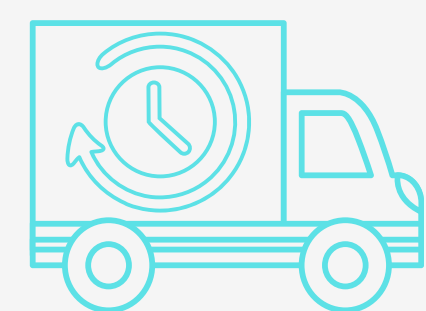


Medical

SUPPLY CHAIN ANALYSIS



Tools: Python & Power BI
Presented by: Juhi Shriwastav

PROBLEM STATEMENT

01

Logistics Performance

What are the average delivery times by Shipment Mode, and what is the overall on-time delivery rate?

02

Cost & Financial Analysis

What factors drive our freight costs, and where are our most significant expenses?

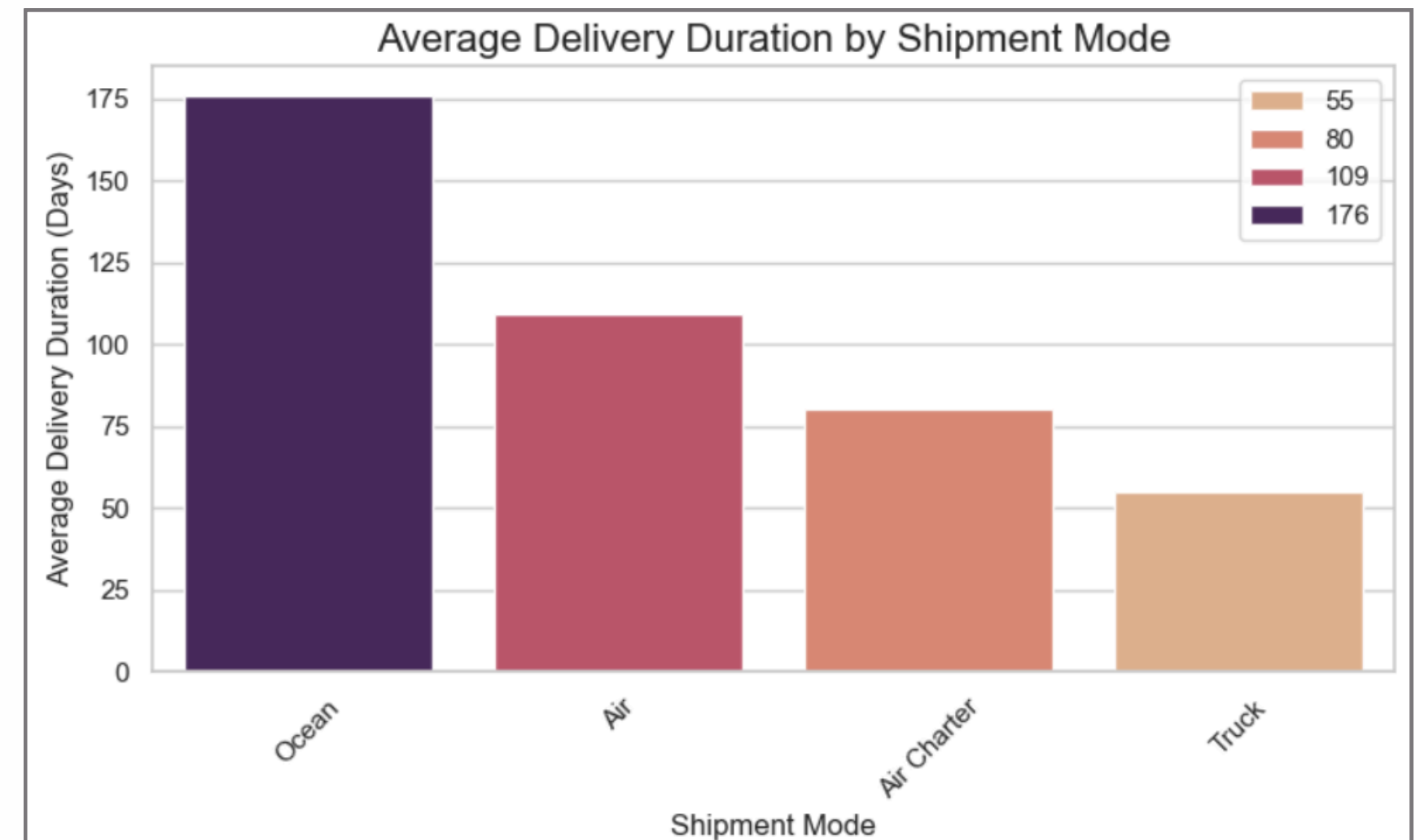
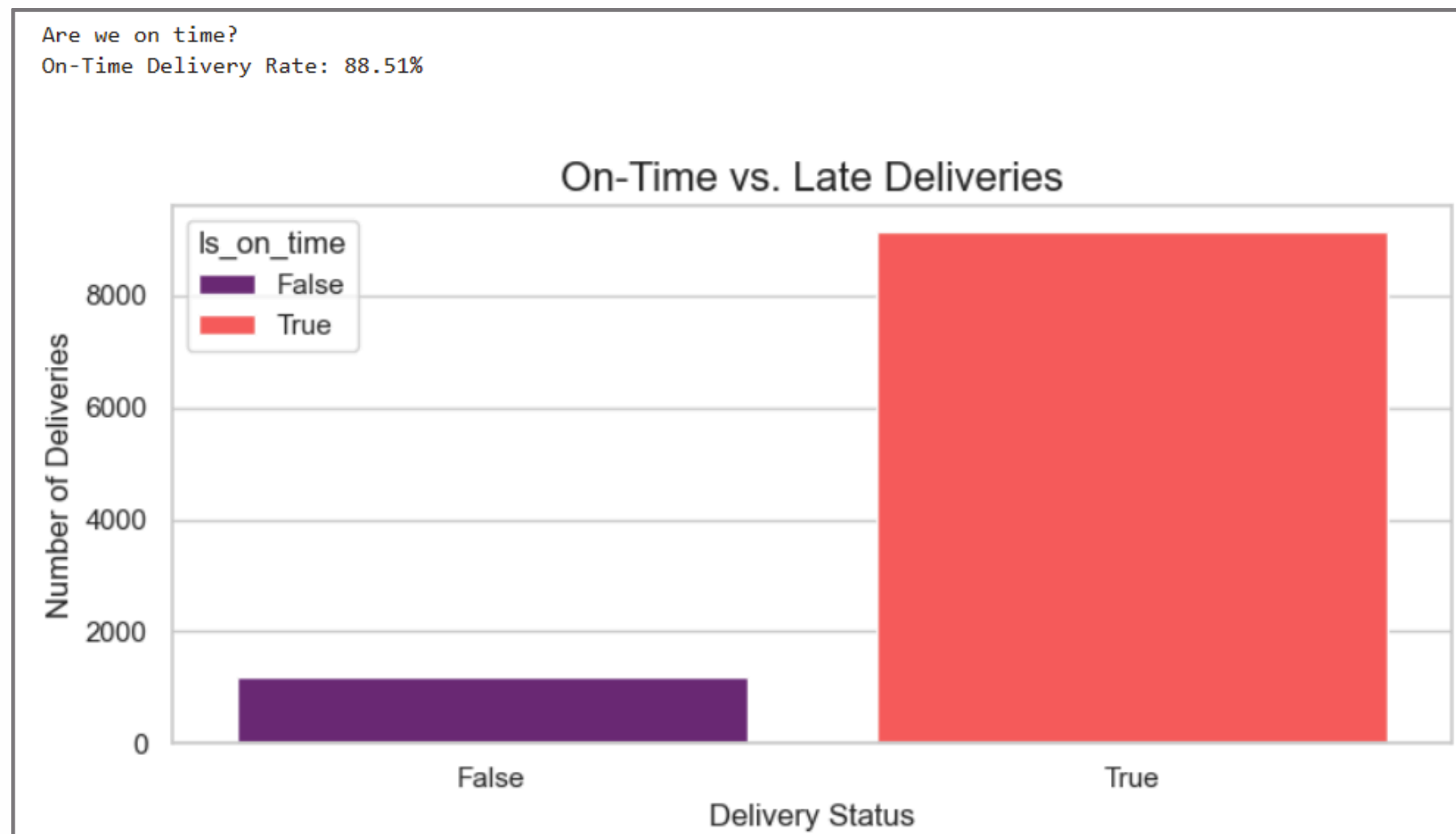
03

Vendor Performance

Which vendors are the most and least reliable for on-time delivery?

