Shipper insights dashboard redesign

Karena Vongampai

Case study from my time at Convoy

The freight industry is complex

Successfully transporting goods relies on the smooth coordination of various job performers and decisions that take place across an array of disconnected tools.

Shippers

Businesses that have a transportation need to move goods from one place to another

Brokers

Intermediary that manages relationships and arranges the transport of goods
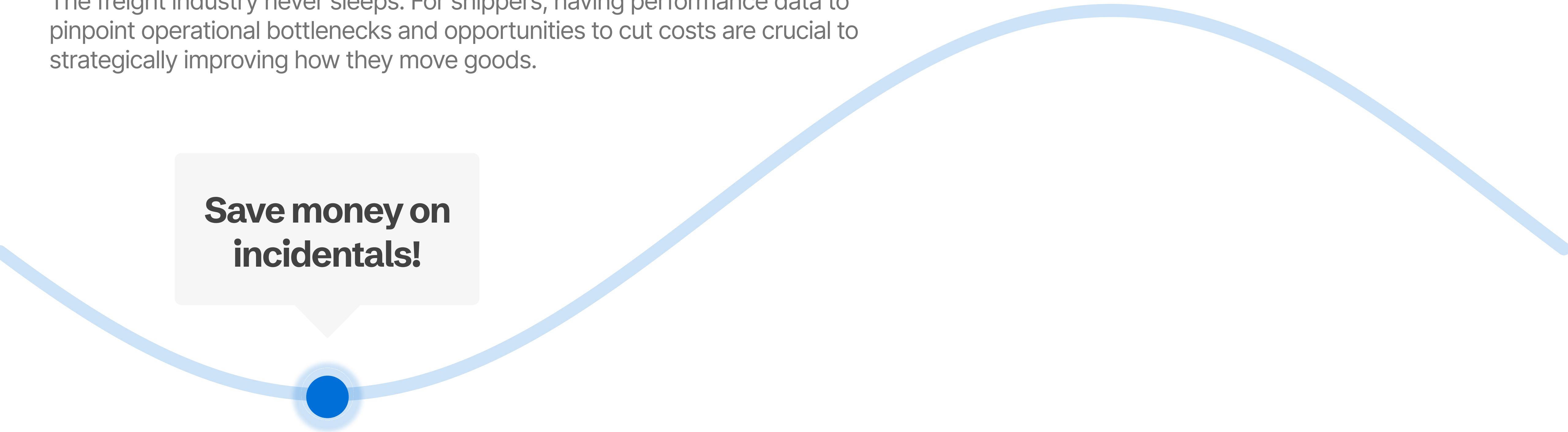

Carriers

Businesses that have the equipment and drivers who travel the country moving goods

Shipper transportation coordinators need to know how well a broker is servicing their freight needs

The freight industry never sleeps. For shippers, having performance data to pinpoint operational bottlenecks and opportunities to cut costs are crucial to strategically improving how they move goods.
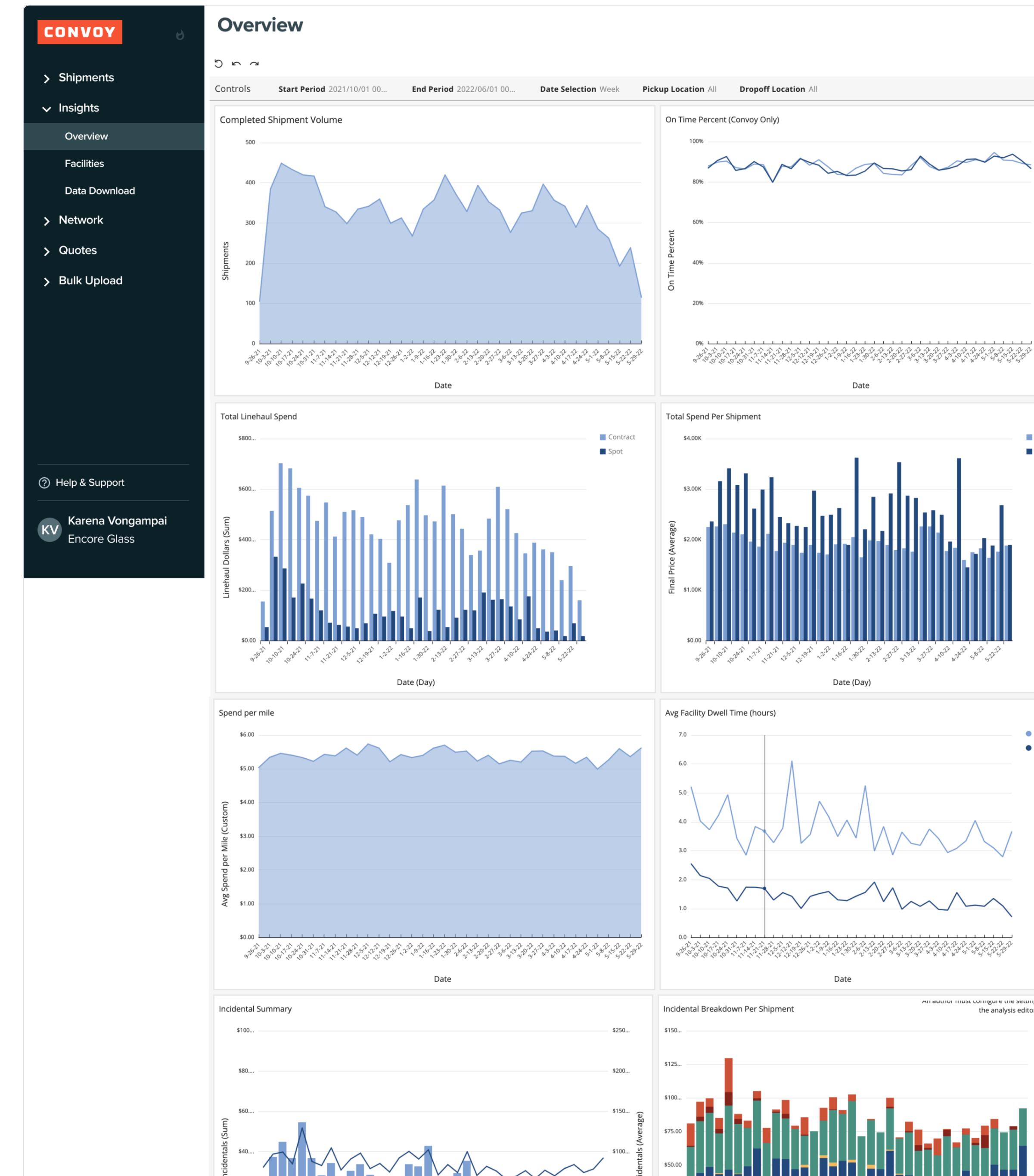
Save money on incidentals!

