

## Figures

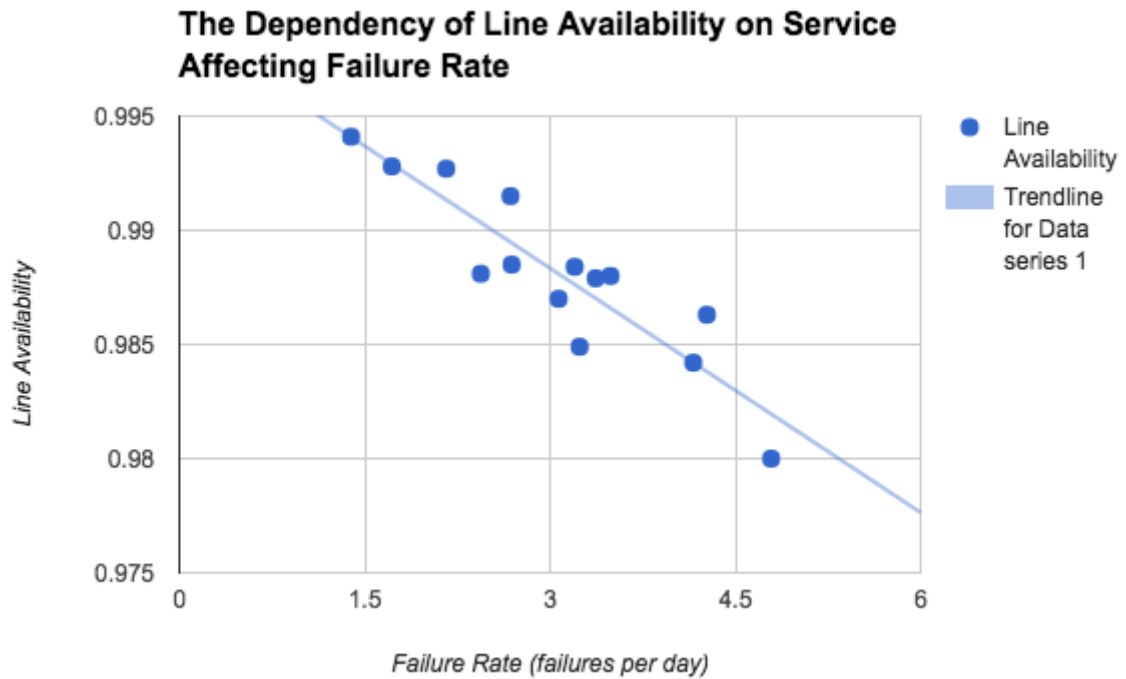


Figure 1 - The relationship between the service affecting failure rate and line availability for London Underground lines

