DataDivas

Juls Ambrosio | Jan Manzano

DataDivas

DataDivas

SPX EXPRESS

Delivery Service Provider

Shopee

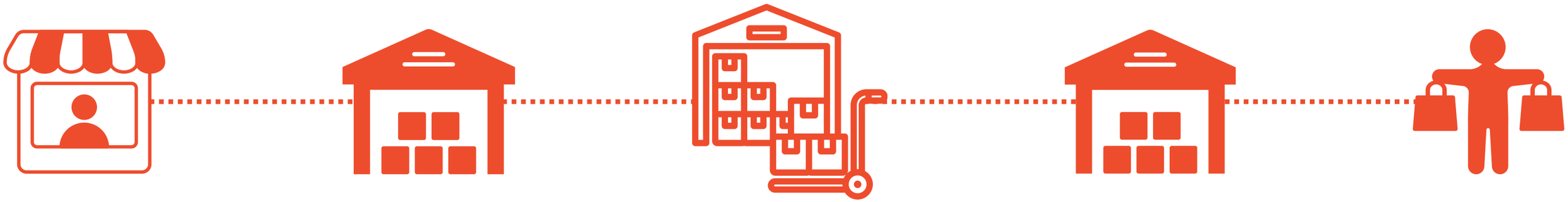
Offered by Shopee

Timely and Secure

DataDivas

Shipping Process

FWD Parcel



RR Parcel

DataDivas

Problem Statement

There is no present mechanism to predict RR shippings per hub.

DataDivas

xoxo

Development of a Predictive Model for SPX Philippines' Return/Refund (RR) Operations

DataDivas

The Data

DataDivas

Forward Parcel Dataset

- report_date
- region
- area_cluster
- station_id
- total_delivery_vol
- delivery_buyer

