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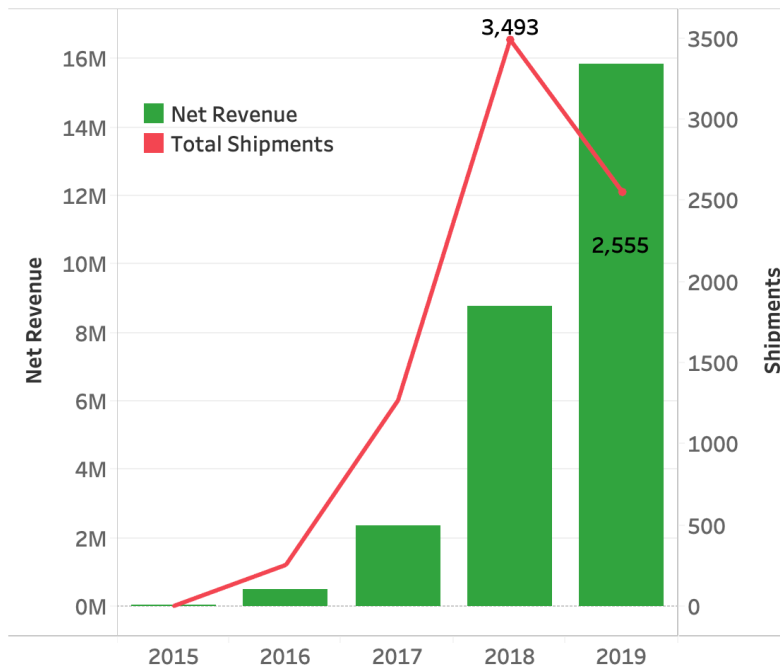
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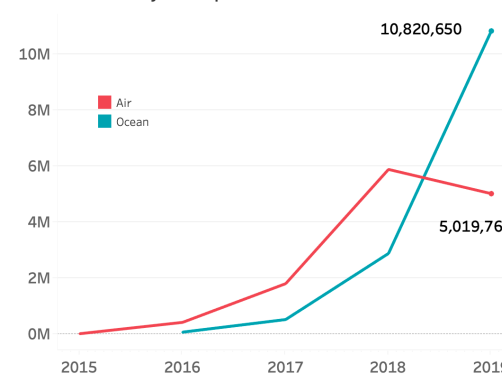
Overall Analysis **FOCUS on Ocean Freight Market,** **IMPROVE Container Utilization on TPEB route and expand business**

Net Revenue & Shipments

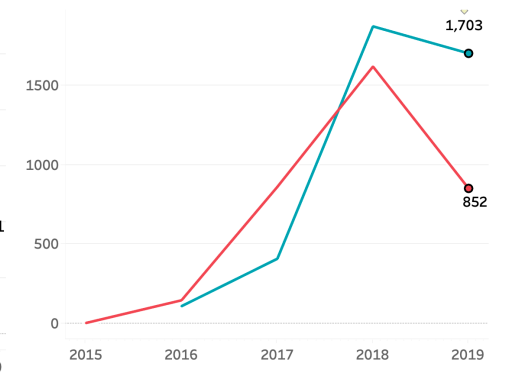


Even though Shipments decreased in 2019, Net Revenue still increased
Shipments decreased is due to the trade war with China.

