

WELCOME TO OUR SUPPLY CHAIN PROJECT

Data analysis
project

presented for DEPI



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INTRODUCTION



**Data
exploration**



Analysis



TRICK



VISUALS



**DECISION
MAKING**

FIRST OF ALL INTRODUCTION

WHAT IS SUPPLY CHAIN?

supply chain is the system that moves products from the manufacturer to the customer.

INTRO

QUESTIONS

ANALYSIS

VISUALS

DECISION



1-INTRODUCTION

Efficient supply chains are vital for business success, and data analysis plays a crucial role in optimizing them.

This project focuses on analyzing supplier performance, inventory management, production efficiency, and logistics to identify inefficiencies, improve decision-making, and reduce costs.

The insights gained will help [Company/Industry] streamline operations and enhance overall supply chain performance.

QUESTIONS

ANALYSIS

VISUAL

DEC

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Find & Select

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A1

Product type

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	Product type	SKU	Price	Availability	Number of	Revenue g	Customer	Stock level	Lead times	Order quan	Shipping t	Shipping c	Shipping c	Supplier n	Location	Lead time	Production	Manufactu	Manufactu	Inspector	Defect rate	Transporta	Routes	Costs	
2	haircare	SKU0	69.808	55	802	8662	Non-binar	58	7	96	4	Carrier B	2.95657	Supplier 3	Mumbai	29	215	29	46.2799	Pending	0.22641	Road	Route B	187.752	
3	skincare	SKU1	14.8435	95	736	7460.9	Female	53	30	37	2	Carrier A	9.71657	Supplier 3	Mumbai	23	517	30	33.6168	Pending	4.85407	Road	Route B	503.066	
4	haircare	SKU2	11.3197	34	8	9577.75	Unknown	1	10	88	2	Carrier B	8.05448	Supplier 1	Mumbai	12	971	27	30.688	Pending	4.58059	Air	Route C	141.92	
5	skincare	SKU3	61.1633	68	83	7766.84	Non-binar	23	13	59	6	Carrier C	1.72957	Supplier 5	Kolkata	24	937	18	35.6247	Fail	4.74665	Rail	Route A	254.776	
6	skincare	SKU4	4.8055	26	871	2686.51	Non-binar	5	3	56	8	Carrier A	3.89055	Supplier 1	Delhi	5	414	3	92.0652	Fail	3.14558	Air	Route A	923.441	
7	haircare	SKU5	1.69998	87	147	2828.35	Non-binar	90	27	66	3	Carrier B	4.4441	Supplier 4	Bangalore	10	104	17	56.7665	Fail	2.77919	Road	Route A	235.461	
8	skincare	SKU6	4.07833	48	65	7823.48	Male	11	15	58	8	Carrier C	3.88076	Supplier 3	Kolkata	14	314	24	1.08507	Pending	1.00091	Sea	Route A	134.369	
9	cosmetics	SKU7	42.9584	59	426	8496.1	Female	93	17	11	1	Carrier B	2.34834	Supplier 4	Bangalore	22	564	1	99.4661	Fail	0.39818	Road	Route C	802.056	
10	cosmetics	SKU8	68.7176	78	150	7517.36	Female	5	10	15	7	Carrier C	3.40473	Supplier 4	Mumbai	13	769	8	11.423	Pending	2.70986	Sea	Route B	505.557	
11	skincare	SKU9	64.0157	35	980	4971.15	Unknown	14	27	83	1	Carrier A	7.16665	Supplier 2	Chennai	29	963	23	47.9576	Pending	3.84461	Rail	Route B	995.929	
12	skincare	SKU10	15.7078	11	996	2330.97	Non-binar	51	13	80	2	Carrier C	8.67321	Supplier 5	Kolkata	18	830	5	96.5274	Pass	1.72731	Road	Route B	806.103	
13	skincare	SKU11	90.6355	95	960	6099.94	Female	46	23	60	1	Carrier A	4.52394	Supplier 2	Kolkata	28	362	11	27.5924	Pending	0.02117	Air	Route A	126.723	
14	haircare	SKU12	71.2134	41	336	2873.74	Unknown	100	30	85	4	Carrier A	1.32527	Supplier 4	Kolkata	3	563	3	32.3213	Fail	2.16125	Road	Route B	402.969	
15	skincare	SKU13	16.1604	5	249	4052.74	Male	80	8	48	9	Carrier A	9.53728	Supplier 5	Bangalore	23	173	10	97.8291	Pending	1.63107	Road	Route B	547.241	
16	skincare	SKU14	99.1713	26	562	8653.57	Non-binar	54	29	78	5	Carrier B	2.03977	Supplier 1	Kolkata	25	558	14	5.79144	Pending	0.10068	Air	Route B	929.235	
17	skincare	SKU15	36.9892	94	469	5442.09	Non-binar	9	8	69	7	Carrier B	2.42204	Supplier 1	Bangalore	14	580	7	97.1213	Pass	2.26441	Sea	Route B	127.862	
18	skincare	SKU16	7.54717	74	280	6453.8	Female	2	5	78	1	Carrier B	4.19132	Supplier 1	Bangalore	3	399	21	77.1063	Pass	1.01256	Air	Route A	865.526	
19	cosmetics	SKU17	81.4625	82	126	2629.4	Female	45	17	85	9	Carrier C	3.58542	Supplier 1	Chennai	7	453	16	47.6797	Fail	0.10202	Air	Route C	670.934	
20	haircare	SKU18	36.4436	23	620	9364.67	Unknown	10	10	46	8	Carrier C	4.33922	Supplier 2	Kolkata	18	374	17	27.108	Pending	2.23194	Sea	Route A	593.48	
21	skincare	SKU19	51.1239	100	187	2553.5	Unknown	48	11	94	3	Carrier A	4.74264	Supplier 4	Chennai	20	694	16	82.3733	Fail	3.64645	Road	Route C	477.308	
22	skincare	SKU20	96.3411	22	320	8128.03	Unknown	27	12	68	6	Carrier A	8.87833	Supplier 1	Chennai	29	309	6	65.6863	Pass	4.23142	Air	Route B	493.871	
23	cosmetics	SKU21	84.8939	60	601	7087.05	Unknown	69	25	7	6	Carrier B	6.03788	Supplier 5	Chennai	19	791	4	61.7357	Pending	0.01861	Air	Route C	523.361	
24	haircare	SKU22	27.6798	55	884	2390.81	Unknown	71	1	63	10	Carrier A	9.56765	Supplier 4	Kolkata	22	780	28	50.1208	Fail	2.59128	Rail	Route C	205.572	
25	cosmetics	SKU23	4.32434	30	391	8858.37	Unknown	84	5	29	7	Carrier A	2.92486	Supplier 5	Kolkata	11	568	29	98.61	Pending	1.34229	Rail	Route A	196.329	
26	haircare	SKU24	4.15631	32	209	9049.08	Male	4	26	2	8	Carrier C	9.74129	Supplier 2	Bangalore	28	447	3	40.3824	Pending	3.69131	Air	Route A	758.725	
27	haircare	SKU25	39.6293	73	142	2174.78	Male	82	11	52	3	Carrier C	2.23107	Supplier 4	Kolkata	19	934	23	78.2804	Pending	3.79723	Road	Route B	458.536	
28	haircare	SKU26	97.4469	9	353	3716.49	Male	59	16	48	4	Carrier B	6.50755	Supplier 2	Bangalore	26	171	4	15.9722	Pass	2.11932	Rail	Route A	617.867	
29	cosmetics	SKU27	92.5574	42	352	2686.46	Unknown	47	9	62	8	Carrier C	7.40675	Supplier 5	Mumbai	25	291	4	10.5282	Fail	2.86467	Sea	Route B	762.459	
30	cosmetics	SKU28	2.39727	12	394	6117.32	Female	48	15	24	4	Carrier B	9.89814	Supplier 1	Mumbai	13	171	7	59.4294	Fail	0.81576	Air	Route A	123.437	

supply_chain_data

ReadyAccessibility: Unavailable

OUR DATASET



1

Availability per
Order Quantity



2

Defect rate per
supplier



3

Most supplier
facing issues



4

Cost/Routes
Relation



5

BEST SHIPPING
METHOD`

ANALYSIS

2-MAIN QUESTIONS

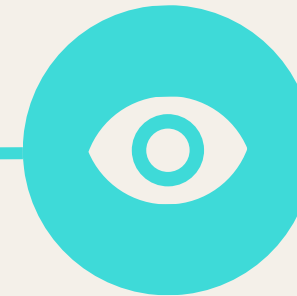
VISUALS

DEC

3-ANALYSIS

TOOLS

PRE VISUALS



MEASUREMENTS

LIBRARIES

3-ANALYSIS



MEASUREMENTS

3- ANALYSIS (Measurements)

