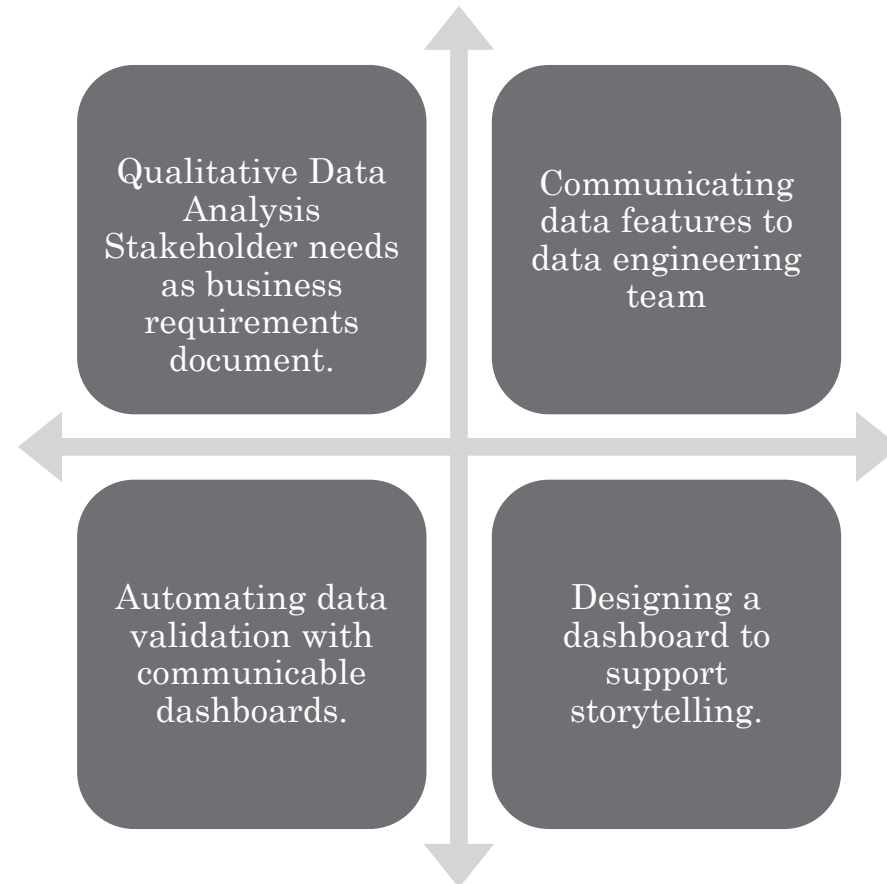


SUPPLY CHAIN INSIGHT TO ACTION



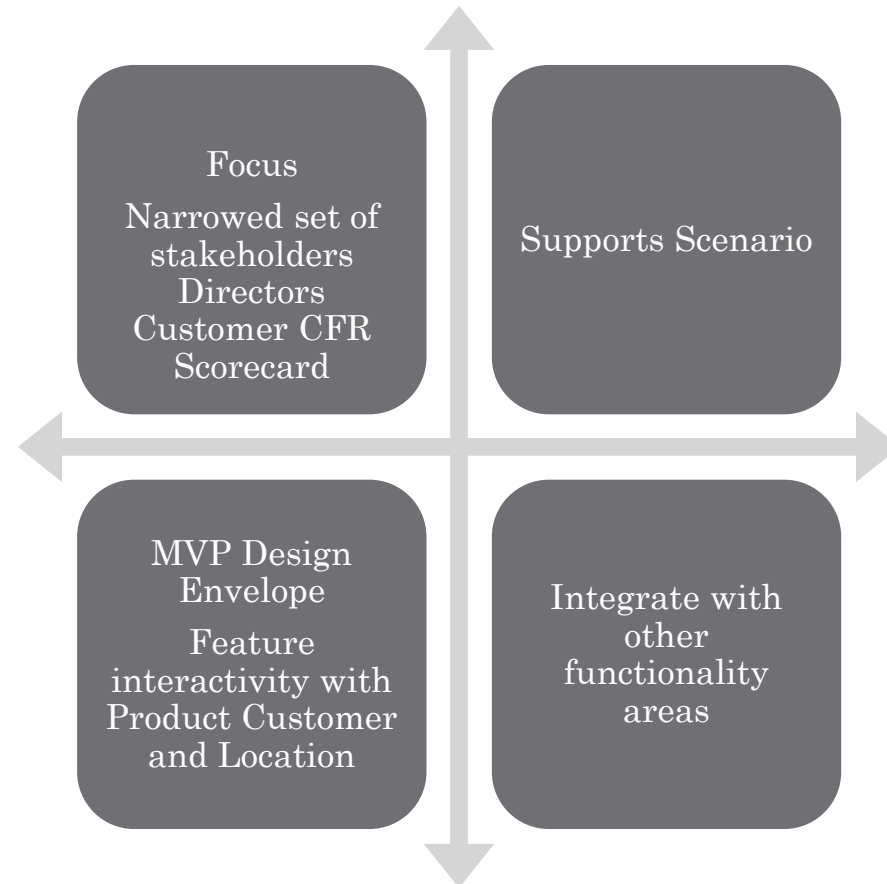
All numbers are fictitious and for demonstration purposes only

Semantic modeling to dashboard design



Dashboard design to support

Explaining the problem
Dimensionalizing the problem
Talking about recovery of the problem.



Phases of Deliverables

Engineered Backend Data

- SAP - GCP - Power BI
- Validated and Sustainable

Develop MVP Front End DB

- One Version of Truth
- Scorecard
- Customer / Location / Product perspectives
- Priority and Trend Insights

Analytics Review

- Efficiency and Insights Opportunities
- Creation of list of questions
- Root Cause Analysis