Net Revenue by Transportation Mode

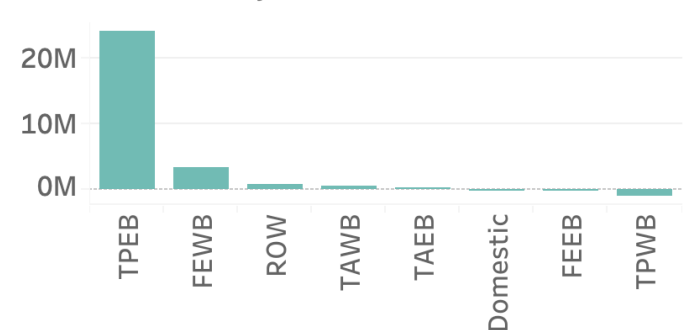


Shipments by Transportation Mode



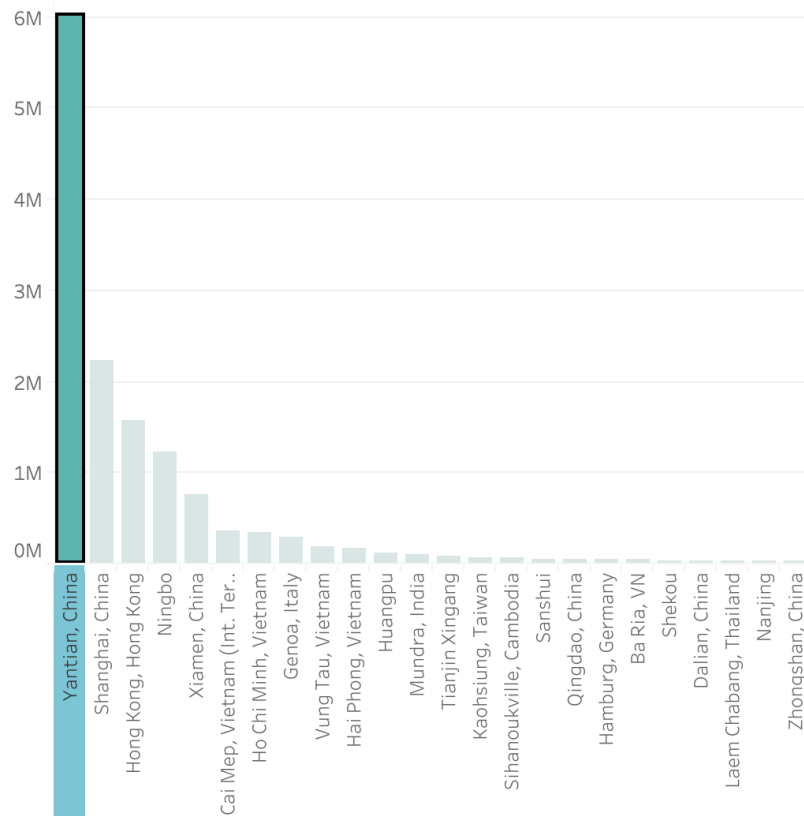
Ocean Freight Market has been increased
Freight during and after Covid 19, Air Freight has more restriction

