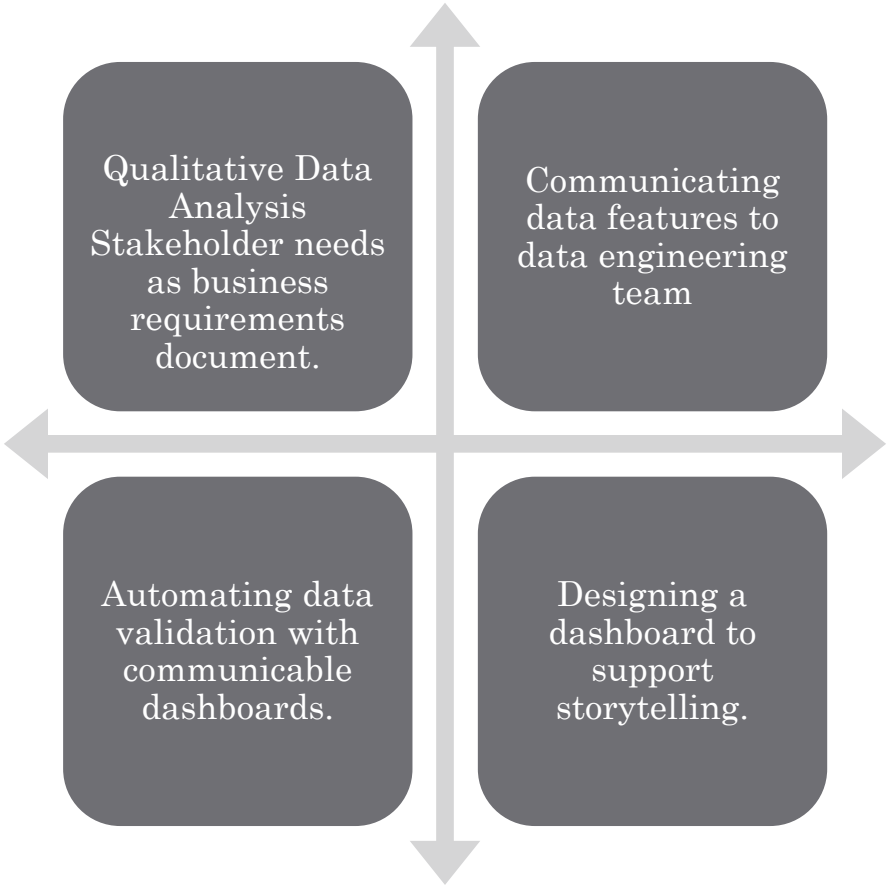
SUPPLY CHAIN
INSIGHT TO ACTION

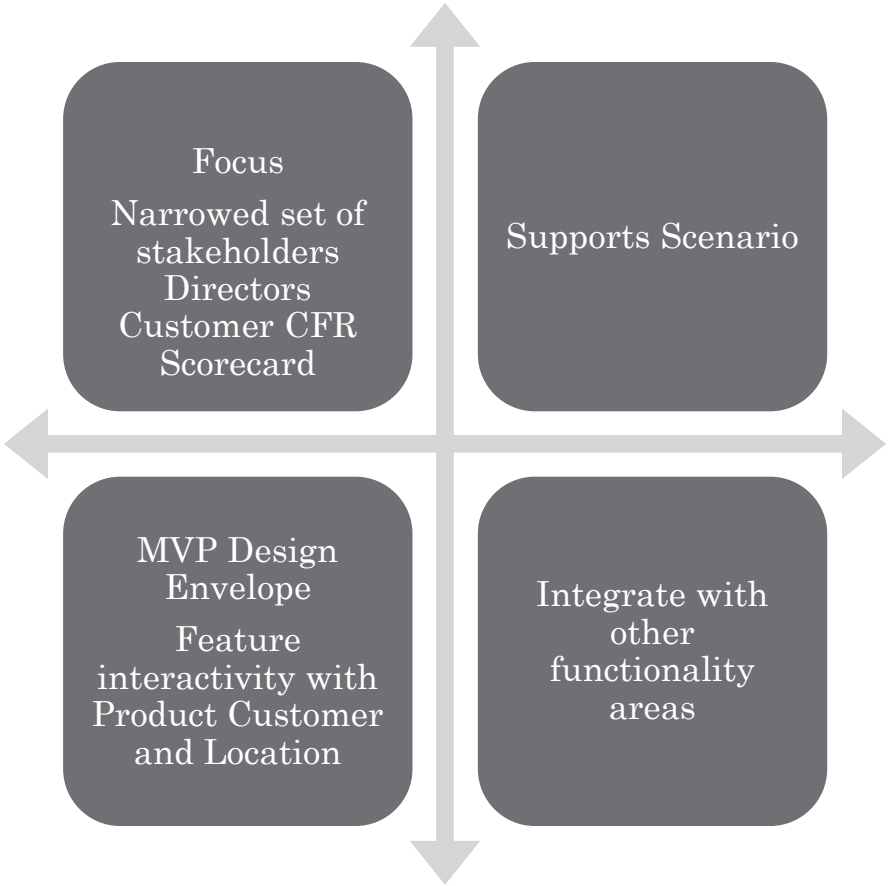
All numbers are fictitious and for demonstration purposes only

