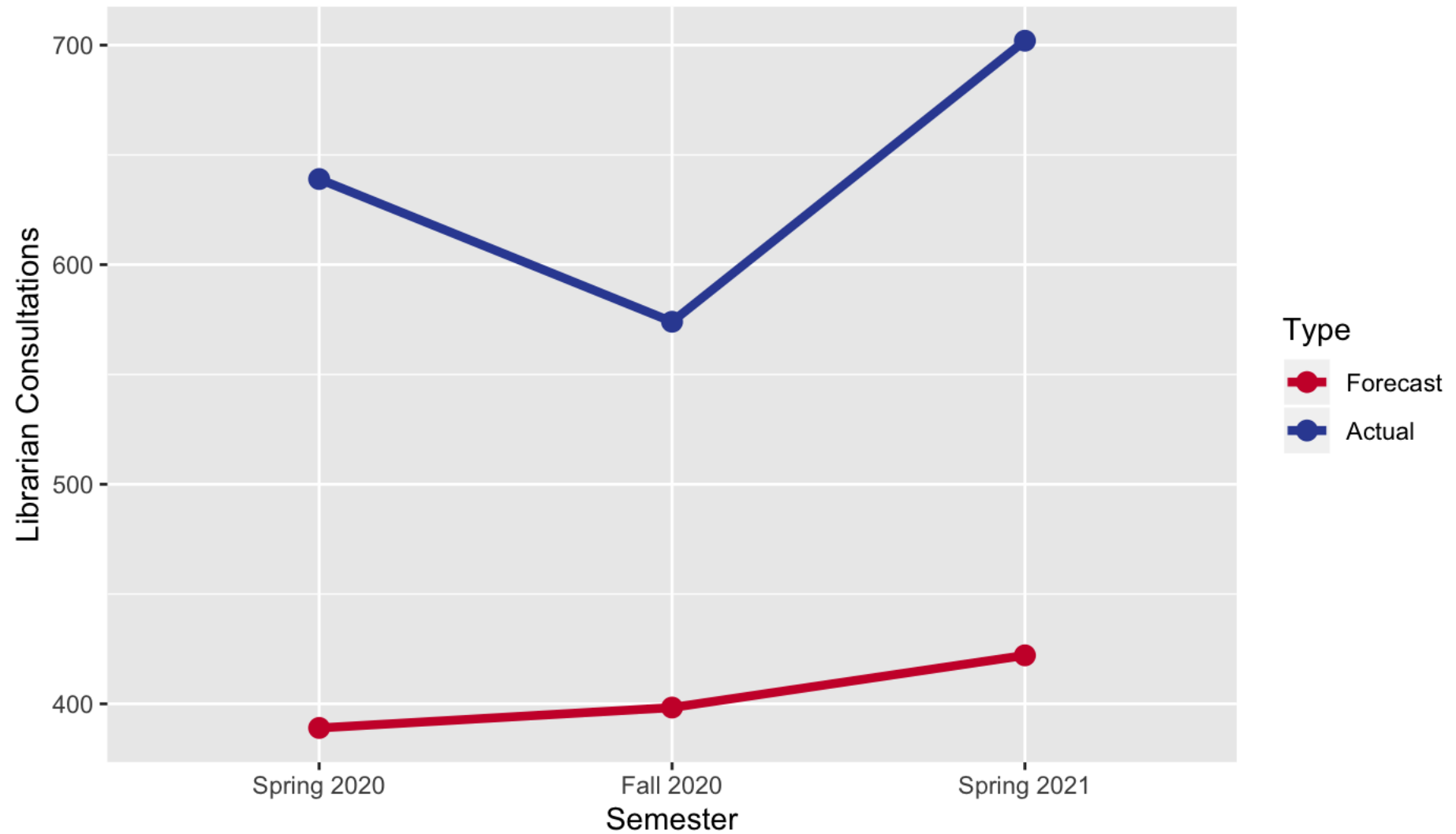
Chat Interactions: Forecast vs Actual



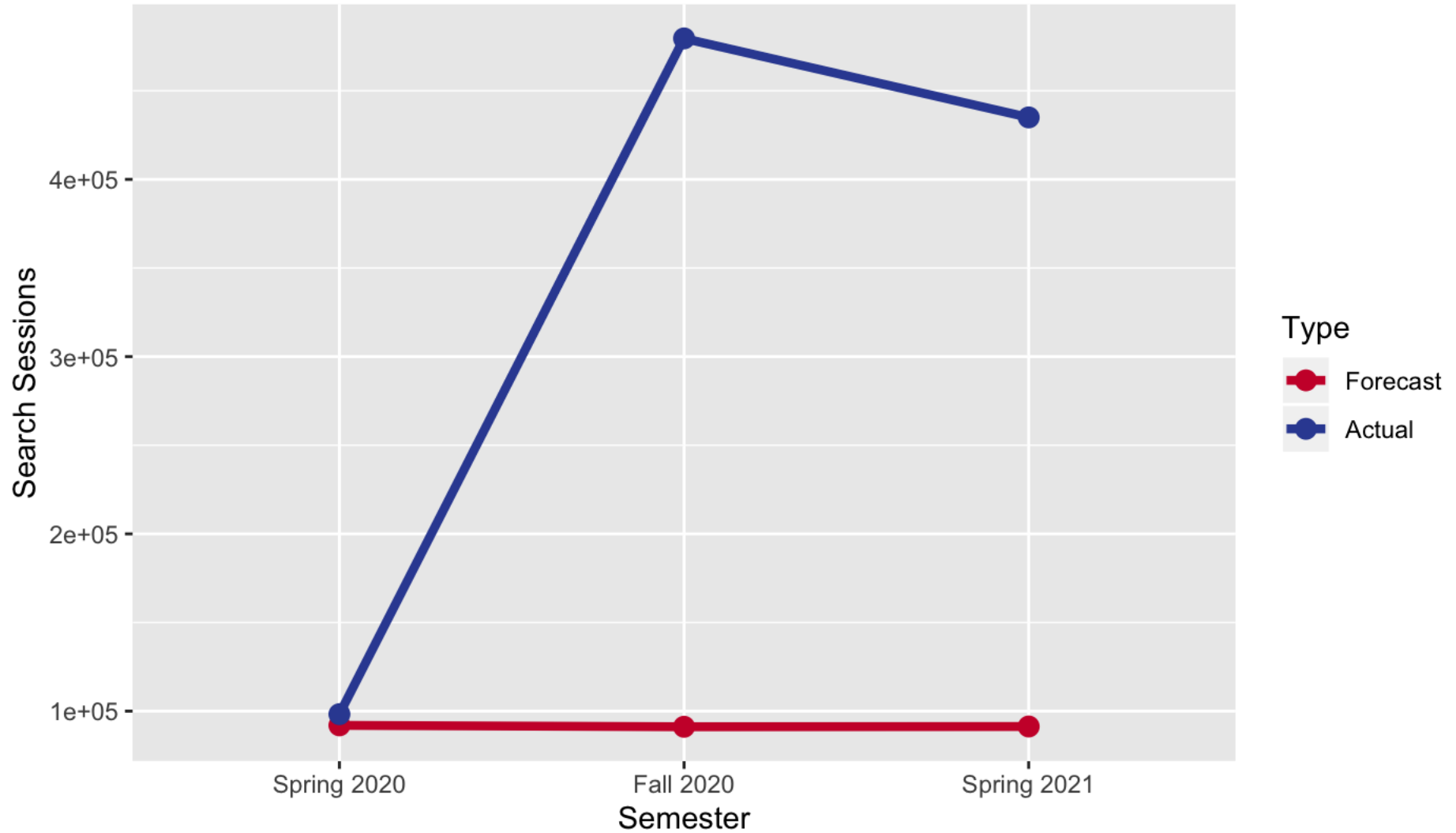
Instruction Sessions: Forecast vs Actual



Librarian Consultations: Forecast vs Actual



Primo Search Sessions: Forecast vs Actual



Summary

Gate Counts	Dropped significantly; slowly increasing, but nowhere near the rate we saw pre-pandemic.
Instruction Sessions	Pre-pandemic trend was decreasing. There is a sharp increase, and the trend continues upward
Ask Us Transactions	Decreasing trend both pre- and post-pandemic. In Person is coming back to previous levels, while Chat saw a sharp increase and don't look to be letting up.
Librarian Appointments	Saw a major increase
Primo Search Sessions	

Discussion



