



LTL Logistics Freight Profitability Analysis

Less-than-truckload (LTL) Shipping Services Company

Root cause analysis of declining profit margin through a robust profitability model that allocated costs at a shipment level

Freight Profitability Analysis for an LTL Logistics Company

Situation

- Client had negative net profit margins for 5 years and was unable to identify the root cause due to lack of visibility into shipment level profitability.
- Partnered with the client to build a shipment-level profitability analysis and identified drivers of low profitability by: i) integrating cost components (linehaul, pick-up, delivery, labor, fuel, etc.) spread across multiple systems; and ii) allocating costs at shipment level.

Accordion Value Add

- Integrated data from disparate source systems (shipment data, dimensions data, GL data, pickup & delivery data, trips data, etc.) into a single database in SQL server by building automated pipelines using Qlik Replicate and SSIS.
- Established relationships across all datasets at shipment level and developed automated data cleansing processes to ensure data quality.
- Developed a comprehensive cost allocation methodology by cost header (shipment volume, miles traveled etc.) to enable margin estimation at shipment level.
- Built robust self-serve dashboards in Power BI to track profitability by customer, lane, transportation mode, etc. and identify drivers of low margin.

Impact

- Enabled transformation of the freight network by strategic closure of loss-making lanes, introduction of margin-based pricing, removal of less profitable modes, and review of cities being served. These data-driven initiatives helped the client become profitable within 1 year of the engagement.
- As a result, Gross Margins increased by \$20 million (5% margin improvement).

Value Creation Initiatives

Value Creation Analytics

Revenue Drivers

1. **Sales Analysis** – Analyzed sales data, sales team performance vs targets and key customer accounts to incentivize the sales reps
2. **Missed pickups Analysis** – Developed automated reporting to analyze missed pickups by drivers resulting in lost revenue
3. **Dimming & Reweighing Reporting** – Compared dimensions and weight of shipment provided by customer to actual values to identify shipments that required rebilling. This minimized revenue leakage.
4. **Service Quality Reporting** – Tracked key customer service metrics including on-time delivery, appointment service, scanning compliance, damaged/lost shipments claims, etc.
5. **Operations Reporting & Analysis** – Tracked all operational metrics including on-time dispatch, route compliance, time to load/unload, dock aging, etc.
6. **Pricing Analysis** – Analyzed pricing per volume of shipment against cost and suggested changes in pricing for lanes

Cost Drivers

1. **Value Chain Planning Reporting**– Provided visibility into value chain metrics to the executive management and investors
2. **Linehaul Profitability Analysis** – Analyzed profitability at a granular level and identified low profitability lanes to be discontinued
3. **Pickup and Delivery Costs Analysis** – Analyzed various cost components involved in pickup/delivery and identified operational inefficiencies across terminals, customers and drivers
4. **Truck Utilization Analysis** – Analyzed truck utilization (volume) and recommended changes to shipment routes to maximize utilization and reduce costs
5. **Labor Productivity Reporting** – Tracked dock labor productivity metrics including shipments scanned and weight handled per hour, idle time, % rehandles, etc. against targets

