

Data-Driven Parking

in Seattle's Belltown North neighborhood

2019 Capstone Project by:

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City of Seattle
Project Sponsor

Parking searches waste time and money.

\$1200
yearly cost to each driver

58 hrs/yr

Parking searches cost drivers 58 hours and \$1200 in wasted time, fuel, and emissions every year.

This adds up to \$490 million across the entire city of Seattle.¹

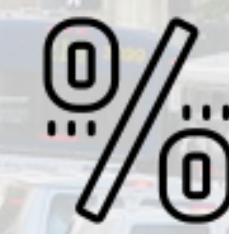
1. Statistics from: inrix.com/press-releases/parking-pain-us/

\$490 million
across Seattle

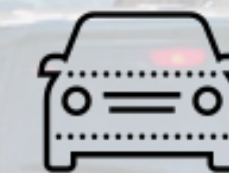


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To reduce parking pains, the city needs better **information:**

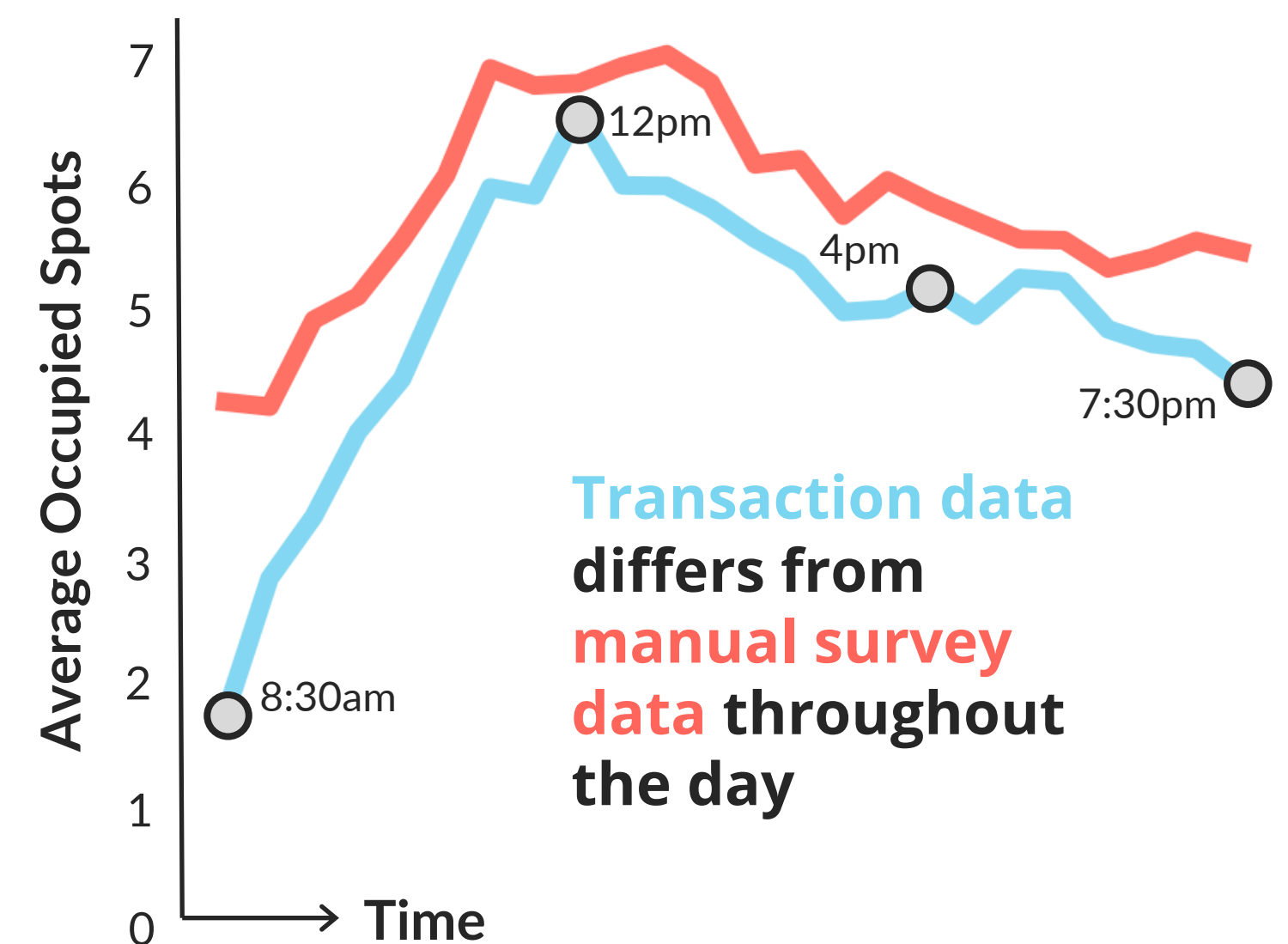
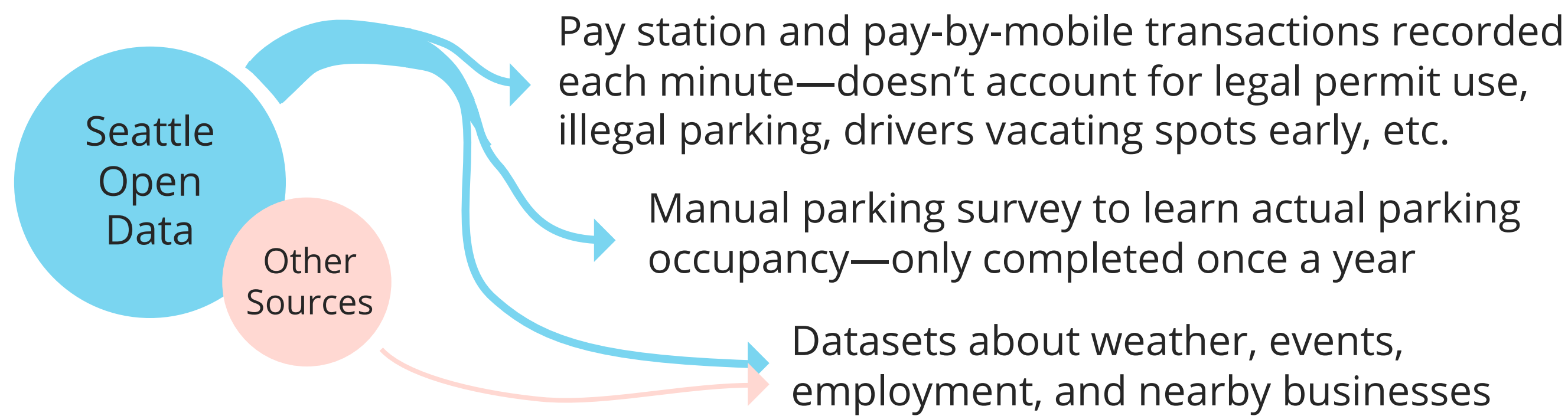