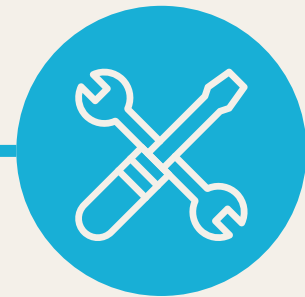


3-ANALYSIS

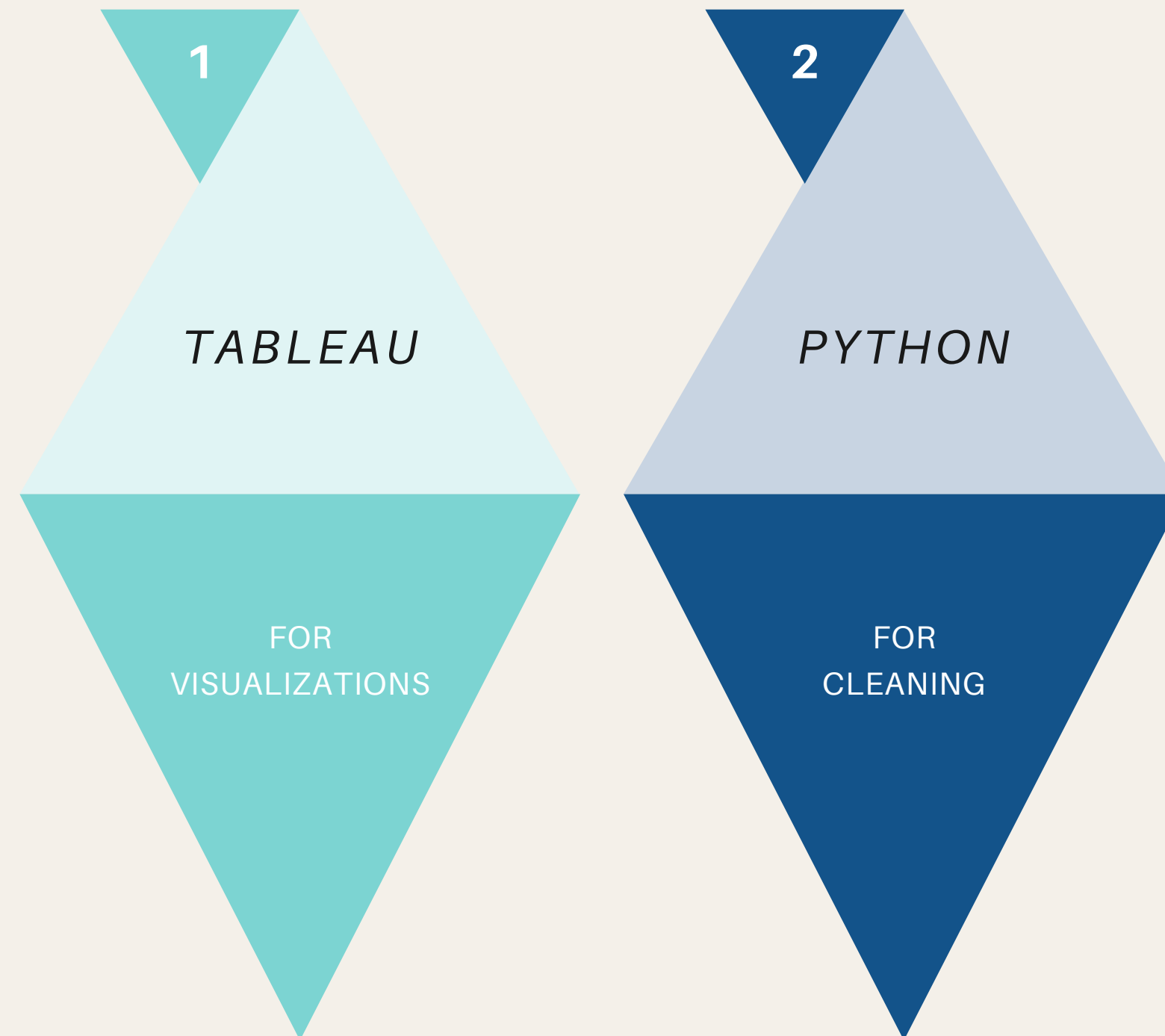
TOOLS



MEASUREMENTS



3- ANALYSIS (TOOLS)