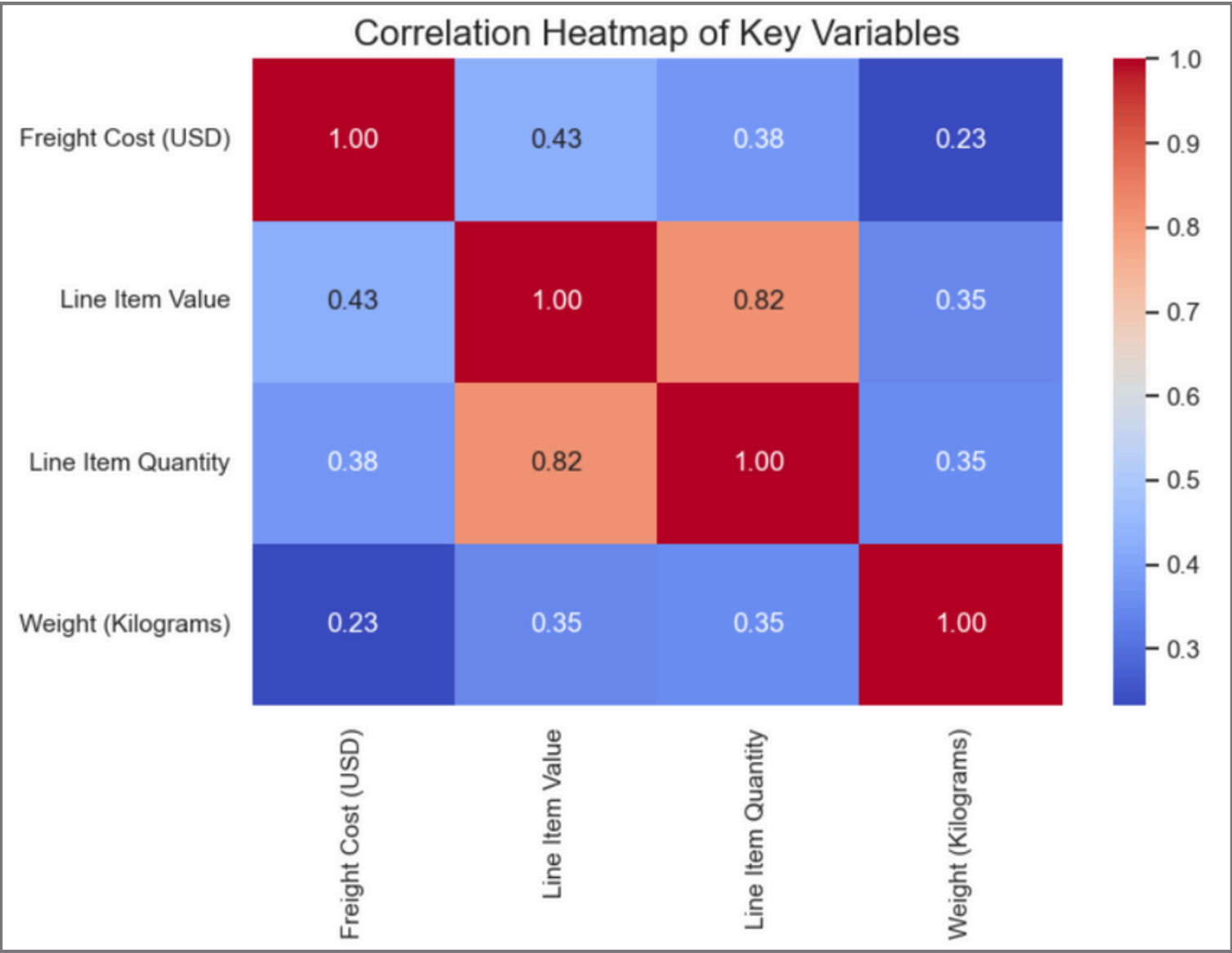
Logistics Performance Insights

- **On-Time Delivery Rate:** Our overall success rate is an impressive **88.51%**, a key benchmark for operational efficiency.
- **Average Delivery Duration:** A deep dive into delivery times showed a clear pattern: **trucks** are the fastest mode of transport, while **ocean** is the slowest.