I inherited this project from a previous team who built the MVP

The build of the MVP optimized for speed and cost, but sacrificed usability and information architecture. It was built by embedding an iFrame of an Amazon Quicksights dashboard.

My objective

As the lead designer, I...

Redesigned the shipper analytics experience to improve usability, comprehension, and overall quality

2.5 weeks

Timeframe

Product & Engineering

Team

01
Identify areas for improvement

Critique the MVP experience

I inspected the current experience by reviewing how a user would utilize the dashboard to accomplish key tasks. This process helped me identify the core UI problems to solve.

This helped me build on top of the feedback some account managers had received from their shipper contacts about Insights.

01   Monitor how well a broker is performing on my shipments

02   Drill down into broker performance at specific facilities

03   Drill down into broker performance for specific shipment types

04   Identify opportunities to fix poor performance

05   Identify opportunities to minimize unnecessary spend
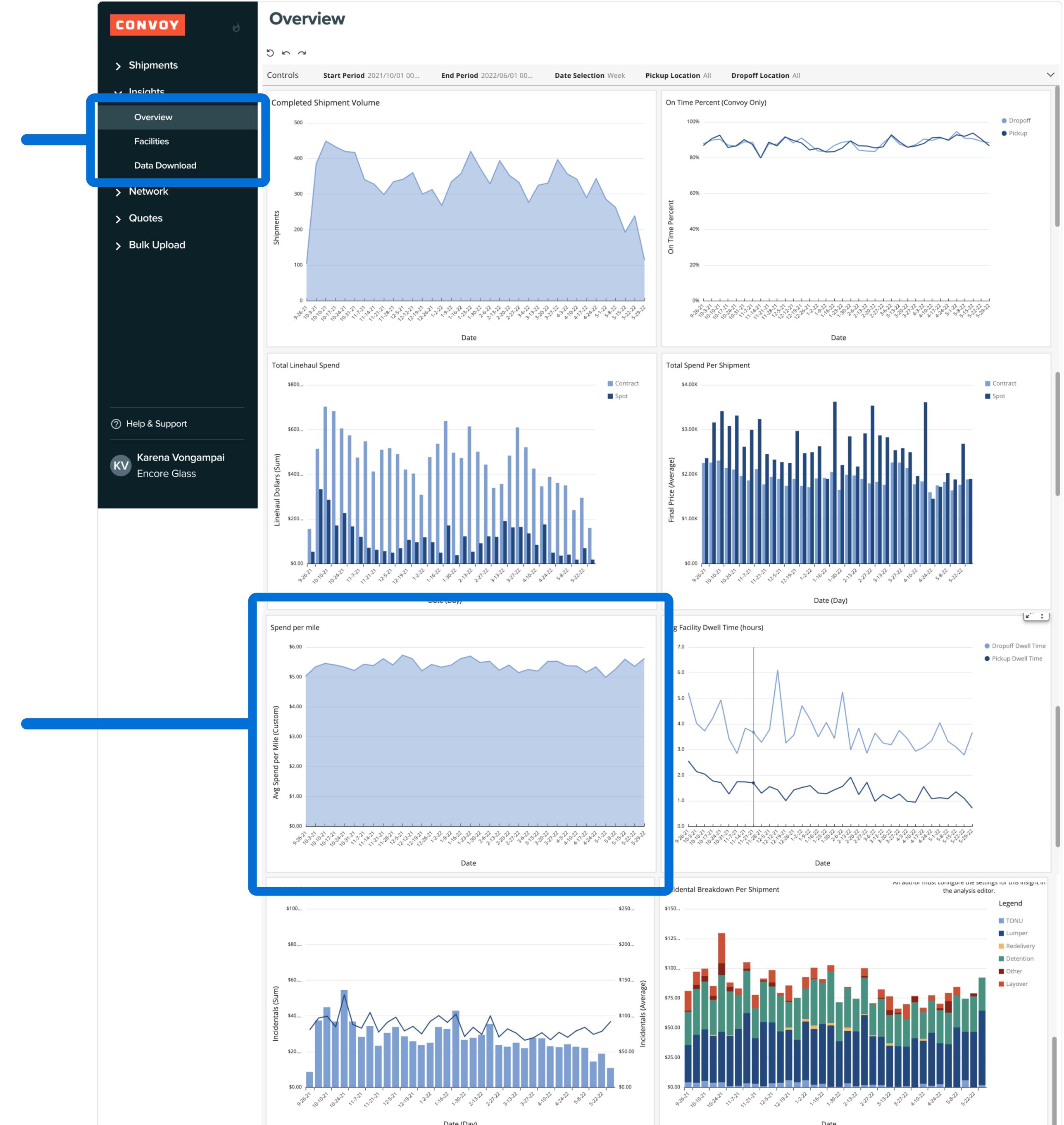
Effectively invisible elements