RR Parcel Dataset

- report_date
- region
- area_cluster
- station_id
- rr_pu_vol
- rr_users

DataDivas

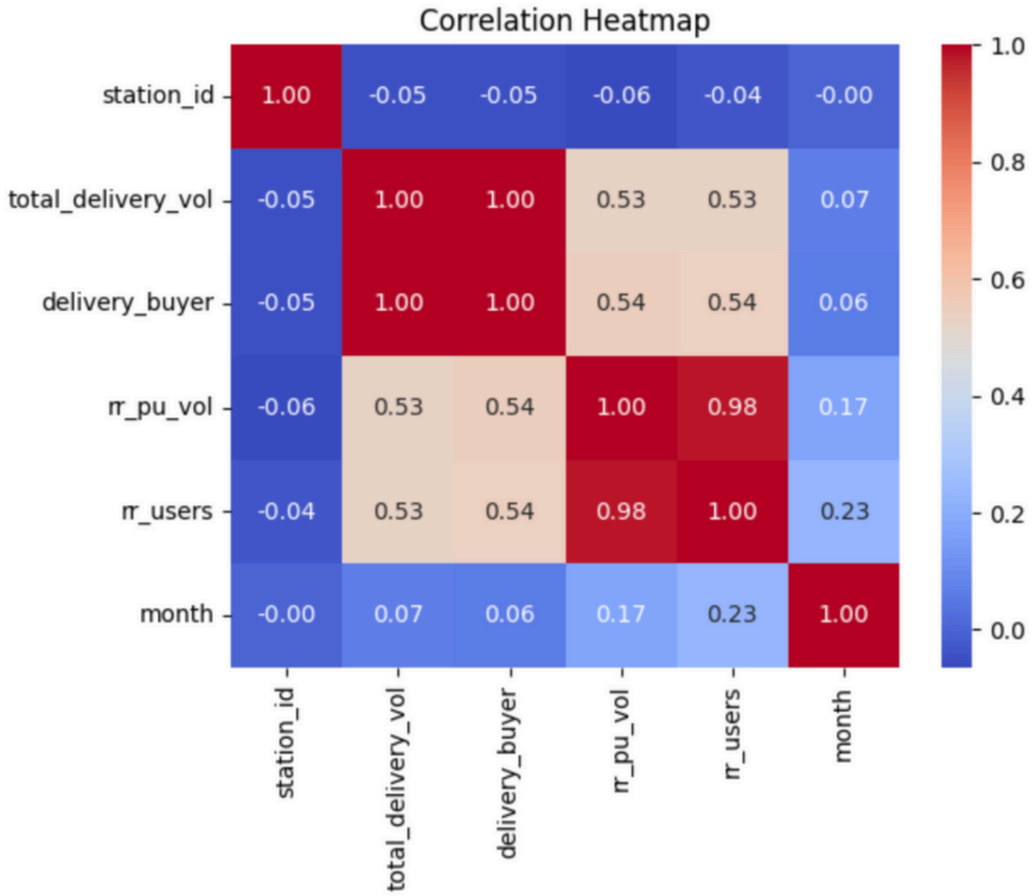
Data Preparation

Merge

Extend

Create

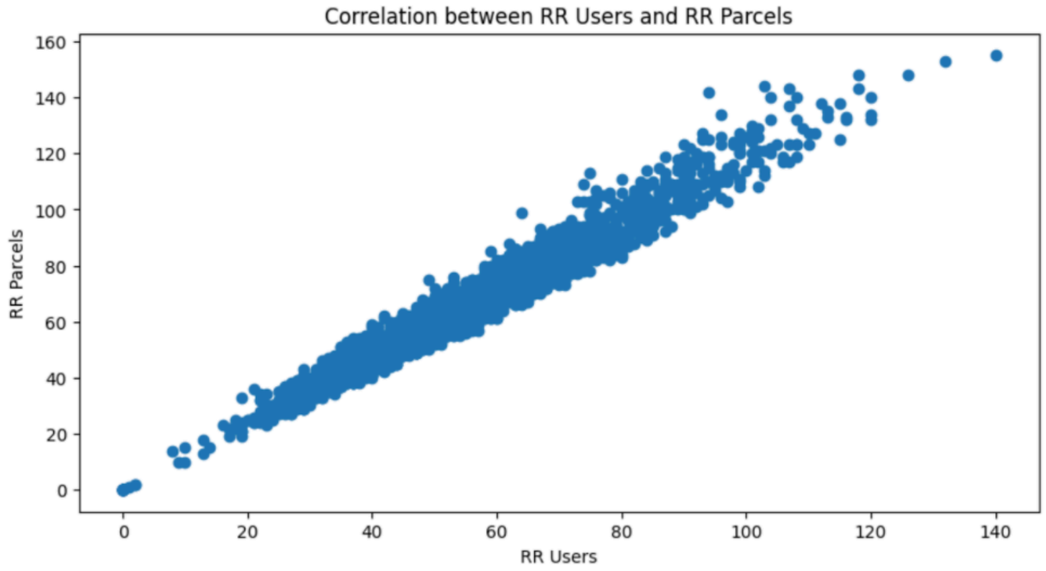
DataDivas

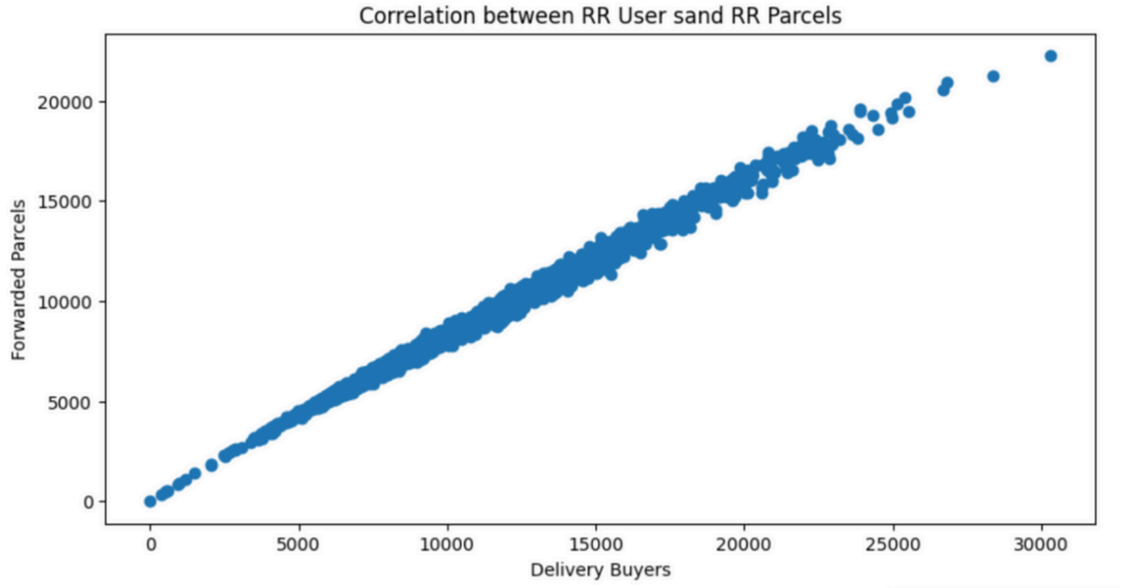


Strong positive correlation between forward parcels and delivery buyers, as well as return/refund parcels and users.

Weak positive correlation between forward-return/refund relationships.