Cost & Financial Analysis

- **Quantity, Value, and Cost:** There's a strong correlation of **0.82** between **Line Item Value** and **Line Item Quantity**, and a **0.43** correlation between **Line Item Value** and **Freight Cost**, which is slightly higher than the **0.38** correlation between **Line Item Quantity** and **Freight Cost**.
- Most valuable shipments also tend to have the most items. More importantly, the shipping bill, the monetary value of the goods is a slightly more significant cost driver than the sheer number of items in the shipment.



- **The Most Expensive Deliveries:** The **top 10** most expensive shipments were sent via **air** freight, which clearly points to this mode of transport as a key area for cost optimization.

Top 10 Most Expensive Shipments				
	Freight Cost (USD)	Shipment Mode	Weight (Kilograms)	
4062	289653.20	Air	18667	
4307	241407.27	Air	18580	
8850	194623.44	Air Charter	87076	
4218	161962.32	Air	17367	
6848	161712.87	Air	16035	
5367	152368.70	Air	13749	
4033	146850.66	Air	24556	
4734	146734.85	Air	34074	
6255	139951.34	Air	13656	
7115	132890.27	Air	20269	

Vendor Performance

- Identified the top 10 best-performing vendors, some with a perfect 100% on-time delivery rate. Crucially, even our "worst" performing vendors have a high on-time rate, with the lowest being 82%.
- It shows that our entire vendor network is highly reliable. While we can use this data to prioritize top vendors, it also highlights that there is no major performance problem with lowest-performing ones.

*Top 10 Best Performing Vendors (By On-Time Rate)

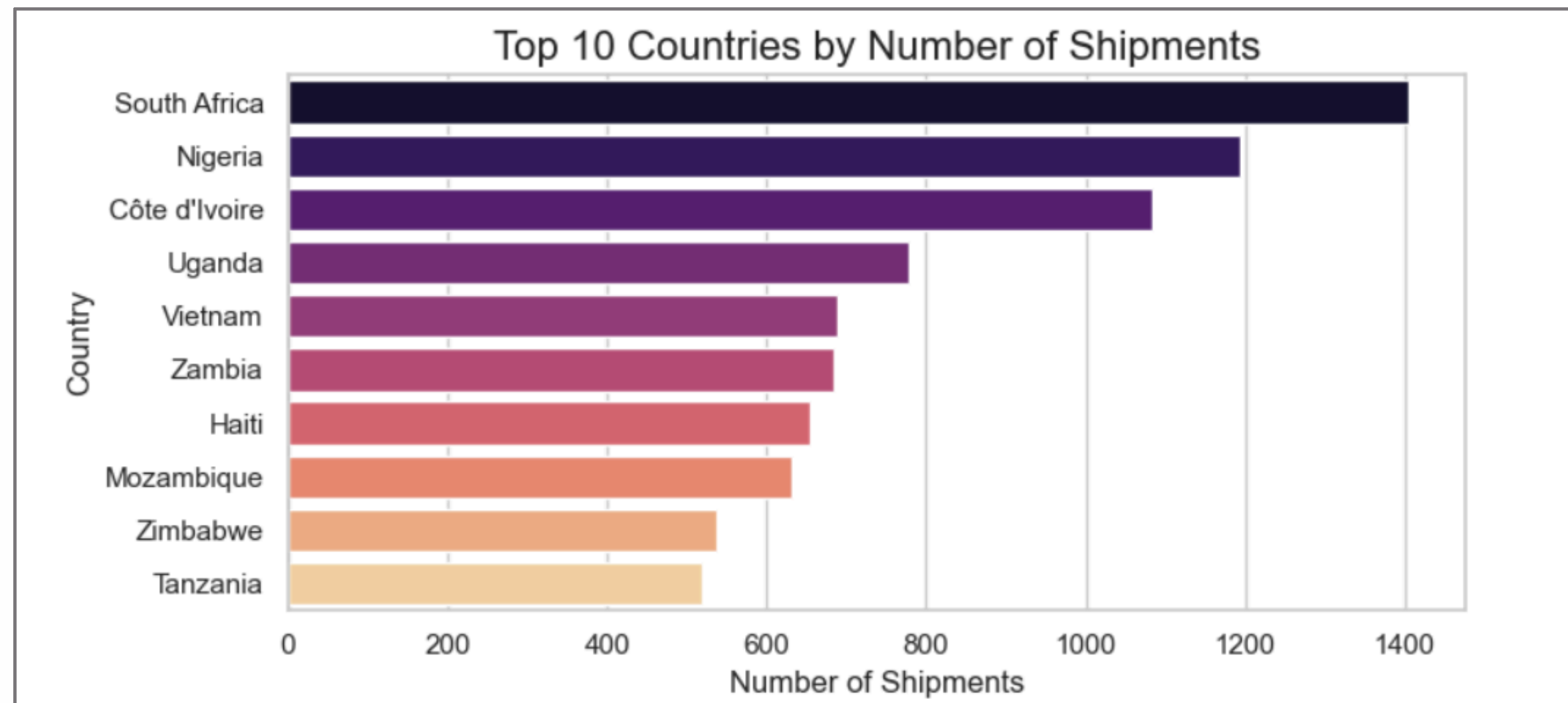
Vendor	
ABBOTT LABORATORIES (PUERTO RICO)	1.0
ABBOTT LOGISTICS B.V.	1.0
ABBVIE, SRL (FORMALLY ABBOTT LABORATORIES INTERNATIONAL CO.)	1.0
ACCESS BIO, INC.	1.0
ACCOUN NIGERIA LIMITED	1.0
ACTION MEDEOR E.V.	1.0
ACOUNS NIGERIA LTD	1.0
AHN (PTY) LTD (AKA UCB (S.A.))	1.0
AMSTELFARMA B.V.	1.0
TURE PHARMACEUTICALS & MEDICAL SUPPLIES P.L.C.	1.0
Name: Is_On_Time, dtype: float64	