It's unclear that these navigation items are how users can explore key metrics at varying granularities

Inviting dead end

It's unclear how users can navigate

Identify areas for improvement

Slow response

Our load time was ~7 sec, which prevented users from completing their tasks in a timely manner

Physical Challenge

Embedding an iFrame within a webpage makes it difficult for users to scroll to reveal additional data visualizations beneath the fold

Inconsistent appearance

The use of Quicksights, instead of our in-house visual lanage made the UI inconsistent with the rest of Convoy's shipper website.

Identify areas for improvement

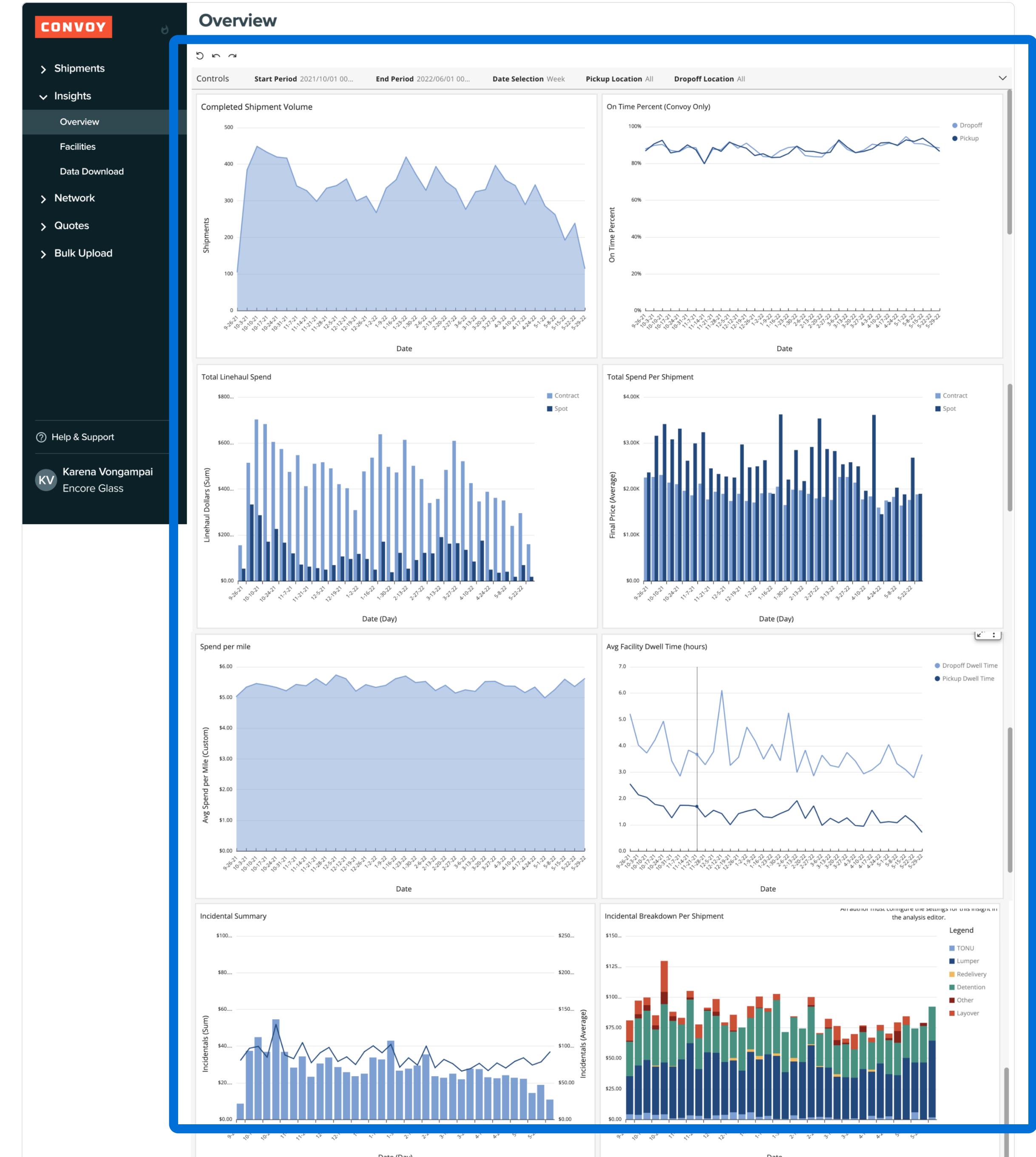## Poor grouping

It's not obvious that selecting a facility from the mid-page dropdown filters the information that gets shown in the KPI cards above and the other top-level pages

Inviting dead end

Users are accustomed to clicking on rows in a table to reveal the details of item, but that interaction does not lead there