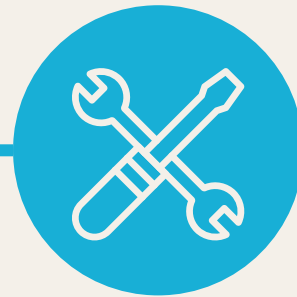


3-ANALYSIS

TOOLS

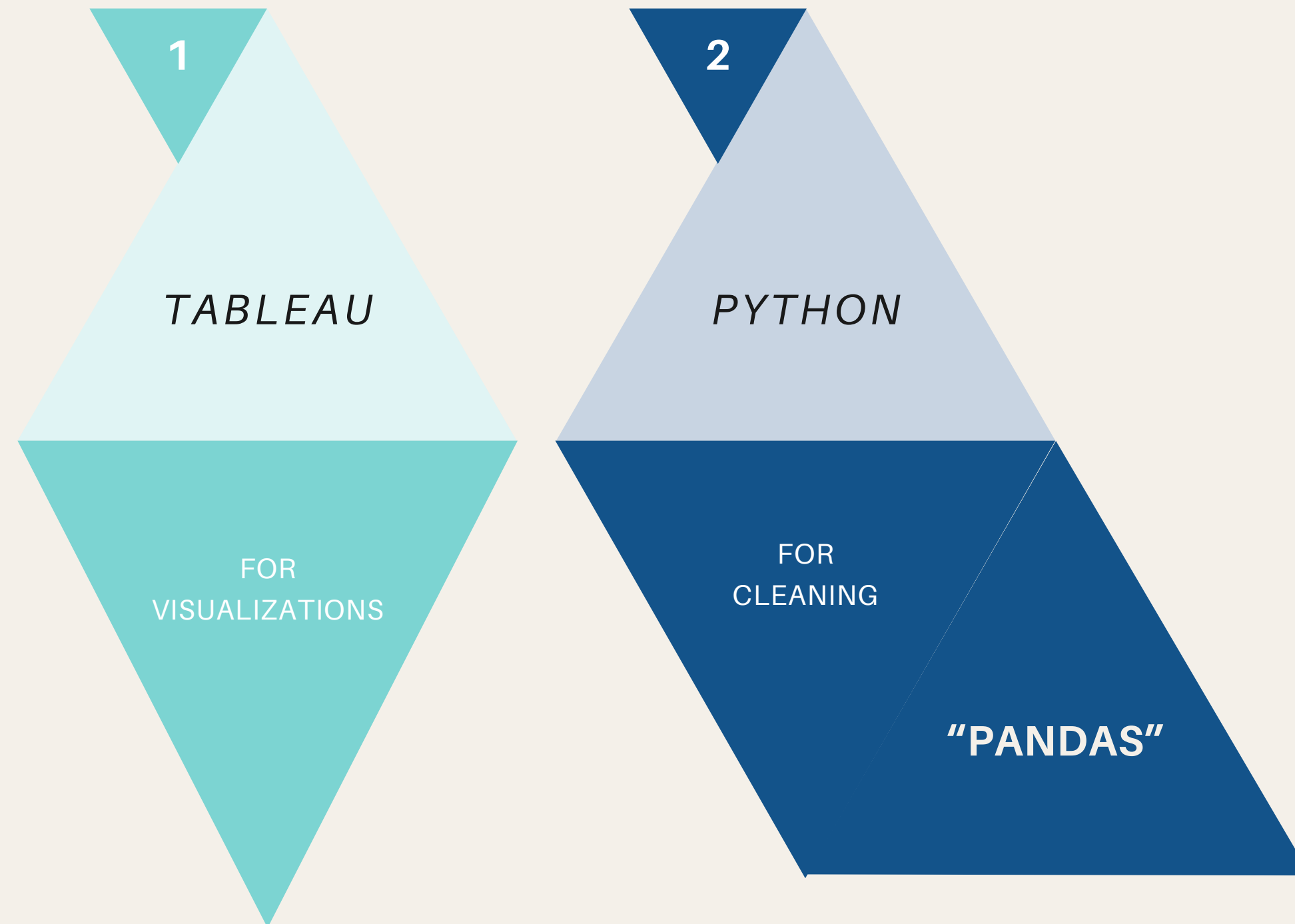


MEASUREMENTS



LIBRARIES

3- ANALYSIS (LIBRARIES)



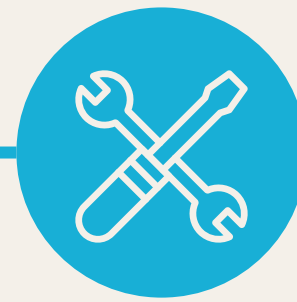
3-ANALYSIS

TOOLS

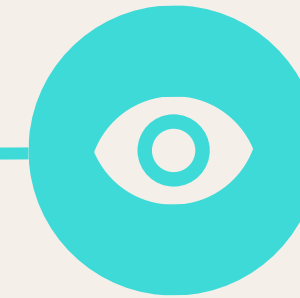
PRE VISUALS



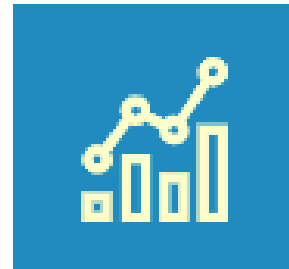
MEASUREMENTS



LIBRARIES

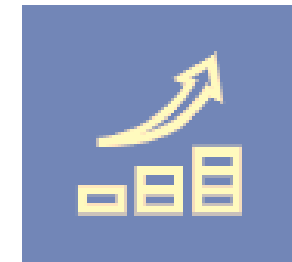


3-ANALYSIS (Pre Visuals)



Doability of the
production

See if the production volume is applicable within the order quantities or we need some improvements



Relationship between
Cost & Location

See if the order is most of the times ordered to Delhi and is stored in chennai instead of delhi etc.