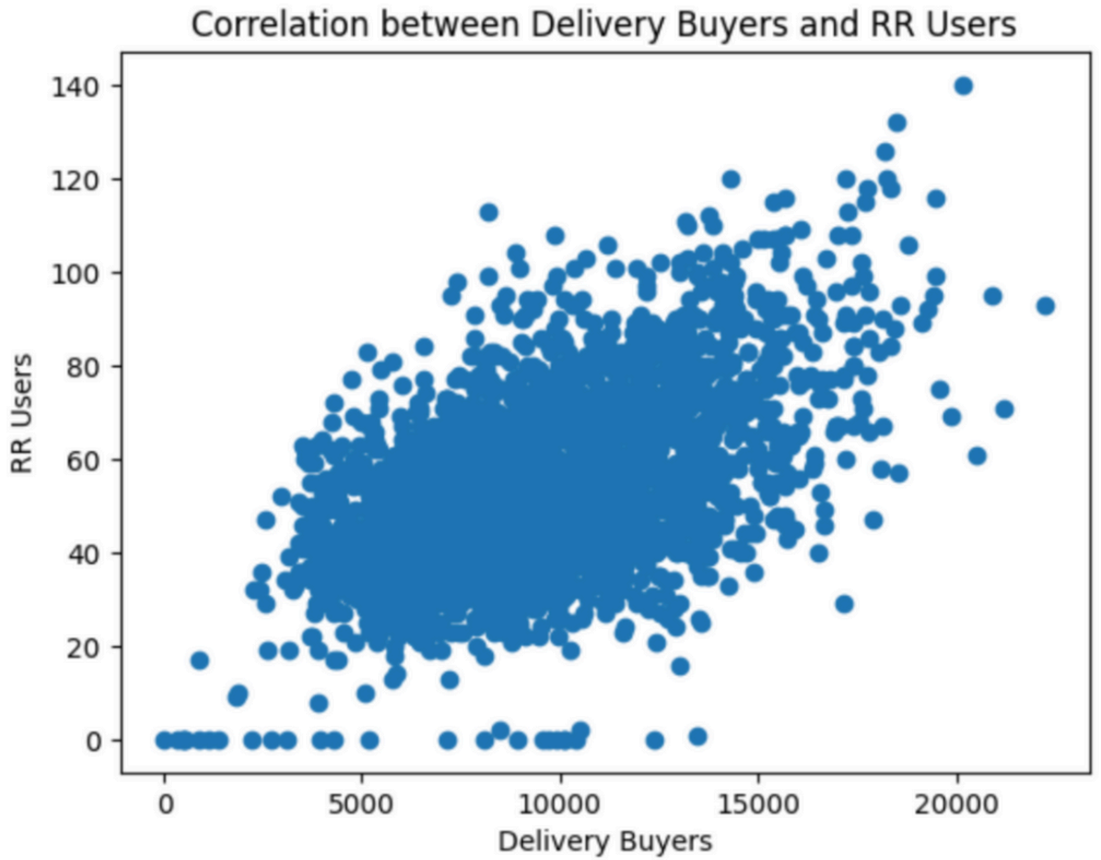
DataDivas





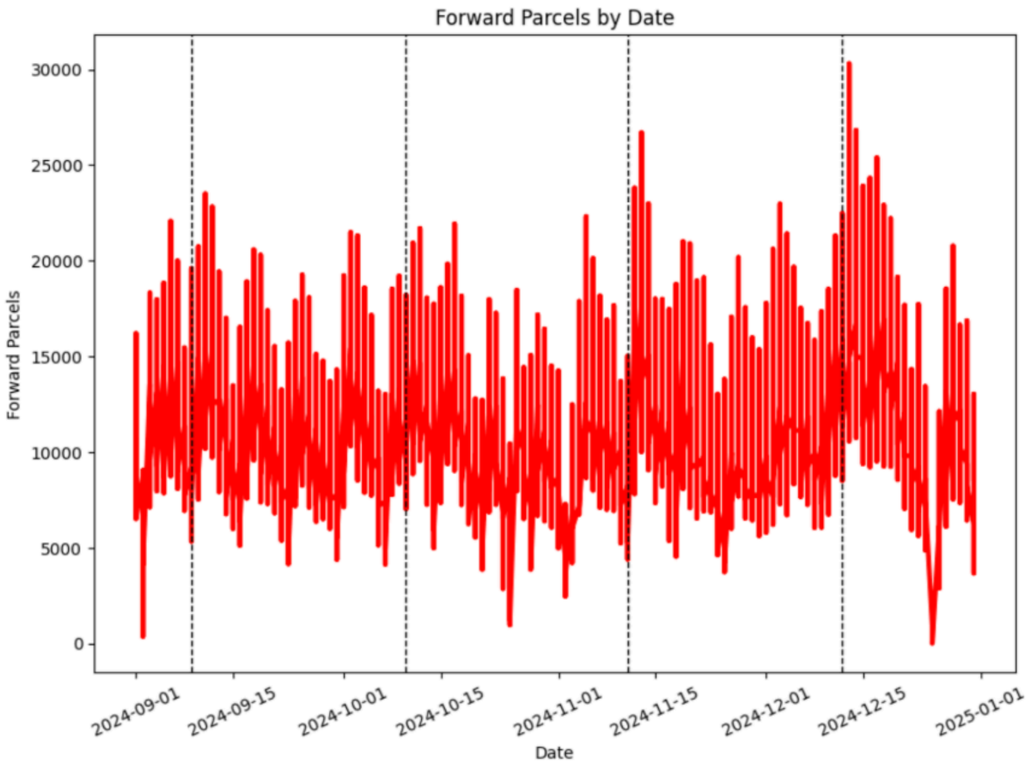
Strong positive correlation between forward parcels and delivery buyers, as well as return/refund parcels and users