Facilities

CONVOY

- Shipments
- Insights
  - Overview
  - Facilities
  - Data Download
- Network
- Quotes
- Bulk Upload

Help & Support

KV Karena Vongampai
Encore Glass

| Summary | Scorecard: Volume | Scorecard: Dwell Time | Scorecard: Carrier Feedback | Scorecard: Incidentals | Scorecard: Incidentals Breakdown |

Controls   Date Selection Month   Select Period 04/01/2022   On Time Definition 30 Mins   Show/ Hide % Change Hide   Loading Type All

For the month of Apr 01, 2022

Finished Shipments	1,434	Average Dwell Time	138 min	Incidental per Shipment	$72.72
down by -2% from last month		down by -1% from last month		stagnant since last month	
Total Incidental Spend	$104.28K	Average Facility Rating	4.6	On Time %	90%
down by -2% from last month		up by 2% from last month		up by 2% from last month	

Select Facilities   All
Click facility to view scorecard

Min Shipment Volume   Enter value

Facility Address	State	Zip	Finished Shipments	% of Total Volume	Avg Rating (out of 5)	Avg Dwell (Hours)	Incidentals Per Shipment	% On Time
C/O UNILEVER RIALTO - DC 305 Resource Dr, Bloomington, CA 92316, USA	CA	92316	752	52.4%	4.8	0.98	$3.35	91%
UNILEVER HPC NA - NEWVILLE DC 954 Centerville Rd, Newville, PA 17241, USA	PA	17241	277	19.3%	4.6	1.13	$2.53	93%
UNILEVER HPC NA - EDWARDSVILLE 5620 Inner Park Dr, Edwardsville, IL 62025, USA	IL	62025	145	10.1%	4.3	1.85	$6.64	90%
C/O GENCO - DC 12200 Presidents Ct, Jacksonville, FL 32219, USA	FL	32219	137	9.6%	4.8	1.1	$2.41	85%
C/O Shippers Warehouse - DC Wilmer, TX US1C5490, No Plant Code 201 Sunridge.	TX	75172	96	6.7%	4.7	1.51	$0.00	77%
Costco Tracy, CA 172 (Wet) & 179 (Dry) 0001092526, No Plant Code 25862 S Schul...	CA	95377	61	4.3%	4.7	2.08	$15.37	97%
WAL-MART #6021 1300 S F St, Porterville, CA 93257, USA	CA	93257	49	3.4%	5.0	0.32	$2.30	98%
Amazon Abe 8 Independence Rd, Florence Township, NJ 08518, USA	NJ	08518	47	3.3%	4.2	3.29	$32.45	96%
Amazon Moreno Valley, CA - ONT8 0004788063, No Plant Code 24300 Nandina Av...	CA	92551	46	3.2%	4.4	2.4	$11.41	100%
WAL-MART #6012 3100 I-27, Plainview, TX 79072, USA	TX	79072	40	2.8%	4.8	0.69	$0.00	65%
Costco Sumner, WA - DC 0001092106, 171 4000 142nd Ave E, Sumner, WA 98390,	WA	98390	39	2.7%	4.9	1.09	$0.00	92%

Powered QuickSight

Identify areas for improvement

Feedback failure

The error state does not guide the user to a solution that'll help them achieve their goal
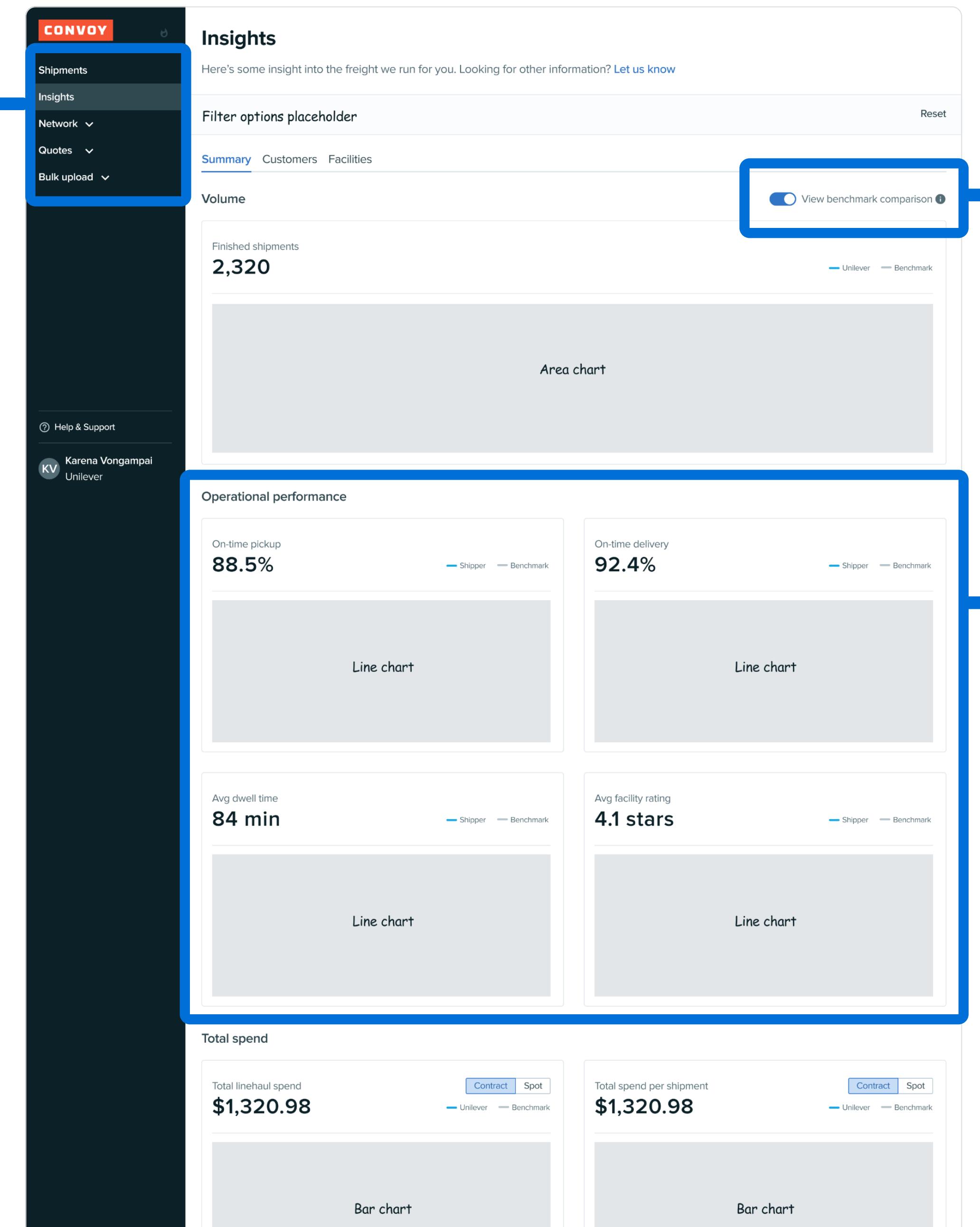
02
Design explorations