Net Revenue by Trade Lane



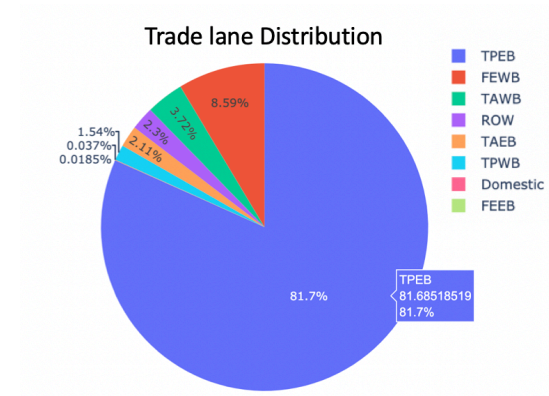
Ocean Freight Market

Total Revenue by Departure Port



Average container utilization: **70.40%**

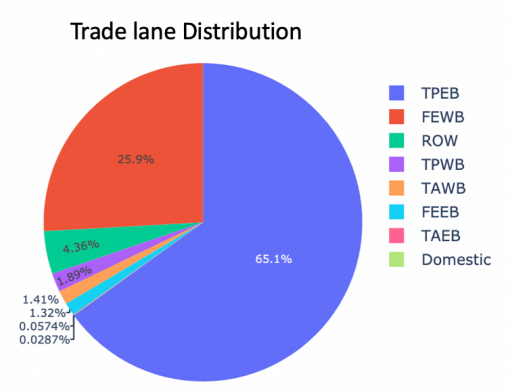
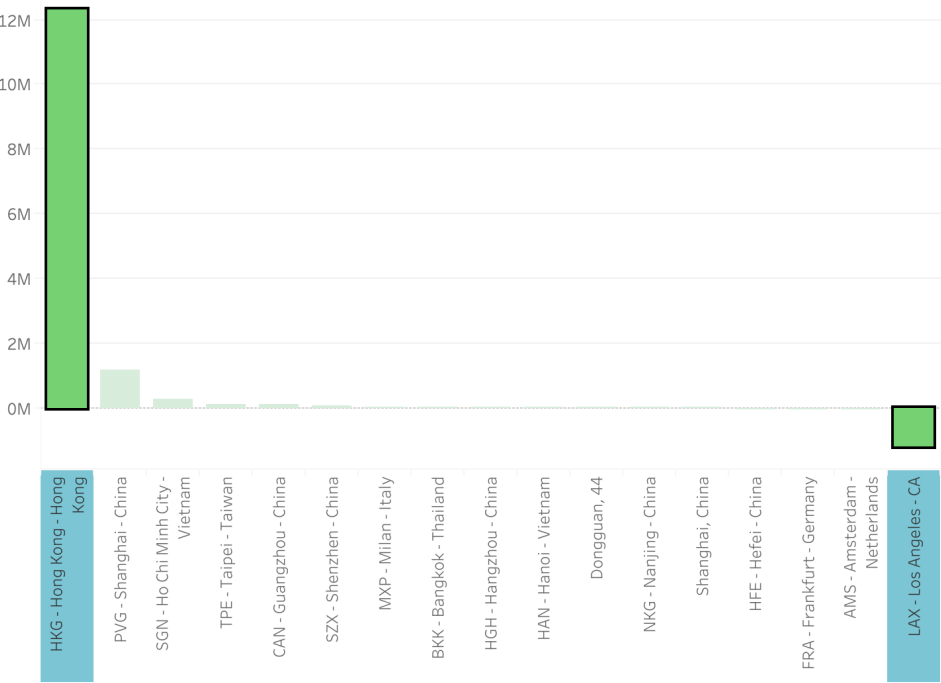
This utilization can be improved, by grouping the **similar routes**



More than 80% of the shipment was **Pacific East Bound(TPEB)** and **Yantian Departure Port** had the highest revenue