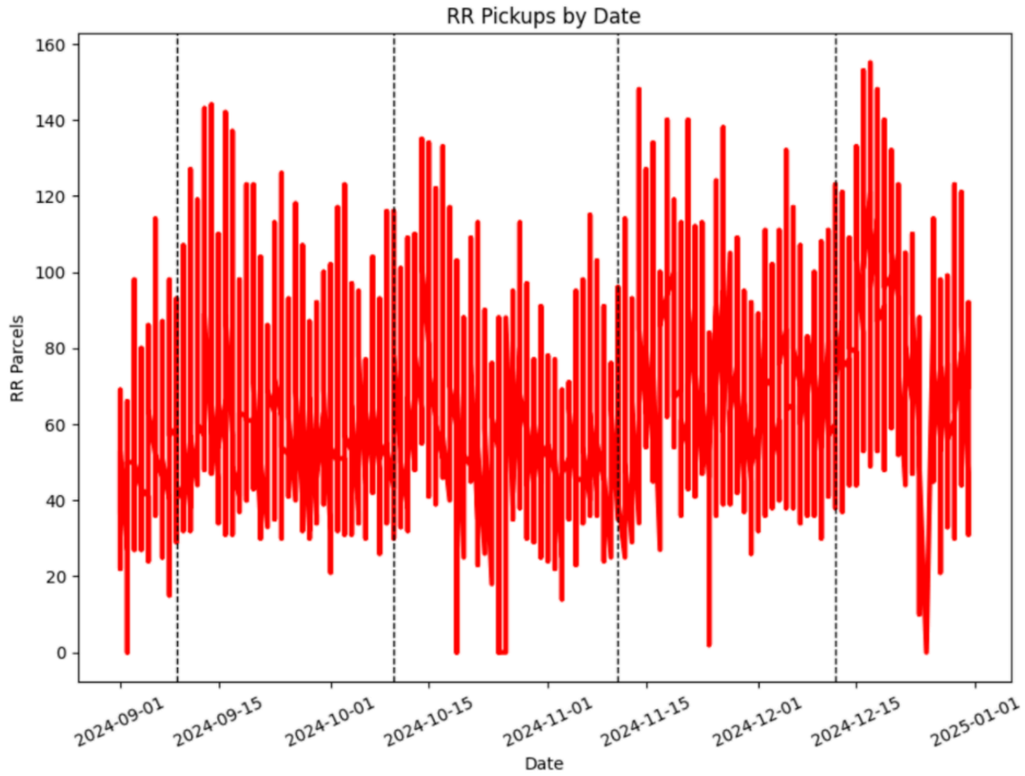
DataDivas



Weak positive correlation between forward-return/refund relationships

DataDivas





A **seasonal pattern** in forward and return/refund parcels, peaking a few days after Shopee's monthly sales events