4-VISUALS



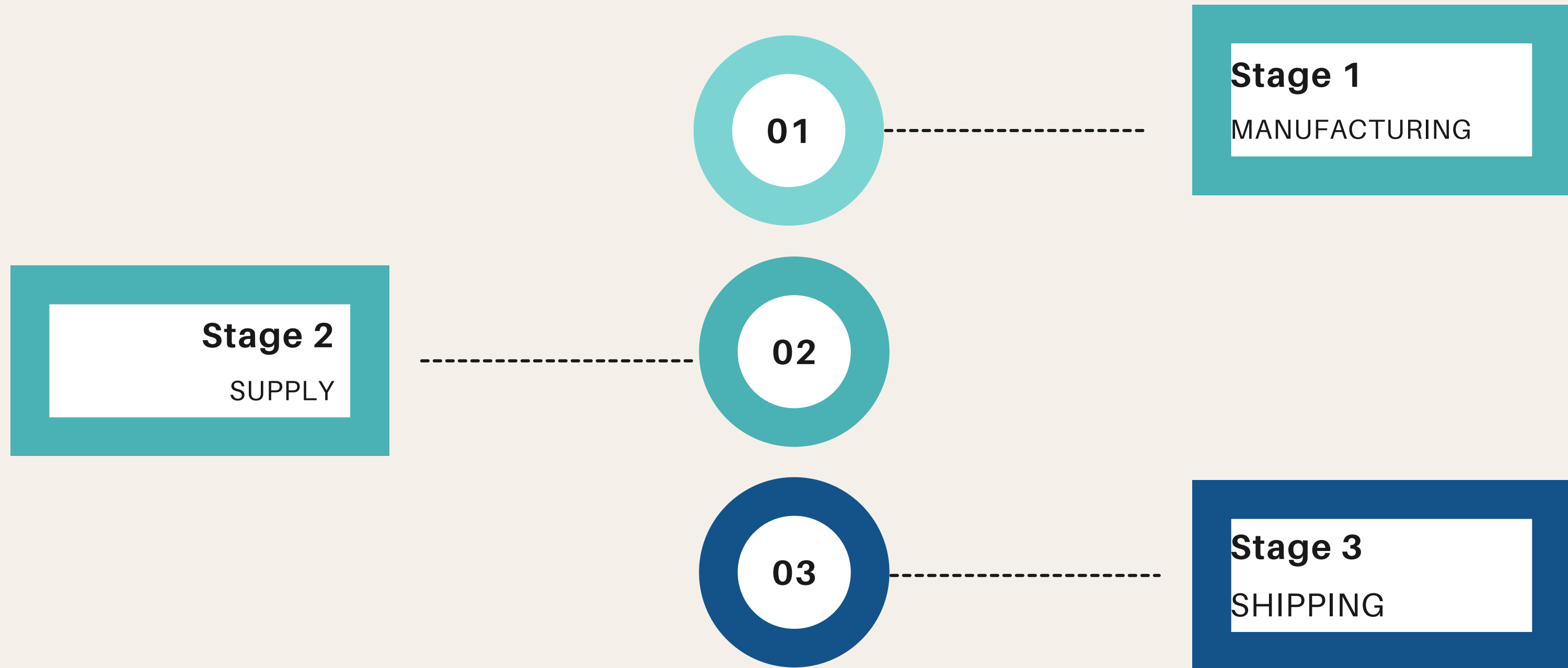
Stage 2



Stage 1

Stage 3

4-VISUALS



Supply Chain Dashboard



manufacturing

Shipping



Supply

4-VISUALS

01

Stage 1

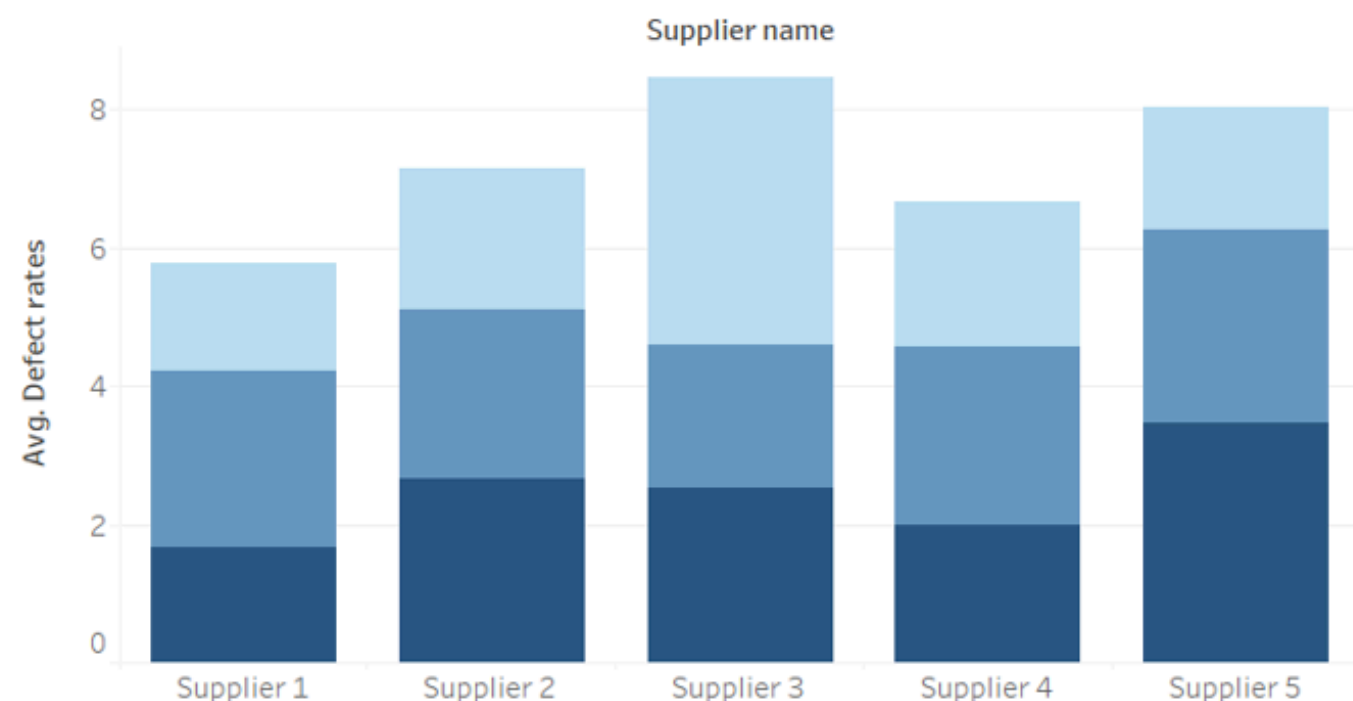
MANUFACTURING



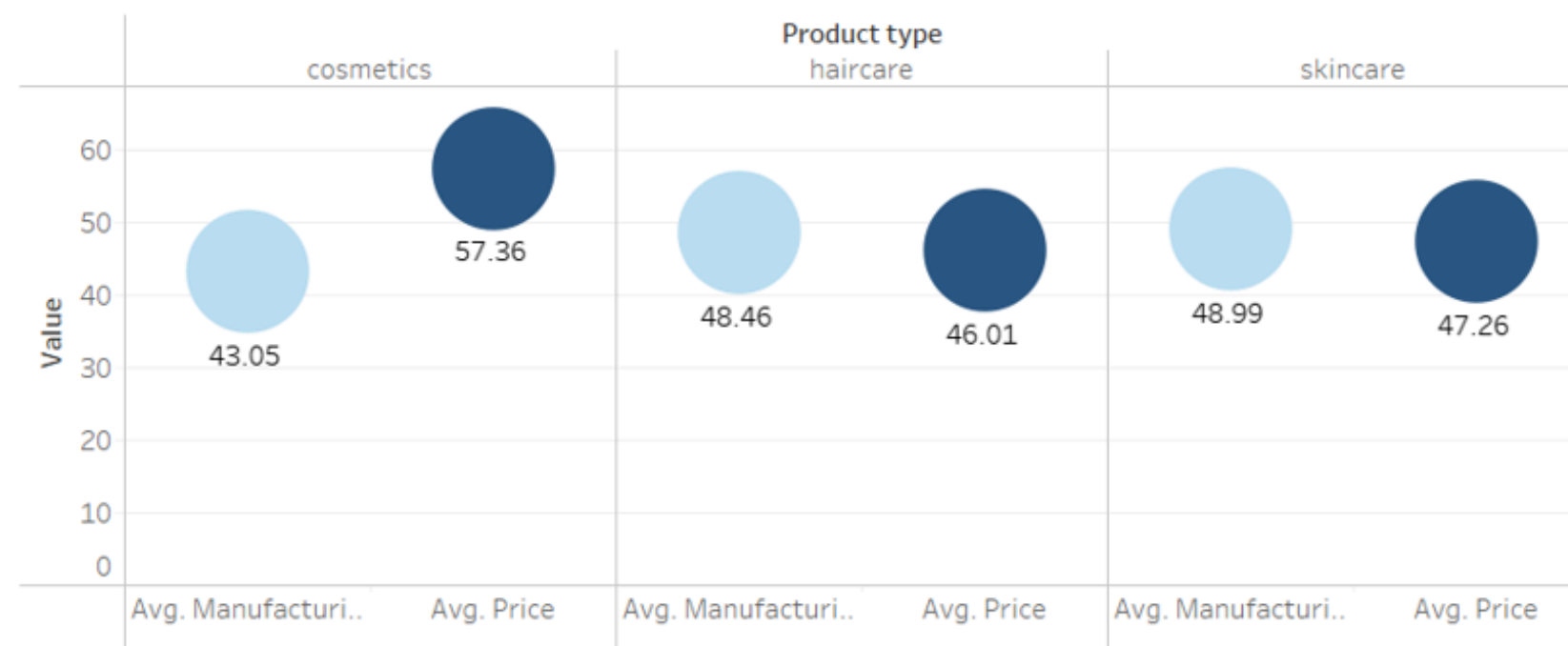
Manufacturing Dashboard



Avg. Defect Rates per Supplier



Avg. Manufacturing Cost vs. Selling Price for each product

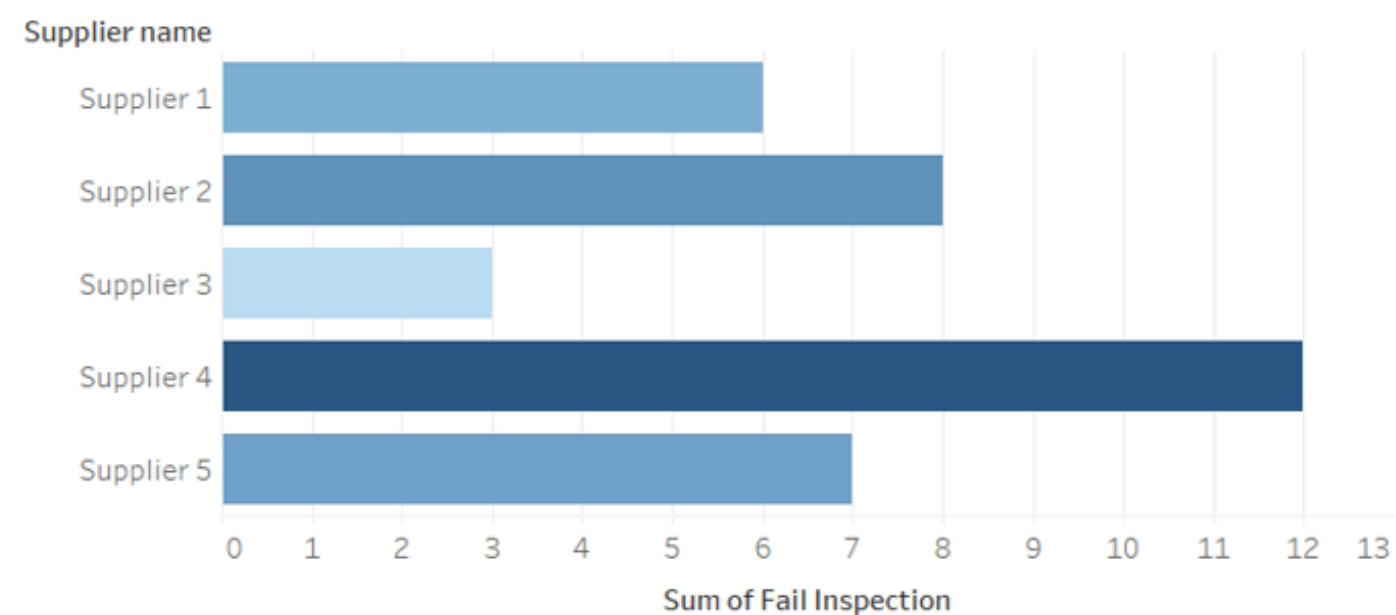


- Location
- ☒ (All)
 - ☐ Bangalore
 - ☐ Chennai
 - ☐ Delhi
 - ☐ Kolkata
 - ☐ Mumbai