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

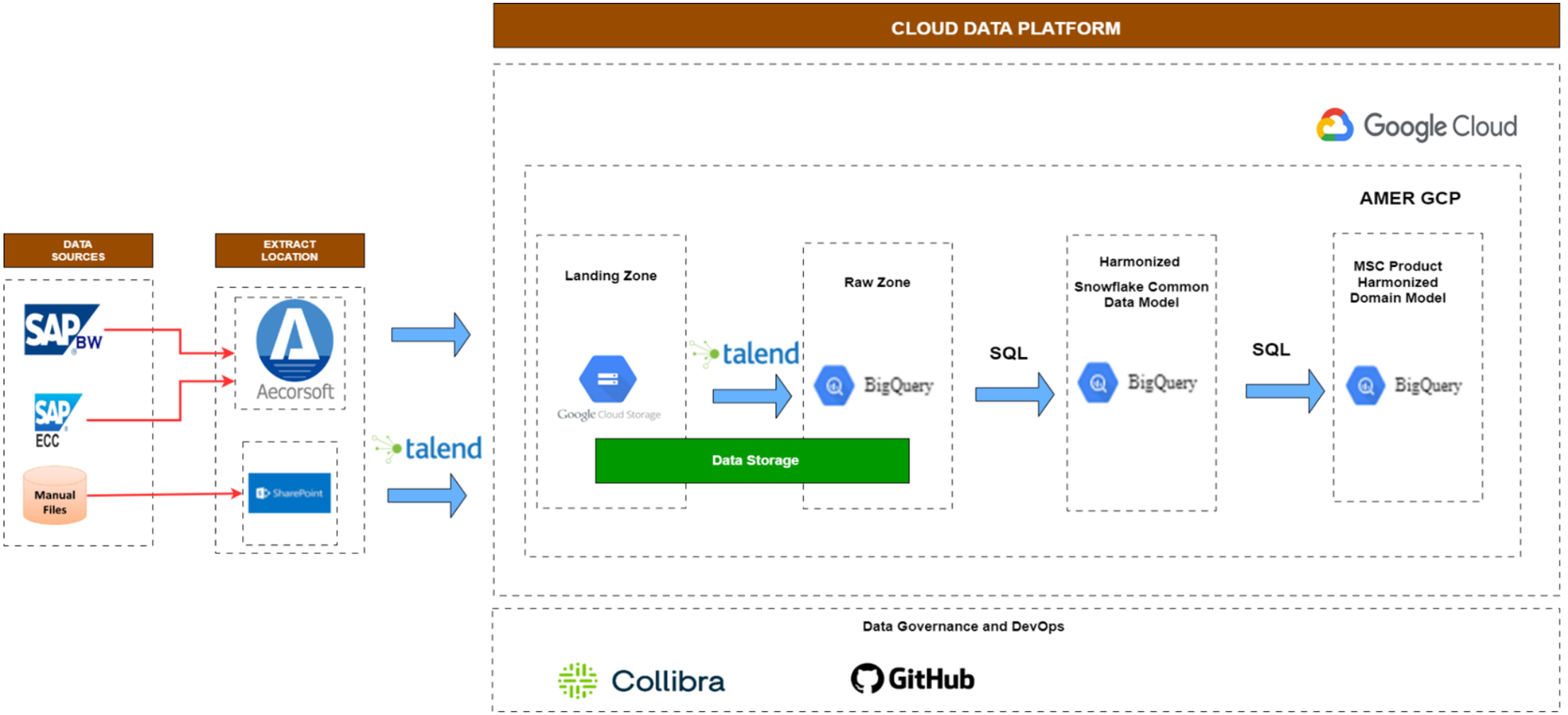
Data Engineering

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

Troubleshoot incremental refresh and real-time data - Power BI | Microsoft Learn



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.

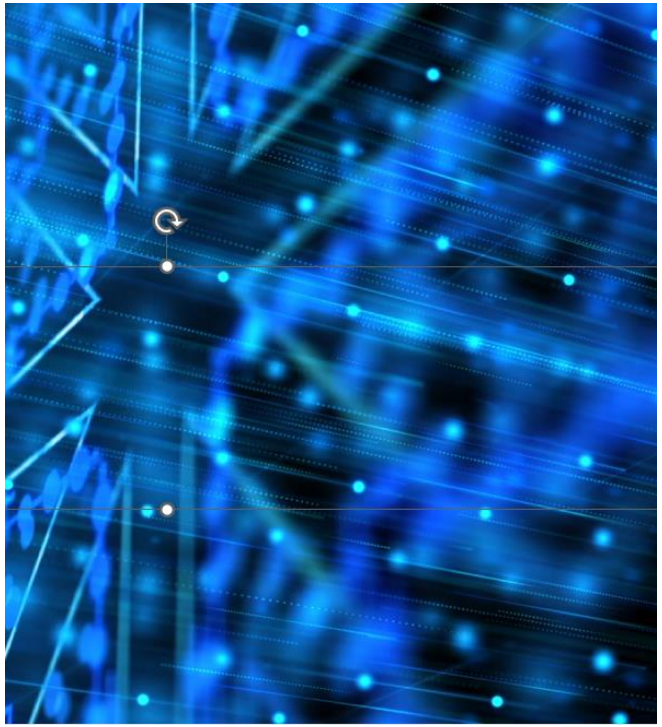
- ✕ Model exceeds Premium capacity limits for initial load.

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.

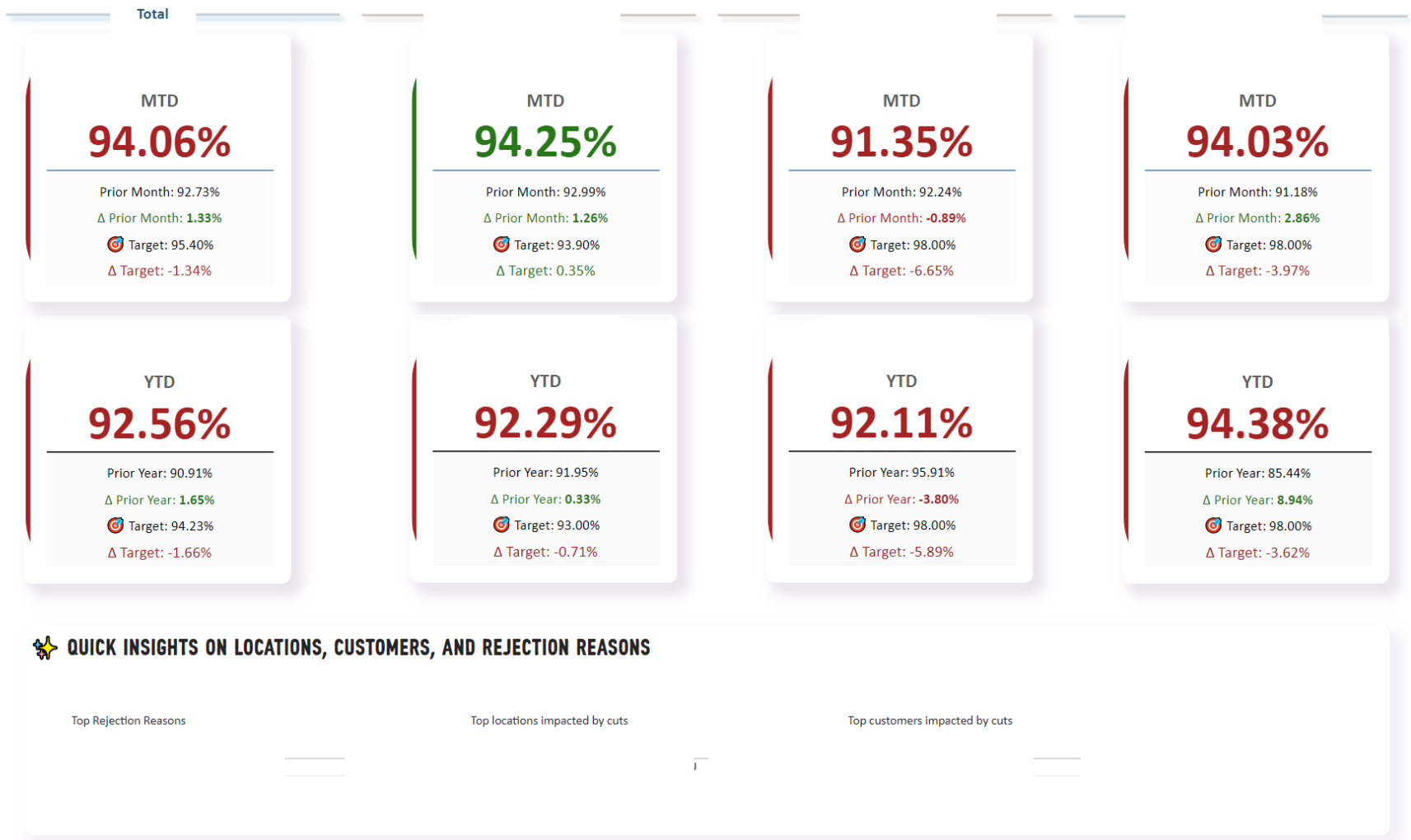
Make reconciliation and trustworthiness of numbers transparent.