New cross functional business practices regarding metrics

- Standardize communication to drive efficiency and capability

Data Engineering

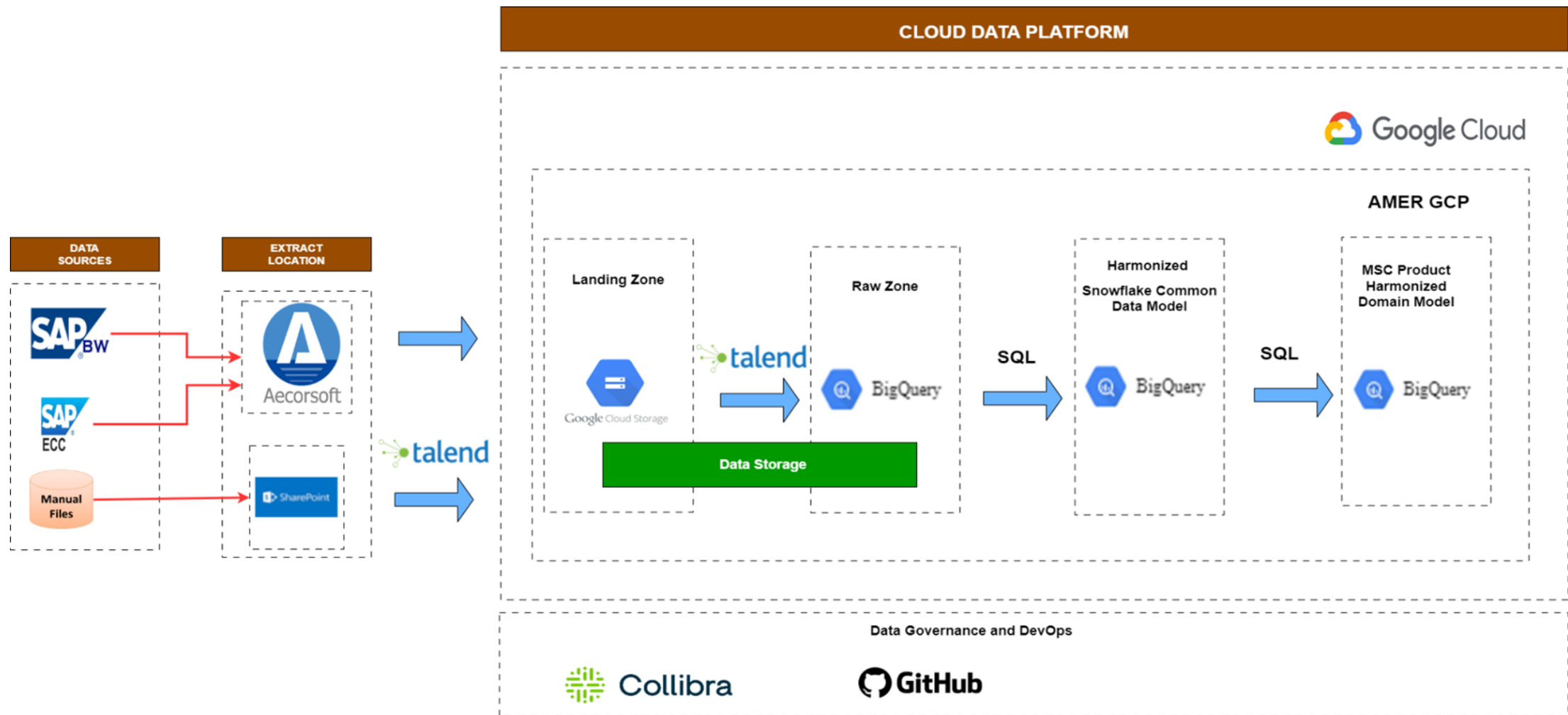
+ . BIG DATA

○ Applying User Defined Aggregations

> 300 GB VERIFIED AND VISUALIZED

< 5 HOURS INITIAL LOAD OF 2 GB VOLUME OF DATA

< 5 SEC RENDERING TIME FOR VISUAL



SAP Cube to Google Cloud Relational Data Base to Power BI Semantic Model

Applying User Defined Aggregations

When confronted with rendering hundreds of Giga Bytes of data to support operational level insights at weekly level, the experience led us to our current trend setting model.

Import Model with Incremental Refresh.

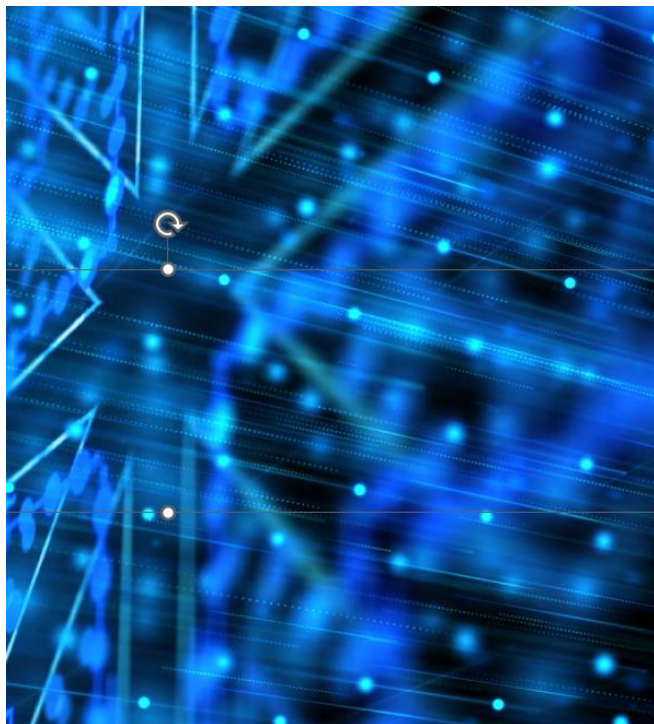
✗ Model exceeds Premium capacity limits for initial load.

Direct Query

✗ Exceedingly slow rendering of visuals > 5 sec

User Defined Aggregations

✓



User defined aggregations combine the benefits of speedy user interactivity with expediency of maintaining a reasonably sized semantic model.

Aggregated Data is stored in In-memory Cache.

Aggregation levels such as typically retrieved Customer, Product hierarchy and time granularity such as weekly are defined by tactical and operational level users of the dashboard.

Agg Awareness or Make Power BI aware of the aggregation column summarization, and detail columns, for automatic data retrieval.

Aggregation tables are hidden from the user.

Future Improvements

Usage of [Automatic Aggregations using Machine Learning](#)

Visualizing Analytics



What questions must data address as per user RACI?

Determine data to be gathered based on goals and objectives of the project.

At what segmentation level can useful insights be drawn?

What anomaly and outlier detection should trigger critical alerts?

Set context for data. Is it compared to target or prior history as baseline or both?

Set trend horizon for future along with granularity for historic and current data.

Make reconciliation and trustworthiness of numbers transparent.

MVP : Focus on Serving the stakeholder



1

Responsible stakeholder for customer individual will update PPT weekly.

2

Drillthrough for details for current week harvesting poor performers by division and % of parent contribution to overall CFR.

3

Isolate and identify Top 10 products with low CFR

4

RCA using dashboard projecting **3 weeks** target of inventory
Considers safety stock + Production attainment + transportation lead time + Frequency of delivery