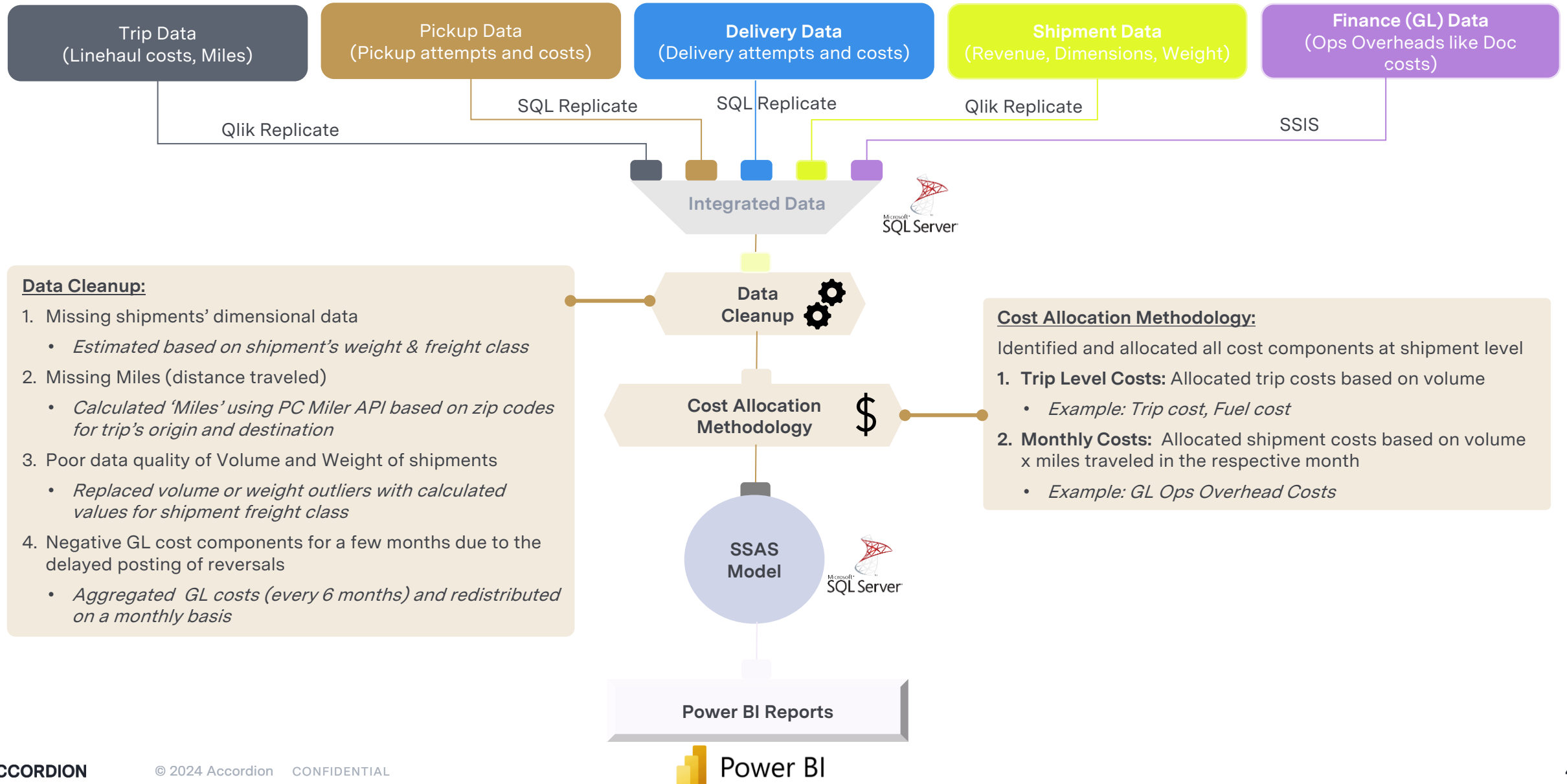
Working Capital Drivers

1. **Equipment Reporting** – Provided visibility into service status and location of trailers, trucks and tractors to track damaged/lost equipment
2. **Driver Settlements Reporting** – Tracked settlement and driver payments to reconcile with driven miles
3. **P&L Reporting** – Provided visibility into expenses (COGS, SG&A, overheads, etc.) related to shipments to identify irregular expenses