Air Freight Market

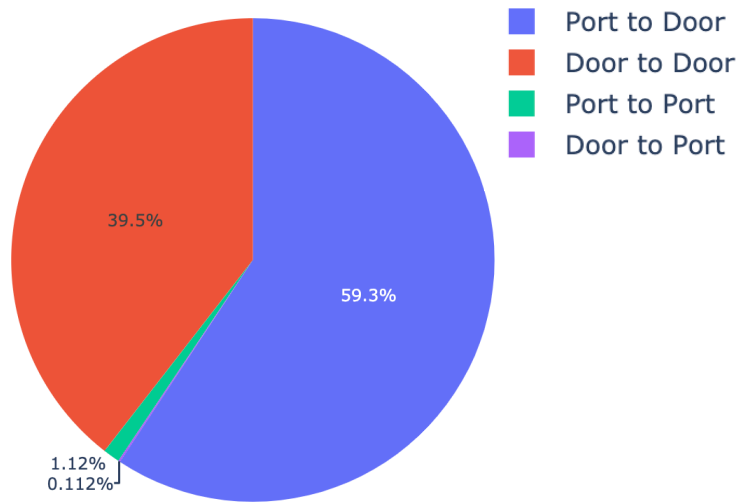
Total Revenue by Departure Port



More than 65% of the shipment was **Pacific East Bound(TPEB)**

Hong Kong

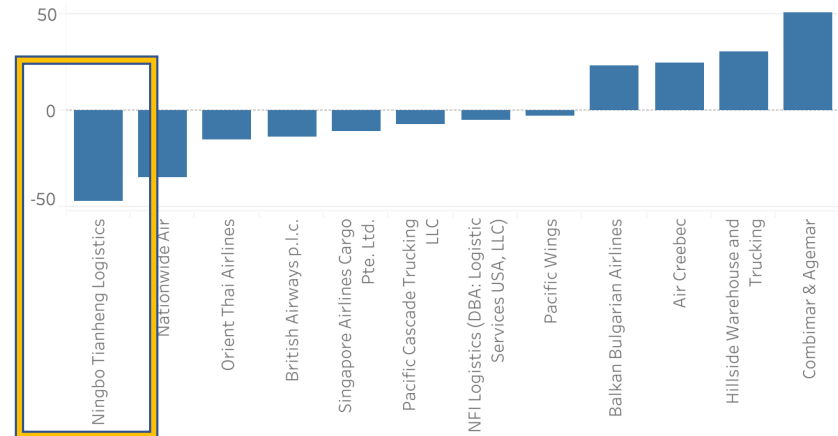
Freight Type



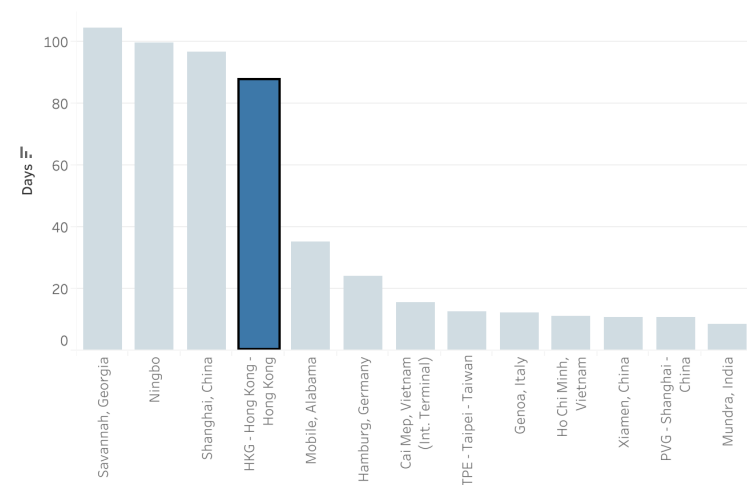
Main Freight Type is **Port to Door**

Average container utilization is **53.51%**
 >> **Need to group containers with similar routes**

Delay Days by Carrier



Total Delay Days in Departure Port

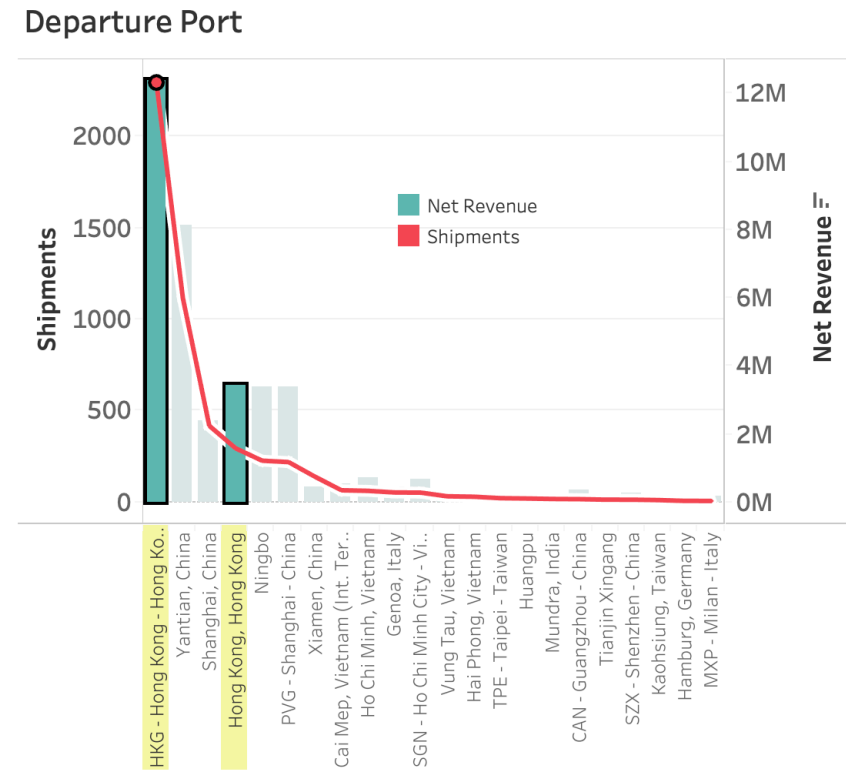


Many Delays occurred >> **Possibility of Storage Service**

Revenue Maximization Model

Based on the data, revenue sources are **Hong Kong**
As such, I suggest the following for revenue maximization