DataDivas

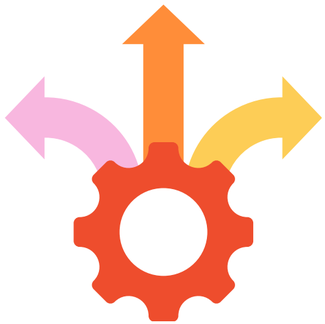
Model Selection

DataDivas

Model Selection Criteria

Nature of the Problem

Accuracy vs. Computation Time

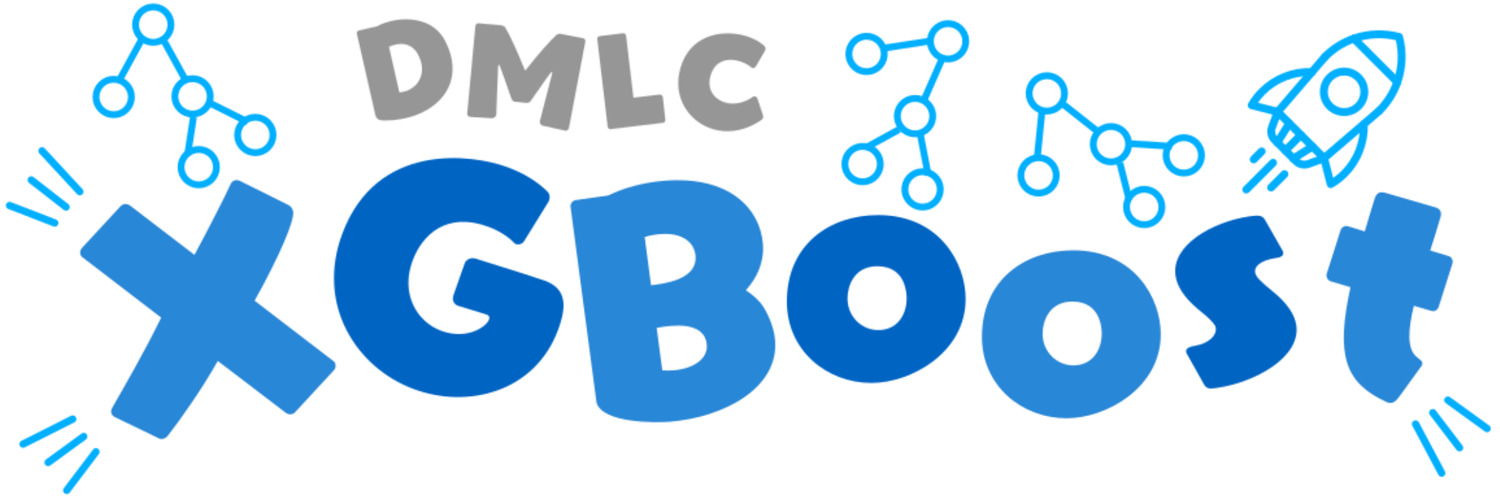


Model Complexity

Feature Types

Noise Handling

DataDivas

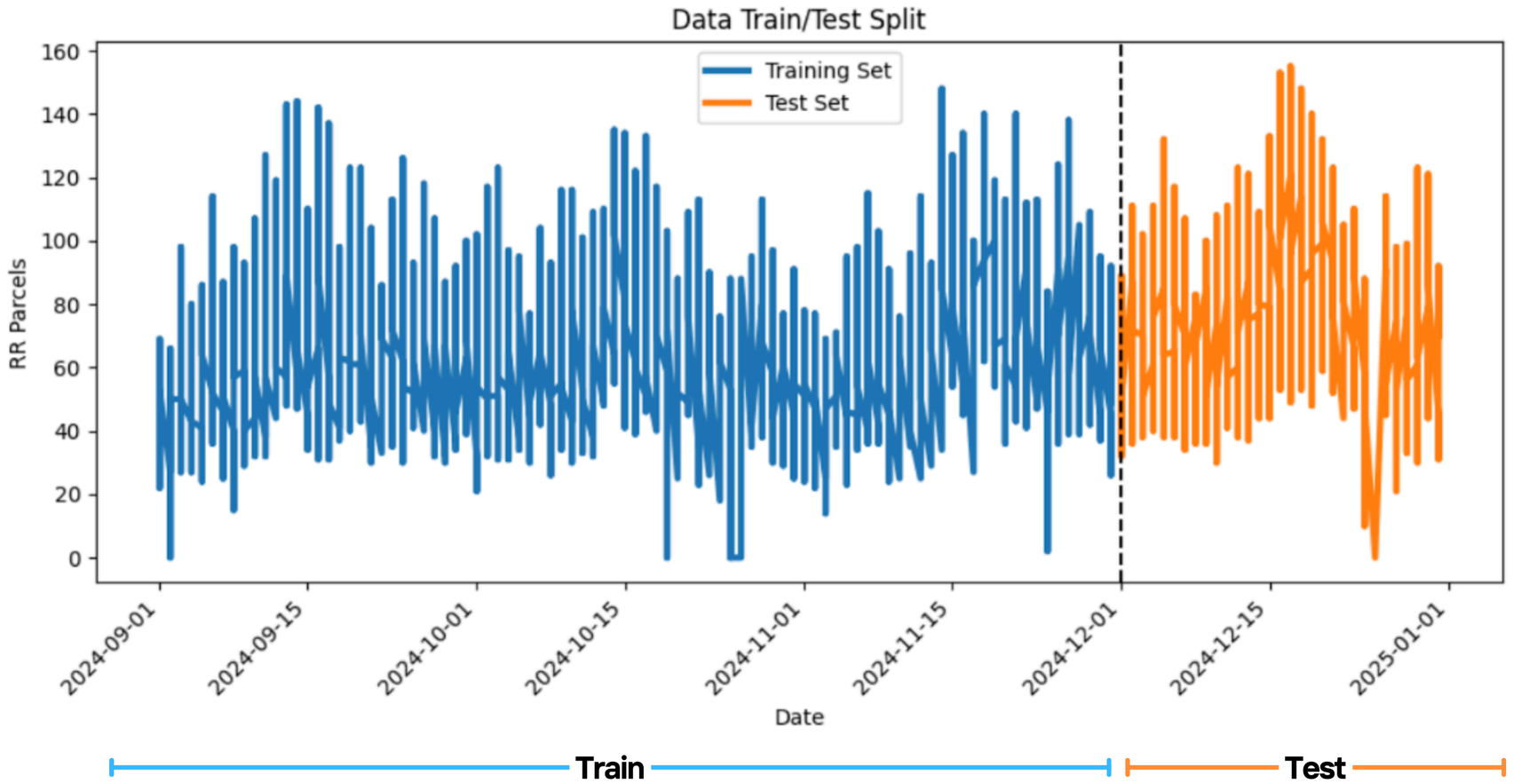