All numbers are fictitious and for demonstration purposes only

STRATEGIC LEVEL ANALYSIS



🌟 QUICK INSIGHTS ON LOCATIONS, CUSTOMERS, AND REJECTION REASONS

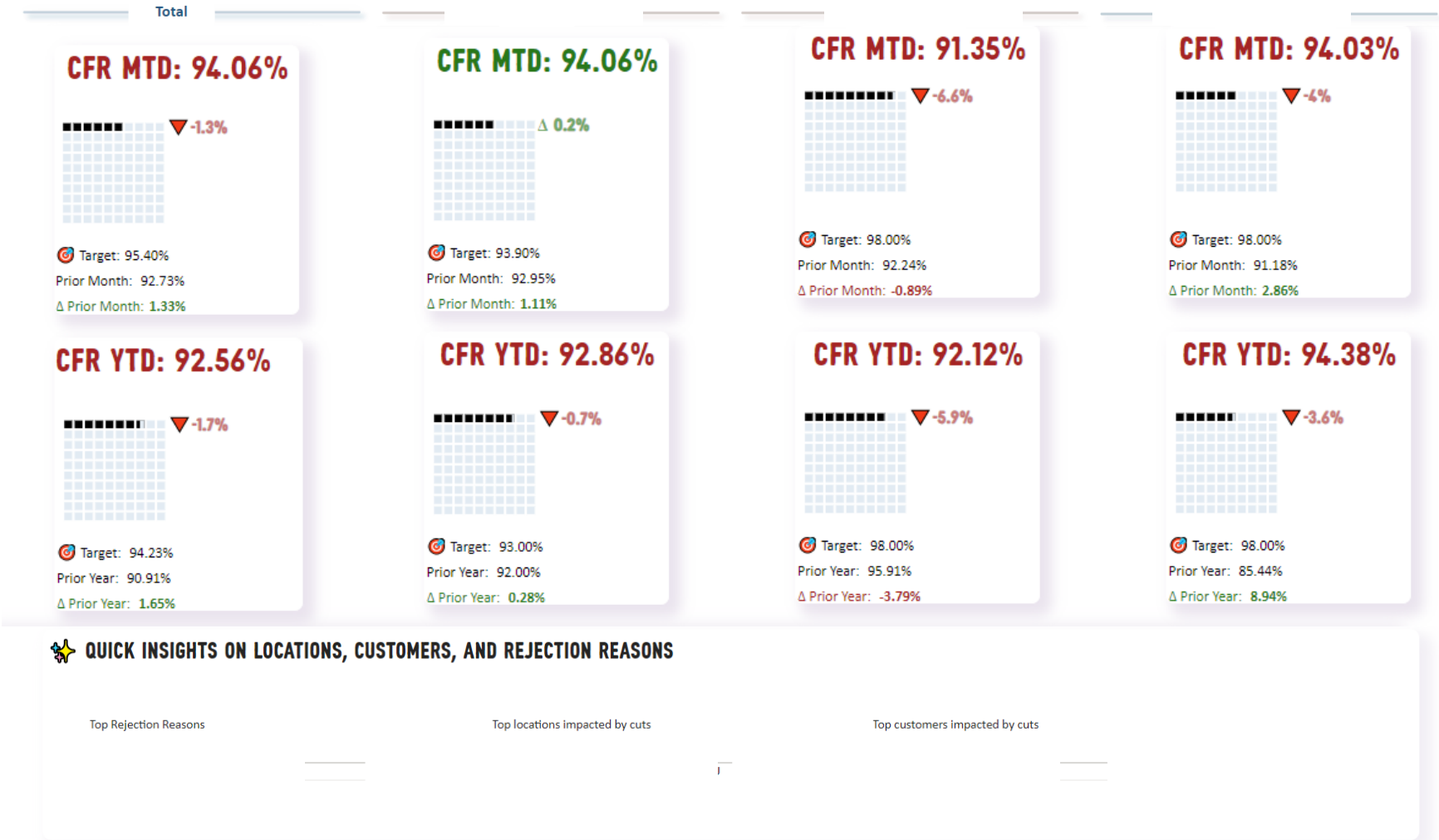
Top Rejection Reasons

Top Locations impacted by cuts

Top customers impacted by cuts

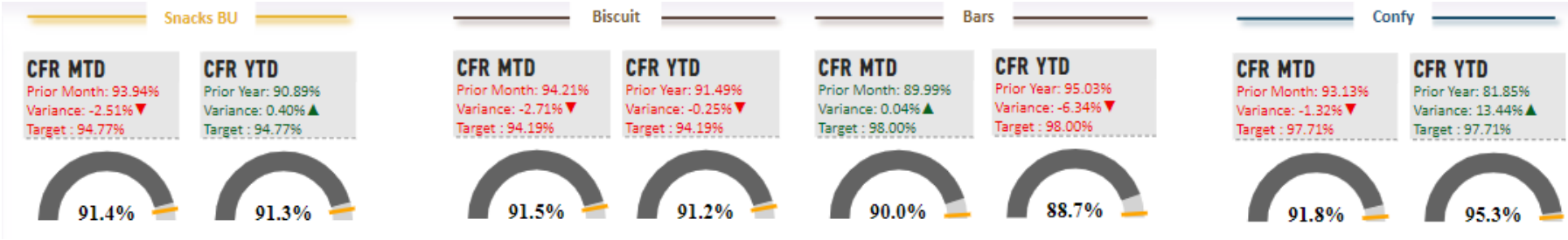
STRATEGIC LEVEL ANALYSIS ONE GLANCE KPIs AND INSIGHTS

What customer regions/customers and product families should we focus on?