Actual parking occupancy within on-street paid zones



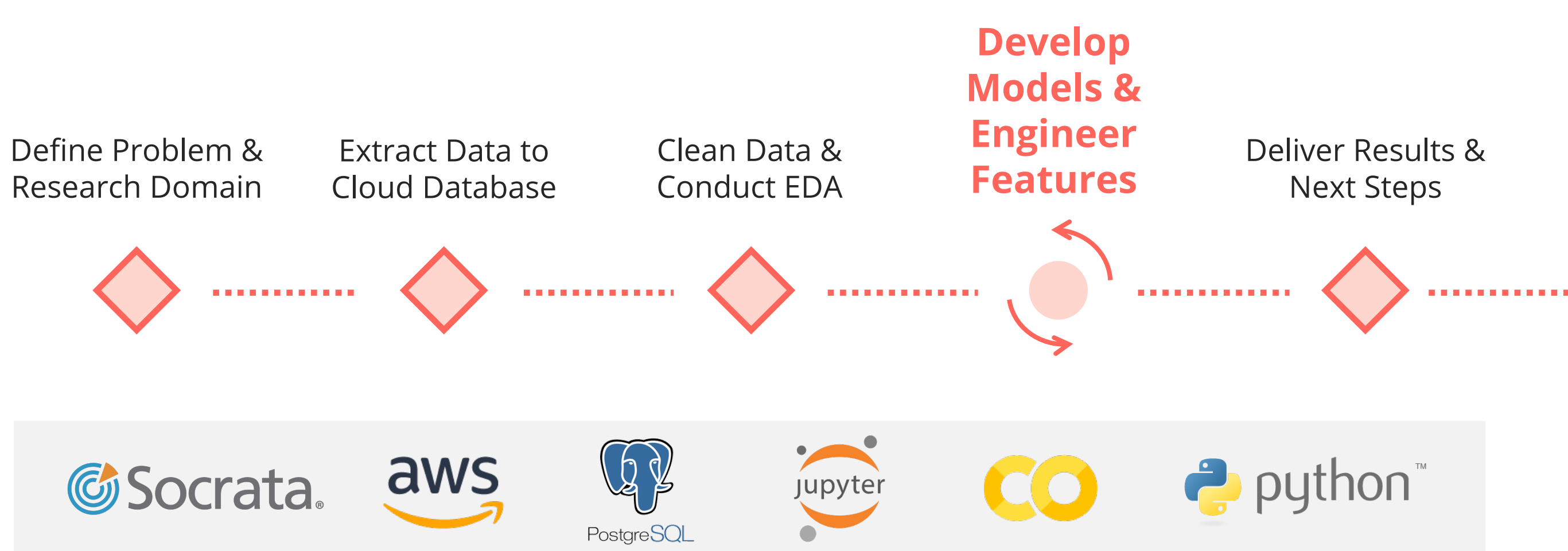
Drivers' parking behaviors and variables that are related to parking

