Maximizing Utilization of Intermodal Local Tractors through Driver Reassignment

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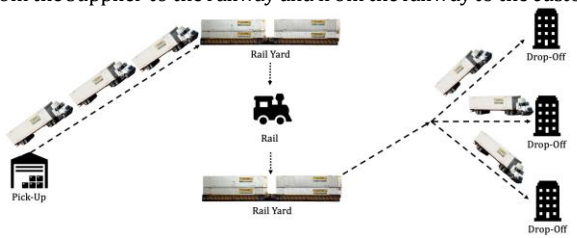
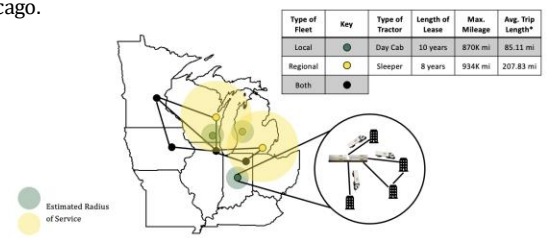
J.B. Hunt Intermodal (JBI)

J.B. Hunt delivers freight to consumers throughout US, Canada, Mexico, and select regions in Asia using a combination of truck and rail delivery systems. J.B. Hunt Intermodal specifically utilizes trucks and railways to transport loads. The trucks take the loads from the supplier to the railway and from the railway to the customer.



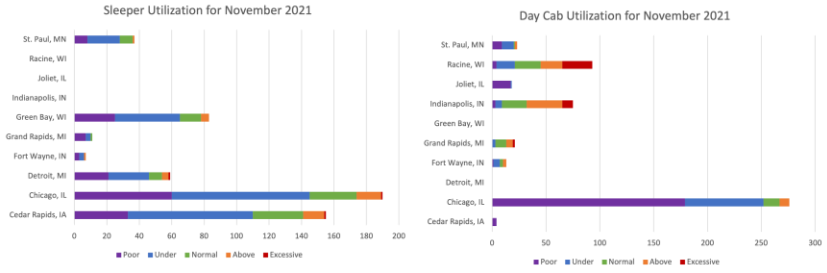
JBI seeks to minimize cost per mile on regional and local tractor lifespans which differ by type with maintenance costs and fees for overutilization. Driver reassignments or tractor transfers between fleets occur to balance tractor utilization but are infrequent and lack a decision-making process. The JBI Midwest region addresses utilization disparities with occasional tractor transfers between fleets typically conducted through Chicago.



Type of Fleet	Key	Type of Tractor	Length of Lease	Max. Mileage	Avg. Trip Length*
Local		Day Cab	10 years	870K mi	85.11 mi
Regional		Sleeper	8 years	934K mi	207.83 mi
Both					

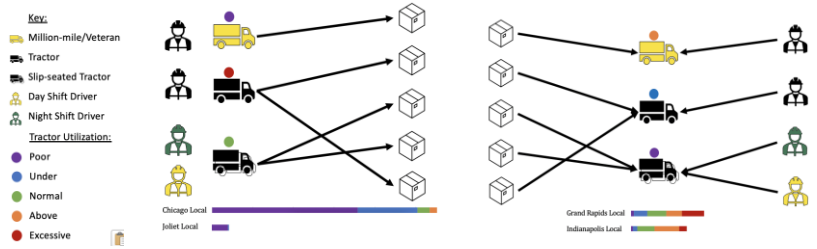
Tractor Utilization Across Fleets

We found evidence of underutilization and overutilization that JBI believes is a result of ad-hoc monitoring and decision-making.



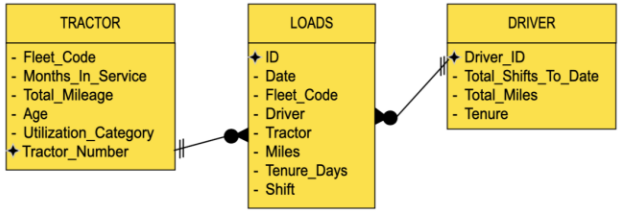
Within Fleet Practices

The Chicago and Joliet Operations Managers exhibit ad-hoc practices where driver preferences are prioritized over utilization balance. In contrast, Grand Rapids and Indianapolis Operations Managers seek to balance load mix and utilization using intuition and driver relationships.



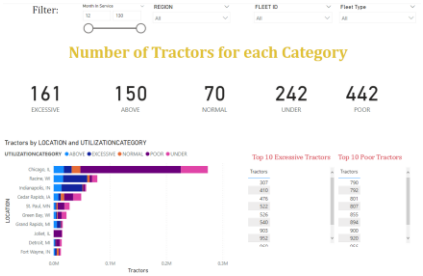
Driver and Tractor Database Structure

JBI is seeking standardized processes for balancing utilization that are focused on regularly scheduled driver reassignments and tractor transfers. We designed a database structure for JBI to utilize when inputting data into our system to more easily access the utilization of tractors and drivers.



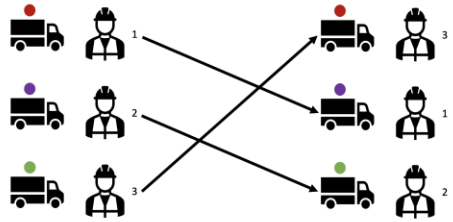
Power BI Fleet Monitoring System

We created a monitoring system in Power BI that identifies the most poorly utilized tractors in a fleet and displays overall utilization balance.



Driver Reassignment System

We constructed a driver reassignment recommendation tool that considers tractor utilization and driver productivity to balance utilization.



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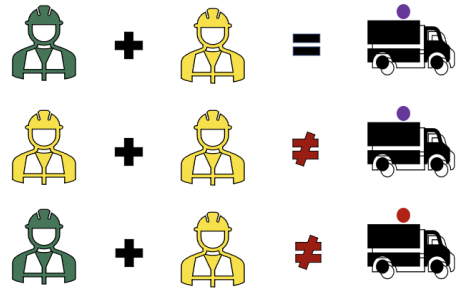

Reassignment System Performance

We conducted a simulation of the system to evaluate performance of the driver reassignment tool in balancing tractor utilization within fleets. A simulation using our reassignment system showed a decrease of 69% in the range and 77% in the standard deviation of tractor mileage per quarter.