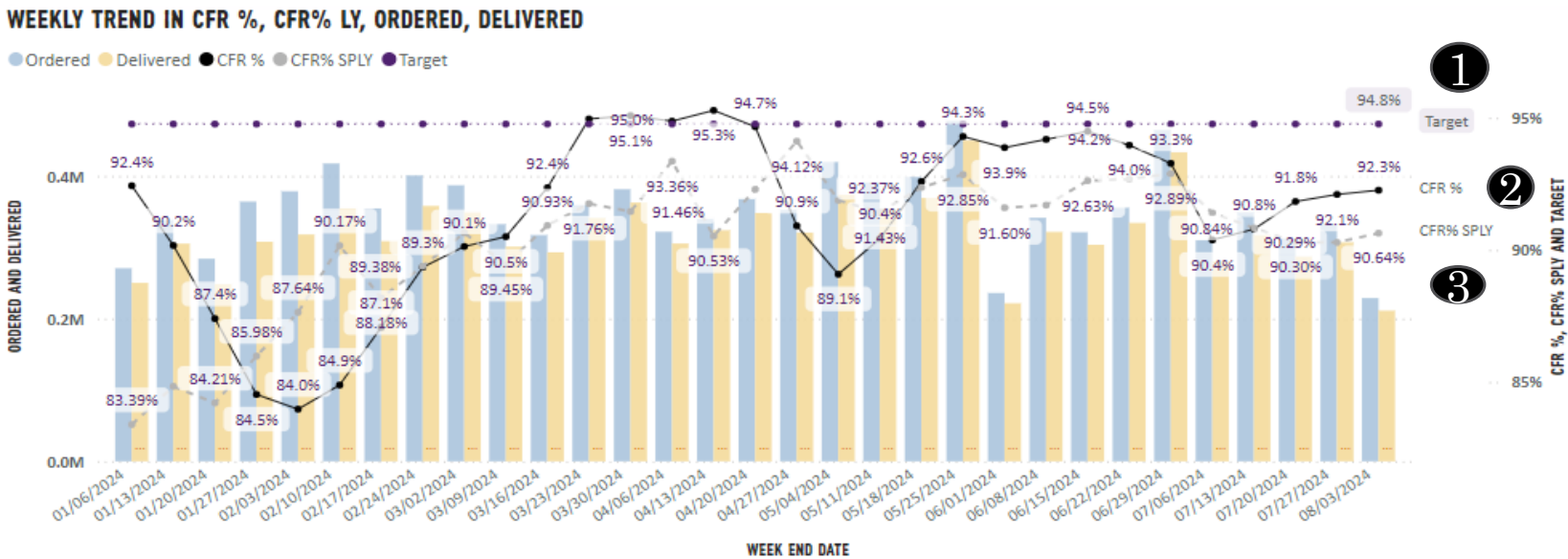


TACTICAL LEVEL ANALYSIS

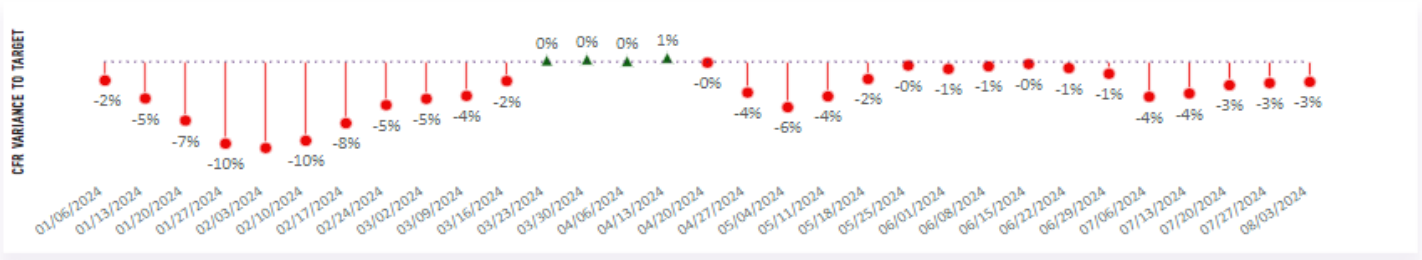
1
KPI



2
Trend

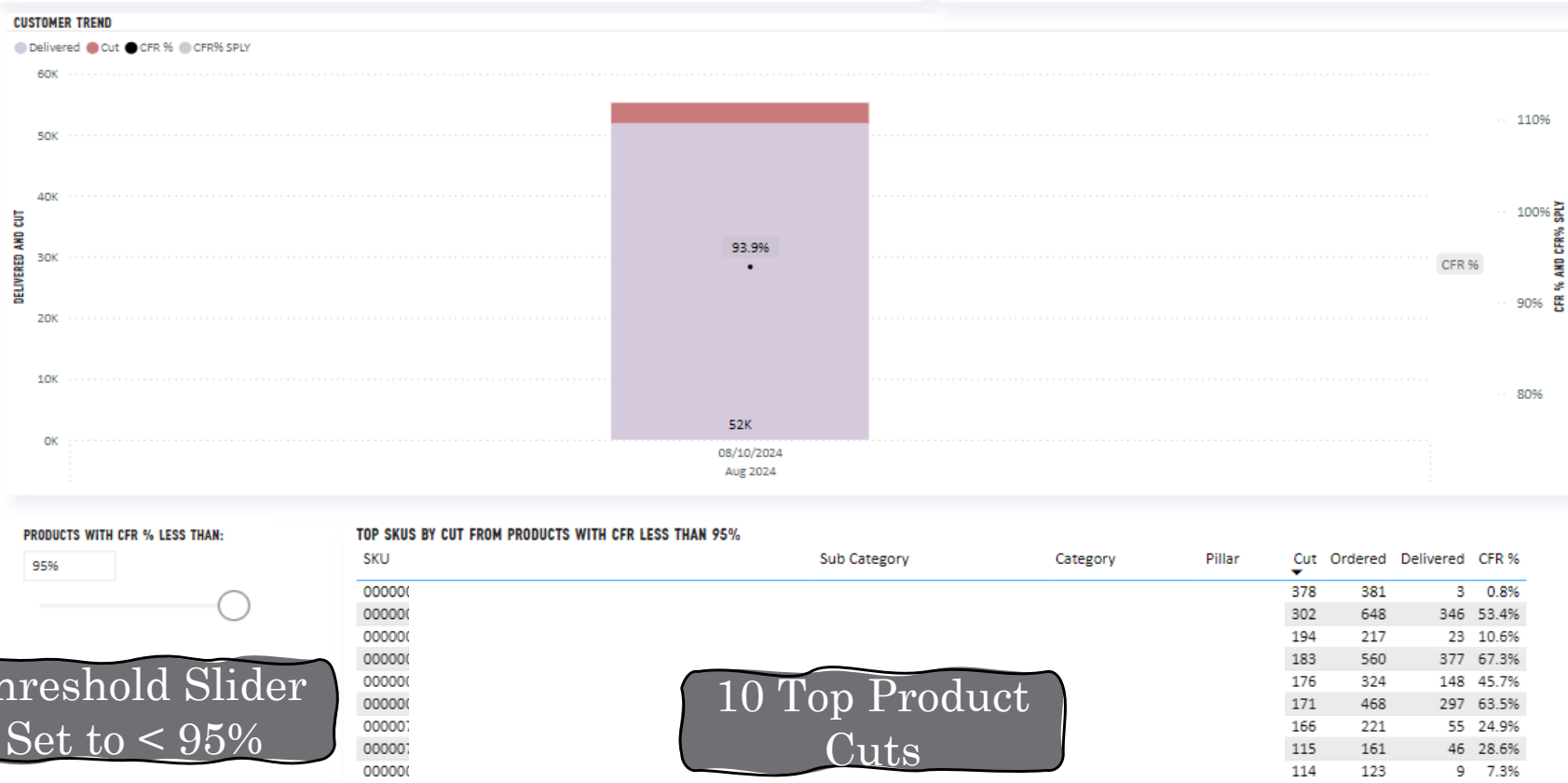


3
Variance



OPERATIONAL LEVEL ANALYSIS

What is the top N products for identified customer divisions causing low CFR?



Threshold Slider
Set to < 95%

10 Top Product
Cuts

CONTROLLABLE INFLUENCING FACTORS

From which locations are we sending out product with low CFR and why?

- Forecasting?
- Product attainment?

CUSTOMER A HIERARCHY LEVEL 1 LEVEL 2 LEVEL 3 LEVEL 4			
A level 1	Delivered	Cut	CFR %
WEST	9,958,302	949,227	91.3%
	9,958,302	949,227	91.3%
	9,958,302	949,227	91.3%
	1,547,321	208,744	88.1%
	1,374,796	136,241	91.0%
	1,007,970	61,839	94.2%
	971,355	65,755	93.7%
	912,492	96,321	90.5%
	889,870	83,331	91.4%
	871,440	88,024	90.8%
Total	9,958,302	949,227	91.3%

PRODUCT PILLAR CATEGORY SUB CATEGORY SKU				
Pillar	Delivered	Cut	CFR %	Δ Target
	8,925,411	856,980	91.2%	🔴 -2.95%
	527,120	67,237	88.7%	🔴 -9.31%
	505,771	25,010	95.3%	🔴 -2.43%
Total	9,958,302	949,227	91.3%	-3.47%

Set Alerts

DSD			
Retail Area	Delivered	Cut	CFR %
	6,266,182	665,683	90.4%
	2,625,313	191,294	93.2%
Total	8,891,495	856,977	91.2%