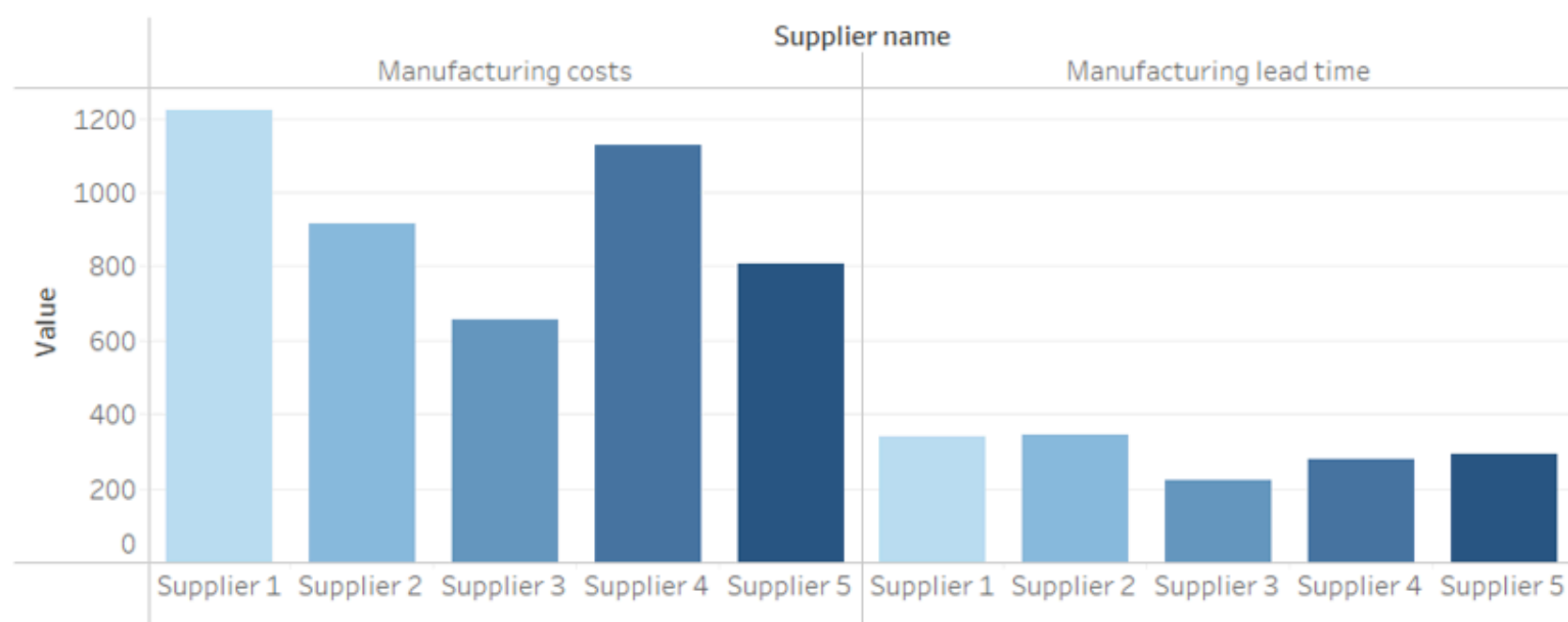
- Product type
- ☒ (All)
 - ☐ cosmetics
 - ☐ haircare
 - ☐ skincare

- Supplier name
- ☒ (All)
 - ☐ Supplier 1
 - ☐ Supplier 2
 - ☐ Supplier 3
 - ☐ Supplier 4
 - ☐ Supplier 5

Fail Inspection rate per Supplier



Manufacturing Cost & Lead Time for each Supplier

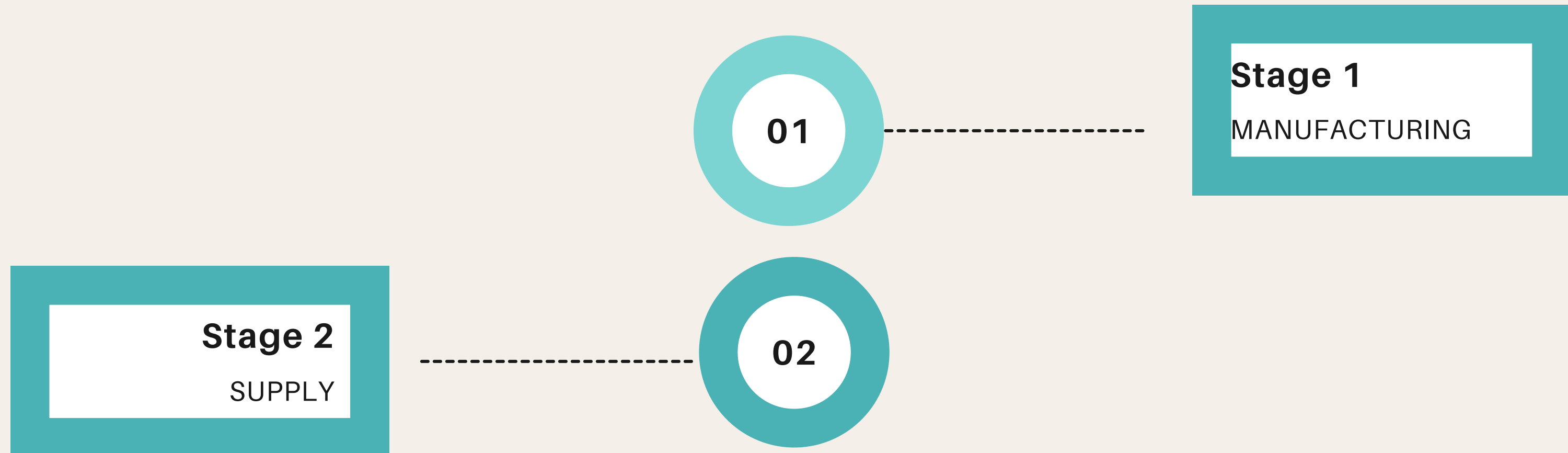


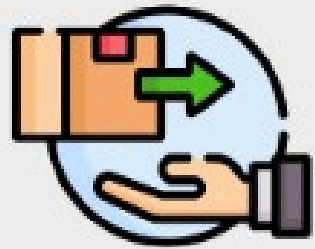
- Supplier name
- ☐ Supplier 1
 - ☐ Supplier 2
 - ☐ Supplier 3
 - ☐ Supplier 4
 - ☐ Supplier 5
- Product type
- ☐ cosmetics
 - ☐ haircare
 - ☐ skincare

