



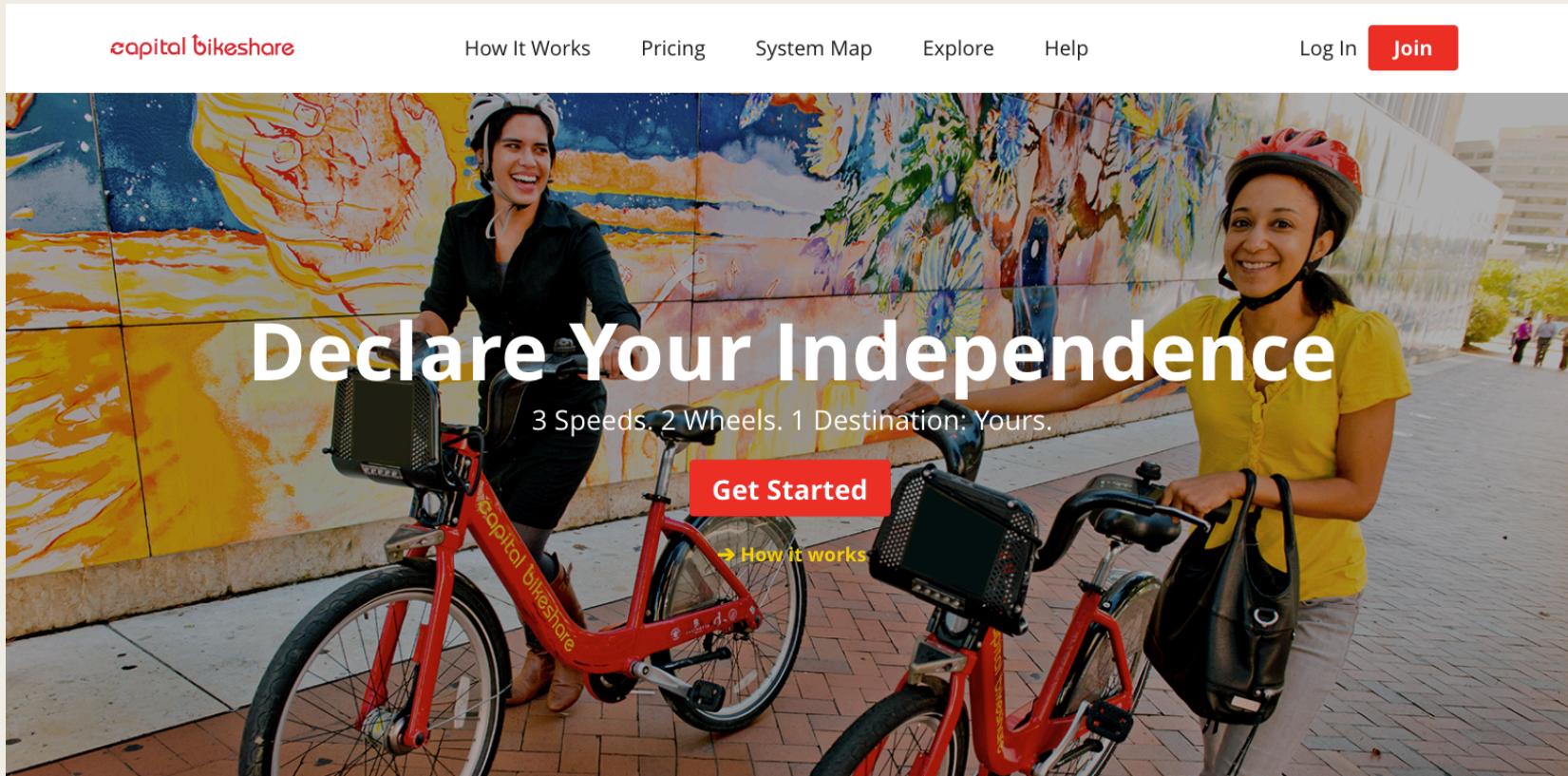
Predicting daily patterns in rentals

By: Meghan Thomason

Challenge

- UNDERSTAND PATTERNS OF BIKE SHARE USE IN WASHINGTON, D.C.
 1. *Summarize historical patterns*
 2. *Predict demand*

www.capitalbikeshare.com



Client

How Capital Bikeshare Works



Unlock

Pick up a bike at one of hundreds of stations around the metro DC area. See bike availability on the [System Map](#) or [mobile app](#).