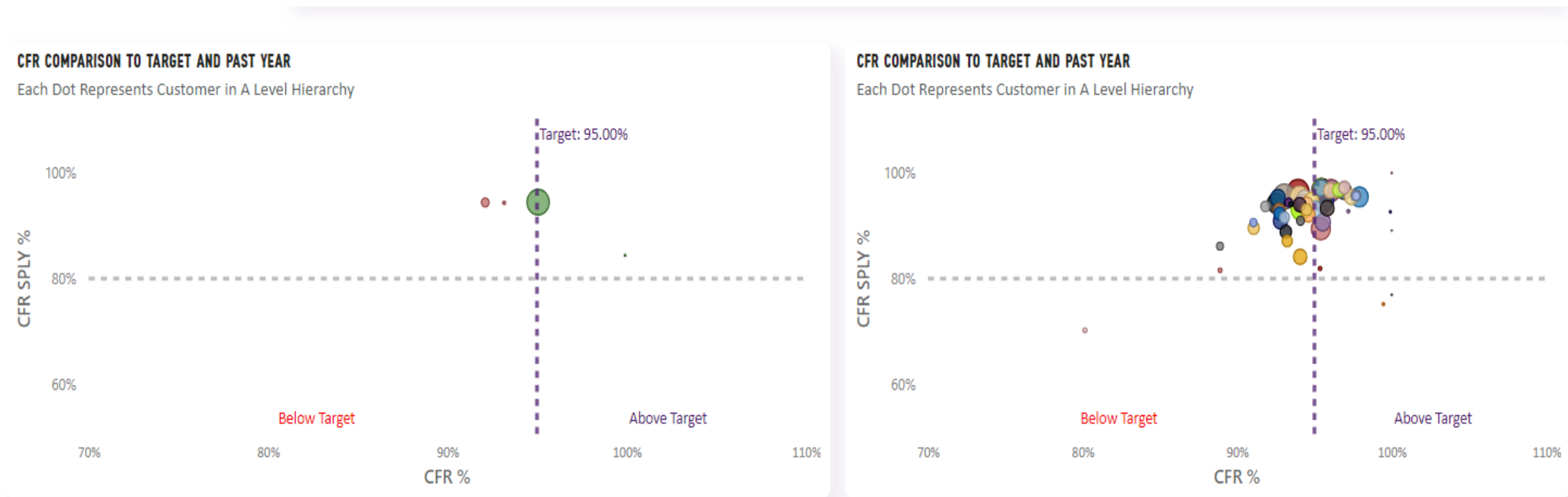
WAREHOUSE			
Location	Delivered	Cut	CFR %
2	321,484	45,008	87.7%
0	213,536	18,159	92.2%
1	169,221	12,290	93.2%
4	166,884	5,876	96.6%
2	80,553	6,617	92.4%
1	64,599	2,298	96.6%
	31,197	3	100.0%
	19,333	1,999	90.6%
Total	1,066,807	92,250	92.0%

Location Channel 1

Location Channel 2

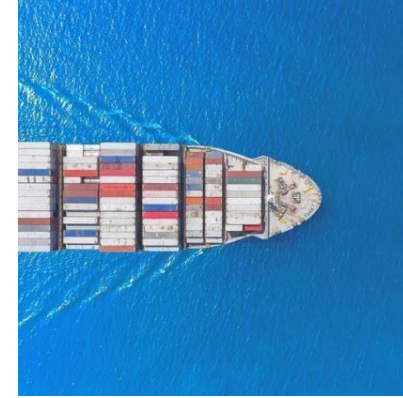
COMBINE CONTEXT TO INFLUENCING FACTORS FOR RCA

Interactively determine locations that will hinder accomplishment of target.
Proactively determine customers clusters likely to complain due to downslide in performance.



THANK YOU

Simi Talkar
sjtalkar@live.com



Dashboards built

- Vehicle Fill Rates
- Case Fill Rates
- Executive Monthly Metrics reports for strategic insights into production
- Exception reports to aid data engineer for data validations.



REPORT PAGES

Pages

Executive Summary

Info

STO Truck Details

STO Origins By Ranking

STO Shipment Level Inf...

STO Overhang Materials...

Customer Order Analysis

Slide 7 Load Density

Waterfall chart Prody Ca...

File

Export

Share

Chat in Teams

Get insights

Subscribe to report

Edit

Information

Executive Summary

STO Truck Details

STO Origins By...

STO Overhang...

Customer Analysis

Drillthrough

Refreshed 8/28/2023 12:04:47 PM

Data Refresh Frequency: Daily

Contacts:
Joseph.Lubrano@mdlz.com
Simi.Talkar@mdlz.com

STO TRUCK DETAILS

Questions that can be answered from STO Truck Details Page

NOTE: Both weight and cube quantities are average per truck

SLICER PANEL FILTERS:

Open the slicer panel to the left to view all filters that can be applied on the page.

DELIVERY DATE

Select range of date in Years, Months and Weeks. The charts can be viewed at monthly or weekly granu

Other filters that can be applied to the trend charts:

LEG

For STO : Leg 1 Biscuit, Leg 2 Confi and Leg 2 Deployn

For SO : Leg 3 Customer

MODE

For STO : Intermodal/IMDL or Truck Load/TL

For SO : Truck Load/TL or Less than Truck Load/LTL

TEMP

DRY or REFER

ORIGIN AND DESTINATION

Origin types and locations as well as Destination type

Charts and Drillthrough Shipment Level details

This objective of this page is to show where shipment

scatter chart is weight per truck versus cube per truck

individual BOL (each point in the scatter graph is a sh

The lower graphs display the percentage of trucks no

selected. The definition of not meeting target is:

Revert to "Default" slicers on any page. Default settings set the slicers to values as when the report was published

Information page details

* Filters

* Purpose of chart

* Formulas

* Drillthrough access and tooltips

Click on page name tab for info on specific page

Condelez logo

scatter chart is weight per pallet versus cube per pallet and the top right

The targets are as provided by the transportation team. Right click on

etails down to the material level.