Ideal state explorations

Simplify nav menu items

The "Shipments" nav item previously had 15+ nested items (with very few visits), automatically open when users first enter the product, pushing "Insights" beneath the fold.

Provide comparative data

Made it easier for users to understand which KPIs categorically relate to each other

Group similar data together

Made it easier for users to understand which KPIs categorically relate to each other

CONVOY

Shipments
Insights
Network ⌄
Quotes ⌄
Bulk upload ⌄

? Help & Support

KV Karena Vongampai
Unilever

Insights

Here's some insight into the freight we run for you. Looking for other information? Let us know

Filter options placeholder   Reset

Summary   Customers   Facilities

Volume   ◉ View benchmark comparison ⓘ

Finished shipments
2,320   — Unilever — Benchmark

Area chart

Operational performance

On-time pickup
88.5%   — Shipper — Benchmark

Line chart

On-time delivery
92.4%   — Shipper — Benchmark

Line chart

Avg dwell time
84 min   — Shipper — Benchmark

Line chart

Avg facility rating
4.1 stars   — Shipper — Benchmark

Line chart

Total spend

Total linehaul spend   Contract Spot
$1,320.98   — Unilever — Benchmark

Bar chart

Total spend per shipment   Contract Spot
$1,320.98   — Unilever — Benchmark

Bar chart

Ideal state explorations

Added secondary navigation

Experimented with this, but didn't feel right because facilities is a more granular way to view the data

Explaining the takeaway from the data

Minimize the time users spend understanding what trends they're supposed to interpret from the data

Drill down into the specifics of a chart

The icon isn't exactly the right cue, but wanted to try it out. Functionality is to allow users to view the visualization larger.

CONVOY

Shipments
Insights
Network
Quotes
Bulk upload

Help & Support

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Unilever

Insights   Settings ▾   Export ▾

Summary   All facilities

All-time YTD QTD MTD 7D Yesterday Today   Pickup facility ▾   Delivery facility ▾   Facility ▾

Compared to facilities owned by other Consumer Packaged Goods companies, Walmart's are doing well
Some placeholder text here

Walmart's ranking against similar sized shippers
#3

Total volume has increased by 10%
Some placeholder text here

Finished shipments
1,340

Primary   Spot   Dynamic backup   Backup   Other program type
340   340   340   340   340

On-time performance has decreased by 3%
Some placeholder text here

99.3%

On-time delivery
1,340

Facilities worth review
Some placeholder text here

Facilities with poor performance
4

Facility driven delays have doubled
Some placeholder text here

% of facility driven delays   #1 Root cause for facility delays
340   Product not ready to pickup

Incidental cost per shipment is expected to surpass $210 by end of Q3 2022
Some placeholder text here