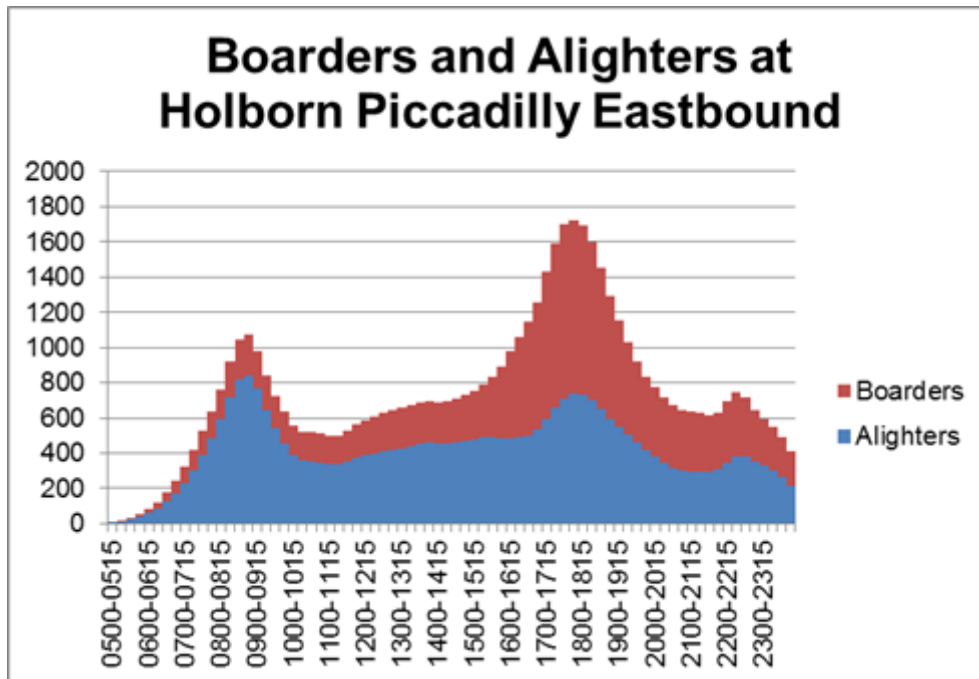


Figure 2 - Number of boarders and alighters on the London Underground at Holborn station. Primary data sourced from internal London Underground RODs data.

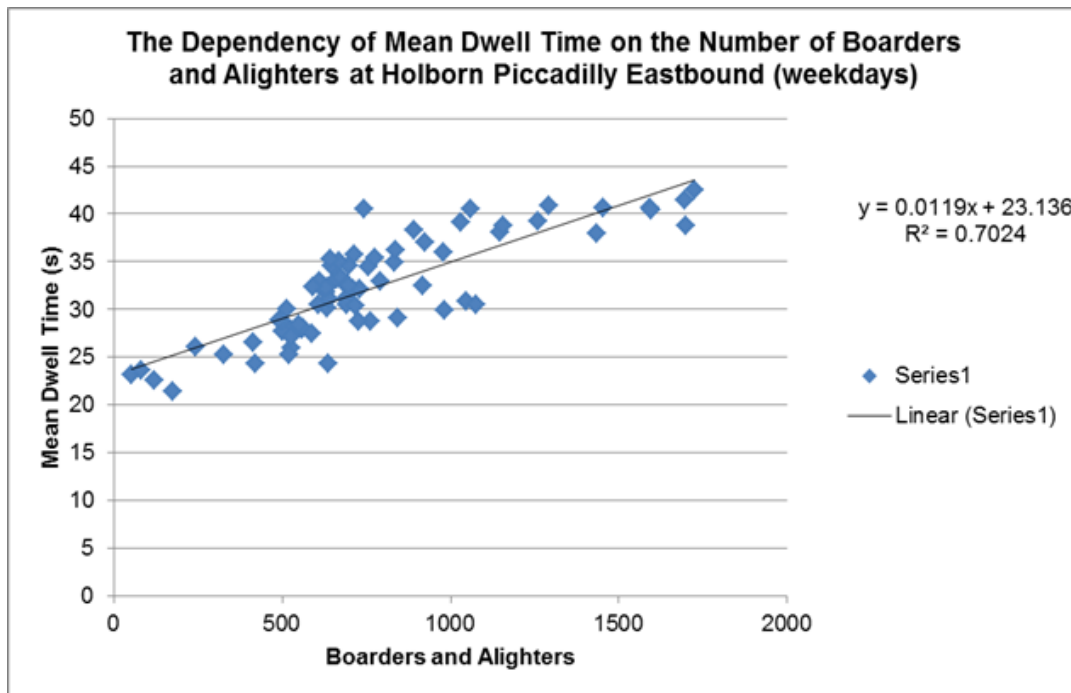


Figure 3 - The dependency of mean dwell time on the number of boarders and alighters