ive value for all legs selected and the bottom right breaks it down by legs

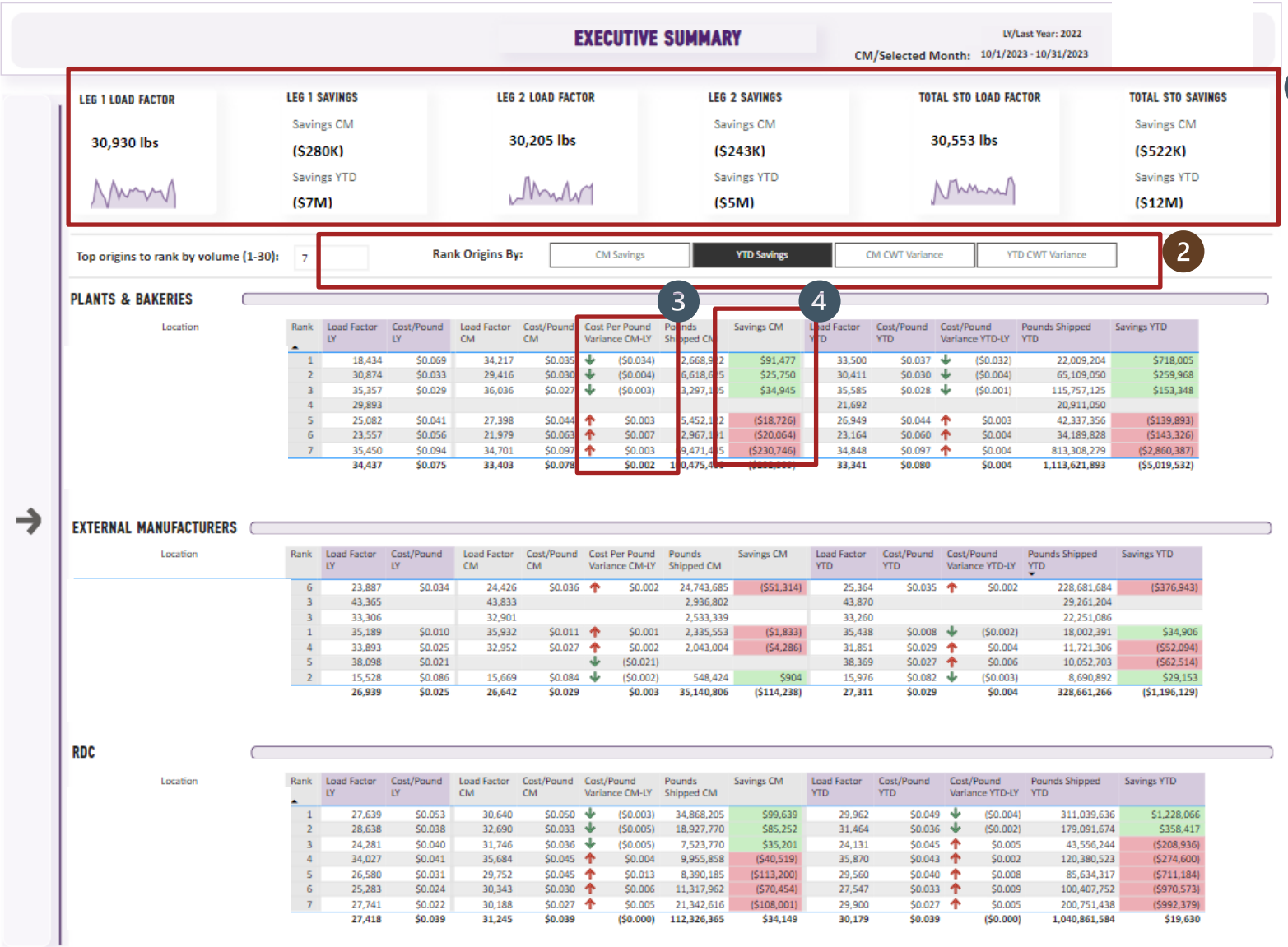
Executive SUMMARY PAGE

VISIT INFO PAGE FOR MORE DETAILS.

KPIS: Load Factor and Savings

Select how to rank the top 10 (by YTD weight) origins Choose between Current Month and YTD savings and variance

Cost per pound is calculated as the weighted cost per lane for each origin (weighted by total number of shipments in the lane) divided by the total number of shipments from the origin Choose between Current Month and YTD savings and variance. Savings is variance multiplied by total weight of shipments.



SUMMARY PAGE

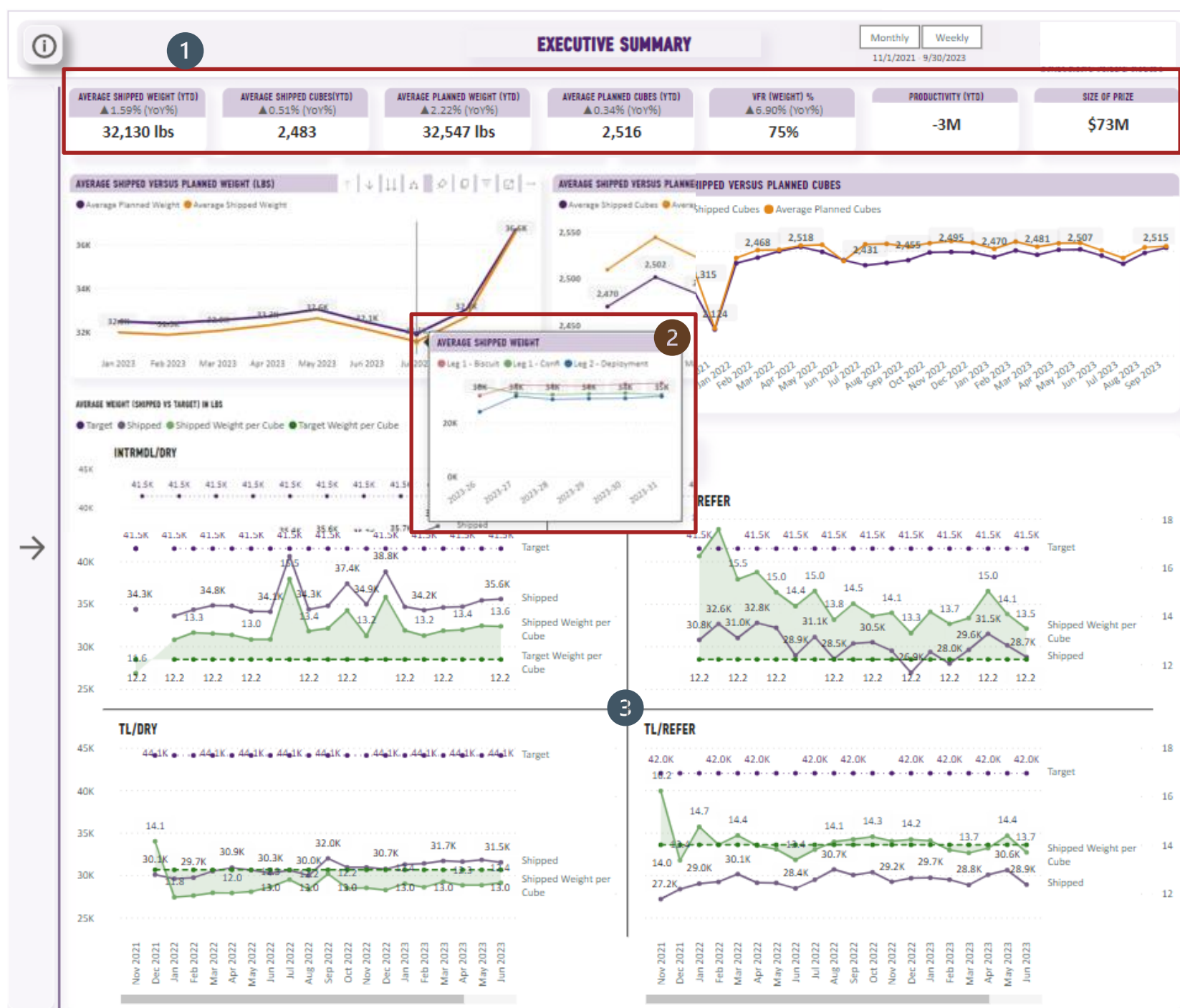
KPIs

YTD VFR values for planned and shipped in weight (lbs) and cubes.