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 od delivery

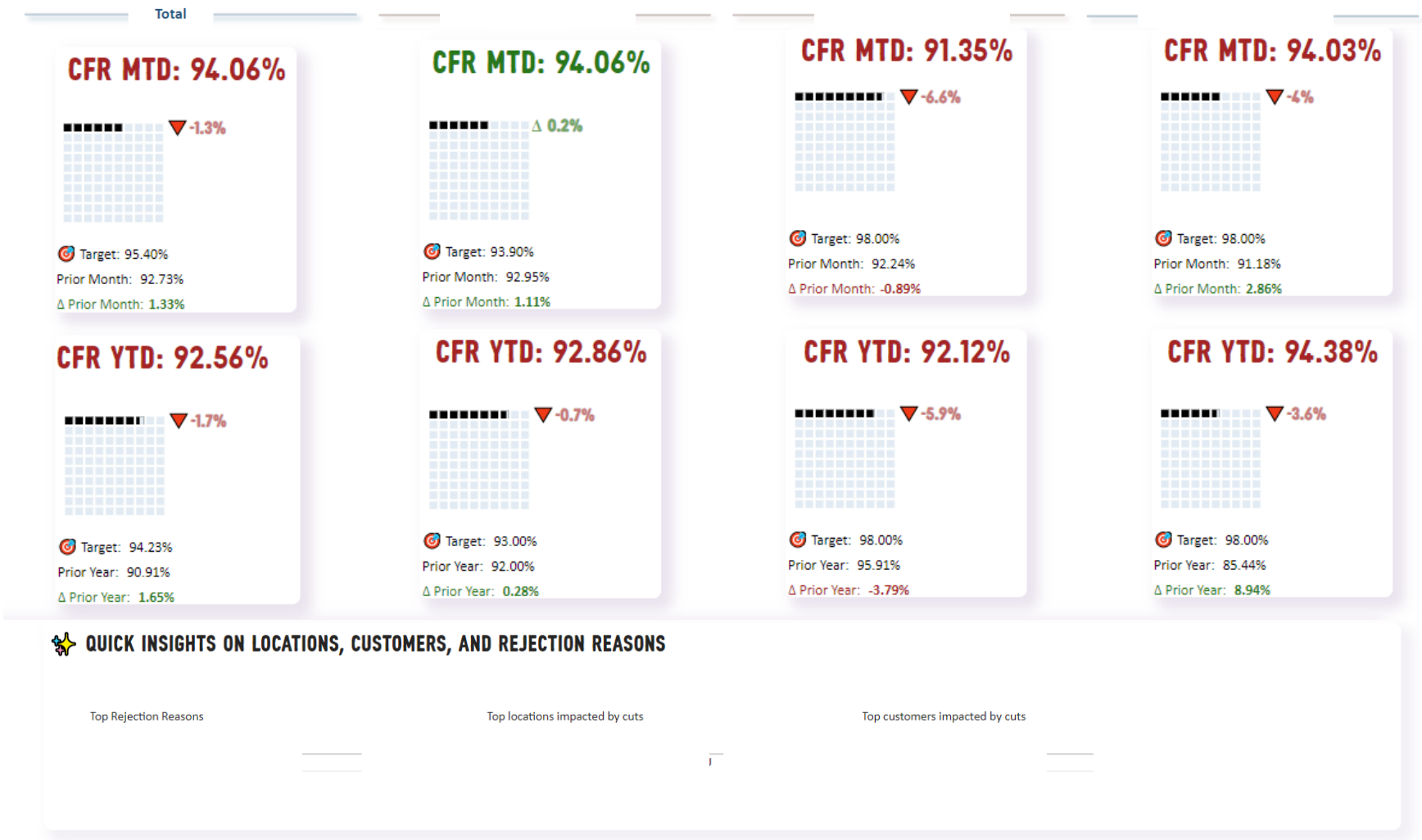
All numbers are fictitious and for demonstration purposes only

STRATEGIC LEVEL ANALYSIS



STRATEGIC LEVEL ANALYSIS ONE GLANCE KPIs AND INSIGHTS

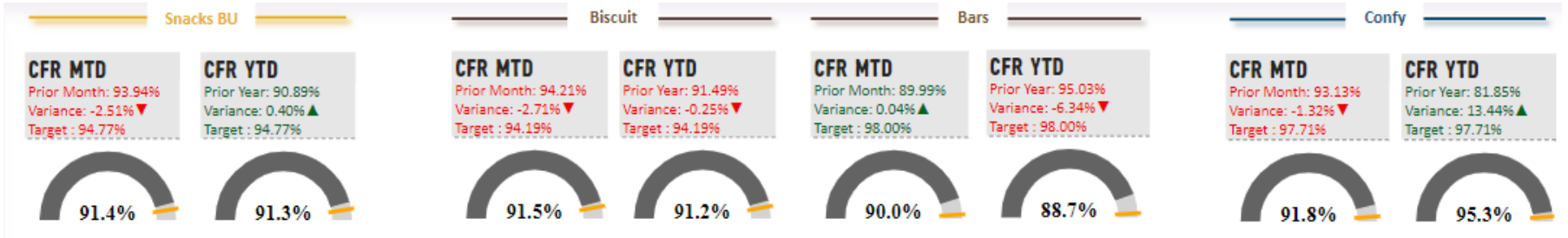
What customer regions/customers and product families should we focus on?



