

HIGHWAY HOGS

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PRELIMINARY ANALYSIS

A stakeholder analysis was conducted to obtain information about the operation of maintenance facilities and potential areas of improvement. Interviews with various employees of J.B. Hunt Maintenance directed attention to staffing imbalances as the cause of increased queue times. Further data analysis proved this to be the case.

OBJECTIVES

A proper data management tool will assist engineers in scheduling technicians to meet labor hours demanded through the use of:

- An Excel tool which allows maintenance engineers to quickly schedule technicians efficiently
- An Arena simulation model used to test the schedules effectiveness

DECISION SUPPORT TOOL

With a connection linking an Excel tool to an Access database, as well as an easy to operate user interface, engineers can view organized data through a VBA macro, enhancing decision making for technician scheduling. Another connection between the Excel tool and the maintenance shop Arena simulation model makes it quick and easy for a user to change information accordingly across all individual shops.

Day Shift Demand versus Staffing (Dallas, TX)

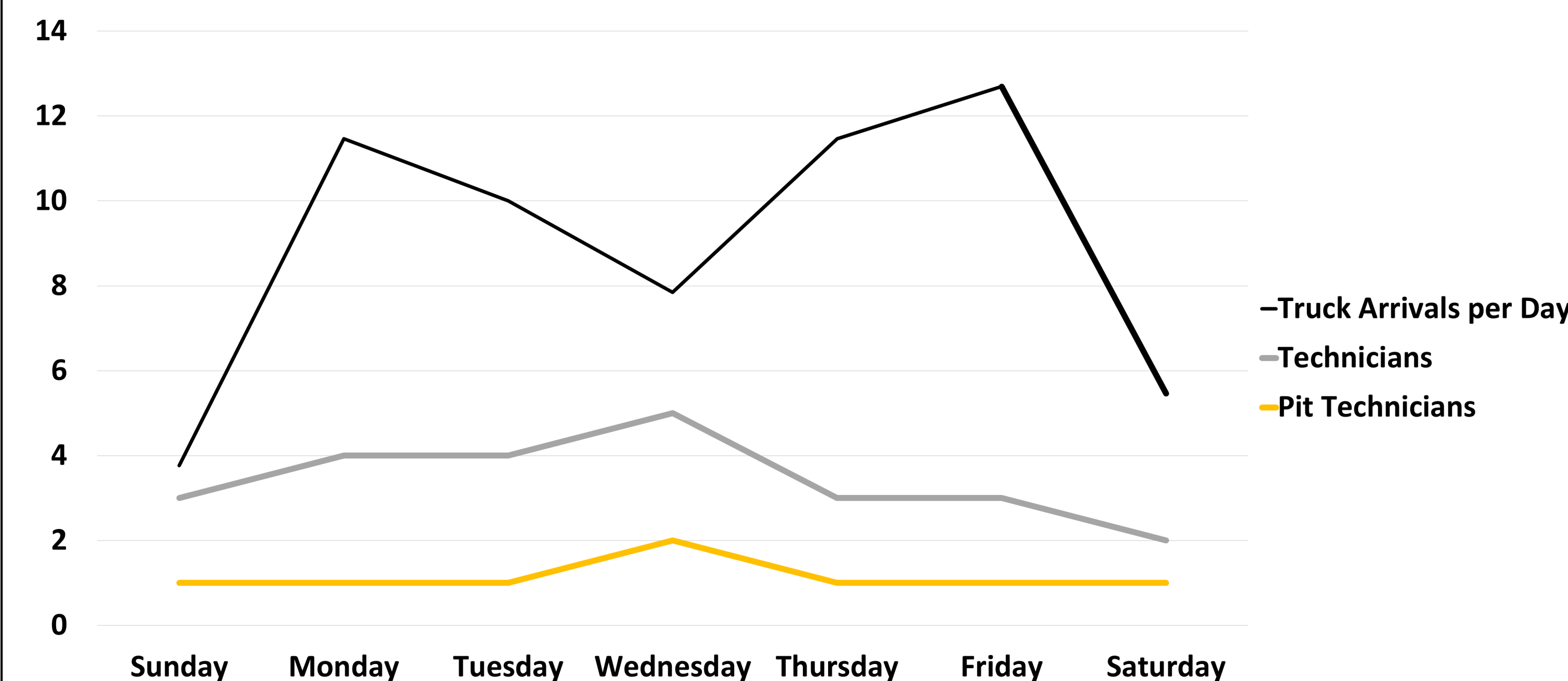


Figure 1: Previous data shows a misalignment in techs scheduled with demand in tractor arrivals

Average Queue Time (Dallas, TX)