Intuitively navigate data granularities

User wants to view one data visualization larger

Ideal state explorations
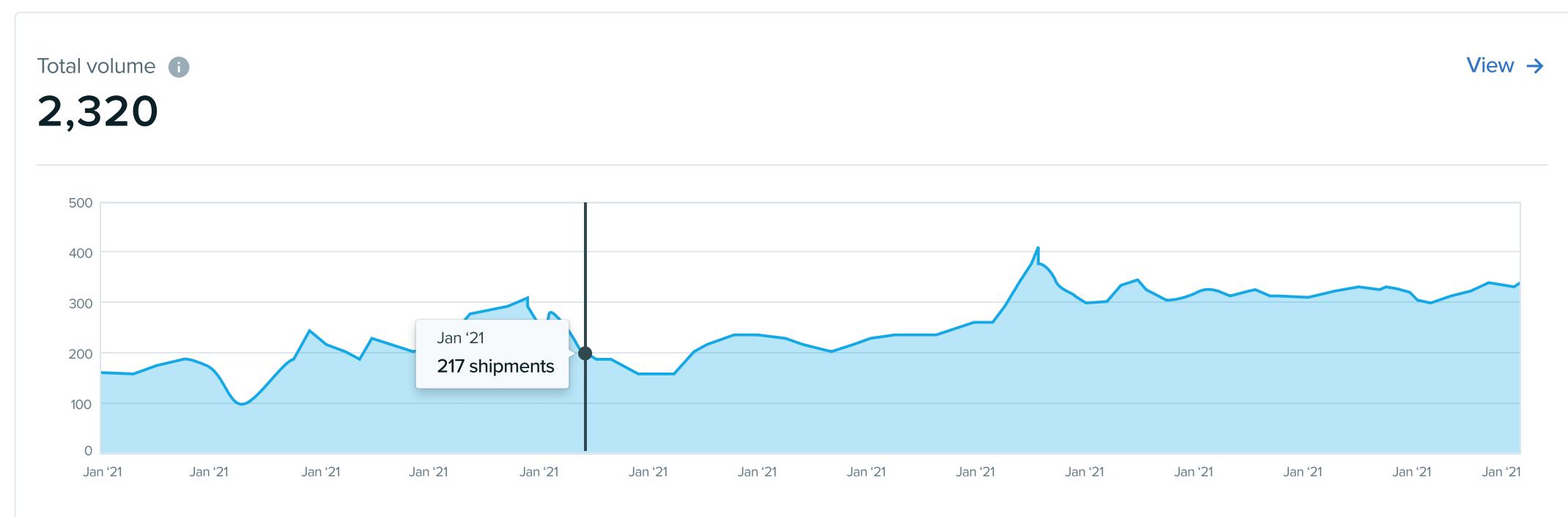
Rev 1

Grid is too busy, text styles could be better prioritized

Finished shipments ⓘ   View →

2,320
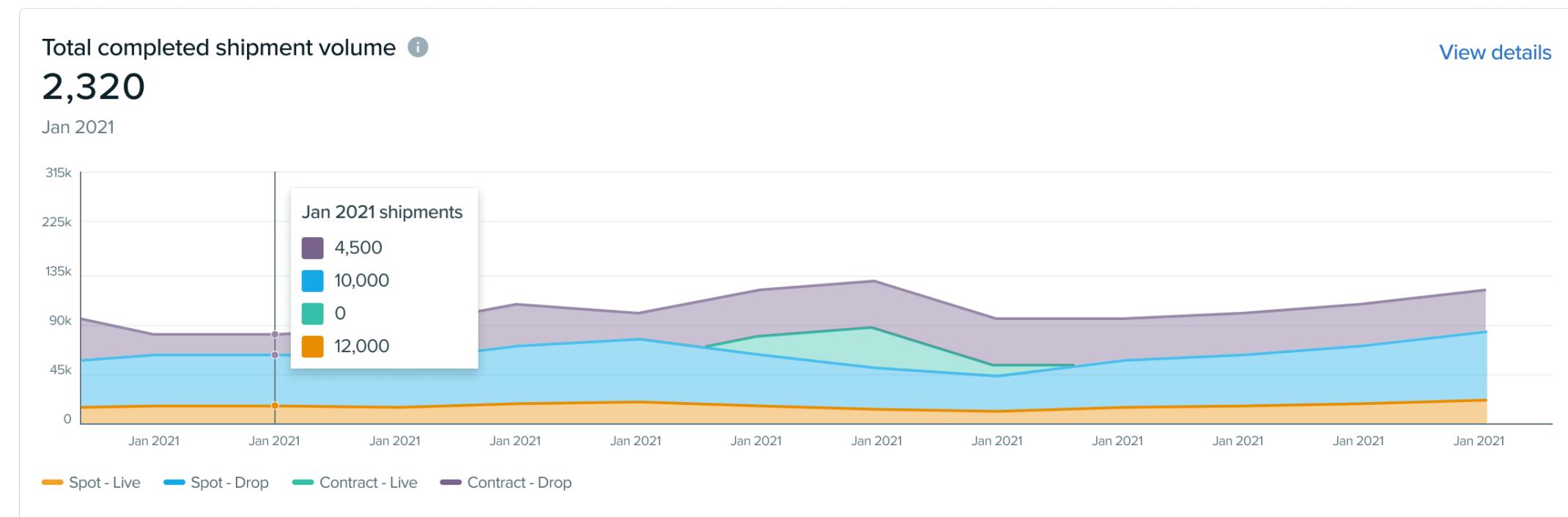
Rev 2

Too many horizontal lines are distracting, copy could be clearer about the exact KPI and timeframe. And what about stacked area?