Ride

Take as many short rides as you want while your pass is active. Passes and memberships include unlimited trips under 30 minutes.



Return

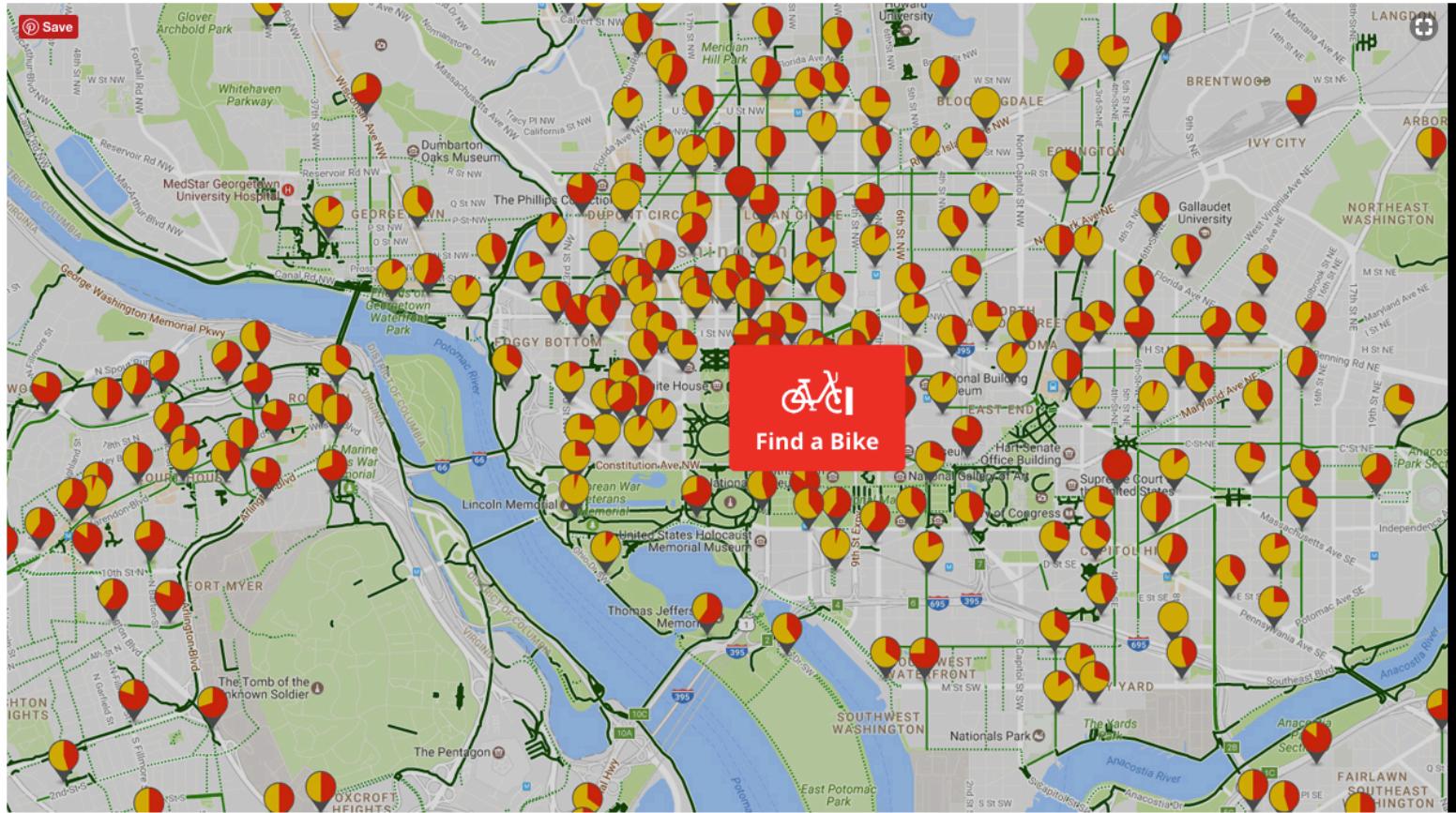
End a ride by returning your bike to any station. Push your bike firmly into an empty dock and wait for the green light to make sure it's locked.