Tooltip to view breakdown by legs

Target comparison

Load density to target versus shipped Cube/Weight to target. Note this chart has a secundar axis.



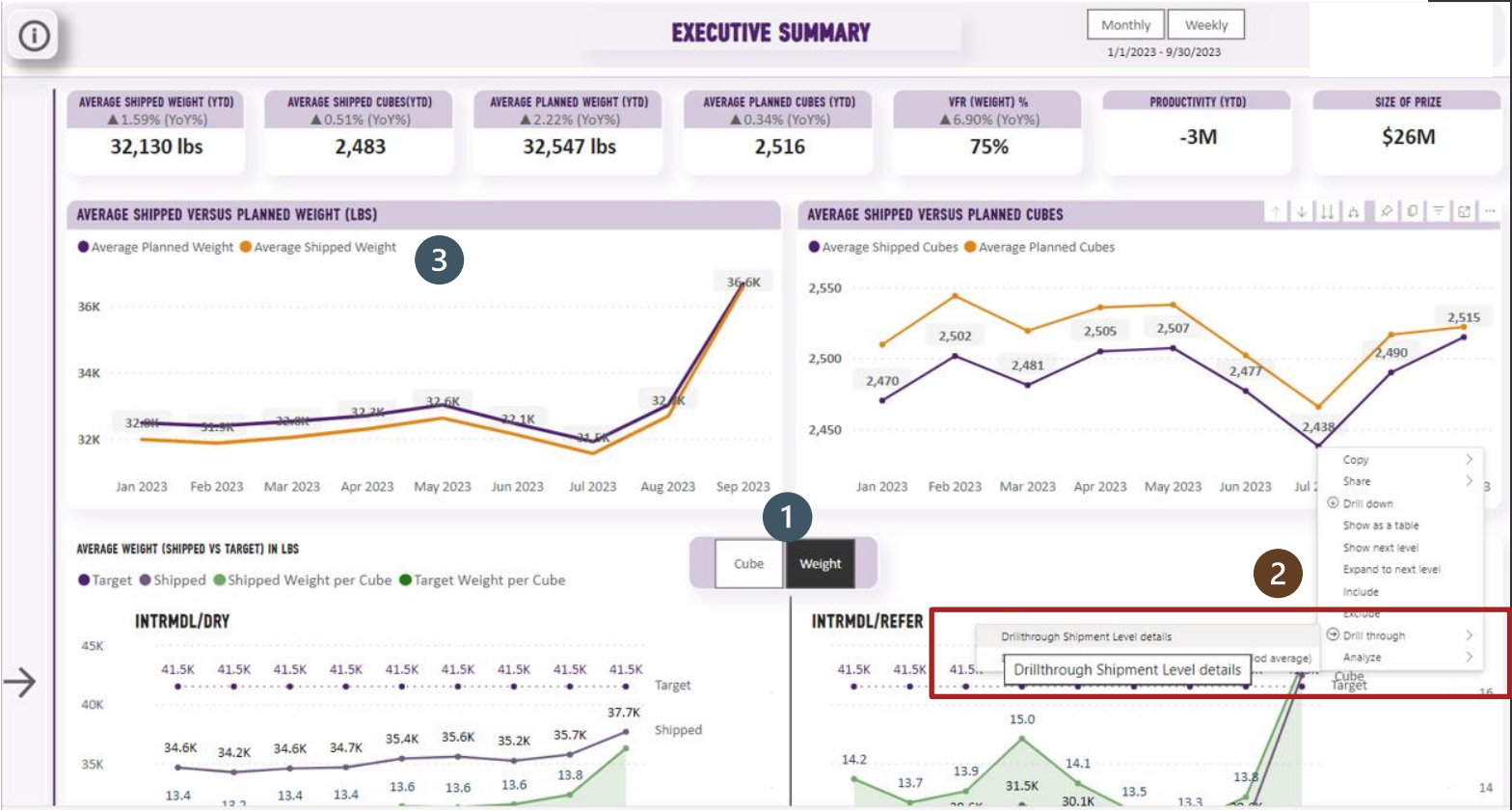
SUMMARY PAGE

[DRILLTHROUGHS EXPLAINED HERE](#). VISIT INFO PAGE FOR MORE DETAILS.

Toggle between Cube and Weight (UOM)

Why the dip?
💡 Right Click and **Drillthrough** to learn

Color Consistency
Planned in **Purple** and Shipped in **Orange**



DRILLTHROUGHS

Select “Drillthrough Shipment Level Details”. Triggered by Origin and/or Destination Location.

Carry over origin, destination and date range filters to focus.

Select BOL to view materials carried.

View Materials/SKU ordered and shipped weight and cubes.

Click to go back to invoking page.

4

SHIPMENT DETAILS DRILL THROUGH

Date Range : 7/1/2023 - 7/31/2023

1

BY ORIGIN-DESTINATION

Or	Destination Type	Mode/Temp	Average Weight/Pallet	Average Cube/Pallet
Hi	CST	TL/REFER	444.00	41.26
Total			444.00	41.26

2

BOL LEVEL TABLE

BOL Document	Mode	Temp	Shipped Weight	Max Weight	Shipped Weight Under Planned %	Shipped Cubes	Max Cube	Shipped Cube Under Planned %
REFER			36192	42,000.00	13.83%	2,362	3,000.00	21.25%
REFER			39049	42,000.00	7.03%	2,361	3,000.00	21.31%
REFER			41032	42,000.00	2.30%	2,359	3,000.00	21.35%
REFER			33472	42,000.00	20.30%	2,356	3,000.00	21.48%
REFER			32884	42,000.00	21.70%	2,354	3,000.00	21.54%
REFER			30410	42,000.00	27.59%	2,336	3,000.00	22.12%
REFER			32392	42,000.00	22.88%	2,334	3,000.00	22.19%
REFER			33342	42,000.00	20.62%	2,330	3,000.00	22.35%
REFER			27240	42,000.00	35.14%	2,328	3,000.00	22.41%
REFER			36332	42,000.00	13.50%	2,318	3,000.00	22.74%
REFER			24864	42,000.00	40.80%	2,310	3,000.00	22.99%
REFER			31727	42,000.00	24.46%	2,302	3,000.00	23.26%
REFER			31727	42,000.00	24.46%	2,302	3,000.00	23.26%
Total			5189340			281,403		

3

SHIPMENT MATERIALS

BOL	Material Full	Ordered Weight (lbs)	Shipped Weight (lbs)	Ordered Cubes	Shipped Cubes
		21,827	21,827	2,136	2,136
		3,037	3,037	174	174
Total		24,864	24,864	2,310	2,310



DRILLTHROUGHS

Select Drillthrough for VFR comparison material vs All (period average). Triggered by Material/SKU.

Carry over material and date range filters.

View VFR for SKU against all shipments in period.

Click to go back to invoking page.



SHIPMENT LEVEL INFO

[DRILLTHROUGHS EXPLAINED HERE.](#) VISIT INFO PAGE FOR MORE DETAILS.