Total volume ⓘ   View →

2,320

Rev 3
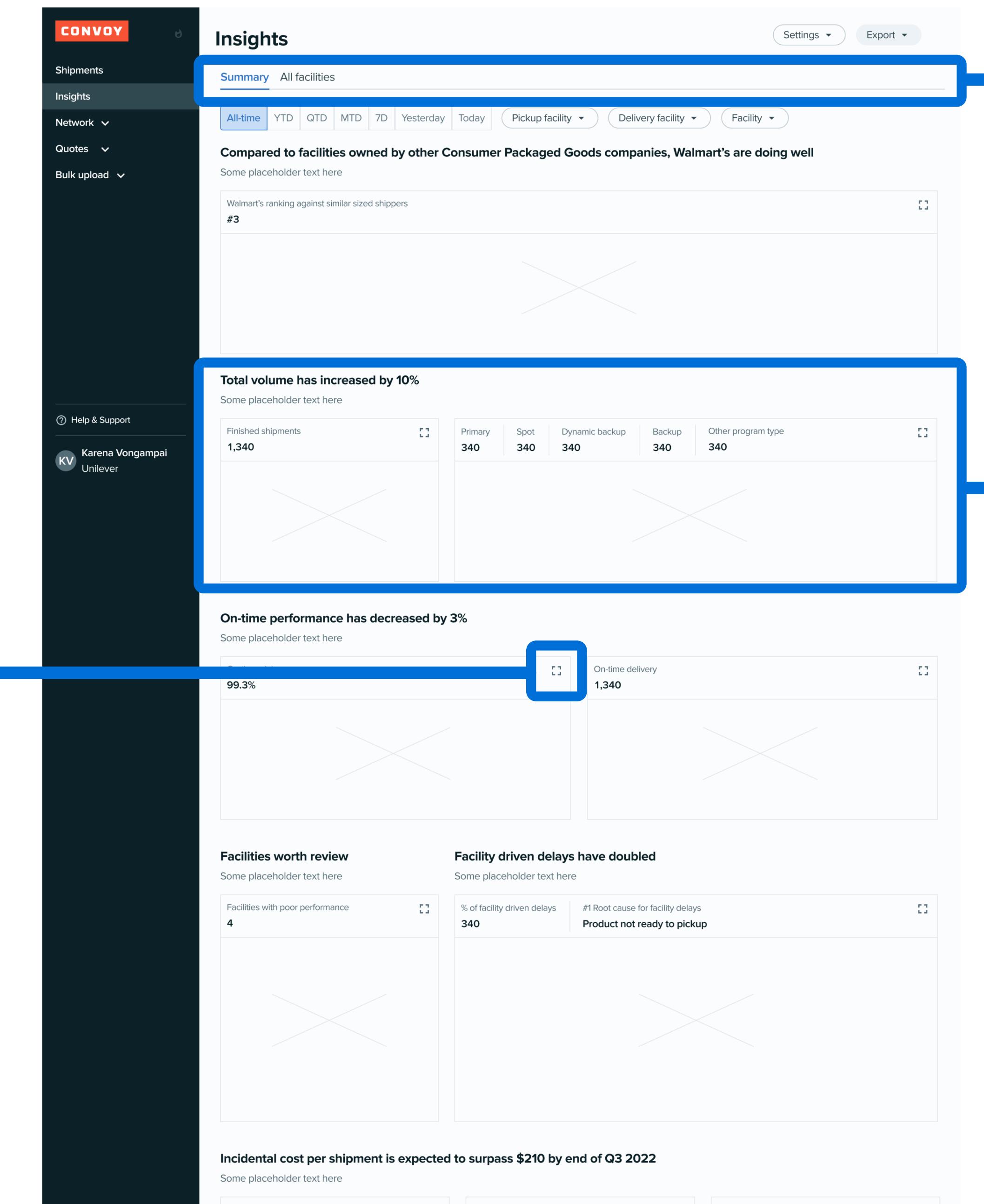
Accounts for additional use cases of multi-category,