TACTICAL LEVEL ANALYSIS

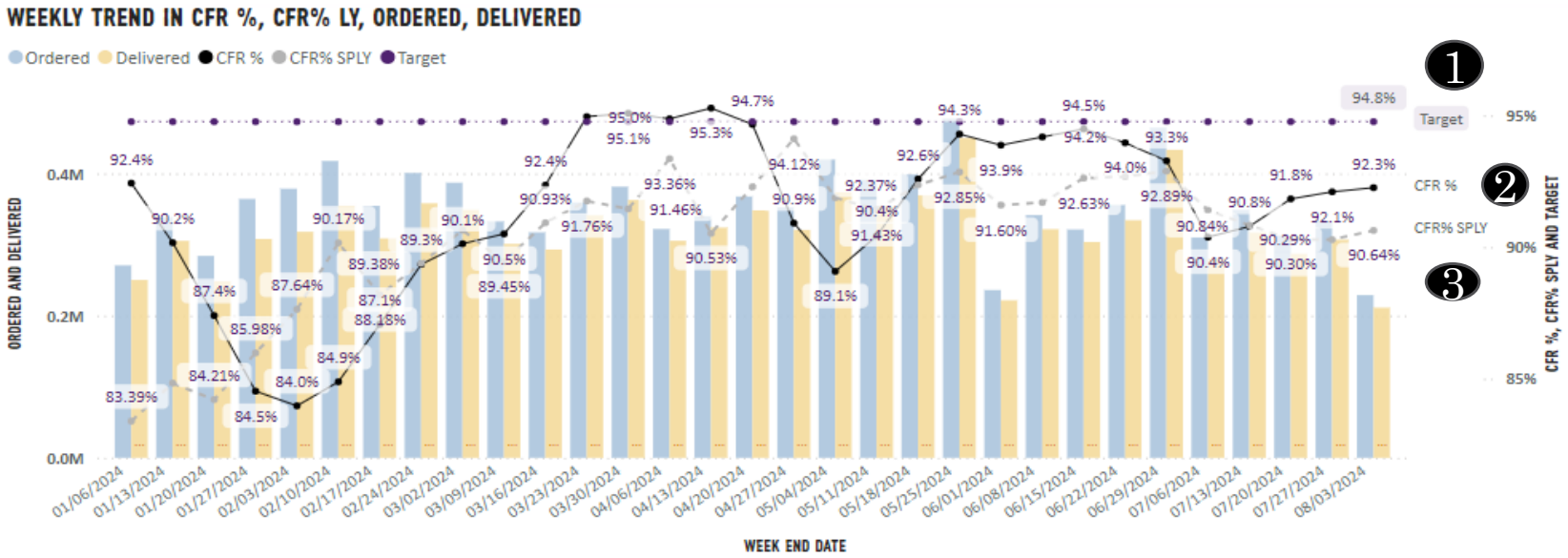
1

KPI



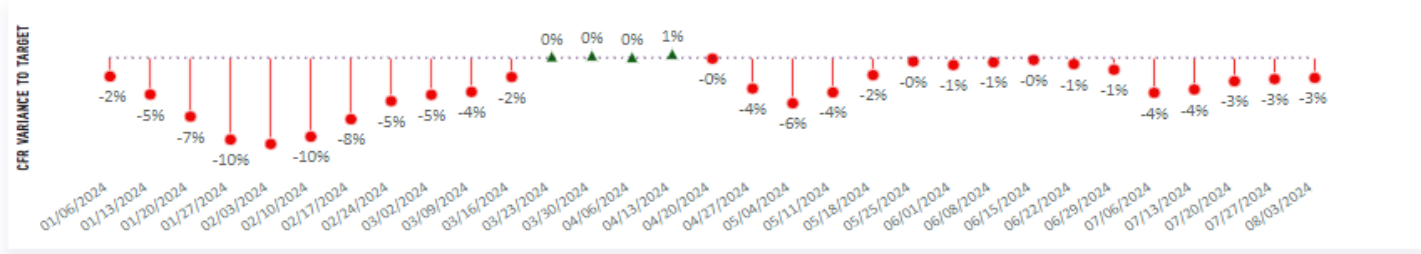
2

Trend



3

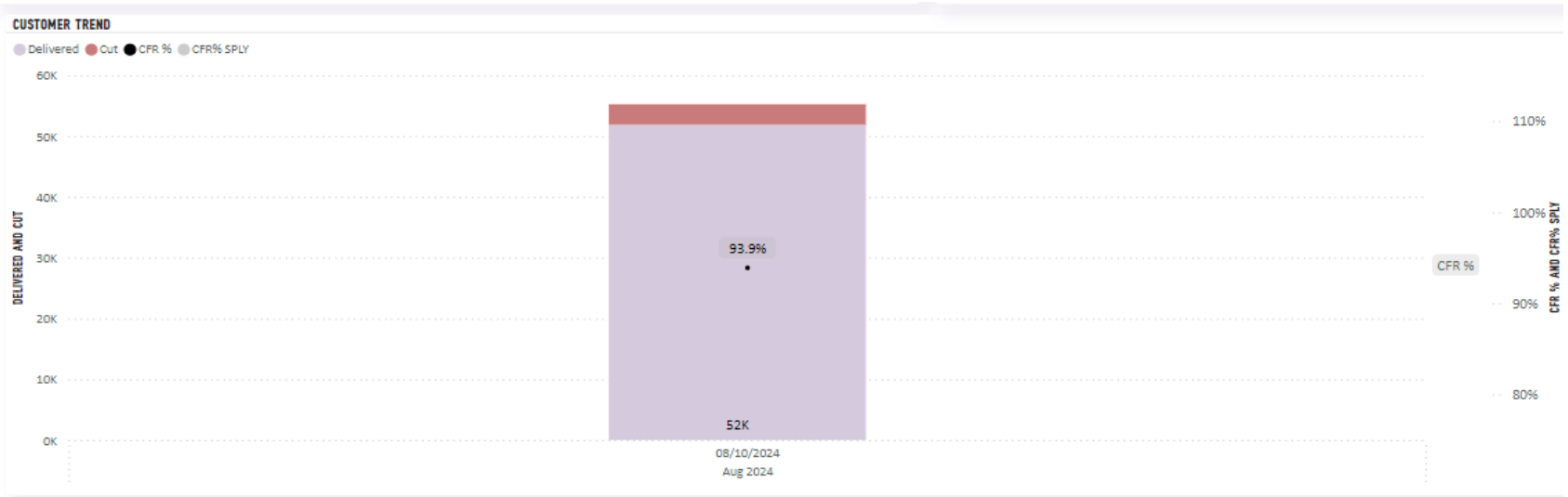
Variance



All numbers are fictitious and for demonstration purposes only

OPERATIONAL LEVEL ANALYSIS

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



PRODUCTS WITH CFR % LESS THAN:

95%

Threshold Slider Set to < 95%

TOP SKUS BY CUT FROM PRODUCTS WITH CFR LESS THAN 95%

SKU	Sub Category	Category	Pillar	Cut	Ordered	Delivered	CFR %
000000				378	381	3	0.8%
000000				302	648	346	53.4%
000000				194	217	23	10.6%
000000				183	560	377	67.3%
000000				176	324	148	45.7%
000000				171	468	297	63.5%
000007				166	221	55	24.9%
000007				115	161	46	28.6%
000000				114	123	9	7.3%