Data Management

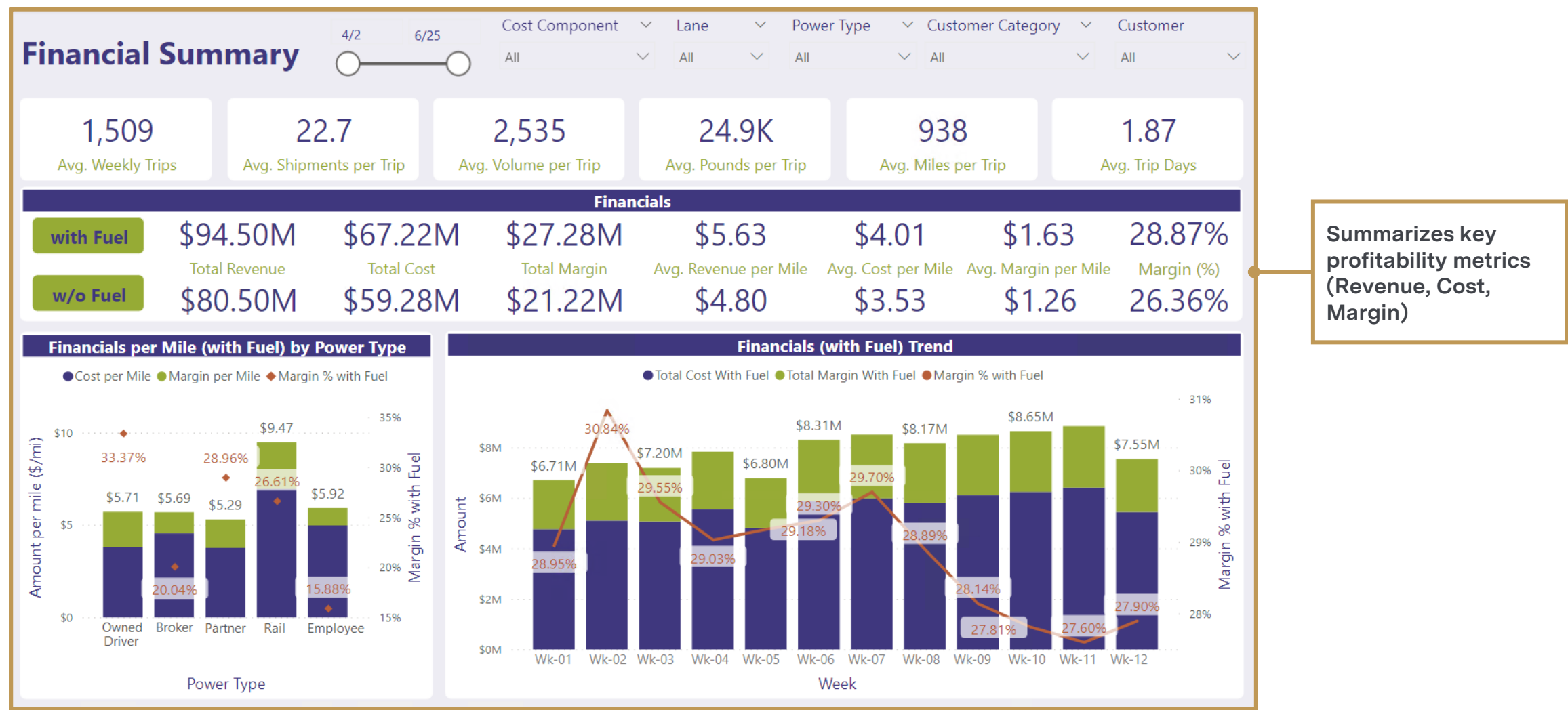
- **Assessed existing data architecture**, built a comprehensive view of systems and data flow, and recommended changes to improve efficiency, scalability and process automation in the architecture
- **Integrated data from disparate source systems** (shipment data, dimensions data, GL (Finance) data, pickup & delivery data, trips data, etc.) **into a single database in SQL server using Qlik Replicate and SSIS**. Established linkages across all datasets at shipment level and added automated data clean-up processes to address data quality & missing data points
- Built a consolidated SQL Server-based Data Warehouse (DW) ensuring a single source of truth for all reporting
- Created seven data cubes on SSAS for the key business functions including operations, drivers, equipment, sales, pricing, partners, and finance
- **Deployed a reporting suite in Power BI** and configured infrastructure to enable automated self-serve reporting and to drive data-driven decision-making across various stakeholder (executives, functional heads, service center managers, operators, and drivers)
- Automated the governance and maintenance of DW with failure notifications, refresh notifications, run time monitoring, etc. to ensure accurate reporting

Approach



Shipment Profitability Analysis

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Initiatives Tracker

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Radical Change Management Tracker