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Client

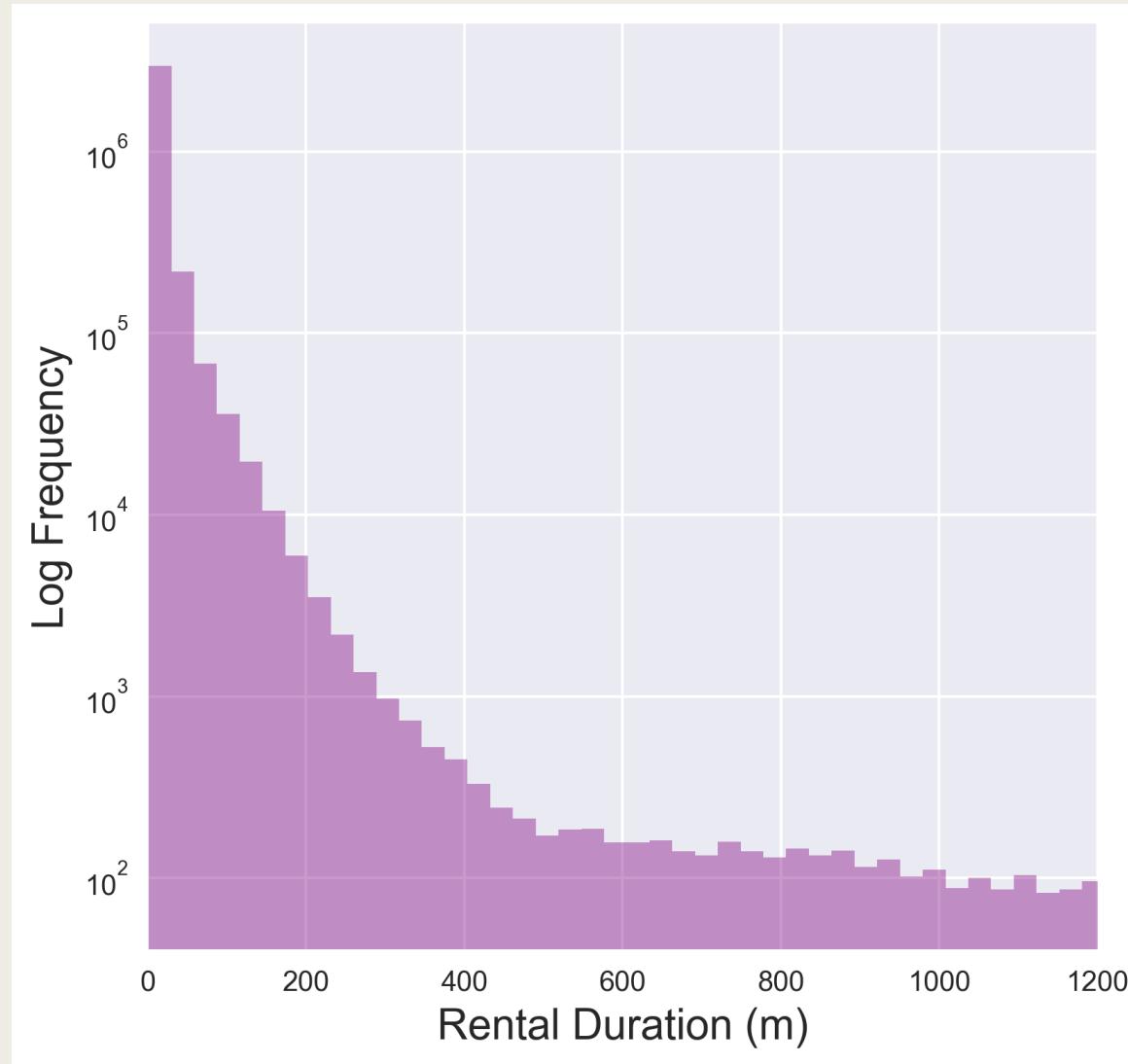
4,300 Bikes. 500+ Stations.