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%

Location Channel 1

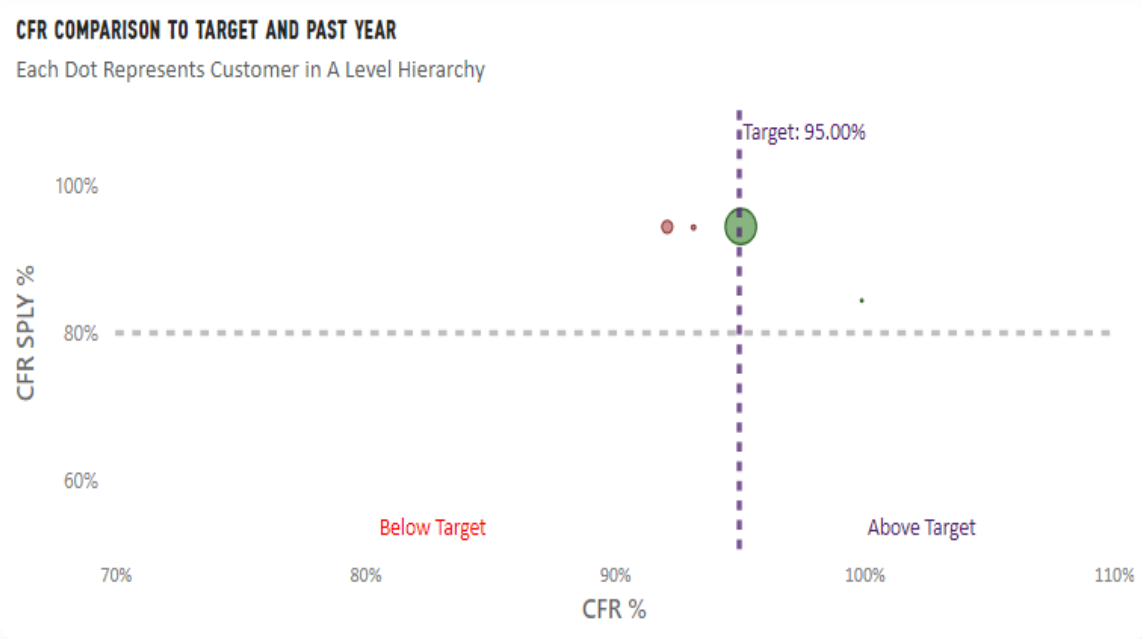
WAREHOUSE

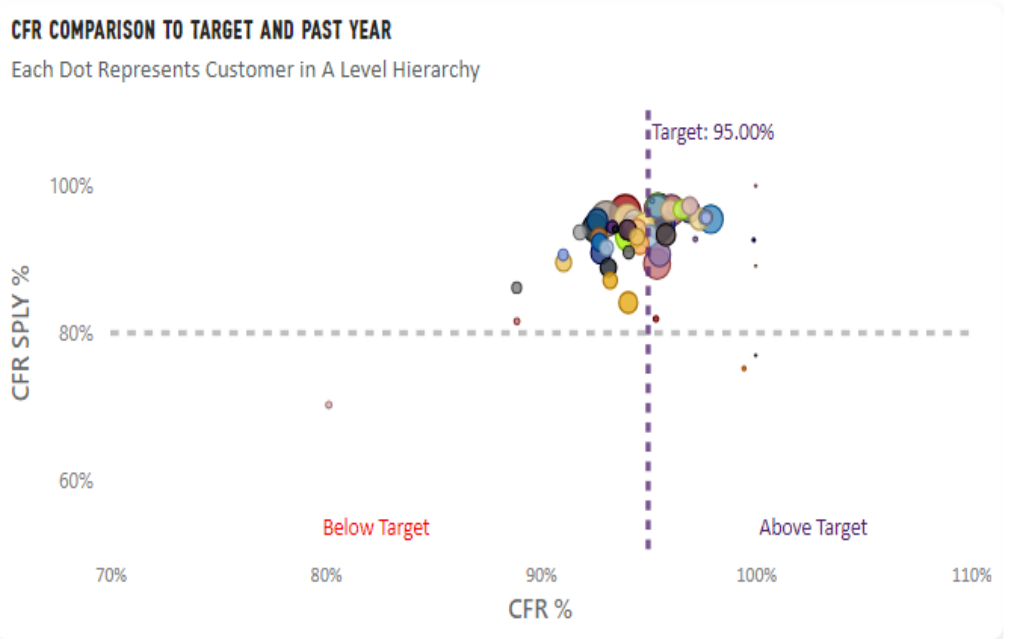
Location	Delivered	Cut	CFR %
	321,484	45,008	87.7%
	213,536	18,159	92.2%
	169,221	12,290	93.2%
	166,884	5,876	96.6%
	80,553	6,617	92.4%
	64,599	2,298	96.6%
	31,197	3	100.0%
	19,333	1,999	90.6%
Total	1,066,807	92,250	92.0%

Location Channel 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.