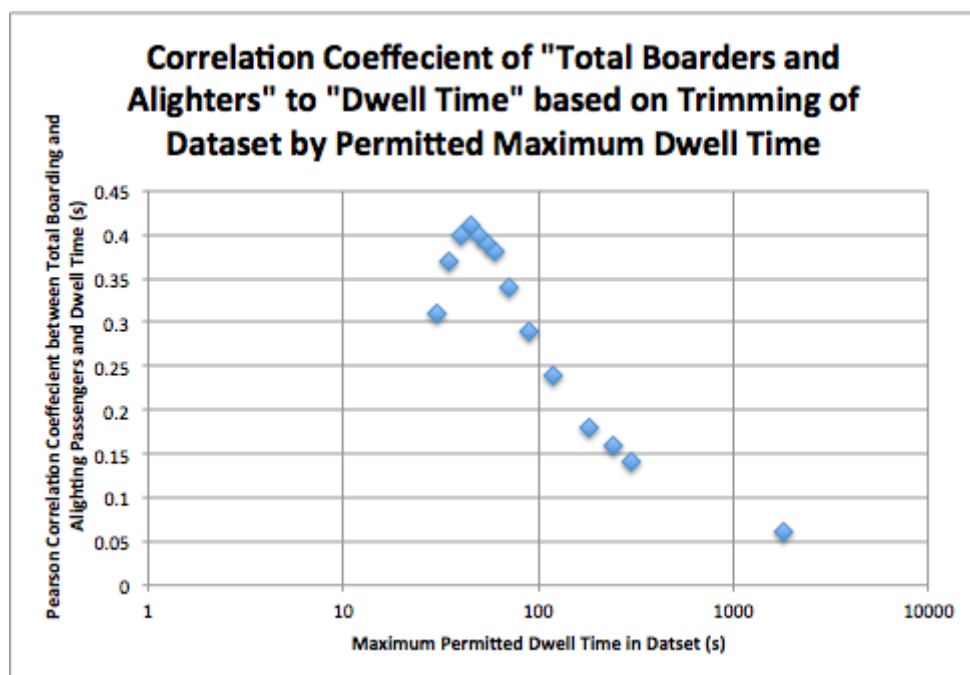


Figure 4 - Correlation coefficient of total boarders and alighters to dwell time

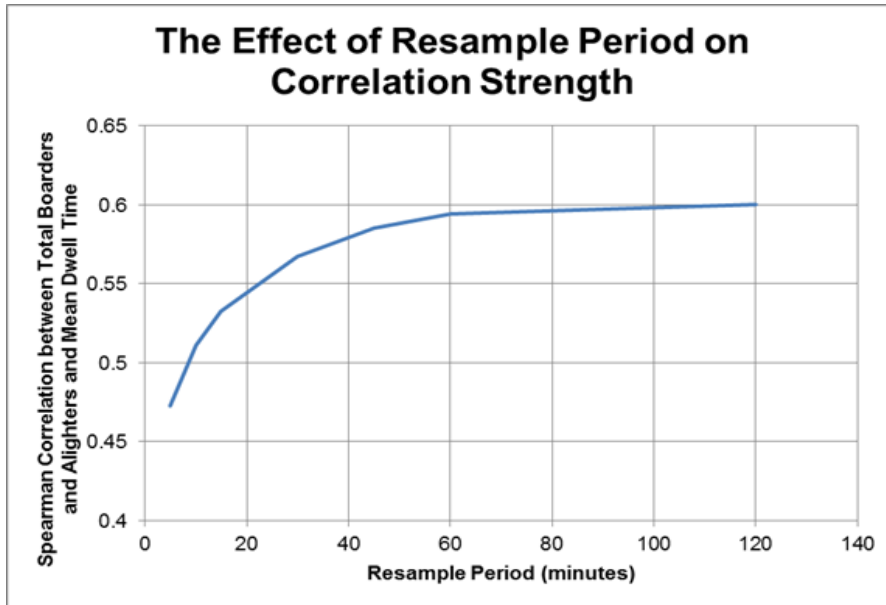