1/17/3

7/1 - 7/3
Current Week

6/24 - 6/30
Last Week

7/2

Previous Day

6/24 - 6/30
Last 4 Weeks

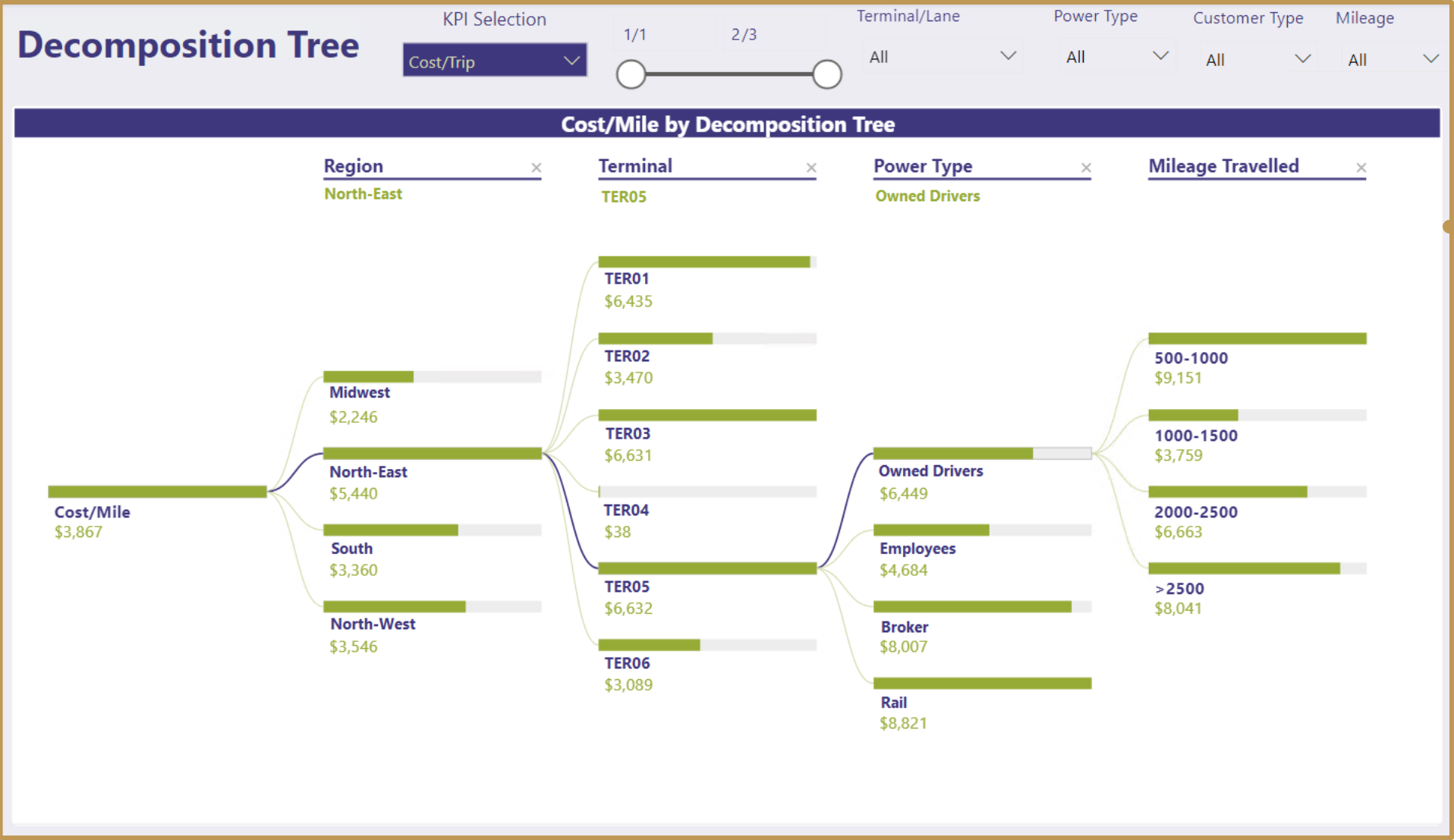
RCM Summary

Metric Group	Metric	Current Week	Previous Day	Last Week	Last 4 Week Average	Target	Weeks Missed Target	Filtered Range	Trendline
Linehaul Margin per 100 Direct CuFt-Miles	Linehaul Margin per 100 Direct CuFt-Miles	\$0.1562 ↑	\$0.1566 ↑	\$0.1523 ↑	\$0.1463 ↑	\$0.15	32	\$0.1384	
	Linehaul Margin per Direct Ton-Mile	\$0.3187 ↑	\$0.3202 ↑	\$0.3224 ↑	\$0.3133 ↑	\$0.11	0	\$0.2900	
	Weighted LH Cost/Mile	\$2.5118 ↑	\$2.5163 ↑	\$2.4593 ↓	\$2.4744 ↑	\$2.15	28	\$2.3169	
	Weighted Mileage Ratio	1.1279 ↓	1.1290 ↑	1.1319 ↓	1.1396 ↑	1.05	34	1.1268	
	Weighted Trailer Cube Utilization	74.85% ↓	74.89% ↑	75.34% ↑	75.53% ↑	85.00%	34	75.34%	
Revenue		\$1,463,608 ↓	\$1,462,509 ↑	\$8,702,712 ↑	\$8,286,590 ↓	\$10,000,000	34	\$139,981,629	
Gross Profit		\$431,702 ↓	\$425,350 ↑	\$2,264,708 ↓	\$2,332,058 ↓	\$2,700,000	30	\$39,636,871	

Change Management Report tracks progress of key initiatives against targets on a daily basis

Root Cause Analysis to Identify Drivers of Low Profitability

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Decomposition tree identifies the root cause of margin variance by region, terminal, power type, trip miles travelled.