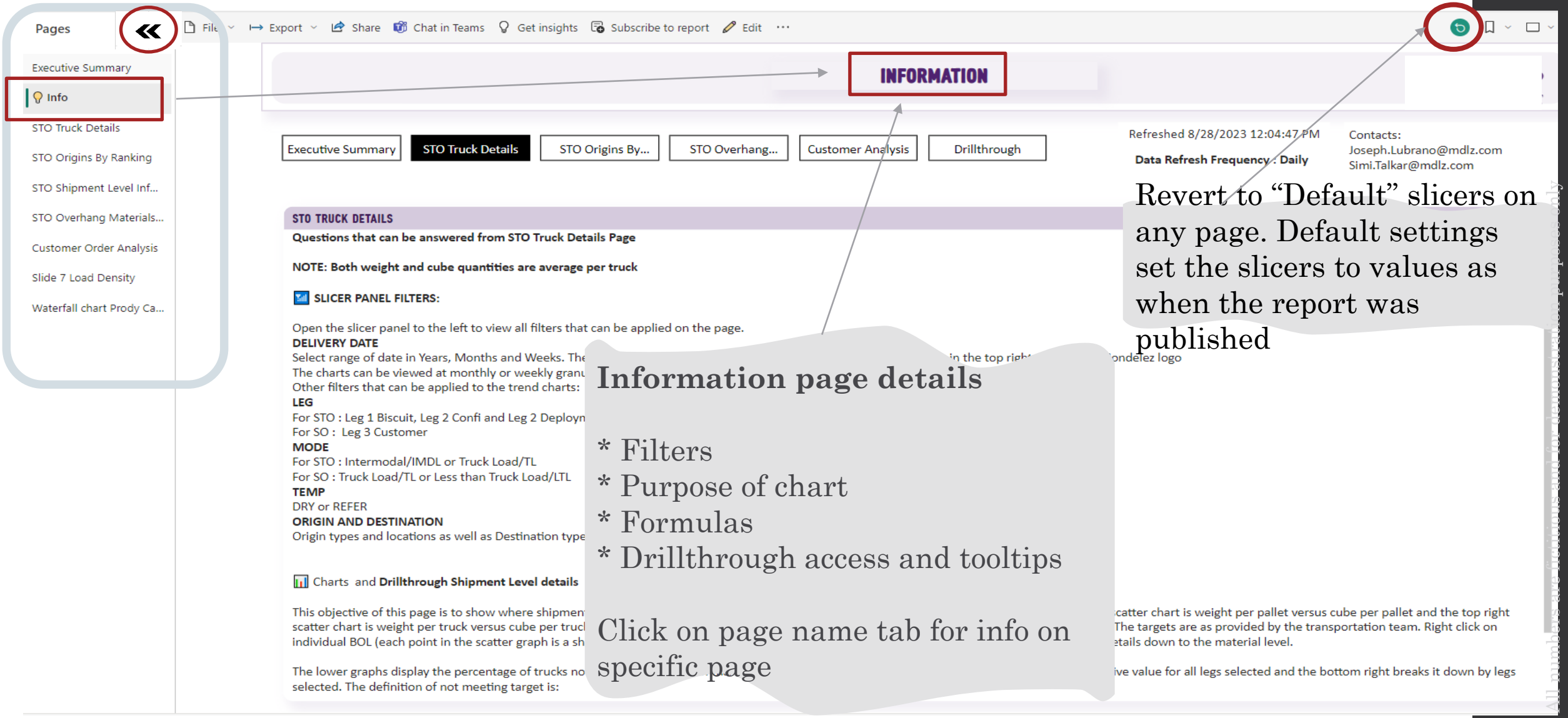
THANK YOU

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



Information page details

* Filters
* Purpose of chart
* Formulas
* Drillthrough access and tooltips

Click on page name tab for info on specific page

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

Executive SUMMARY PAGE

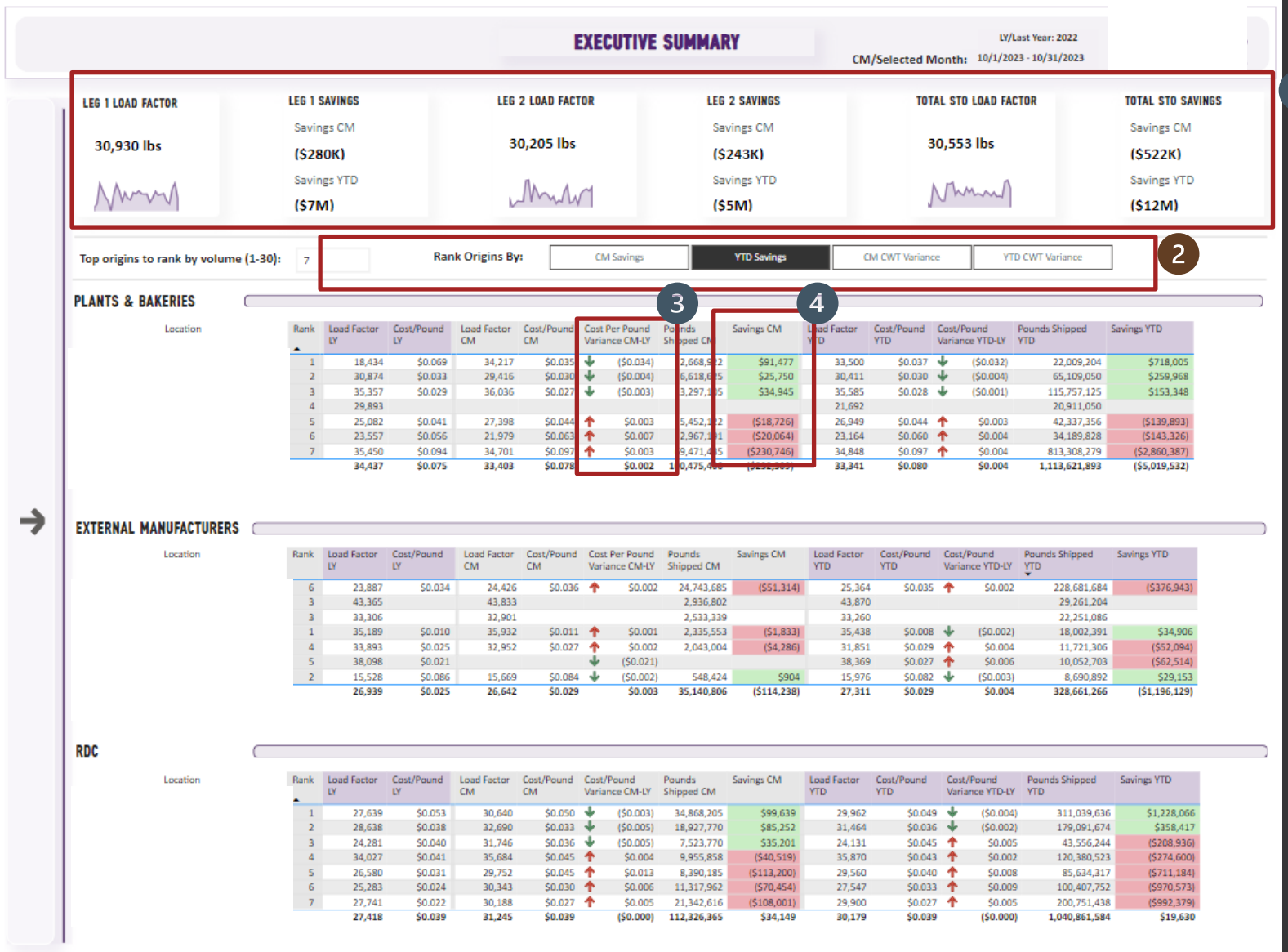
. VISIT INFO PAGE FOR MORE DETAILS.