Figure 5 - The effect of resample period on correlation strength

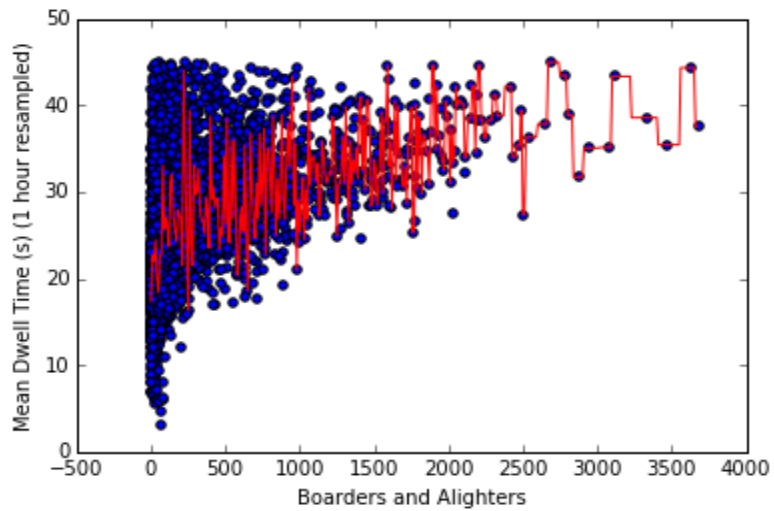