1. Use **Freight Company** for Air as **Ningbo Tianheng Logistics**, and **Singapore Airlines Cargo Pte. Ltd.** For Ocean transportations.
2. **Push for Storage Service (warehousing)** based on Freight Type: Port to door service and high departure delays



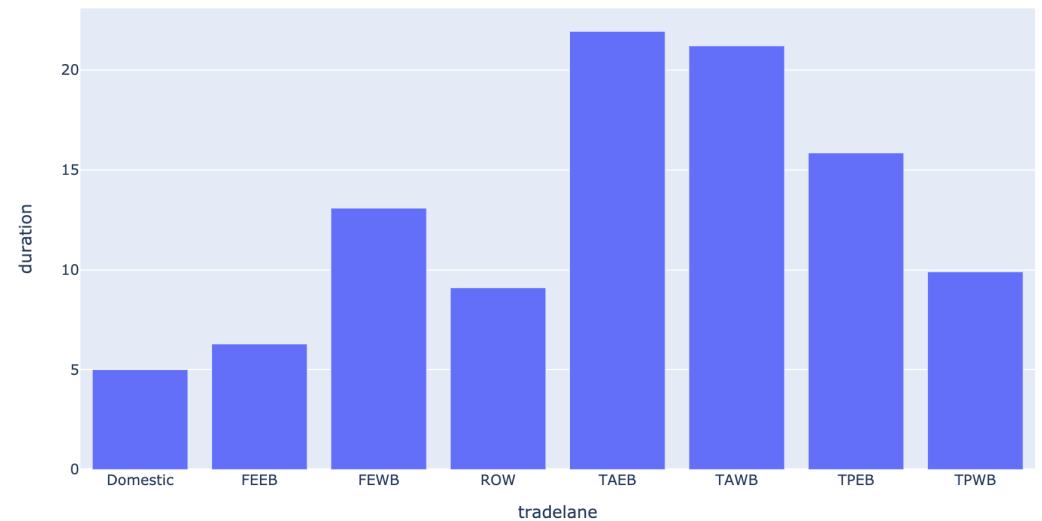
Which trade route have the highest shipment duration?

TPEB route had the longest shipment duration in Aug 2017,
Overall TAEB (Trans Atlantic Eastbound) had the average 27 days of shipment duration

>> Provide Customer estimated shipment duration

tradelane	duration							
	count	mean	std	min	25%	50%	75%	max
Domestic	1.0	5.000000	NaN	5.0	5.00	5.0	5.0	5.0
FEEB	42.0	6.285714	6.267554	1.0	3.00	5.0	8.0	41.0
FEWB	1130.0	13.083186	14.231796	1.0	4.00	6.0	16.0	68.0
ROW	263.0	9.095057	9.382992	0.0	3.00	5.0	11.5	47.0
TAEB	47.0	21.936170	8.580575	8.0	15.00	20.0	27.0	42.0
TAWB	183.0	21.207650	9.701623	2.0	17.00	22.0	26.0	59.0
TPEB	4813.0	15.850821	12.942539	-2.0	4.00	17.0	24.0	80.0
TPWB	78.0	9.897436	10.619254	0.0	3.25	6.0	8.0	44.0

Average Duration by Trade Lane



Which trade route suffers the longest delays?

