

Supply Chain Logistics & Shipping Analysis

A comprehensive logistics and shipping performance analysis built using Tableau. This project evaluates shipment efficiency, disruption patterns, transport performance, and operational risk indicators across global routes.

Project Overview

Dataset: Global shipping transactions (5,000+ records)

Tool: Tableau Public

Analysis Focus: Shipment performance, disruption rate, route efficiency, transport mode performance, and weather impact analysis

This dashboard is designed to monitor logistics reliability, detect operational bottlenecks, and support data-driven decision-making in supply chain operations.

Key Questions & Insights

1 What is the overall shipment performance?

KPIs Analyzed:

- Total Shipments
- Disruption Rate (%)
- Average Transit Time
- On-Time Delivery Rate
- Total Transaction Count

Insight:

While overall shipment volume remains stable, the presence of disruptions indicates operational risk exposure. Monitoring disruption % is critical for service-level reliability.

2 Which routes have the highest transaction volume?

Analysis: Shipment Count by Origin–Destination Route

Insight:

Certain port-to-port routes dominate transaction volume. High-traffic routes represent both strategic strengths and operational risk concentration areas.

Recommendation:

Introduce route-specific performance monitoring for high-volume corridors.

3 What is the disruption rate across transport modes?

Analysis: Disruption Rate by Transport Mode (Sea, Air, Rail, Road)

Insight:

Sea and road transport show higher disruption variability compared to air. This reflects exposure to weather, congestion, and geopolitical risk.

Recommendation:

Diversify mode selection for high-priority shipments and introduce risk scoring per mode.

4 How does weather condition impact disruptions?

Analysis: Shipment Performance by Weather Condition

Insight:

Extreme weather conditions significantly increase disruption probability and transit delays.

Recommendation:

Integrate weather forecasting into logistics planning and adjust buffer times accordingly.

5 Which product categories face higher disruption exposure?

Analysis: Disruption Count by Product Category

Insight:

Certain categories (likely perishable or high-value goods) experience higher disruption sensitivity.

Recommendation:

Prioritize resilient transport modes for sensitive goods and negotiate SLAs with stronger penalty clauses.

6 How does transit time vary across routes?

Analysis: Average Transit Time by Route

Insight:

Some routes show consistently longer lead times, indicating congestion or inefficient routing.

Recommendation:

Evaluate alternative routing strategies or renegotiate carrier agreements.

7 Monthly Shipment & Disruption Trend

Insight:

Seasonal spikes in disruption rates indicate potential climate or demand-driven pressure periods.

Recommendation:

Develop peak-season contingency planning and capacity buffers.

Overall Insights Summary

- Disruption risk is unevenly distributed across transport modes and routes.
 - High-volume routes carry concentrated operational risk.
 - Weather conditions significantly impact reliability.
 - Some transport modes demonstrate better stability but may involve higher cost.
 - Transit time variability suggests optimization opportunity.
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Strategic Recommendations

1. Implement Route Risk Scoring
Assign risk levels to high-volume origin–destination pairs.
2. Improve Mode Diversification Strategy
Avoid overreliance on disruption-prone modes.
3. Introduce Predictive Disruption Monitoring
Use historical disruption patterns to anticipate future risk.

4. Strengthen Carrier Performance KPIs
Monitor on-time delivery %, average delay, and disruption frequency per carrier.
 5. Establish Seasonal Contingency Plans
Increase buffer stock and safety lead time during high-risk periods.
 6. Develop Executive-Level Logistics KPI Dashboard
Include disruption %, transit variance, and SLA compliance for leadership visibility.
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Technical Implementation

Calculated Fields:

- Disruption Rate = $(\text{SUM}(\text{Disruption Flag}) / \text{COUNT}(\text{Shipment ID})) \times 100$
- Average Transit Time = $\text{AVG}(\text{Delivery Date} - \text{Shipment Date})$
- On-Time Delivery % = $\text{On-Time Shipments} / \text{Total Shipments}$
- Route = [Origin Port] + " → " + [Destination Port]

Data Aggregation:

- Route-level transaction grouping
- Transport mode performance comparison
- Monthly trend analysis using date hierarchy

Visualization Techniques:

- KPI Summary Cards
 - Route transaction bar charts
 - Disruption % comparison charts
 - Monthly trend line charts
 - Interactive filters (Month, Quarter, Route, Product Category, Transport Mode, Weather Condition)
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Files Included

- SUPPLY CHAIN LOGISTICS & SHIPPING ANALYSIS.twbx – Tableau packaged workbook

- `global_supply_chain_risk_2026.csv.csv` – Simulated logistics dataset
 - `readme.md` – Project documentation
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Business Impact

This dashboard enables logistics managers and supply chain leaders to:

- Detect disruption hotspots
- Optimize route planning
- Reduce delivery delays
- Improve SLA compliance
- Strengthen operational resilience

It supports proactive decision-making instead of reactive firefighting in supply chain operations.

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