Use the [System Map](#) or [Download the App](#) to Find Real-Time Bike Availability.

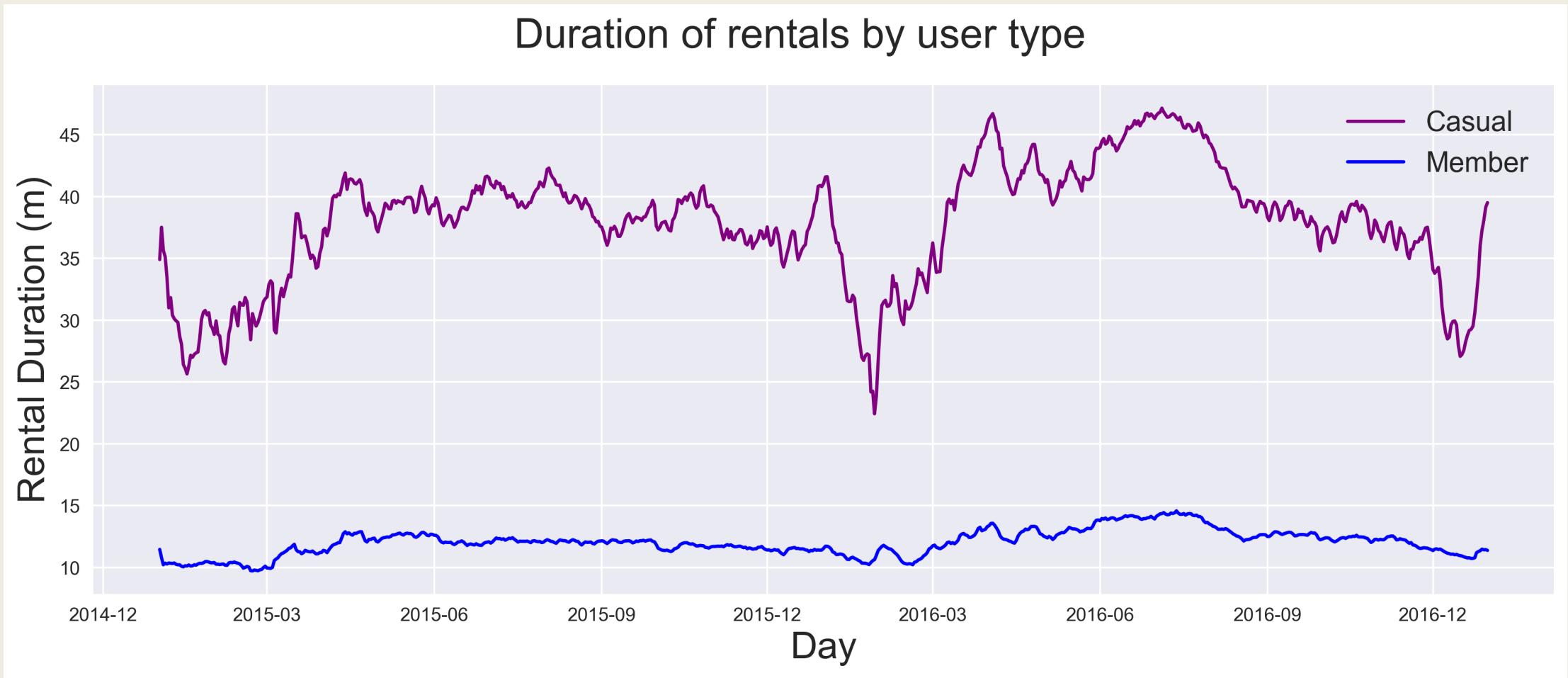


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