KPIS: Load Factor and Savings 1

Select how to rank the top 10 (by YTD weight) origins 2
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 3
Choose between Current Month and YTD savings and variance.

Savings is variance multiplied by total weight of shipments. 4



All numbers are fictitious and for demonstration purposes only

SUMMARY PAGE

KPIs

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

1

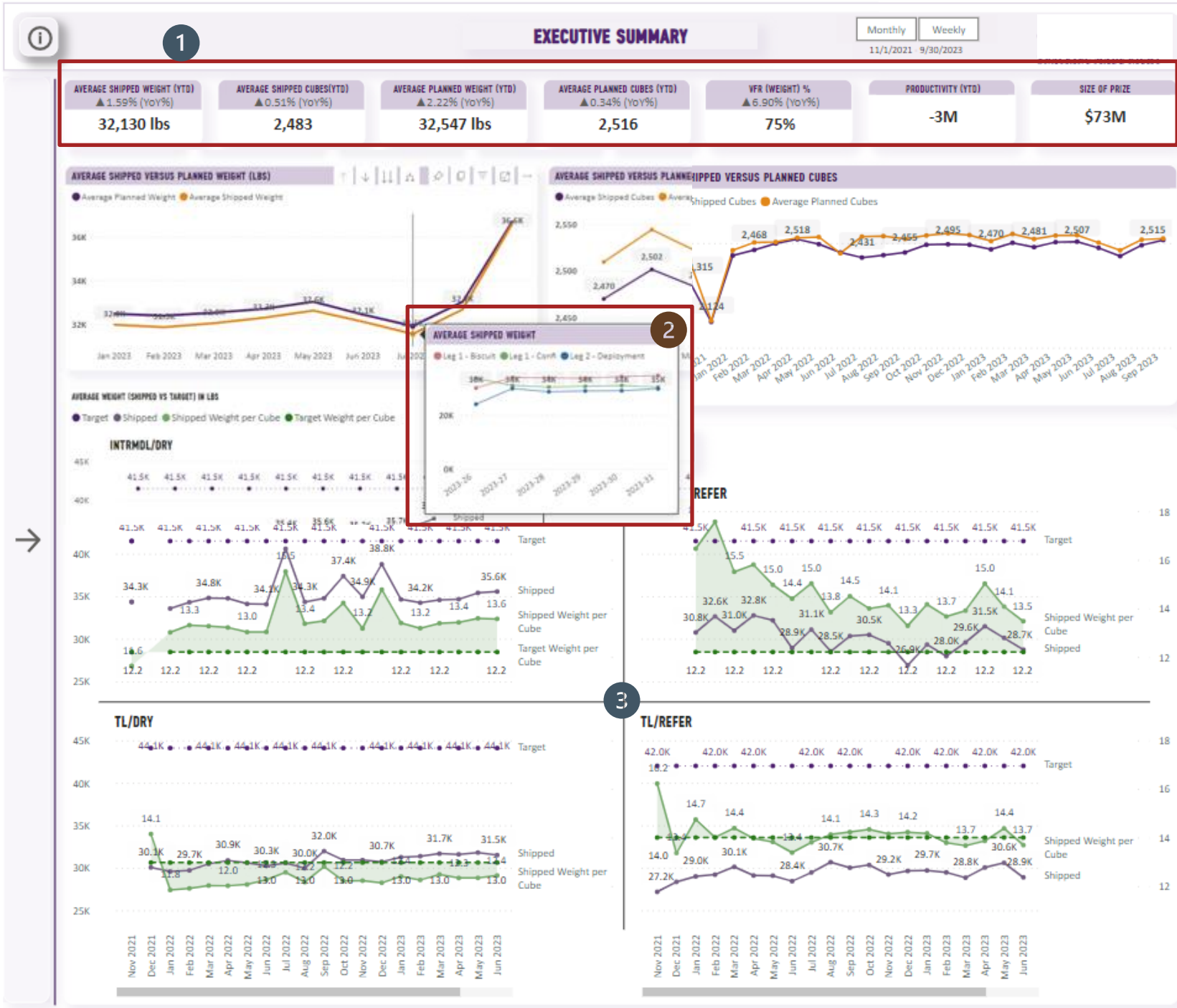
Tooltip to view breakdown by legs

2

Target comparison

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

3



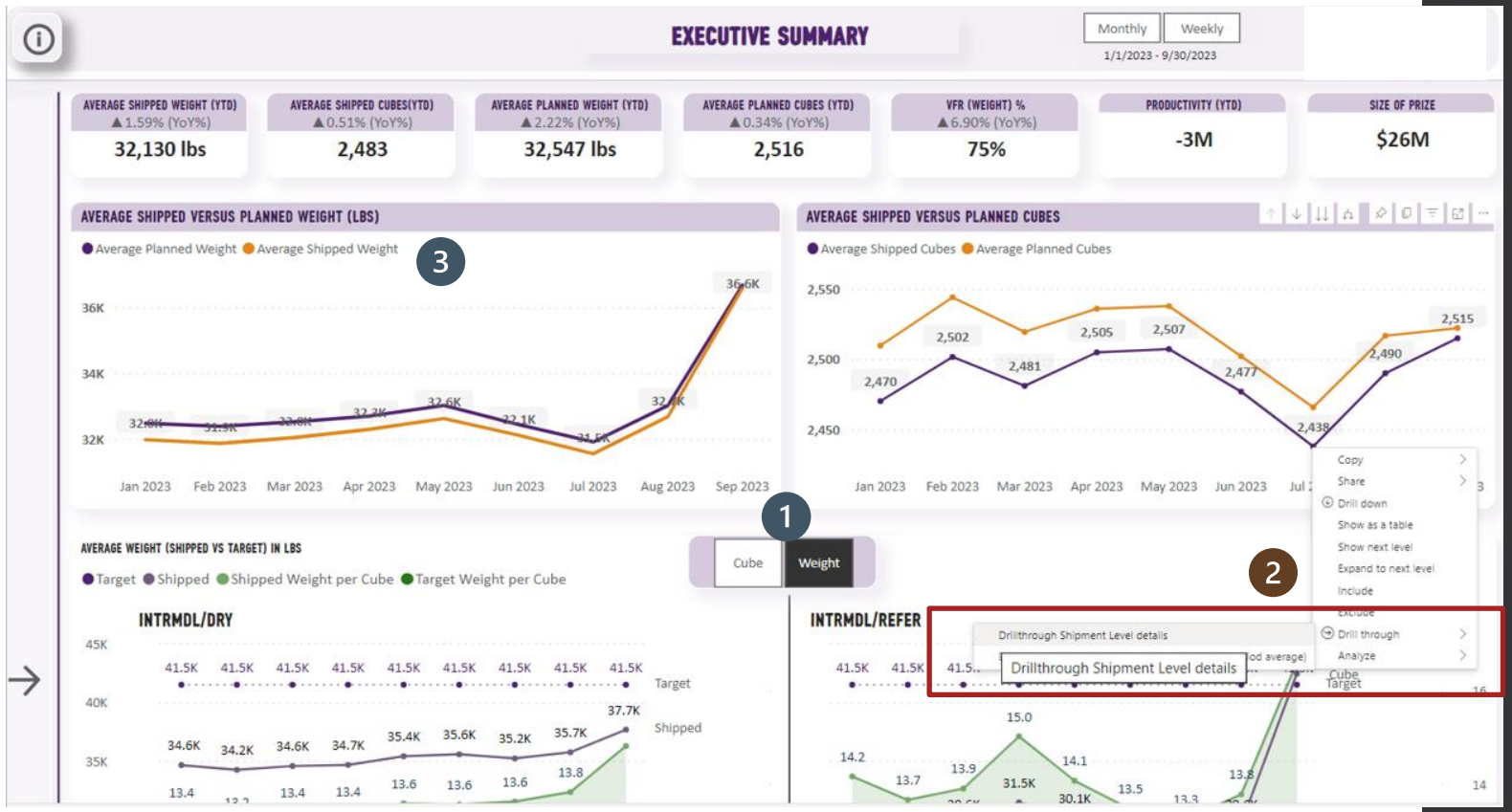
SUMMARY PAGE

DRILLTHROUGHS EXPLAINED HERE. VISIT INFO PAGE FOR MORE DETAILS.

1 Toggle between Cube and Weight (UOM)

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

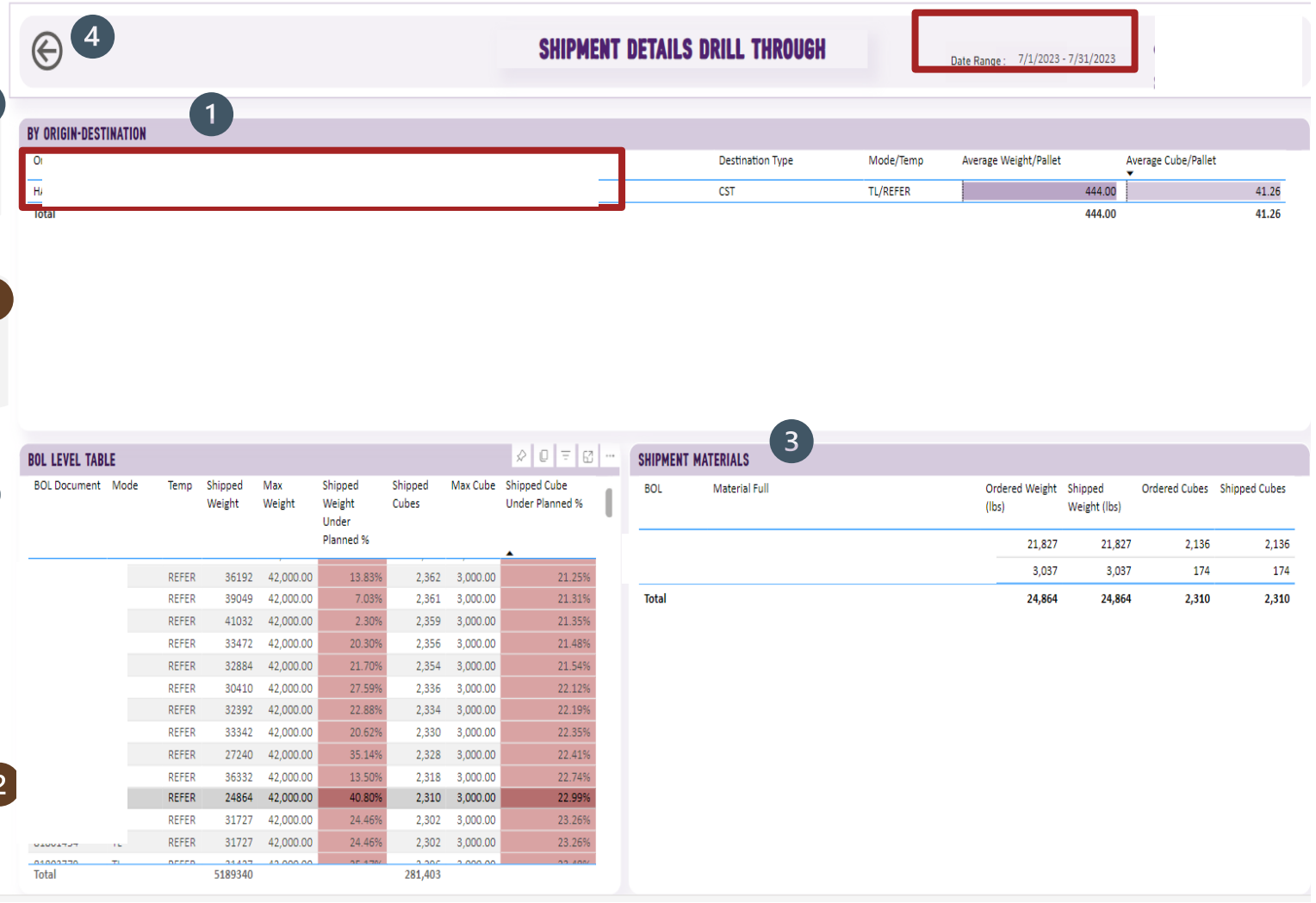
3 Color Consistency
Planned in **Purple** and Shipped in **Orange**