All models are wrong, but some are useful.

- George Box

Making Lemonade Out of Lemons

SMU Libraries, Strategic Plan 2019-2024



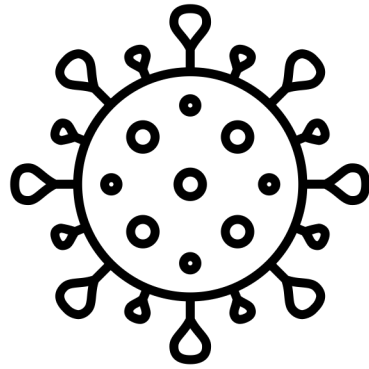
3.1 - Align library expertise and collection resources at critical junctures in the student experience to increase effectiveness of the academic support ecosystem in student 1 retention and success.



3.5 - Design methods to extend library services, instruction, and access to resources for distance, online, and non-traditional students based on their unique experiences and needs.

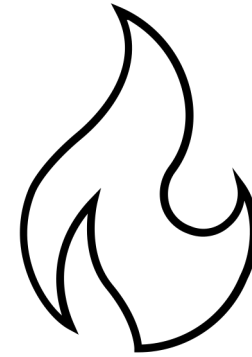


4.5 Manage with care, concern, and empathy the wellbeing of students by partnering to build thoughtful support services.



COVID-19

as



Catalyst

What's Next?