Customer Profitability and Pricing Adjustments

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Customer Summary

4/27/19

Cost Component

Lane

Power Type

Customer Category

Customer

Customer Details											
Customer	Inactivity period	Share of Revenue (%)	Total Revenue	Total Cost	Total Margin	Margin (%)	#Shipments	Pounds	Revenue per CWT	Revenue per shipment	Revenue per Working Day
Customer - 001	<1 Week	11.10%	\$10,491,961	\$7,893,861	\$2,598,099	24.8%	23,014	43,518,574	\$24	\$456	\$174,866
Customer - 002	<1 Week	4.48%	\$4,234,172	\$2,954,743	\$1,279,429	30.2%	10,447	13,350,424	\$32	\$405	\$70,570
Customer - 003	<1 Week	3.48%	\$3,285,035	\$2,257,935	\$1,027,100	31.3%	7,229	8,855,613	\$37	\$454	\$54,751
Customer - 004	<1 Week	3.44%	\$3,248,542	\$2,091,587	\$1,156,955	35.6%	8,563	7,793,519	\$42	\$379	\$54,142
Customer - 005	<1 Week	3.06%	\$2,890,772	\$2,032,576	\$858,195	29.7%	5,645	9,092,910	\$32	\$512	\$48,180
Customer - 006	<1 Week	3.01%	\$2,843,657	\$1,901,805	\$941,853	33.1%	11,584	4,366,614	\$65	\$245	\$47,394
Customer - 007	<1 Week	2.70%	\$2,552,688	\$1,728,117	\$824,571	32.3%	6,286	6,554,689	\$39	\$406	\$42,545
Customer - 008	<1 Week	2.19%	\$2,069,793	\$1,429,344	\$640,450	30.9%	9,157	5,215,578	\$40	\$226	\$34,497
Customer - 009	<1 Week	1.84%	\$1,743,169	\$1,275,726	\$467,443	26.8%	8,555	3,722,550	\$47	\$204	\$29,053
Customer - 010	<1 Week	1.71%	\$1,615,713	\$1,315,468	\$300,245	18.6%	10,897	2,748,744	\$59	\$148	\$26,929
Customer - 011	<1 Week	1.25%	\$1,181,989	\$826,237	\$355,752	30.1%	2,794	3,872,198	\$31	\$423	\$19,700
Customer - 012	<1 Week	1.21%	\$1,142,114	\$793,965	\$348,149	30.5%	2,794	3,386,012	\$34	\$409	\$19,035
Customer - 013	<1 Week	1.19%	\$1,119,894	\$594,911	\$524,983	46.9%	3,444	888,051	\$126	\$325	\$18,665
Customer - 014	<1 Week	1.00%	\$945,950	\$667,258	\$278,692	29.5%	6,060	2,064,440	\$46	\$156	\$15,766
Customer - 015	<1 Week	0.96%	\$908,003	\$797,164	\$110,840	12.2%	2,358	2,530,978	\$36	\$385	\$15,133
Customer - 016	<1 Week	0.92%	\$874,121	\$656,015	\$218,106	25.0%	1,143	2,959,916	\$30	\$765	\$14,569
Customer - 017	<1 Week	0.85%	\$805,659	\$592,550	\$213,109	26.5%	1,356	2,551,836	\$32	\$594	\$13,428
Customer - 018	<1 Week	0.84%	\$790,399	\$597,292	\$193,107	24.4%	1,895	3,195,469	\$25	\$417	\$13,173
Customer - 019	<1 Week	0.83%	\$781,850	\$571,916	\$209,934	26.9%	2,826	860,091	\$91	\$277	\$13,031
Customer - 020	<1 Week	0.79%	\$744,726	\$496,366	\$248,360	33.3%	1,293	2,526,727	\$29	\$576	\$12,412
Customer - 021	<1 Week	0.76%	\$722,148	\$561,514	\$160,634	22.2%	1,582	984,018	\$73	\$456	\$12,036
Customer - 022	<1 Week	0.75%	\$707,947	\$364,033	\$343,914	48.6%	2,014	2,094,651	\$34	\$352	\$11,799
Customer - 023	<1 Week	0.74%	\$695,597	\$579,476	\$116,121	16.7%	2,679	3,642,172	\$19	\$260	\$11,593
Customer - 024	<1 Week	0.73%	\$686,380	\$610,269	\$76,111	11.1%	2,273	1,756,259	\$39	\$302	\$11,440
Customer - 025	<1 Week	0.71%	\$669,928	\$428,408	\$241,520	36.1%	1,558	1,683,335	\$40	\$430	\$11,165
Total		100.00%	\$94,500,227	\$67,217,564	\$27,282,663	28.9%	262,041	299,239,551	\$32	\$361	\$1,575,004

Identifies customers with low margins to re-evaluate pricing and improve margins