DataDivas

Model Training & Testing

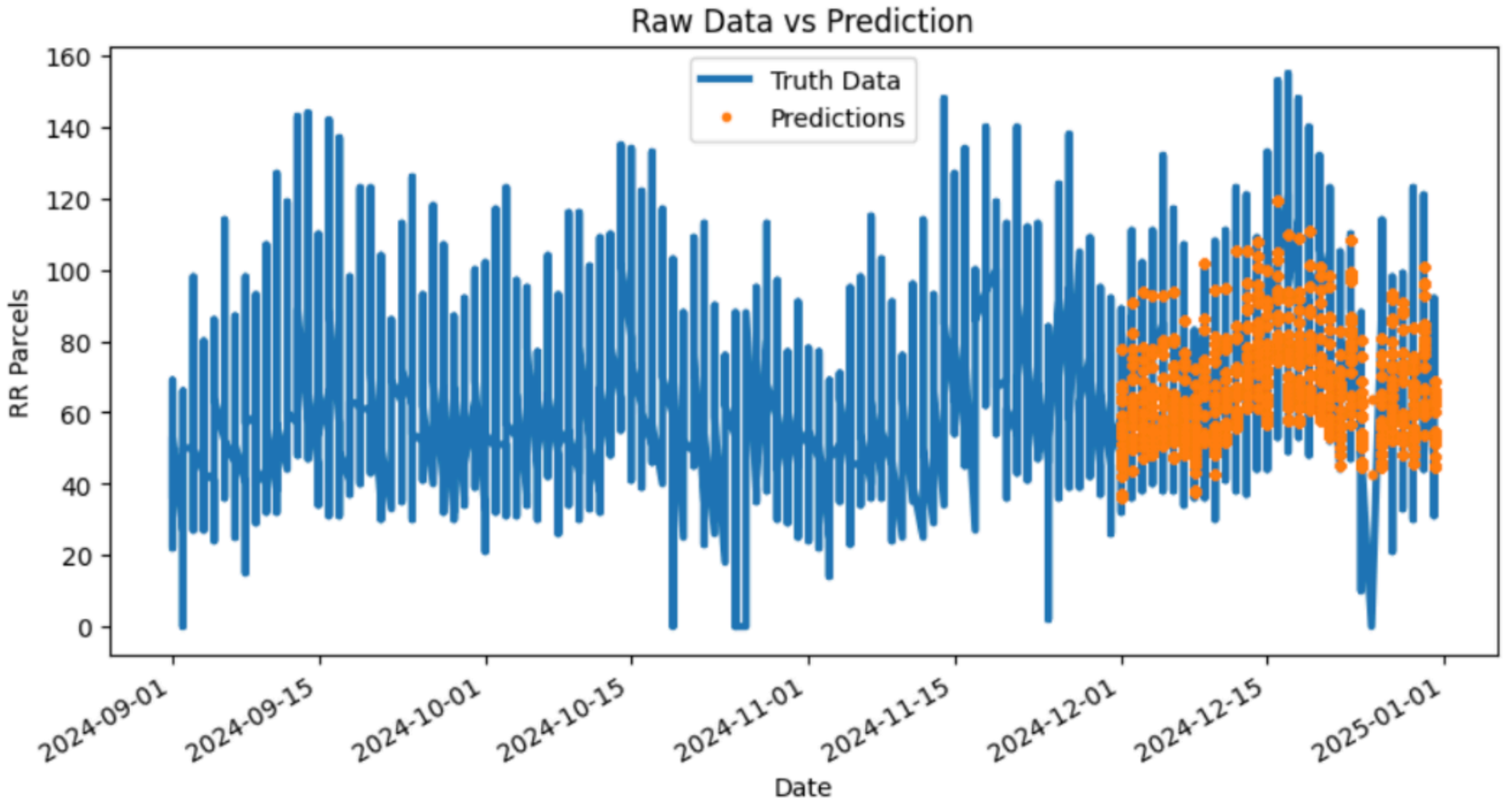
DataDivas

Train/Test Split

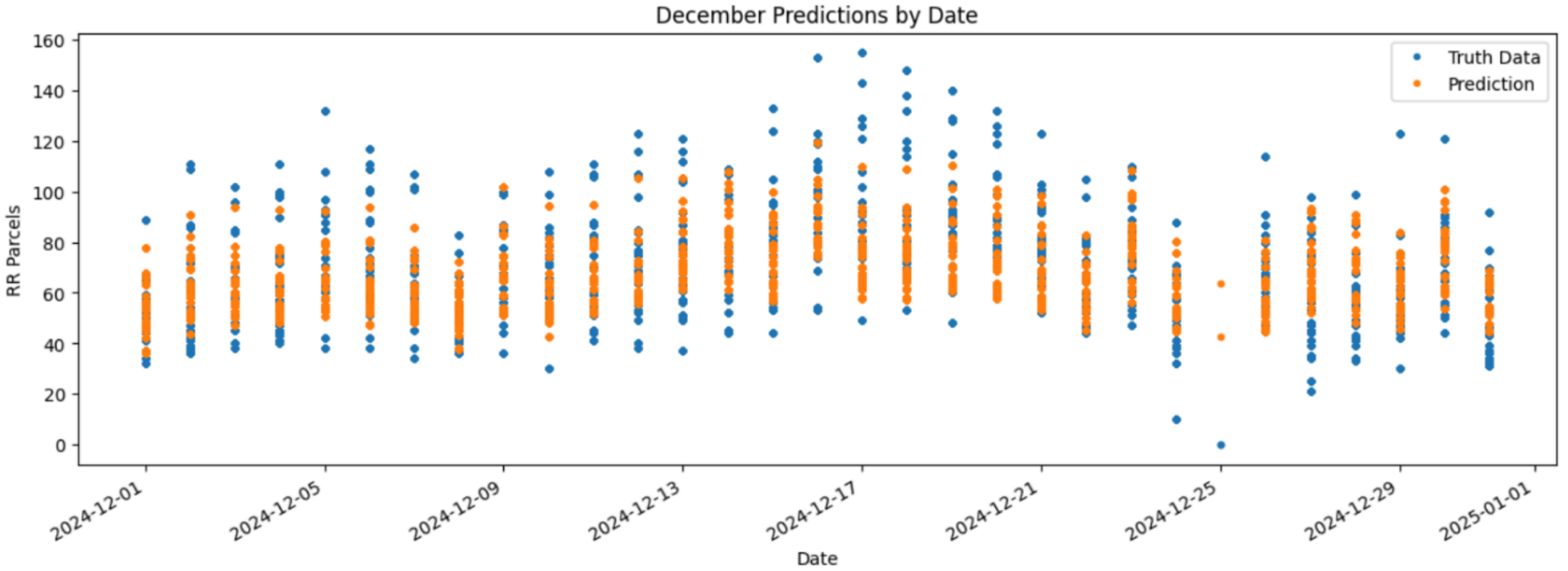


DataDivas

Predicted vs Actual

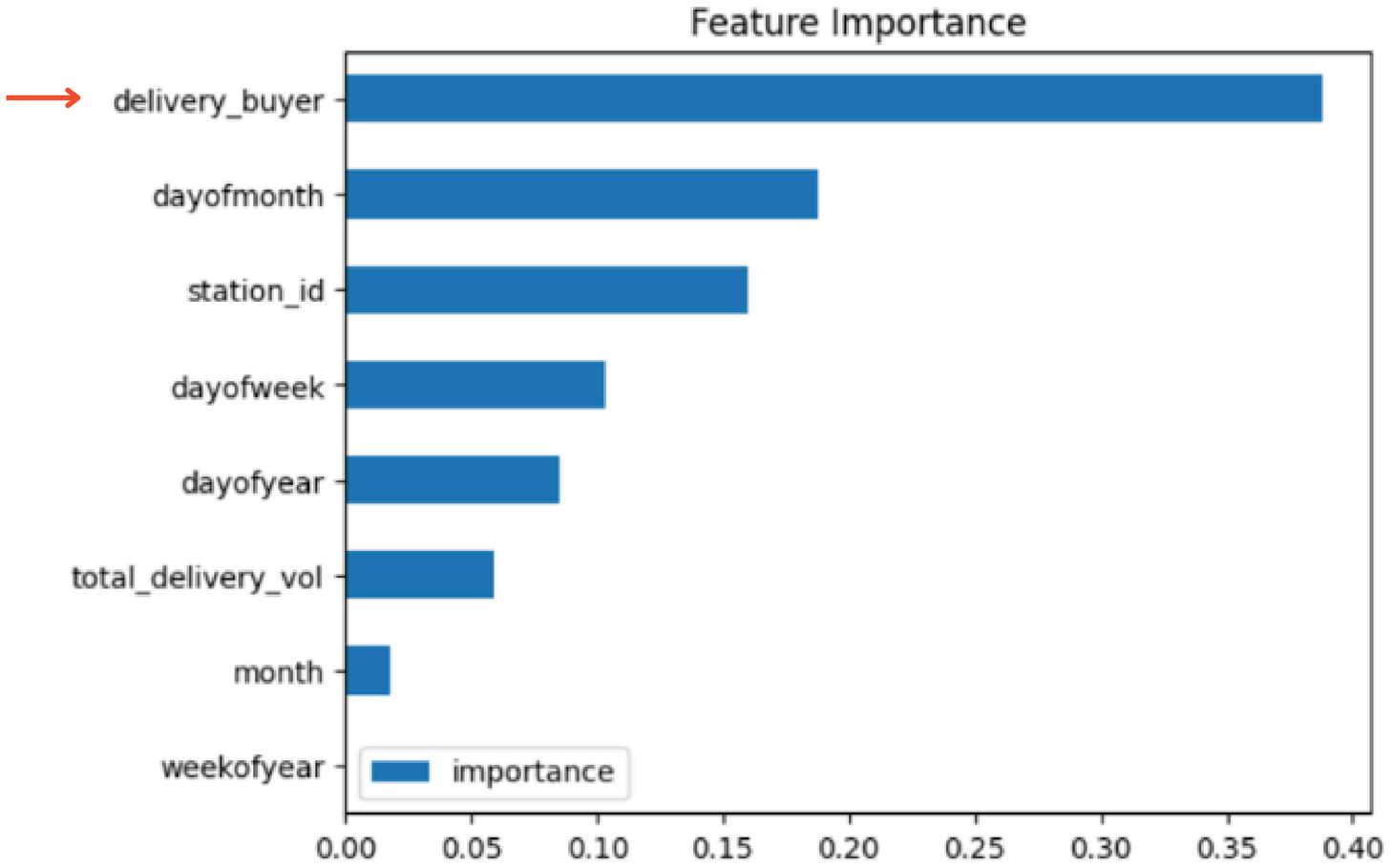


DataDivas


December Predictions by Date
RR Parcels
Date
Truth Data
Prediction