Sum of Fail Inspection

3 12

4-VISUALS



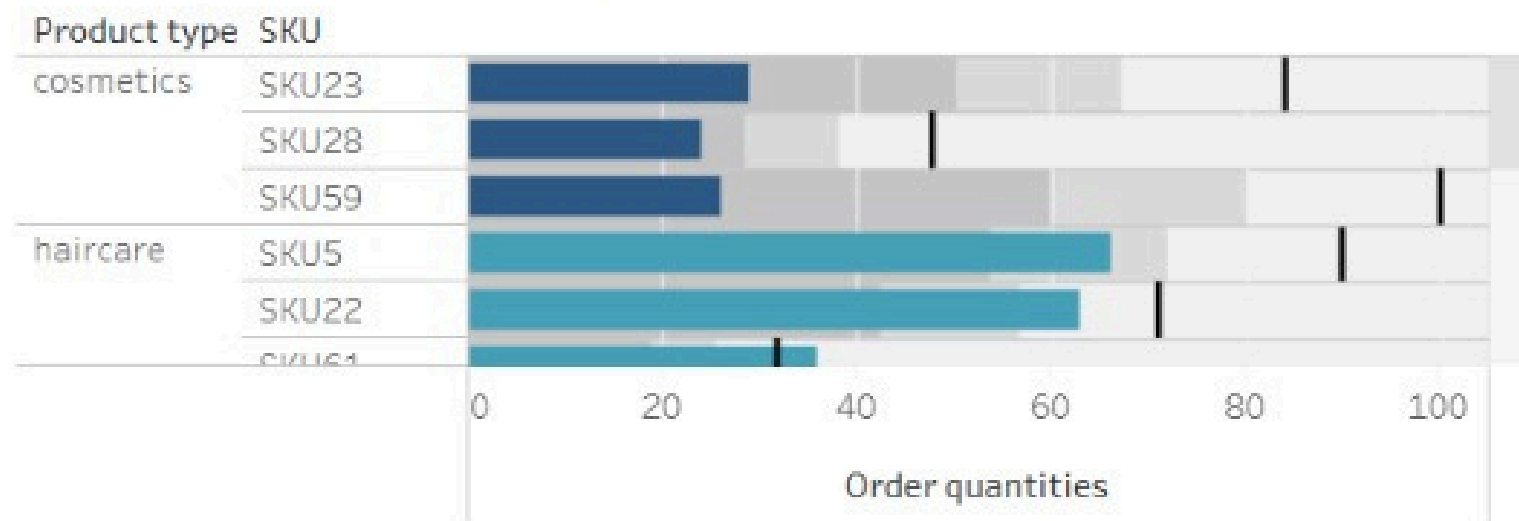


Supply Dashboard



Home

Stock Levels for each product



Production Volumes vs. Order Quantities for each Product



Location

- ☒ (All)
- ☐ Bangalore
- ☐ Chennai
- ☐ Delhi
- ☐ Kolkata
- ☐ Mumbai

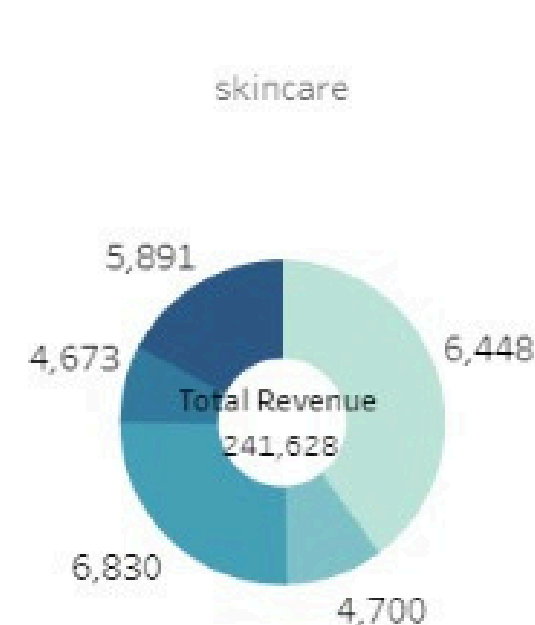
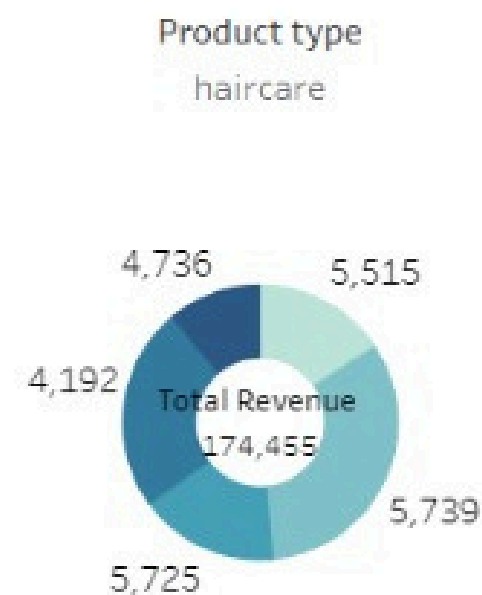
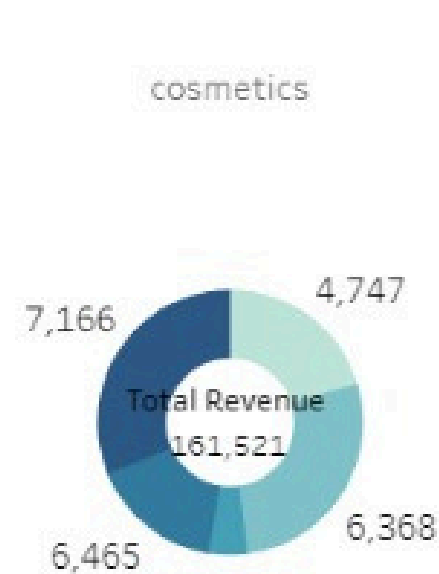
Supplier name

- ☒ (All)
- ☐ Supplier 1
- ☐ Supplier 2
- ☐ Supplier 3
- ☐ Supplier 4
- ☐ Supplier 5