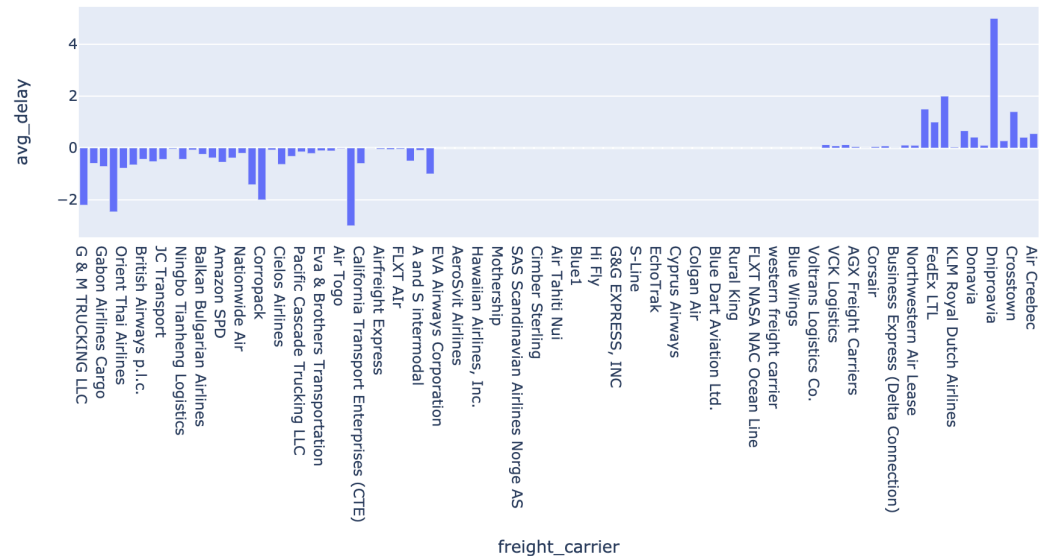
FEWB route had the longest delay duration in April 2017,

>> Provide Customer to estimated maximum shipment delay days for them to estimate delivery time

>> Select reliable Freight Containers

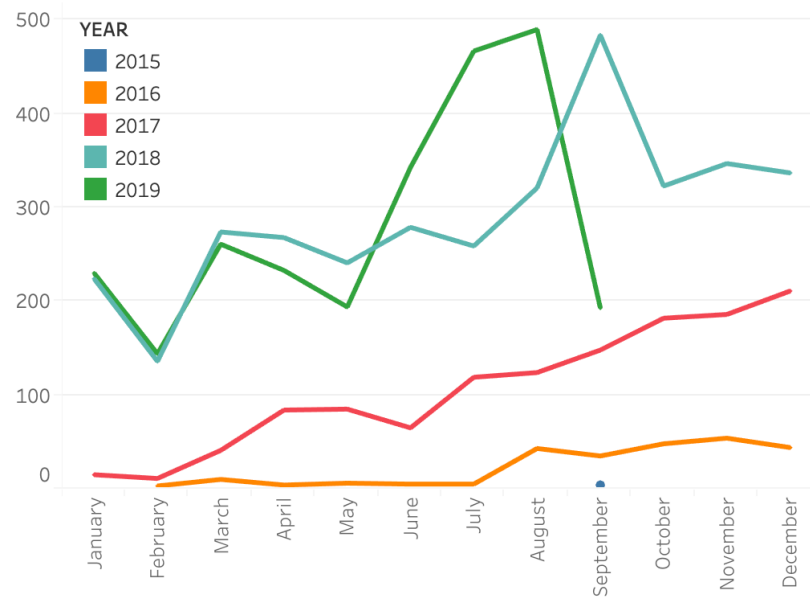
tradelane	delay							
	count	mean	std	min	25%	50%	75%	max
Domestic	1.0	0.000000	NaN	0.0	0.0	0.0	0.0	0.0
FEEB	45.0	0.155556	0.877899	-2.0	0.0	0.0	0.0	5.0
FEWB	1143.0	-0.086614	1.600795	-11.0	0.0	0.0	0.0	27.0
ROW	263.0	-0.209125	1.429645	-7.0	0.0	0.0	0.0	8.0
TAEB	47.0	0.063830	2.190932	-6.0	0.0	0.0	0.0	10.0
TAWB	183.0	-0.005464	0.578908	-3.0	0.0	0.0	0.0	5.0
TPEB	4814.0	-0.486498	2.638344	-88.0	0.0	0.0	0.0	19.0
TPWB	81.0	0.197531	1.155636	-4.0	0.0	0.0	0.0	8.0