160
140
120
100
80
60
40
20
0
2024-12-01
2024-12-05
2024-12-09
2024-12-13
2024-12-17
2024-12-21
2024-12-25
2024-12-29
2025-01-01

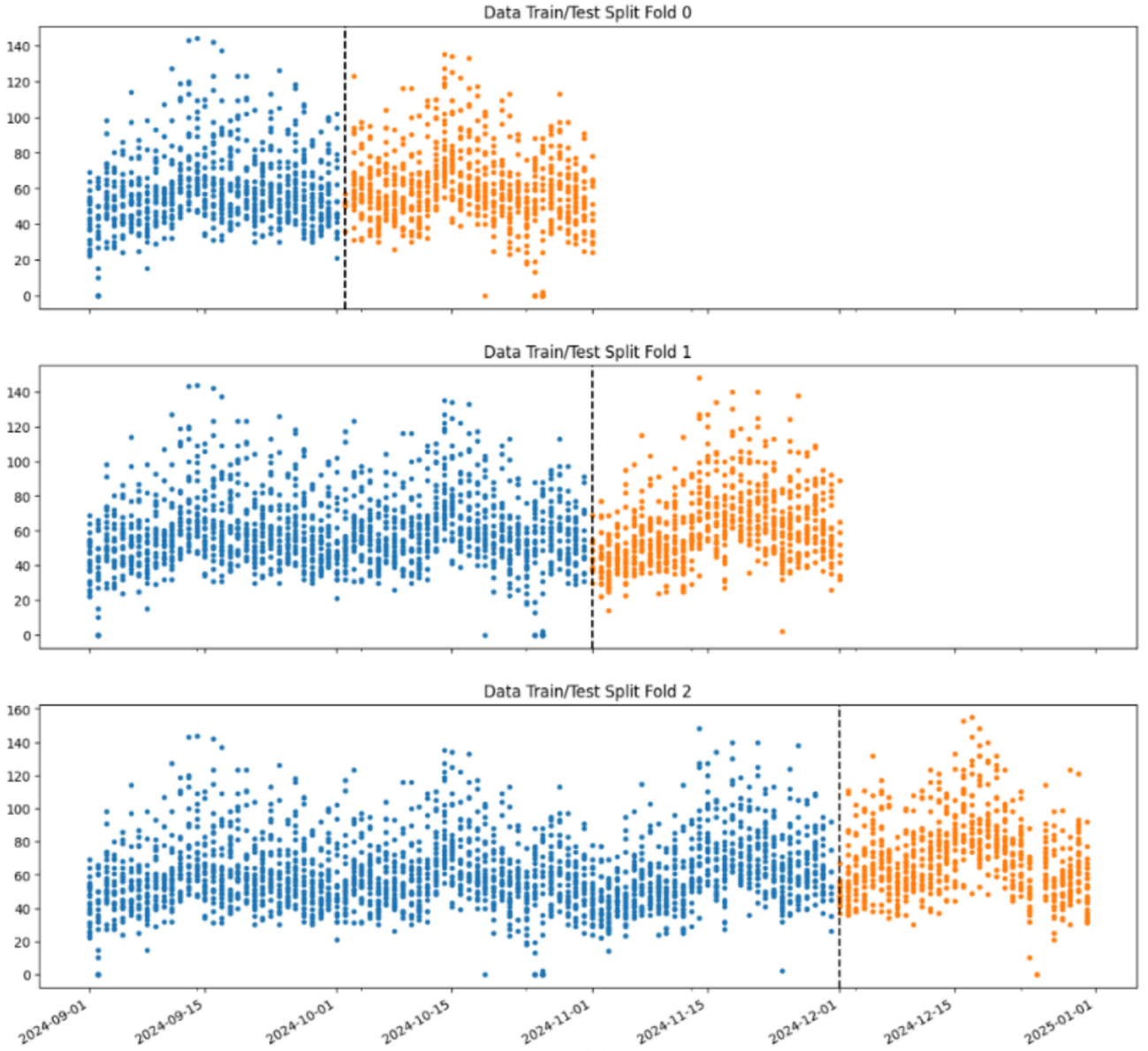
DataDivas

Feature Importance



DataDivas

Cross Validation



DataDivas

Initial RMSE

16.07

Cross Validation RMSE (Each Fold)