Figure 6 - Decision Tree model overfitting

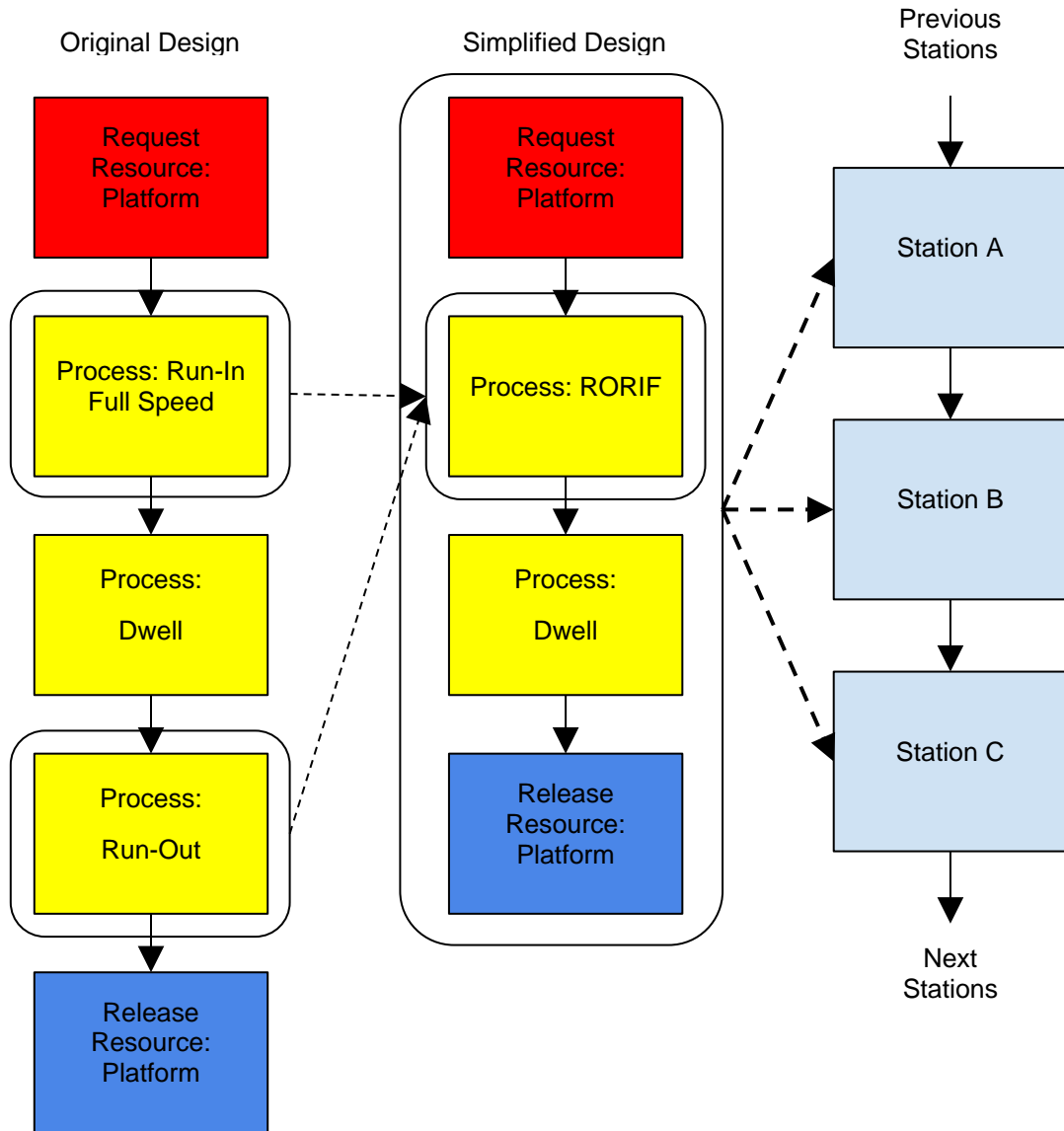
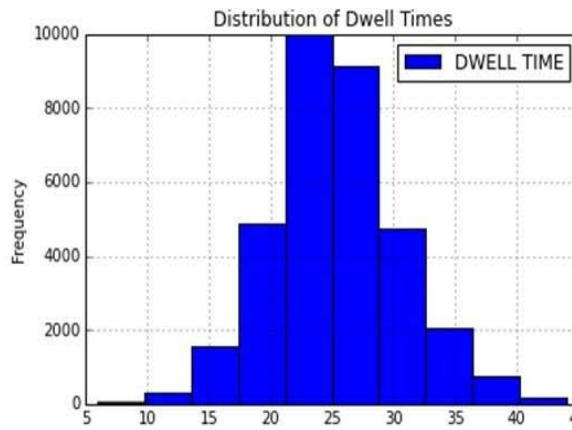
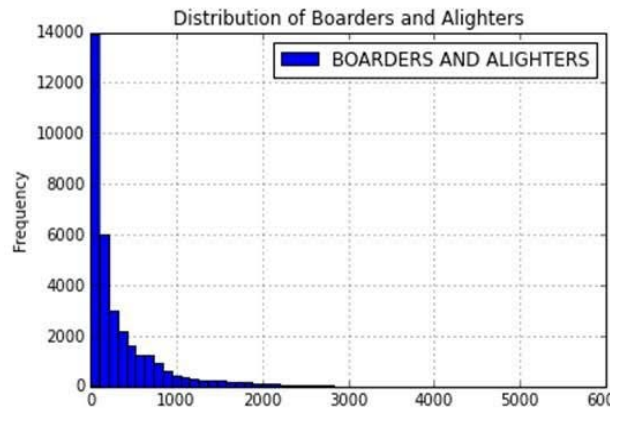