Information Assets & Challenges



Our Approach

Calibrate transaction data based on manual survey results and build statistical models to predict parking occupancy



Results

Random Forest model performed best. Holdout set score:

RMS Error **0.17** ↓ better

In other words, parking predictions are off by 17 percentage points on average.

Top variables related to parking:



Lagged parking occupancy



Hour of the day



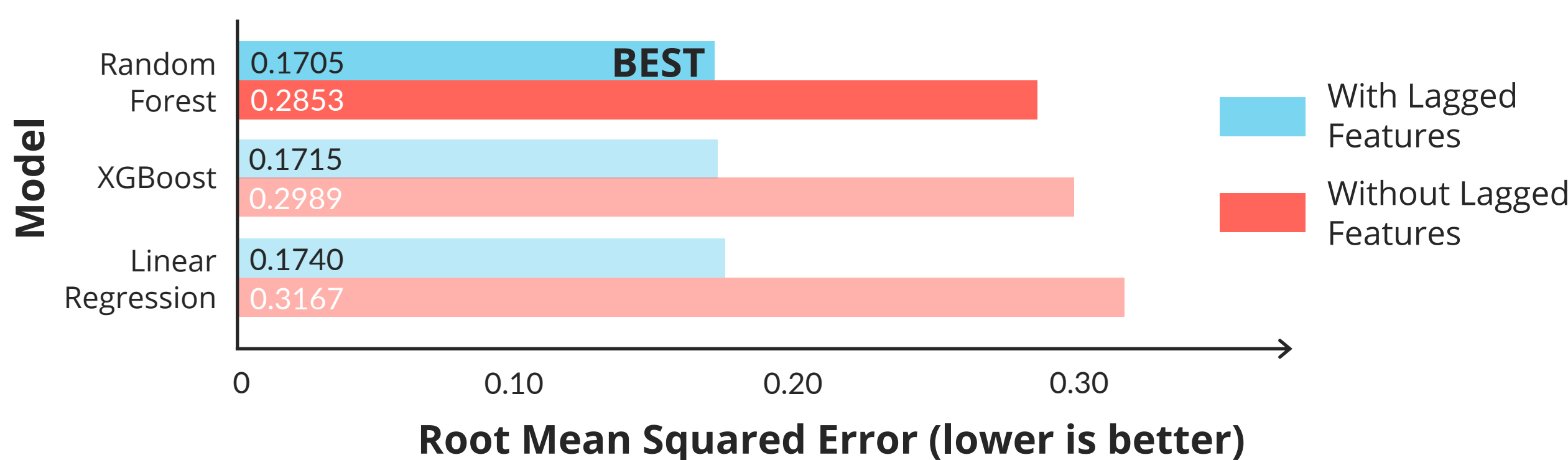
Proximity to downtown Seattle



Types of businesses within two blocks²

2. We split businesses by type. Top-performing categories include medical offices, grocery stores, and bars and restaurants.

Model Performance on Validation Set



Final Steps

Give City of Seattle full documentation of our approach to inform their parking policy decisions



Information School
UNIVERSITY of WASHINGTON