24.69 Subset 1

17.24 Subset 2

16.51 Subset 3

16.08 Subset 4

Cross Validation RMSE Across All Folds

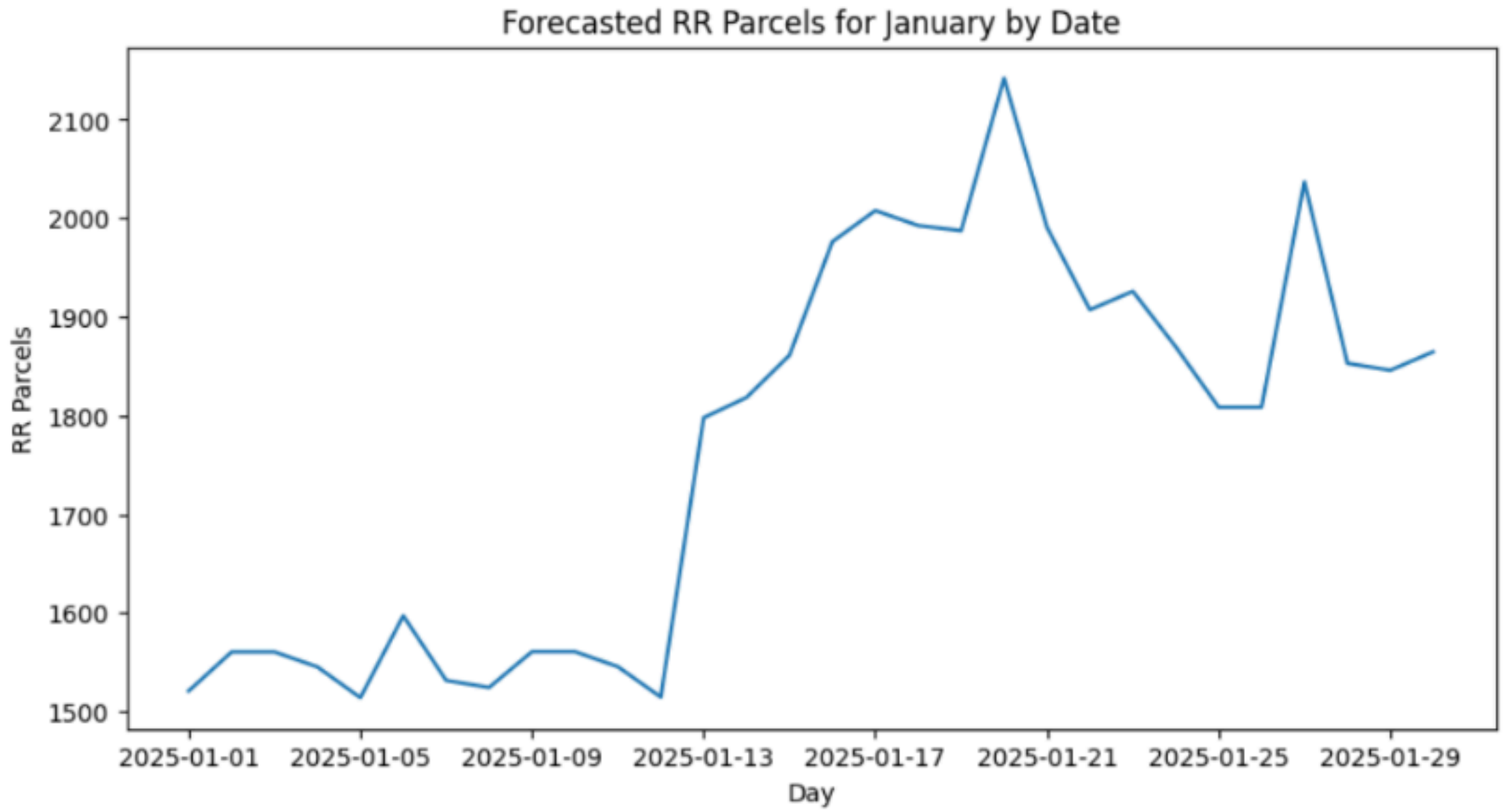
18.63

DataDivas

Forecast Results

DataDivas

Forecasted RR Parcels for January



DataDivas

53,028

Expected RR Shippings

Confidence interval of
(52,469.1, 53,586.9)

DataDivas

	station_id	proportion_jan	forecasted_rr
0	7	0.061499	3261
1	9	0.035786	1897
2	11	0.030043	1593
3	13	0.037672	1997
4	18	0.039240	2080
5	19	0.035080	1860
6	20	0.040593	2152
7	273	0.030051	1593
8	434	0.054877	2910
9	903	0.044303	2349
10	1232	0.032923	1745
11	1242	0.052692	2794
12	1365	0.050981	2703
13	1476	0.031040	1646
14	1705	0.040365	2140
15	1707	0.034513	1830
16	1770	0.032095	1701
17	2180	0.034352	1821
18	2201	0.046089	2444
19	2266	0.058588	3106
20	2268	0.040950	2171
21	2384	0.033559	1779
22	2647	0.035274	1870
23	2680	0.030570	1621
24	3062	0.036863	1954

DataDivas

Conclusion and Recommendations

DataDivas

Further study consumer behavior.

Explore more ways to process data and handle features.

Make use of existing FWD predictive model as input.

DataDivas

RR predictive models RR future!

Thank you!