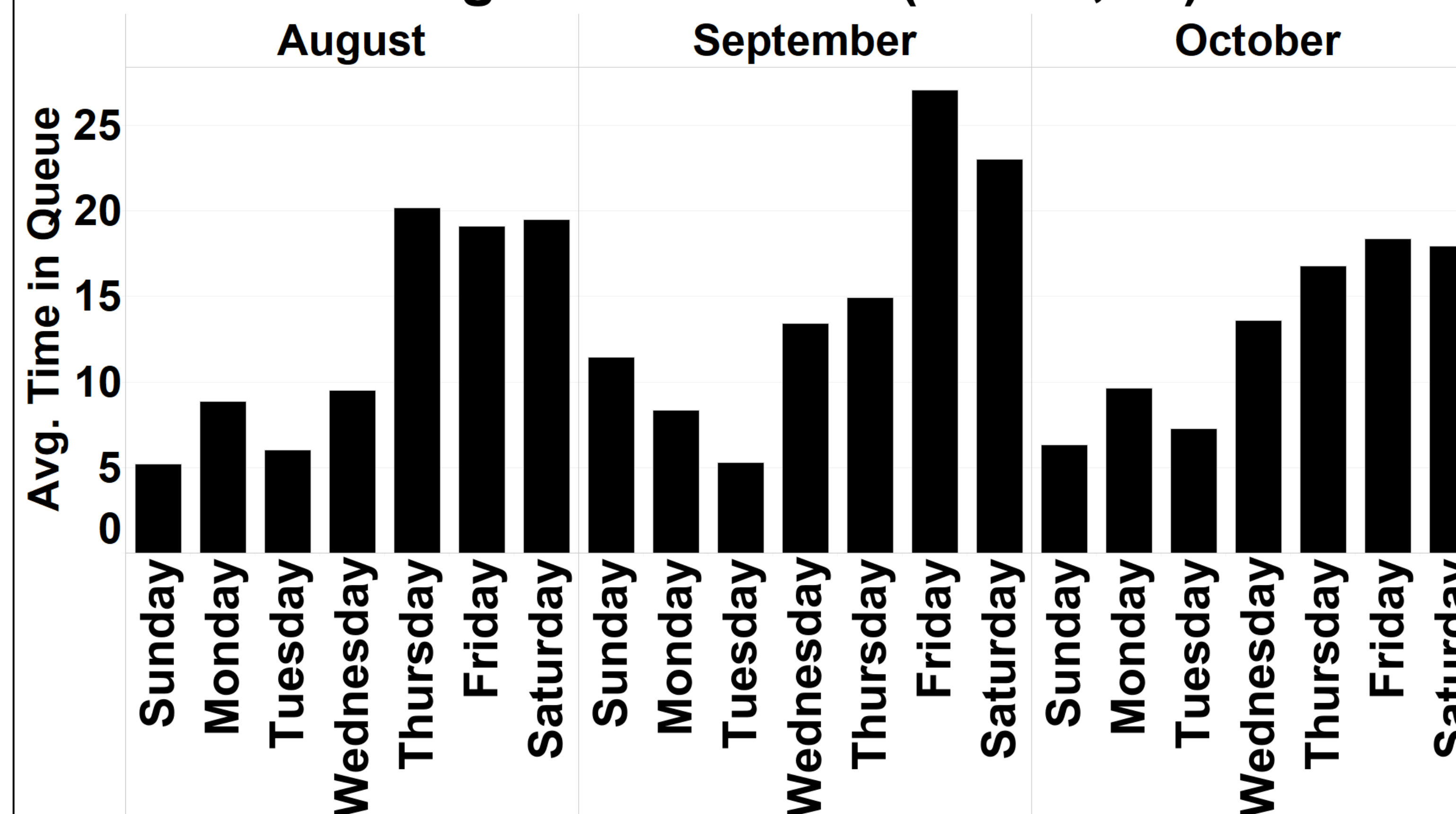


Figure 2: Queue times increase when technician misalignment occurs

Shop: Dallas, TX
Time: 10/1/2016 - 12/31/2016

	Current Schedule	+1 Tech	Lead Time Difference
Planned	25.2704	24.623	0.6474
Unplanned	11.5315	11.196	0.3355

Figure 3: Reduction in lead time after adding one technician

SIMULATION MODEL

Arena simulation models of all four shop flow patterns provide insight to engineers on how technician schedules effect operations using historical data. This information will assist in structuring future technician schedules.

FINANCIAL ANALYSIS

Implementing proper technician schedules will reduce queue times within shops, putting tractors back on the road at a quicker pace. Reduced queue times decrease a tractors downtime, allowing tractors to generate more revenue hauling freight.

Total Cost Savings

Total Work Orders	97,127	
Opportunity Cost (Tractor/hr)	\$3.75	
Estimated Reduced Lead Time (hr)	0.25	2
Total Cost Savings	\$91,056.56	\$728,452.50

CONCLUSION

Since implementing the scheduling tool, the J.B. Hunt Maintenance engineers have been able to test technician schedules for multiple shops. New scheduling strategies should reduce queue times and increase technician utilization