Figure 7 - Simulation logic

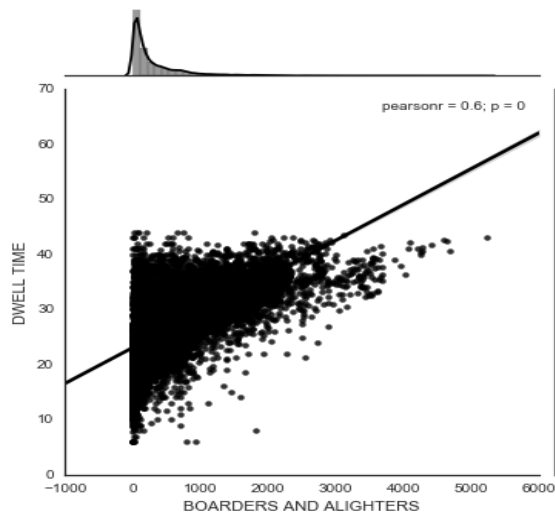


a: dwell times dataset

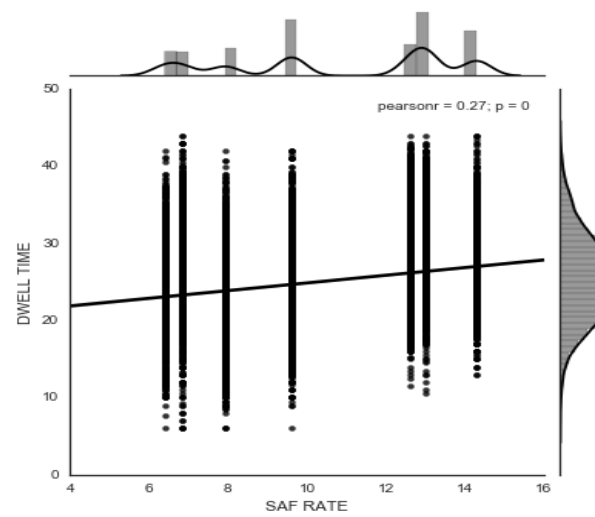


b: boarders and alighters

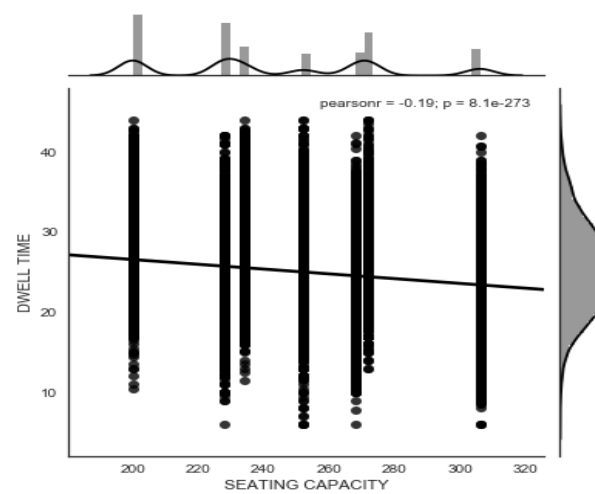
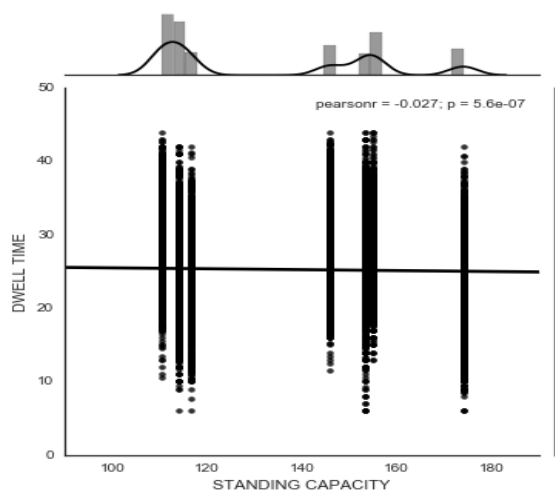
Figure 8: Distribution of resampled mean graphs



a: Mean dwell time on total boarders and alighters

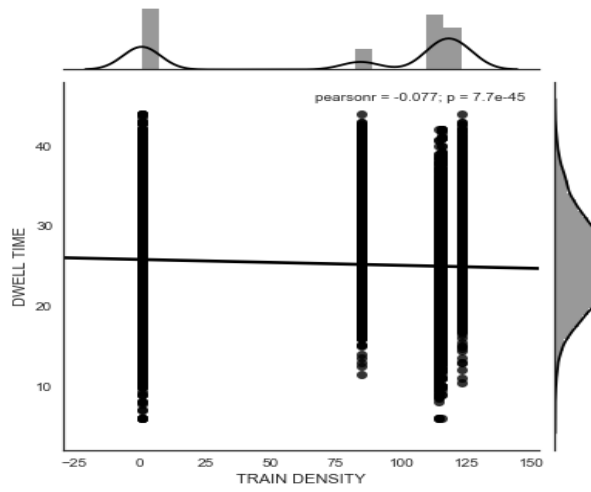


b: Mean dwell time on SAF rate



c: Mean dwell time on standing capacity

d: Mean dwell time on seating capacity



e: Mean dwell time on train density

Figure 9: The dependency graphs

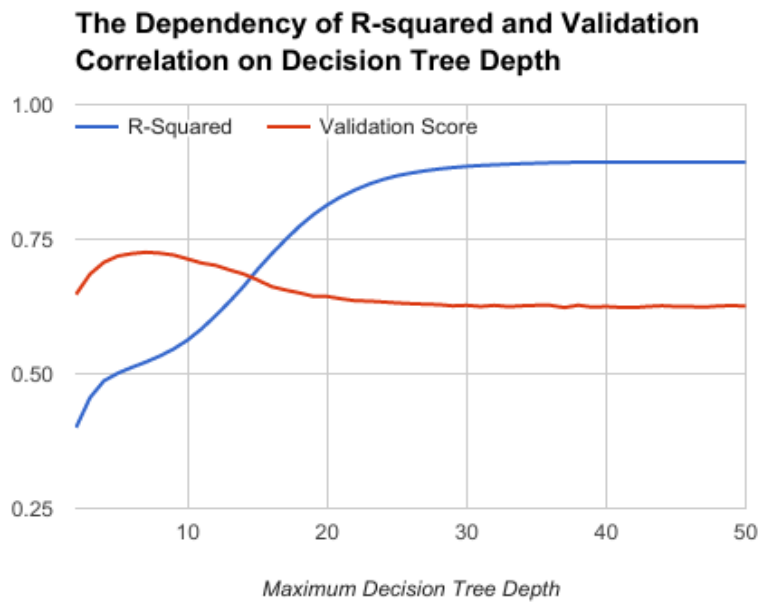


Figure 10 - The dependency of R-squared and validation correlation on decision tree depth