*Top 10 Worst Performing Vendors (By On-Time Rate)

Vendor	
SCMS from RDC	0.828460
BIO-RAD LABORATORIES (FRANCE)	0.857143
Aurobindo Pharma Limited	0.859281
CIPLA LIMITED	0.868571
Orgenics, Ltd	0.870027
SUN PHARMACEUTICAL INDUSTRIES LTD (RANBAXY LABORATORIES LIMITED)	0.888889
REINBOLD EXPORT IMPORT	0.916667
EMCURE PHARMACEUTICALS LTD	0.951220
Abbott GmbH & Co. KG	0.952381
STRIDES ARCOLAB LIMITED	0.956989
Name: Is_On_Time, dtype: float64	

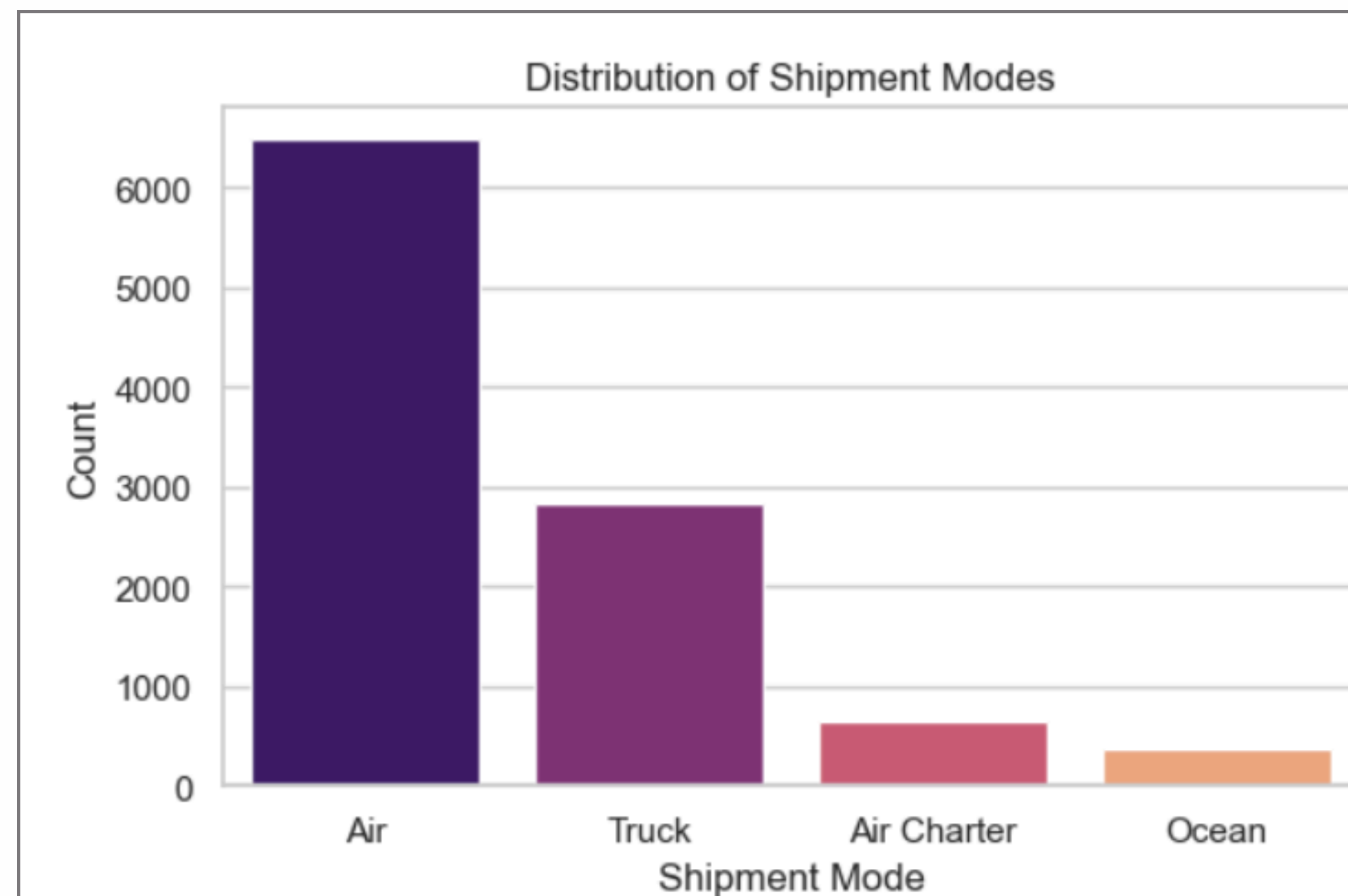
Top Markets

- An analysis of shipment data shows that the highest volume of deliveries is to **South Africa, Nigeria, and Cote d'Ivoire**.
- These are the core markets and the most active parts of supply chain. Focusing business strategy on these regions, whether by strengthening vendor relationships, improving logistics, or investing in local infrastructure, is likely to yield the most significant returns.



Distribution of Shipment Modes

- Shipment Mode data shows that **Air** is our most frequently used mode of transport, accounting for the highest number of shipments. **Truck** is the second most common, followed by **Air Charter** and **Ocean**.
- Supply chain is heavily reliant on air transportation, which is typically faster but more expensive



Recommendations

- **Prioritize Air Freight Strategically:** Analysis shows air is the most used and expensive shipment mode. To reduce costs, limit its use to only the most time-critical or high-value deliveries.
- **Leverage Trucks for Speed:** Use trucks for domestic or regional shipments where speed is a priority, as they are a fast and reliable option.
- **Scrutinize High-Value Shipments:** Since the value of a shipment has a slightly greater impact on shipping costs than the quantity, focus on optimizing logistics for high-value goods.
- **Reward Top Performers:** Data shows many vendors with a perfect on-time rate. Continue to prioritize these partners to maintain a reliable supply chain.
- **Engage with Lower-Performing Vendors:** Even the lowest-performing vendors are still performing well. Use this data to engage with them and explore ways to close the small performance gap.

Thank You

Happy to connect!



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<https://github.com/DA-Juhi>