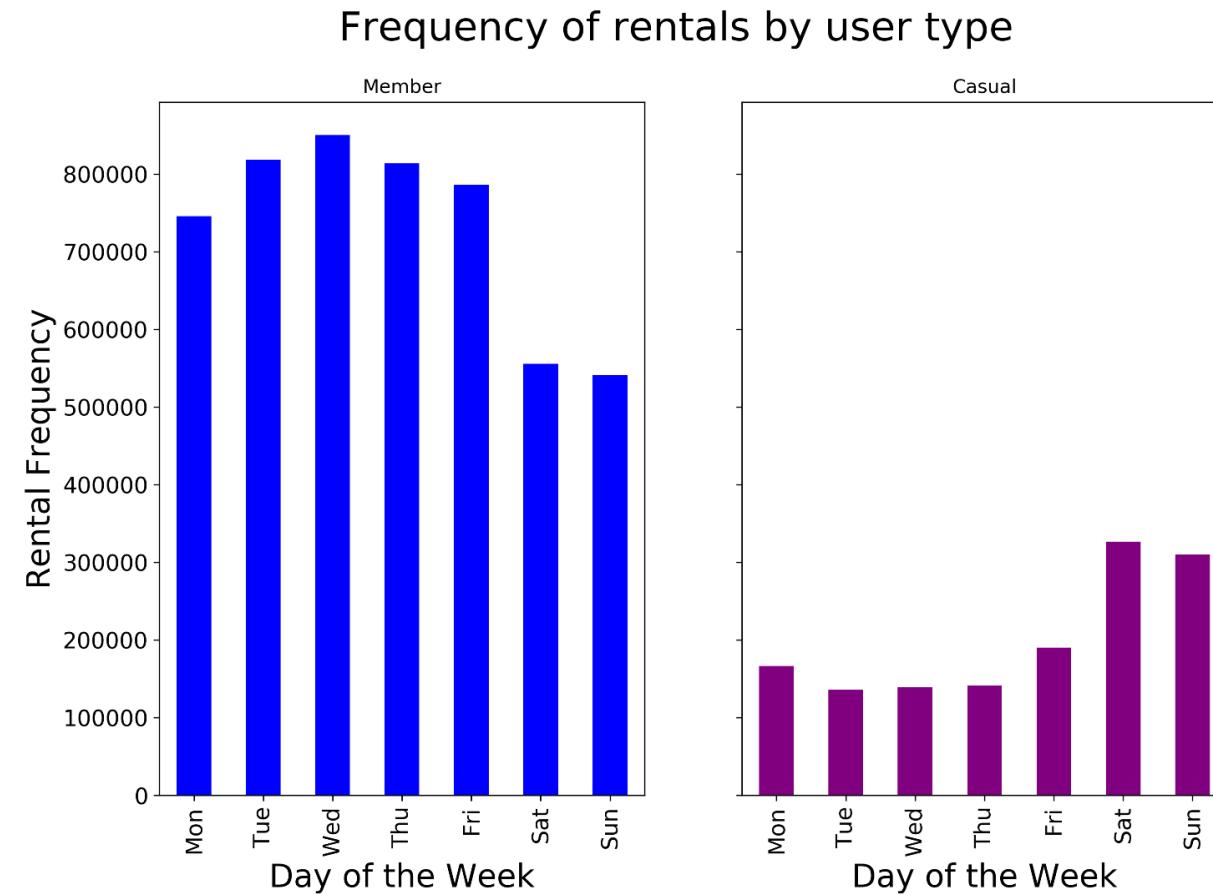
Historical patterns: Rental Duration



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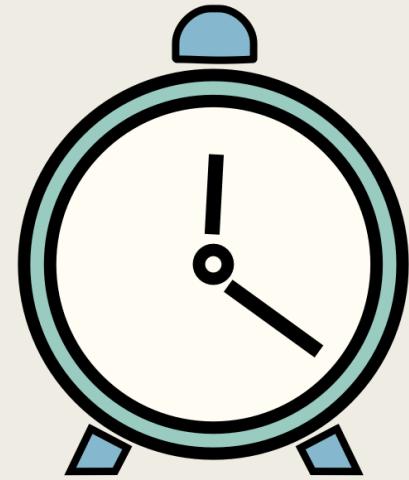