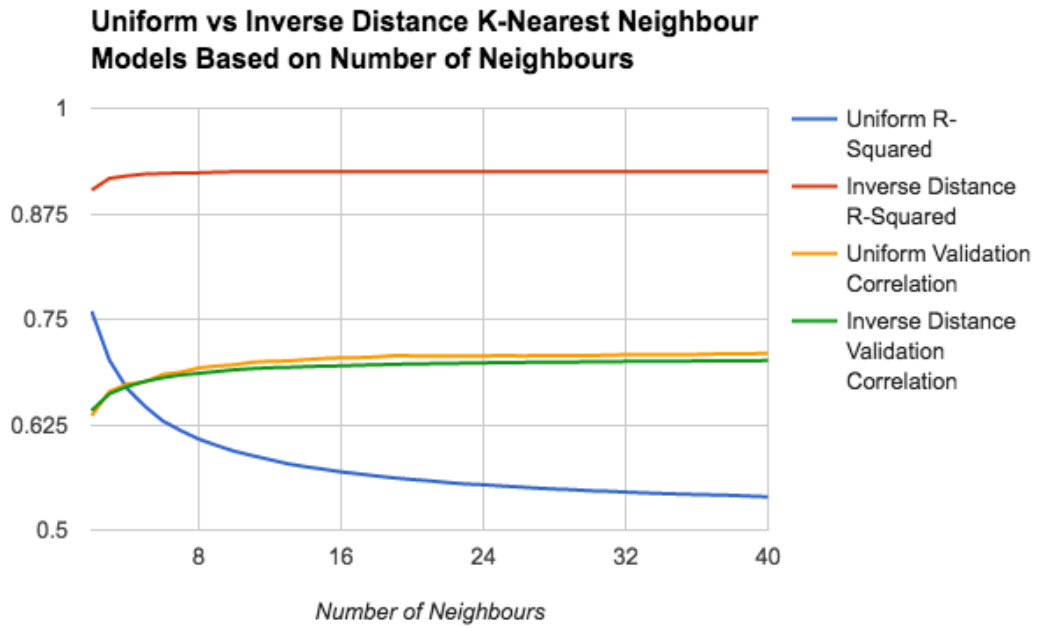


Figure 11 - Uniform vs inverse distance K-nearest neighbour models based on the number of neighbours

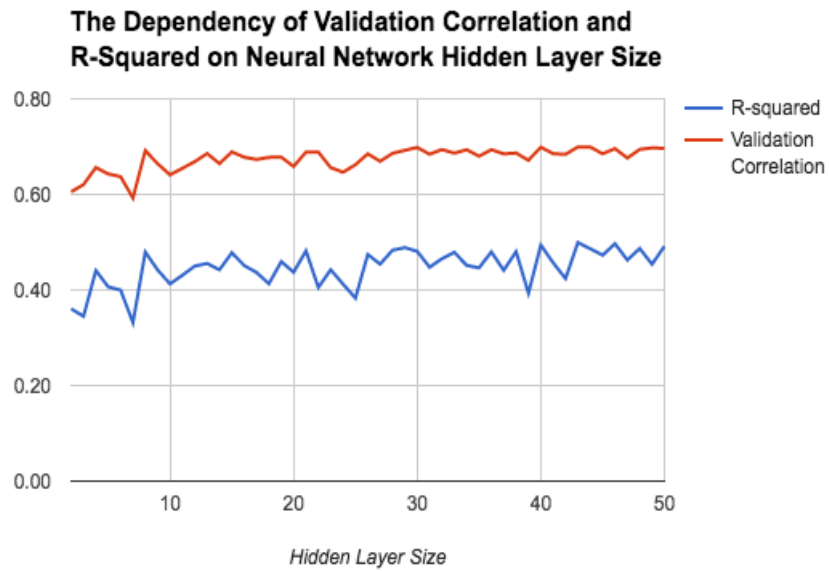


Figure 12 - The dependency of validation correlation and r-squared on neural network hidden layer size