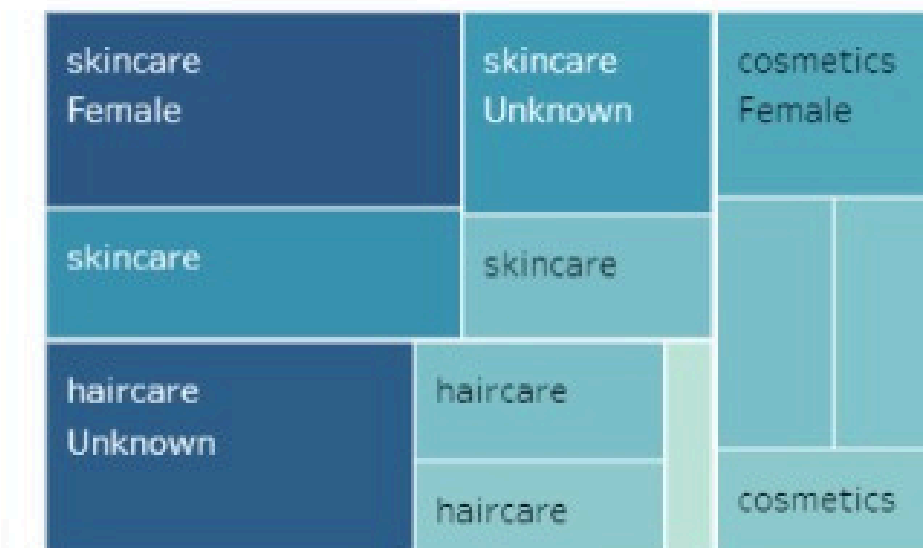
Product type

- ☒ (All)
- ☐ cosmetics
- ☐ haircare
- ☐ skincare

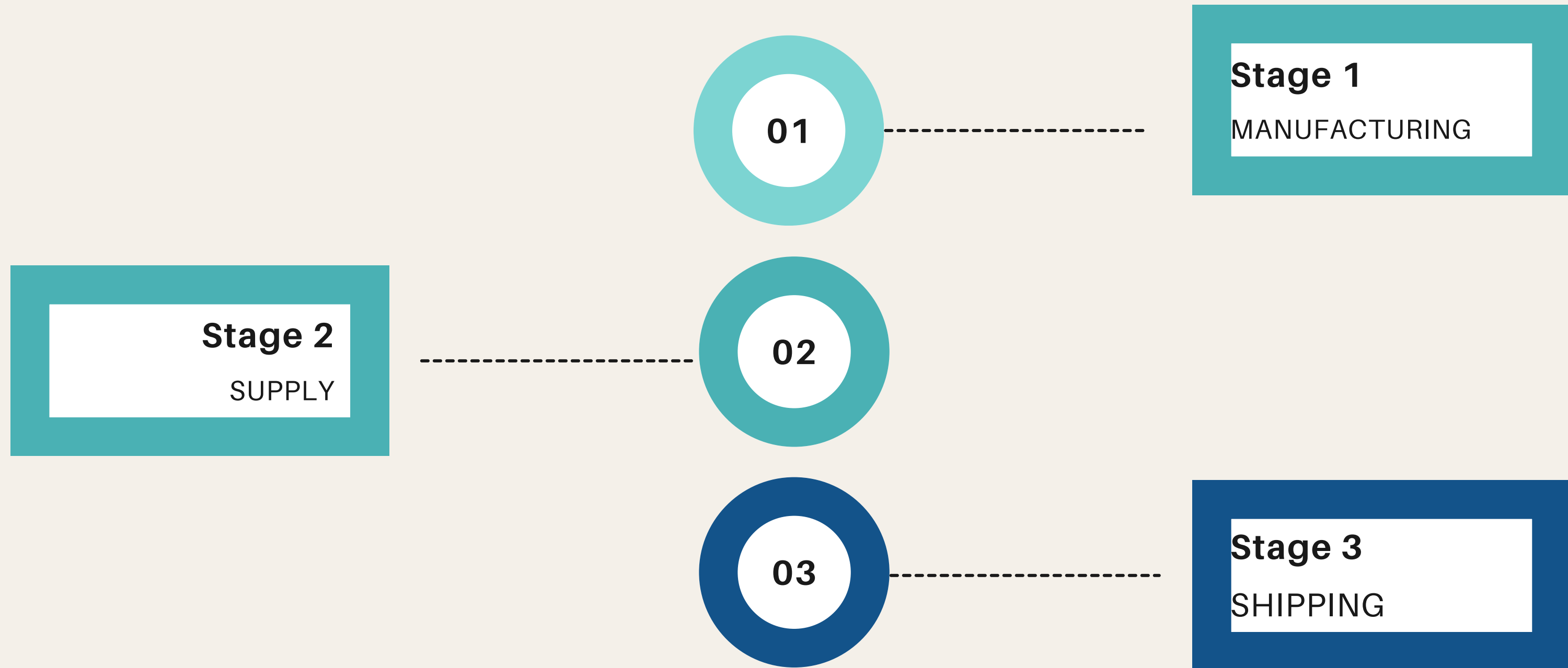
Number of products :