Historical patterns: Daily rentals



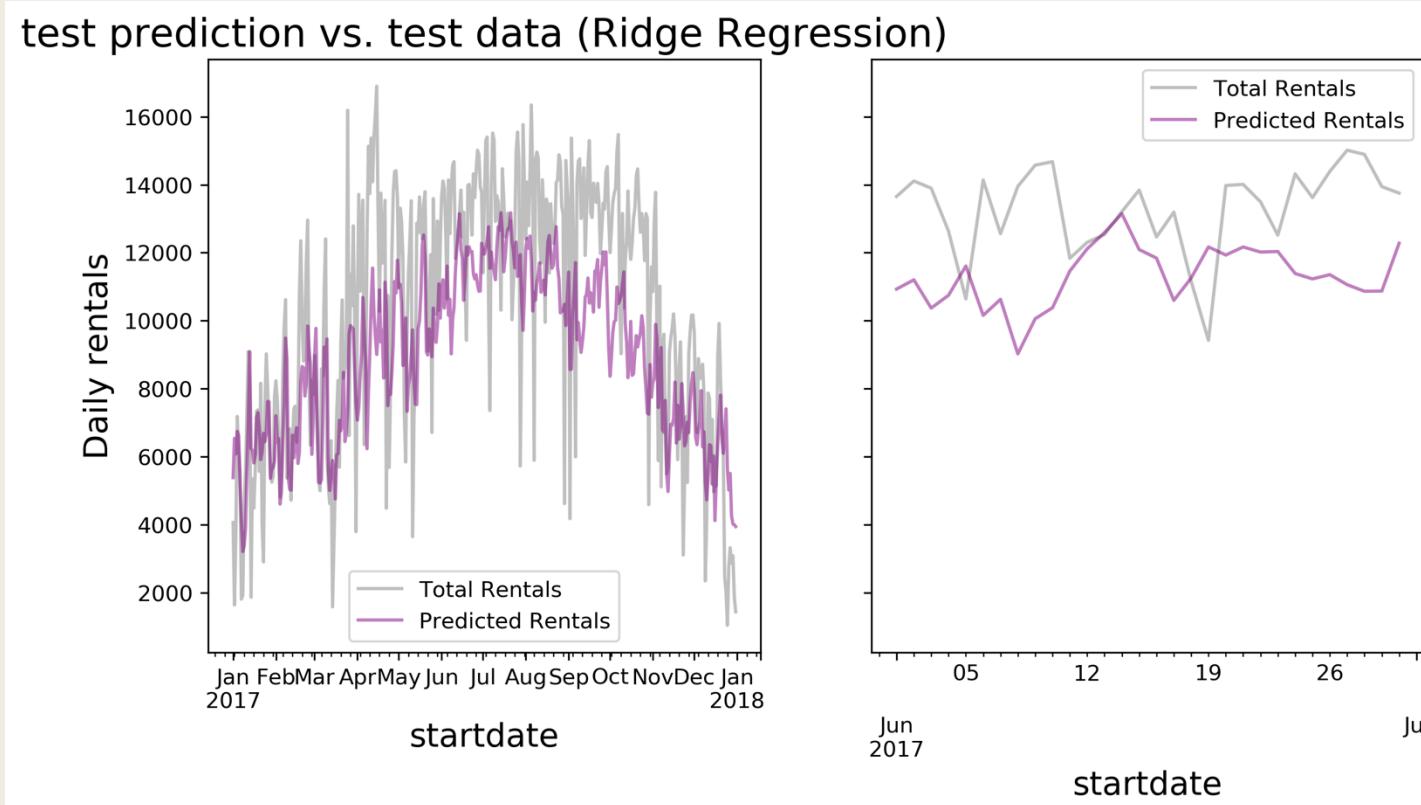
Model features

- Time components
 - *Time (Days in the year, 1-365)*
 - $(\text{Time})^2$
 - Weekday dummy variables ('day_0', ... 'day_5': 0 or 1)
 - *Holiday indicator variable (0 or 1)*
- Weather
 - *Daily maximum temperature*
 - *Daily minimum temperature*
 - $(\text{Daily maximum temperature})^2$
 - $(\text{Daily minimum temperature})^2$