DRILLTHROUGHS

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

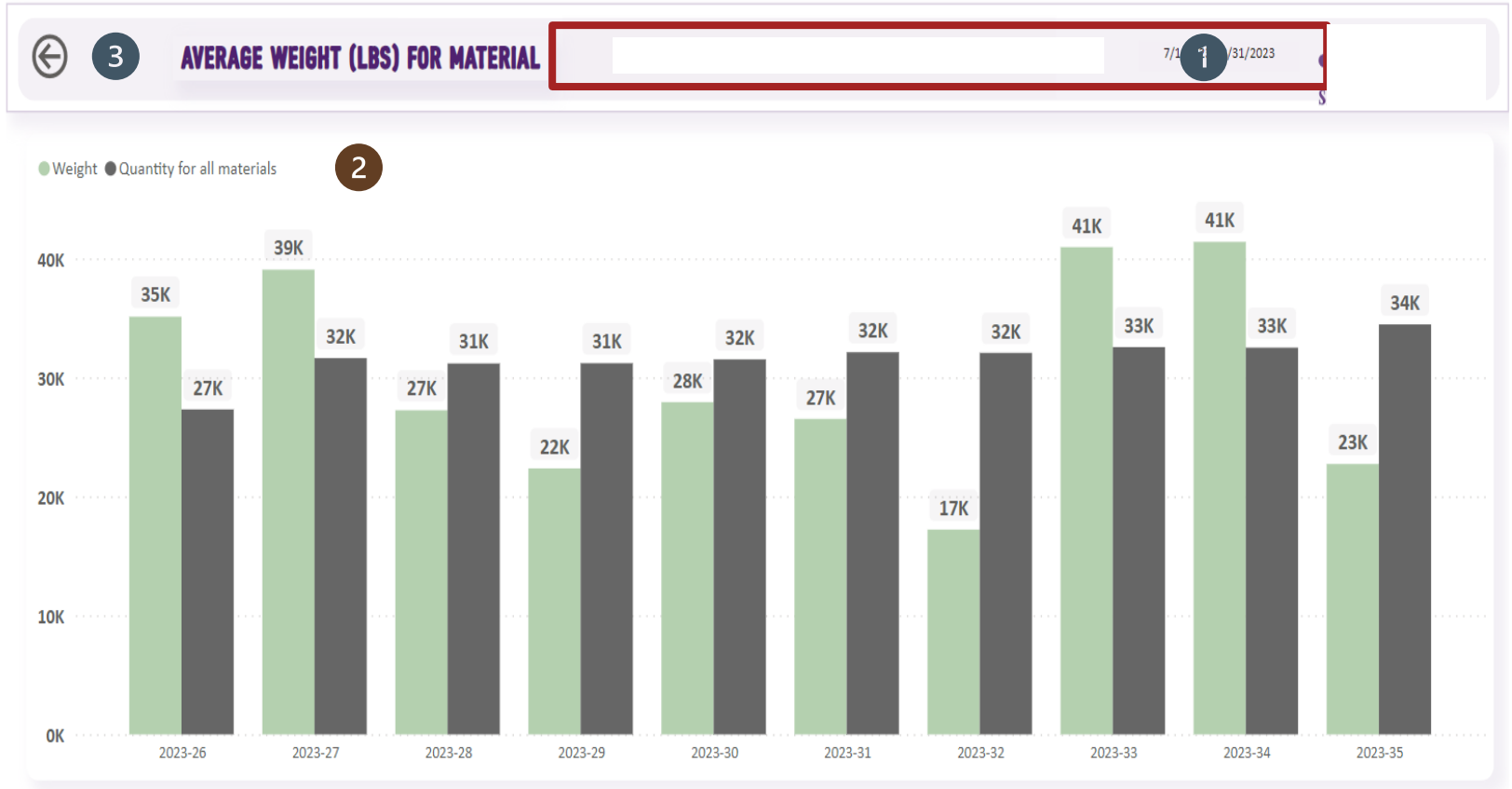
1. Carry over origin, destination and date range filters to focus.
2. Select BOL to view materials carried.
3. View Materials/SKU ordered and shipped weight and cubes.
4. Click to go back to invoking page.



DRILLTHROUGHS

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

1. Carry over material and date range filters.
2. View VFR for SKU against all shipments in period.
3. Click to go back to invoking page.



SHIPMENT LEVEL INFO

DRILLTHROUGHS EXPLAINED HERE. VISIT INFO PAGE FOR MORE DETAILS.

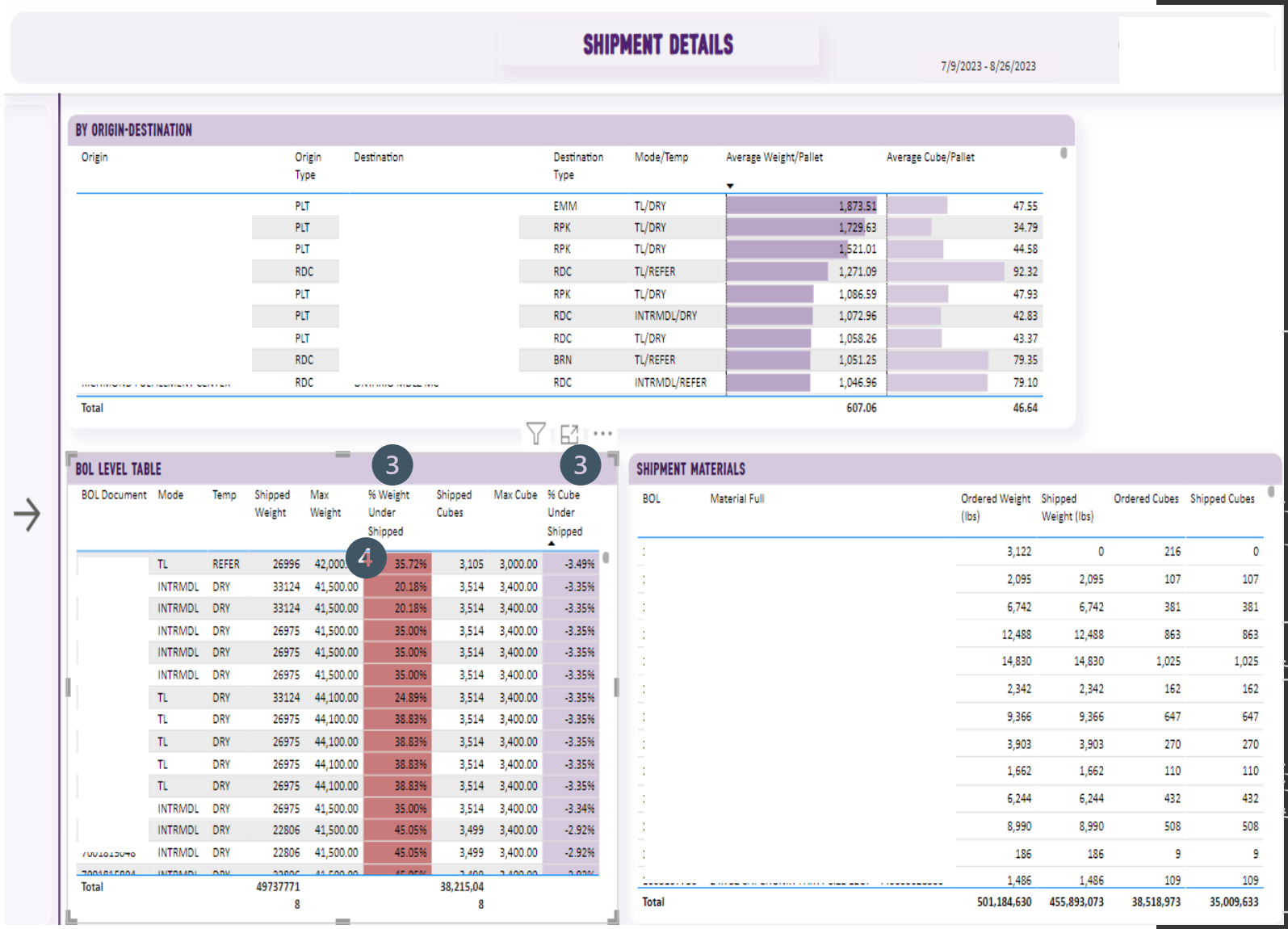
Information on this page is also available through drillthrough on right clicking on an Origin or Destination and selecting Drillthrough Shipment Level Details 1

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



All numbers are fictitious and for demonstration purposes only

TRUCK DETAILS

Filters on this page [are described here.](#) 1

In the two scatter plots in the top row every shipment is represented by a dot colored by the origin it is shipped from. 2

The target weight and cube per pallet and per truck are targets set by the transportation team. 3

Drillthrough to materials on a shipment by right clicking on a dot and selecting "Drillthrough Shipment Level Details" 4

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. 5