Average Delay Days by Freight Carrier

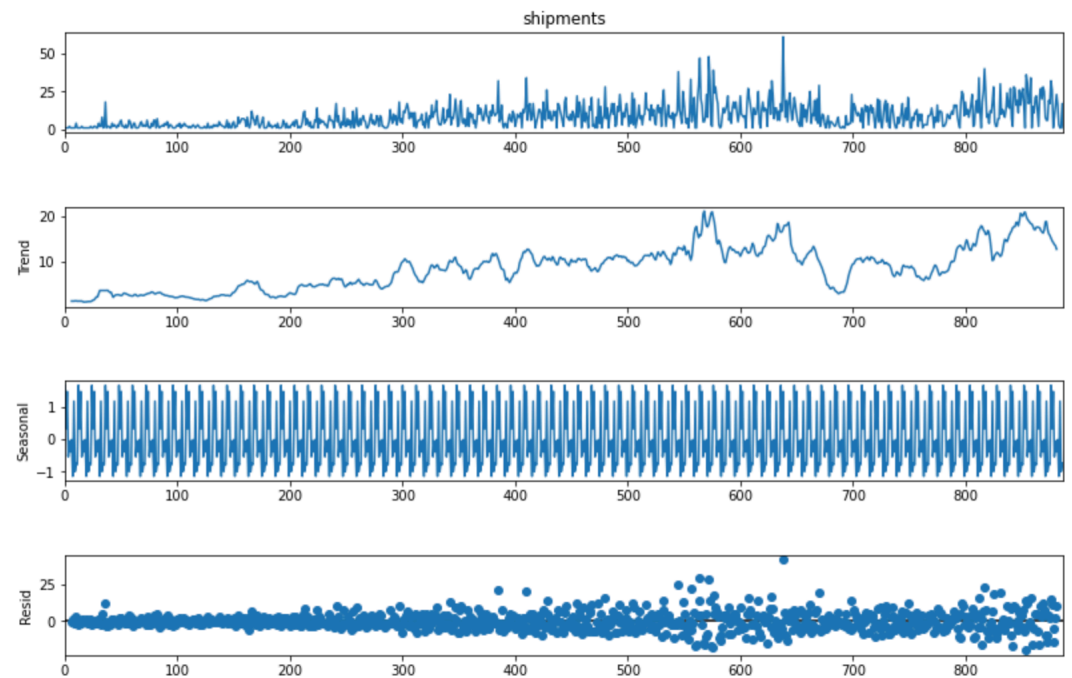


Demand Forecasting

Shipments



- JUL – SEP have the more shipments than other months



- Time series Analysis - decomposition

Underutilized Container Classification

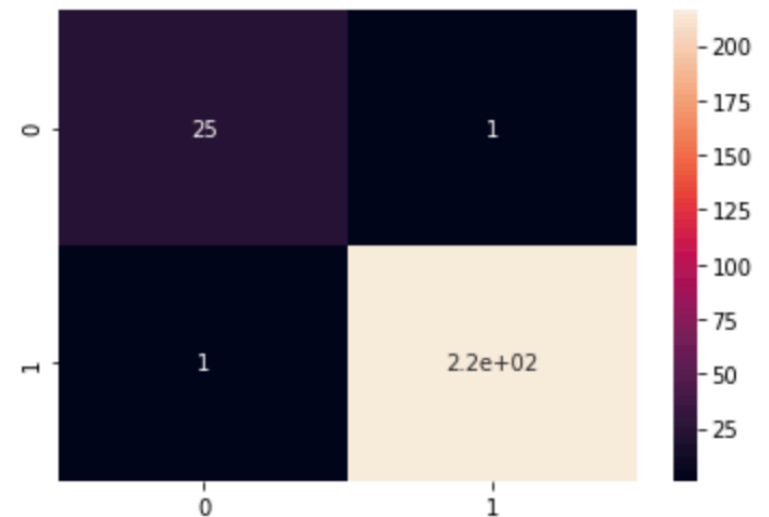
Method: **Decision Tree**

- Used Ordinal Encoding to convert Categorical Variables
- Dropped the missing values
- Class 1 : Underutilized Class 0: Utilization over 50%

- **Prediction Accuracy is high**

	precision	recall	f1-score	support
0	0.96	0.96	0.96	26
1	1.00	1.00	1.00	217
accuracy			0.99	243
macro avg	0.98	0.98	0.98	243
weighted avg	0.99	0.99	0.99	243