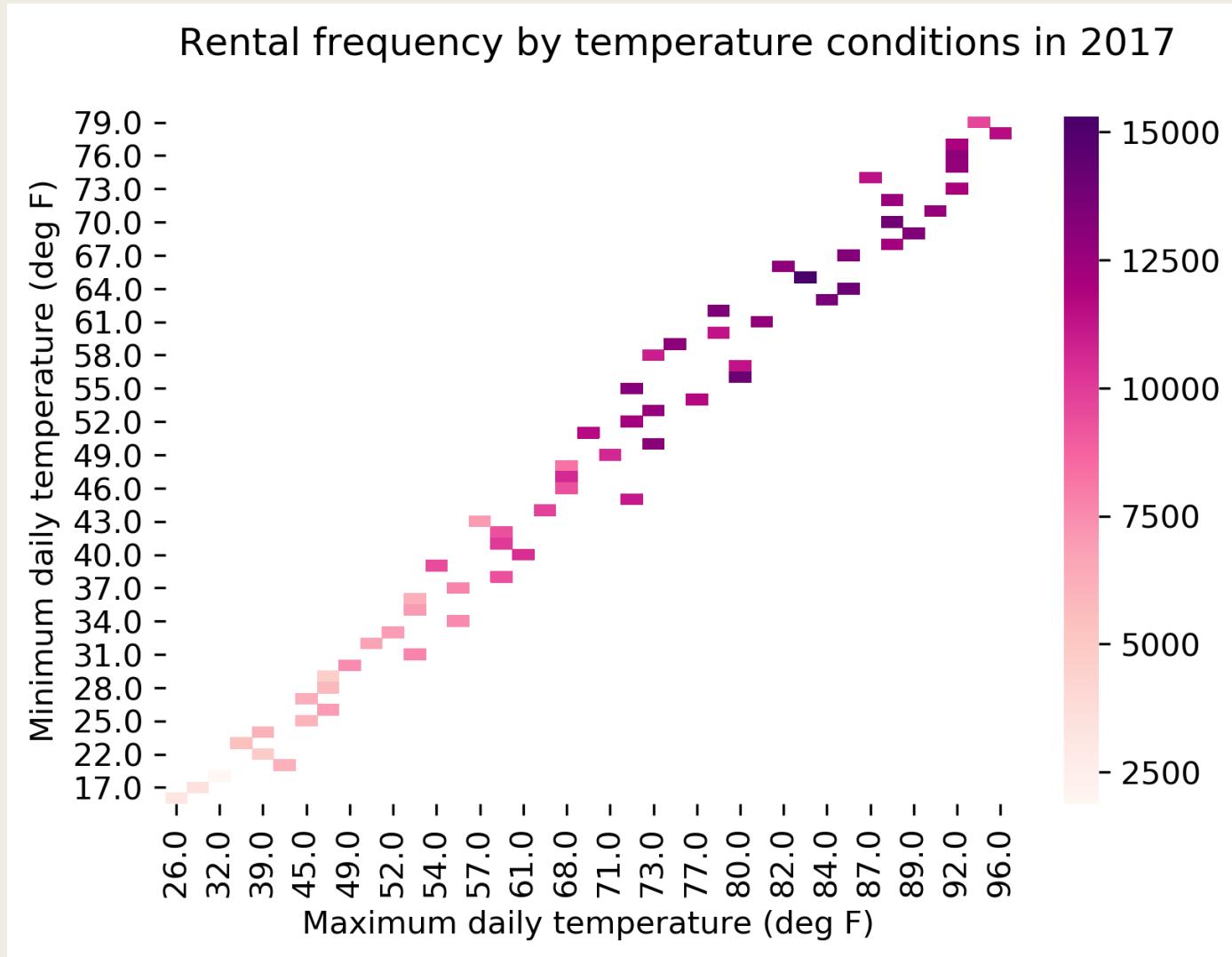


Best model

- Ridge regression performed the best of four models
- Can account for 59% of the noise in daily rental totals



”What’s the weather tomorrow?”



Conclusions

- The best model performed well at predicting rental demand
- What improvements could be made?
 - *Look for divergence due to special events*
 - *Local predictions: use station ID to get specific*

Other information

- Please find relevant code notebooks at
<https://github.com/mskaerthomason/Springboard-Capstone-1>.
- Thank to you Springboard staff, and my mentor Everett Wetchler!
- Say hello on LinkedIn or Twitter:

Linkedin.com/in/mskaerthomason

@thomasonmeg