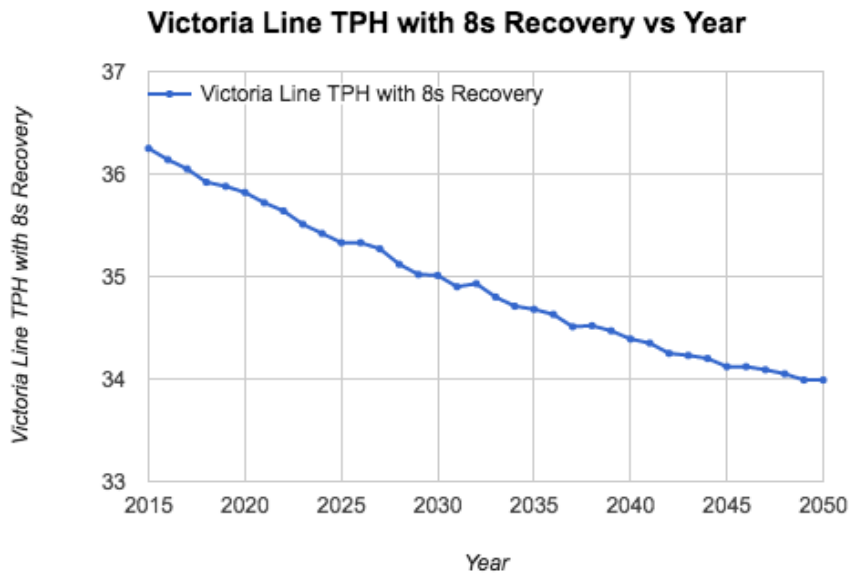


Figure 13 - Predicted Victoria Line achievable capacity as London population increases

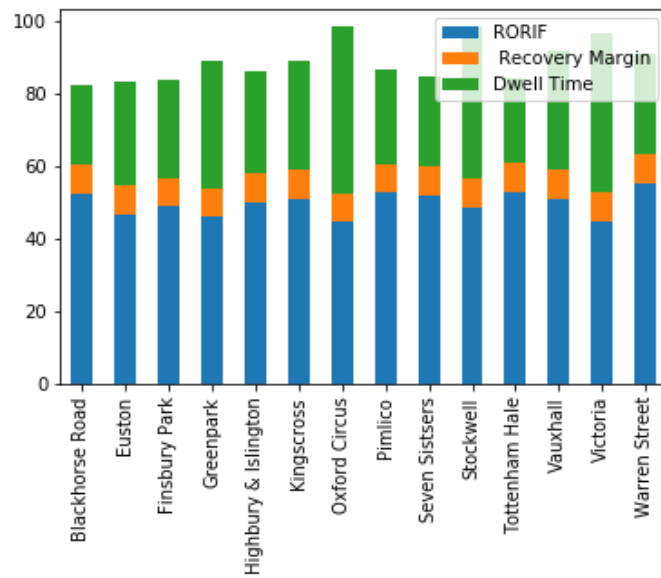


Figure 14 - Analysis of capacity constraints at each station on Victoria Line in 2015



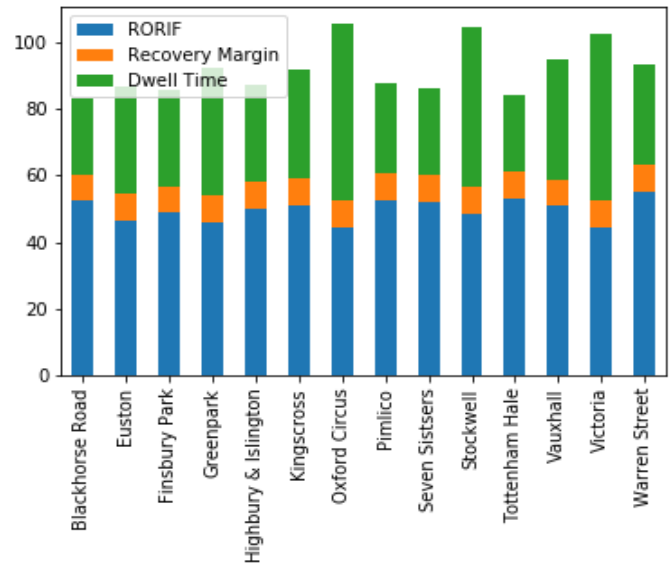


Figure 15 - Analysis of capacity constraints at each station on Victoria Line in 2050