Information on this page is also available through drillthrough on right clicking on an Origin or Destination and selecting Drillthrough Shipment Level Details

1

Slicer panel has filter to segment by week, Origin and Destination types and locations, Mode and Temp. Note that the delivery date (PGI date) is limited to week since at a material level, the amount of data can be too large for effective insights.

2

% Weight/Cube under shipped is the ratio of the maximum target to the shipped quantity divided by the maximum target.

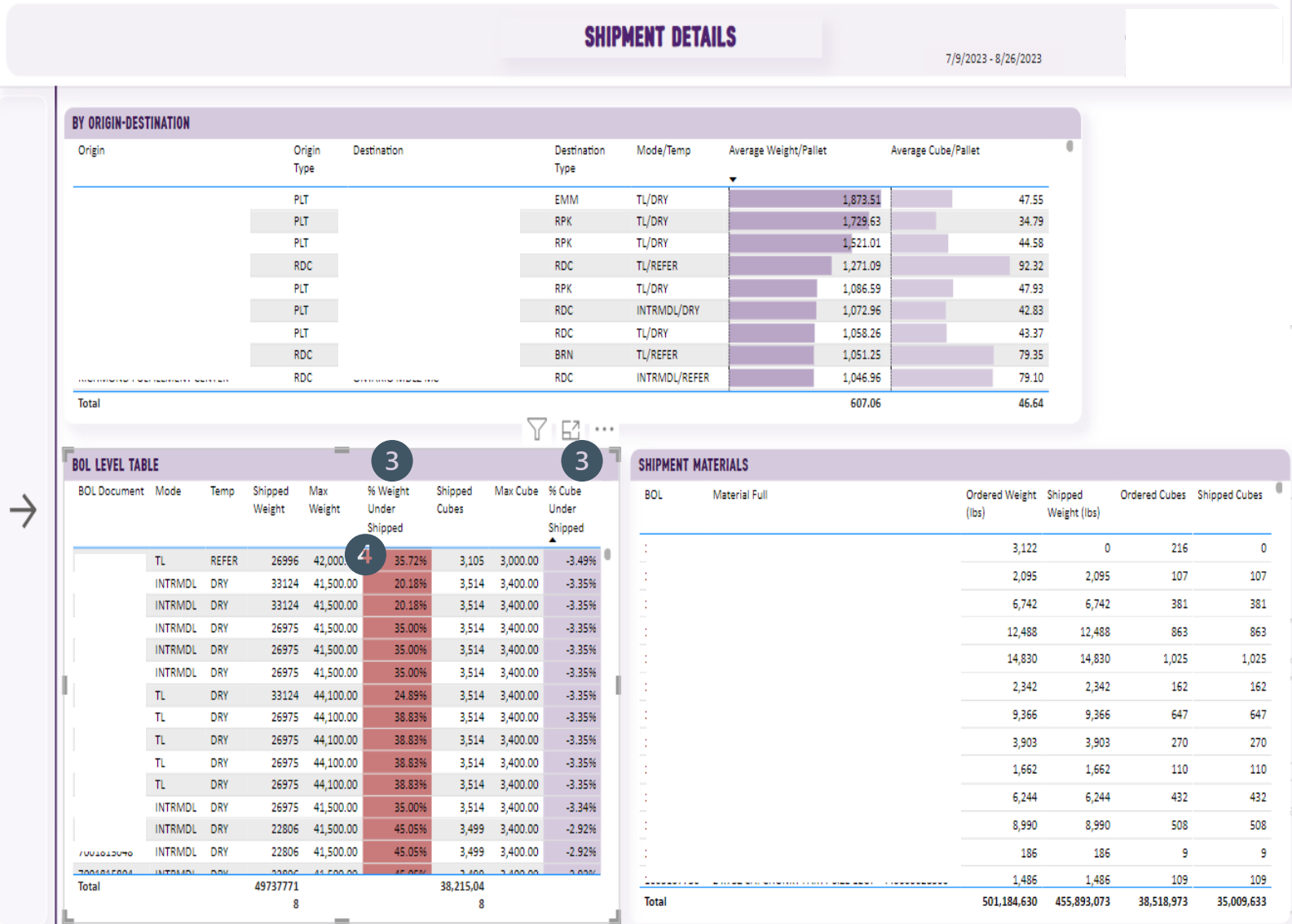
3

If the shipped quantity is less than the target by over 1.5%, then the cells are colored red, if they are within 1.5% of target they are colored green, otherwise it is colored purple (weight/cube) shipped is more than target.

4

Click on a shipment BOL to view materials on it/

5



TRUCK DETAILS

TRUCK DETAILS

Monthly Weekly

1/1/2023 - 8/31/2023

Filters on this page [are described here.](#)

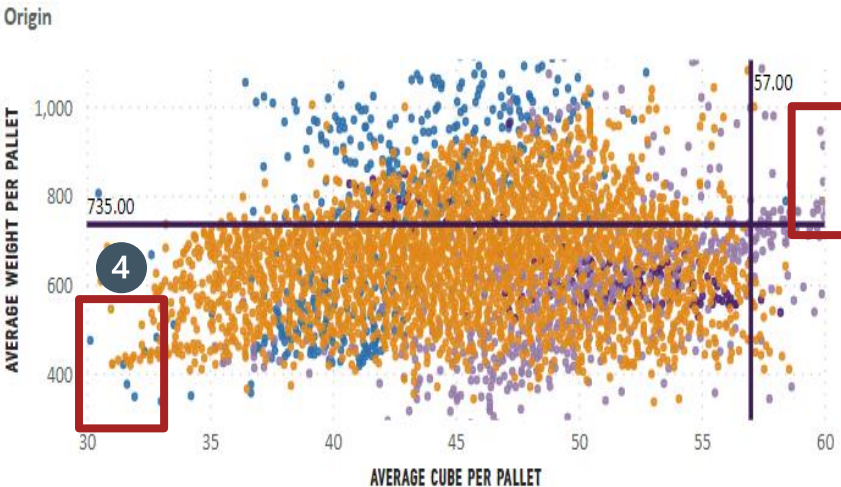
In the two scatter plots in the top row every shipment is represented by a dot colored by the origin it is shipped from.

The target weight and cube per pallet and per truck are targets set by the transportation team.

Drillthrough to materials on a shipment by right clicking on a dot and selecting “Drillthrough Shipment Level Details”

The lower charts provide insights on raw number of shipments on any route along with the **route percentage**. The matrix has a hierarchy of legs, origin and destinations. This supports deriving insights into VFR in terms of pallets and the route that has the maximum impact in terms of number of shipments.

WEIGHT PER CUBE (AVERAGE)



WEIGHT PER CUBE (AVERAGE)



OUTBOUND SHIPMENTS

Leg Origin Destination	# Of Shipments	Shipments as % of Parent	VFR (pallets)
L	19863	100.00%	56
	19863	100.00%	56
	3049	15.35%	58
	2328	11.72%	58
	1562	7.86%	58
	1181	5.95%	55
	604	3.04%	56
	587	2.96%	55
	568	2.86%	57
	555	2.79%	50
	526	2.65%	56
	524	2.64%	51
Total	28218	100.00%	55

AVERAGE SHIPPED PALLETS BY LEG