Confusion Matrix



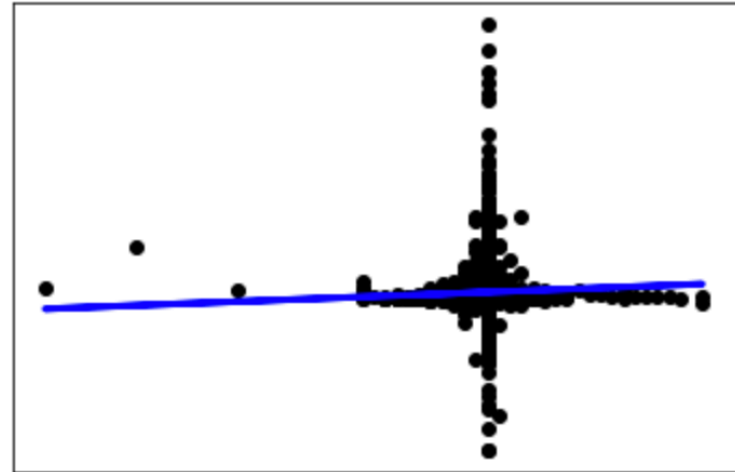
Is there a relationship between Delay and Net revenue ?

Method: **Linear Regression**

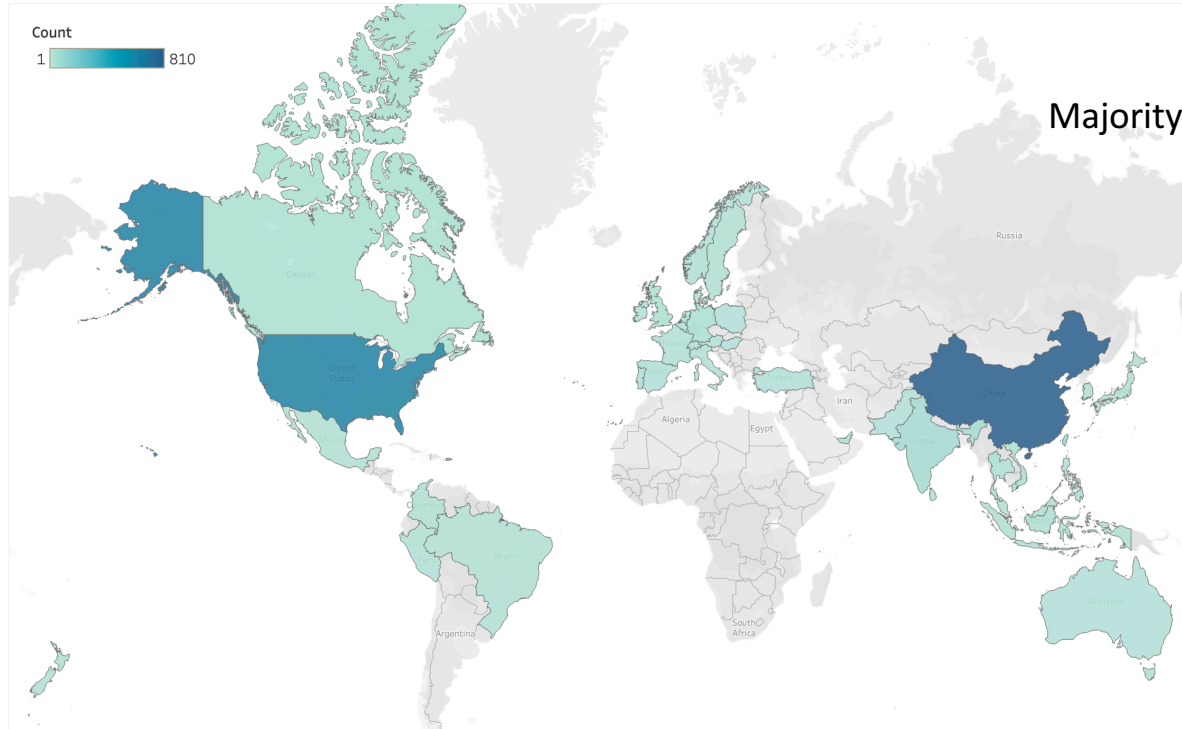
Result:

- Coefficients: 175.97504513
- Mean squared error: 84267496.62
- R^2 Score (Coefficient of determination): -0.00

They don't have relationship



Suppliers



Majority of the suppliers are located in **China**