Products sold per customer type



4-VISUALS



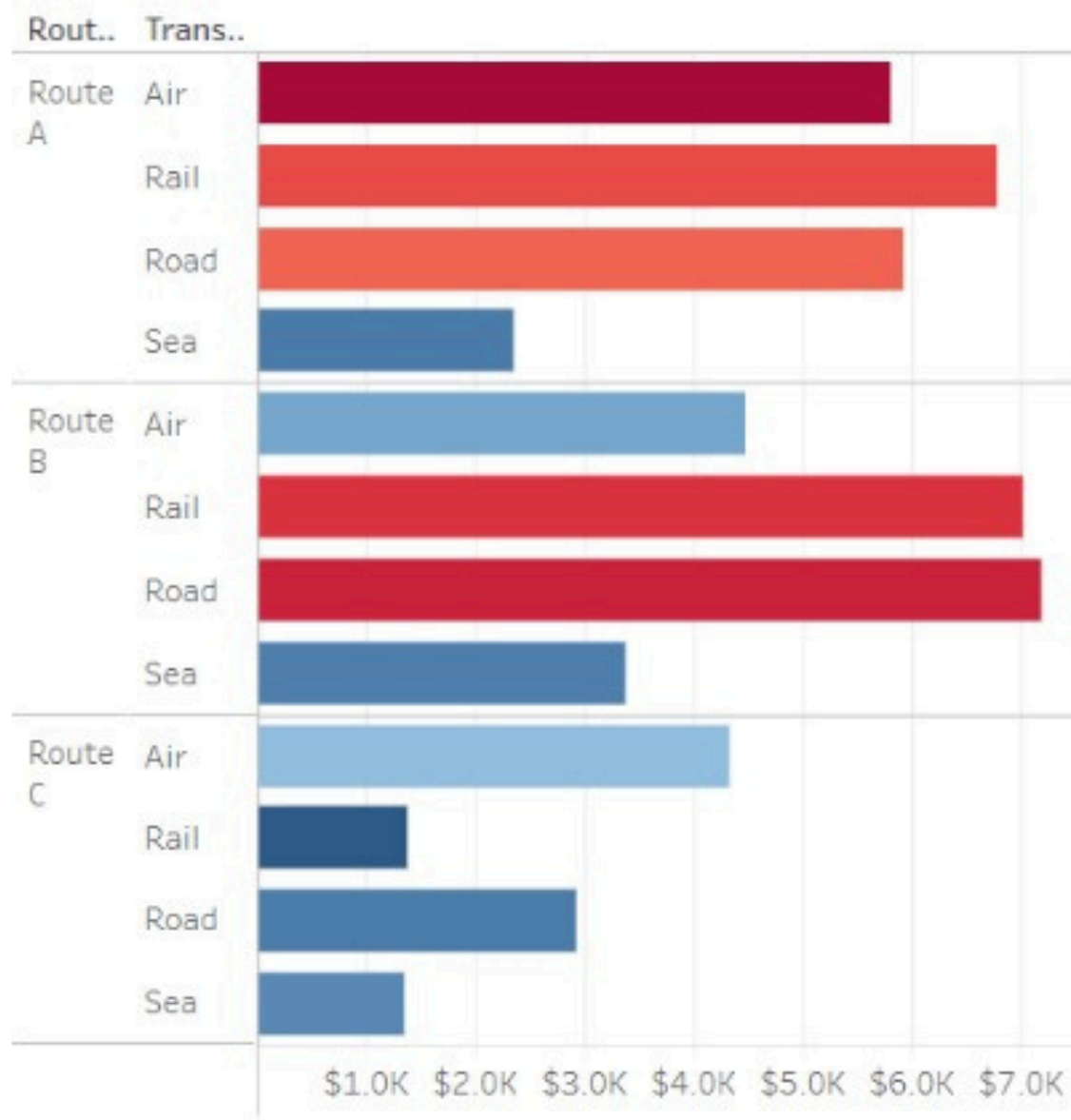


Shipping Dashboard

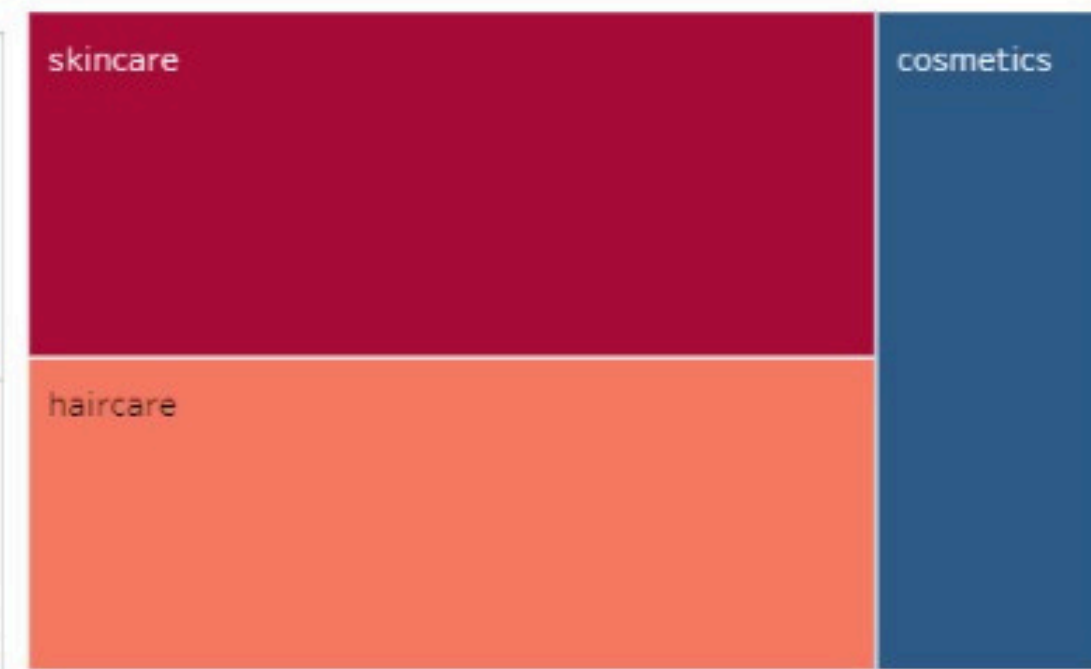


Home

Cost/Route Analysis



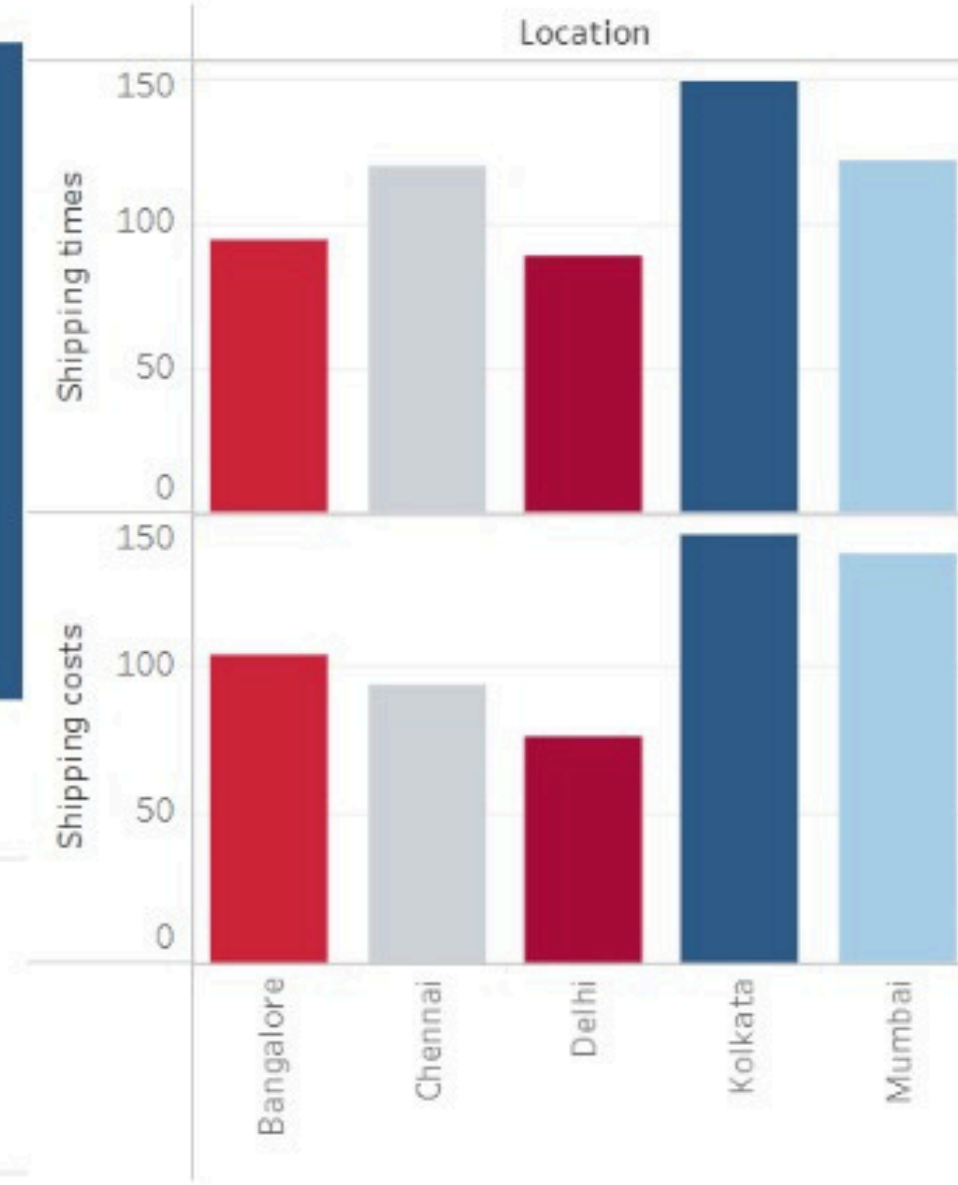
Shipping time per product type



Average shipping cost



shipping 4



Location

- ☒ (All)
- ☐ Bangalore
- ☐ Chennai
- ☐ Delhi
- ☐ Kolkata

Product type

- ☒ (All)
- ☐ cosmetics
- ☐ haircare
- ☐ skincare

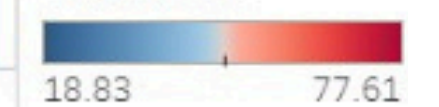
Supplier name

- ☒ (All)
- ☐ Supplier 1
- ☐ Supplier 2

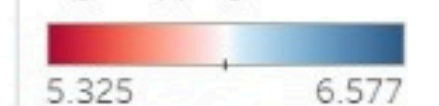
Shipping times



Shipping costs



Avg. Shipping times



5-DECISION MAKING

STAGE 1



CHALLENGES

Addressing these challenges was essential for ensuring accurate insights and reliable recommendations

STAGE 2



RECOMMENDATIONS

Based on the comprehensive analysis conducted through the dashboards and the insights gained, several actionable recommendations can be made to enhance supply chain performance:

5-DECISION MAKING

CHALLENGES

Addressing these challenges was essential for ensuring accurate insights and reliable recommendations

STAGE 1

01

Inconsistent Data Entries

Minor inconsistencies were found in supplier names, product types, and other categorical variables. These inconsistencies could potentially skew results if not corrected.

02

Missing Values:

The "Inspection Results" column contained "Pending" entries, which posed a challenge in measuring defect rates comprehensively. These entries needed careful consideration in the analysis to avoid misleading conclusions

03

Outlier Detection

Outliers in manufacturing costs and defect rates were identified. Distinguishing between genuine data points and entry errors required additional investigation, impacting the time spent on the analysis.

04

Tool Limitations

While both Python and Tableau are powerful tools, they come with limitations. For instance, Tableau can sometimes struggle with extremely large datasets, leading to performance issues. Adequate hardware and data preparation strategies were necessary to mitigate these issues.

5-DECISION MAKING

Recommendations

Based on the comprehensive analysis conducted through the dashboards and the insights gained, several actionable recommendations can be made to enhance supply chain performance:

STAGE 2

01	Optimize Shipping Costs	A review of shipping practices is advised to reduce costs, possibly by renegotiating carrier contracts or exploring alternative routes. Using more cost-effective transport modes could yield significant savings.
02	Supplier Performance Management	Suppliers with high defect rates should undergo quality improvement initiatives like workshops or stricter inspections. Diversifying the supplier base can reduce risks from reliance on underperforming suppliers.
03	Enhance Inventory Management	Robust inventory management, such as just-in-time systems, is essential for aligning stock with demand, reducing excess inventory, and ensuring availability of high-demand products.
04	Improve Geographic Cost Efficiency	To address inefficiencies in geographic disparities, relocate inventory closer to key markets, such as moving products for Delhi from Chennai, to optimize logistics and cut transportation costs.

VERTEBRA

SKELETAL

MUSCULAR

INTEGUMENTARY

DIGESTIVE



Thank you!