Total completed shipment volume ⓘ   View details

2,320

Jan 2021

Ideal state explorations
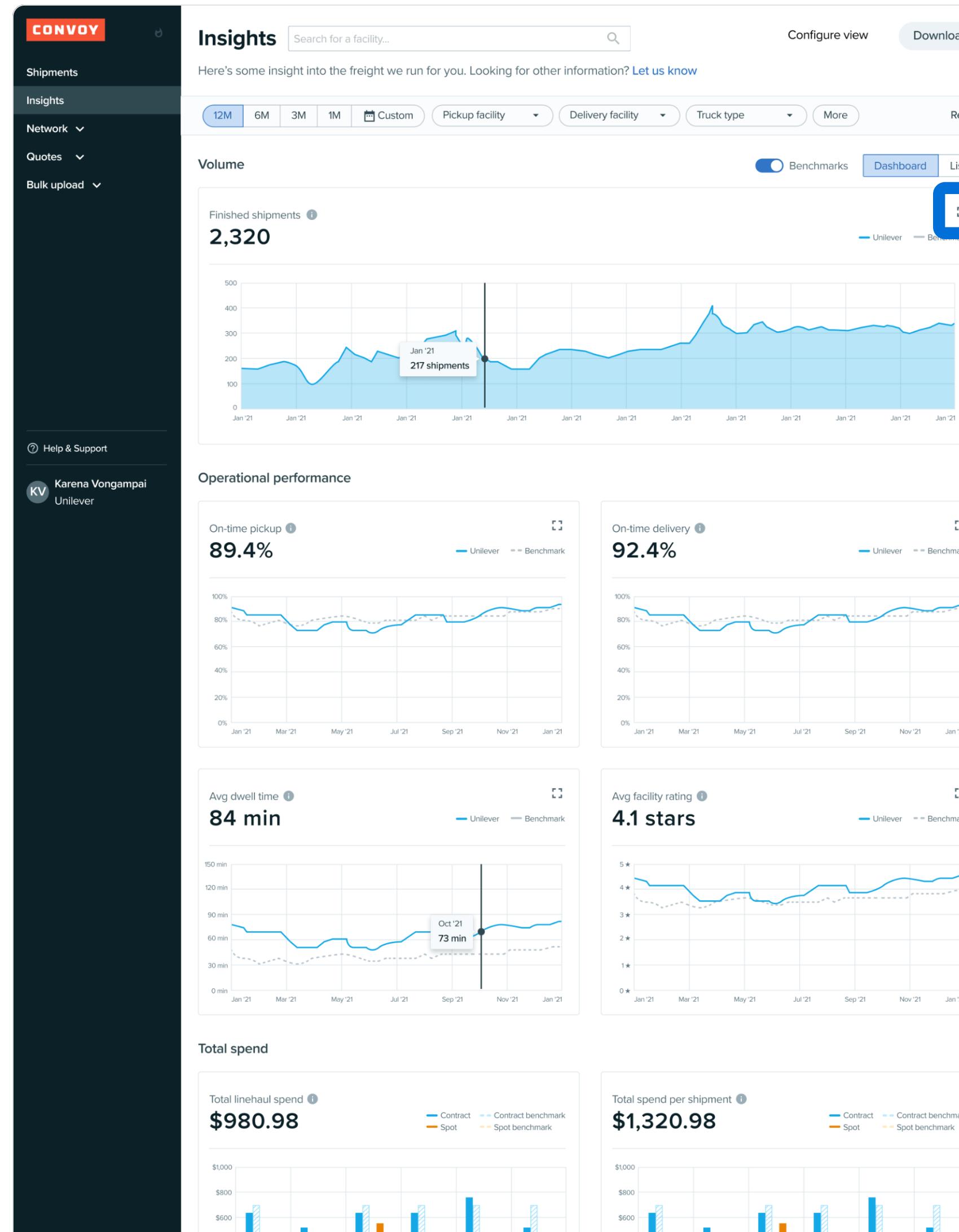
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Experimented with this, but didn't feel right because facilities is a more granular way to view the data
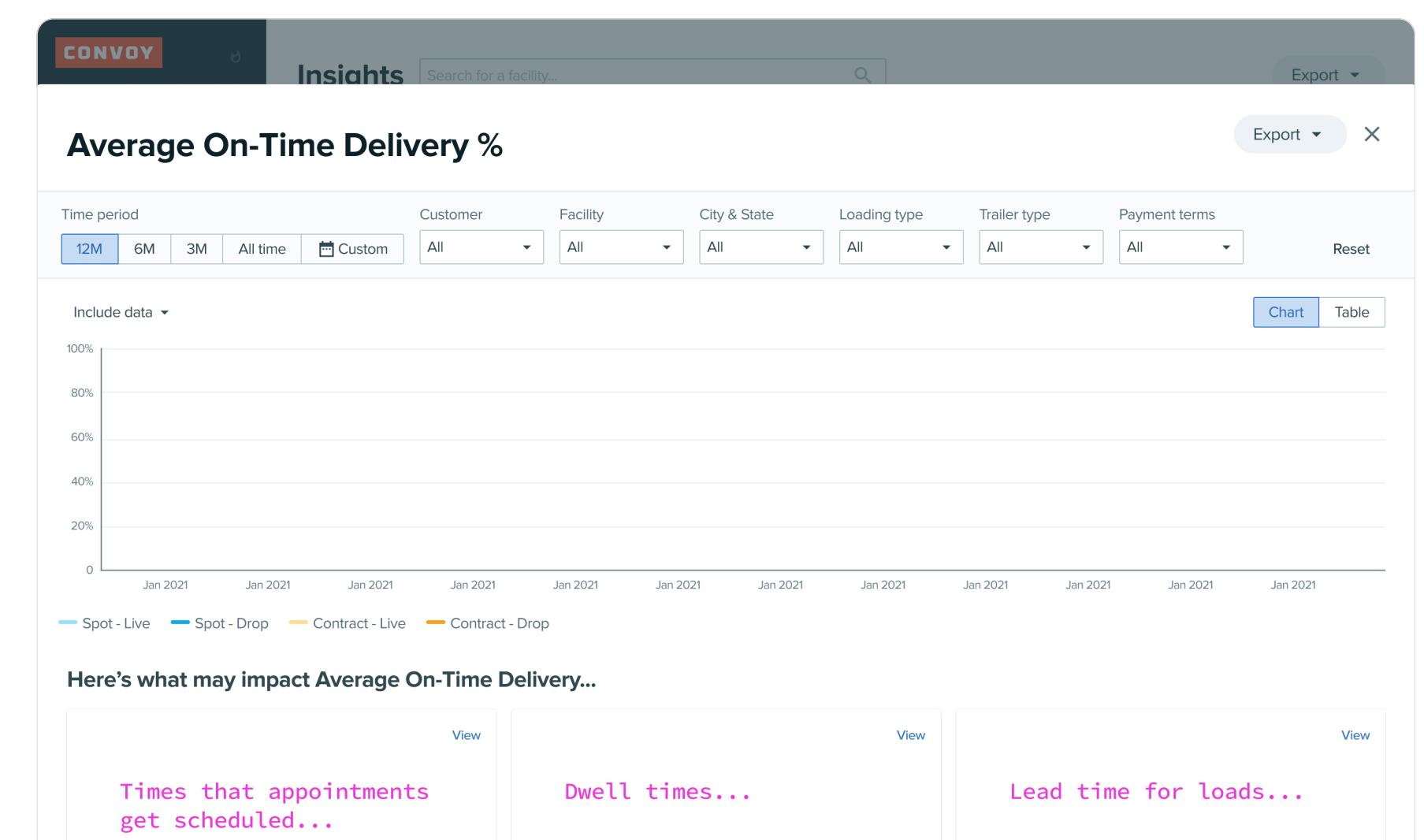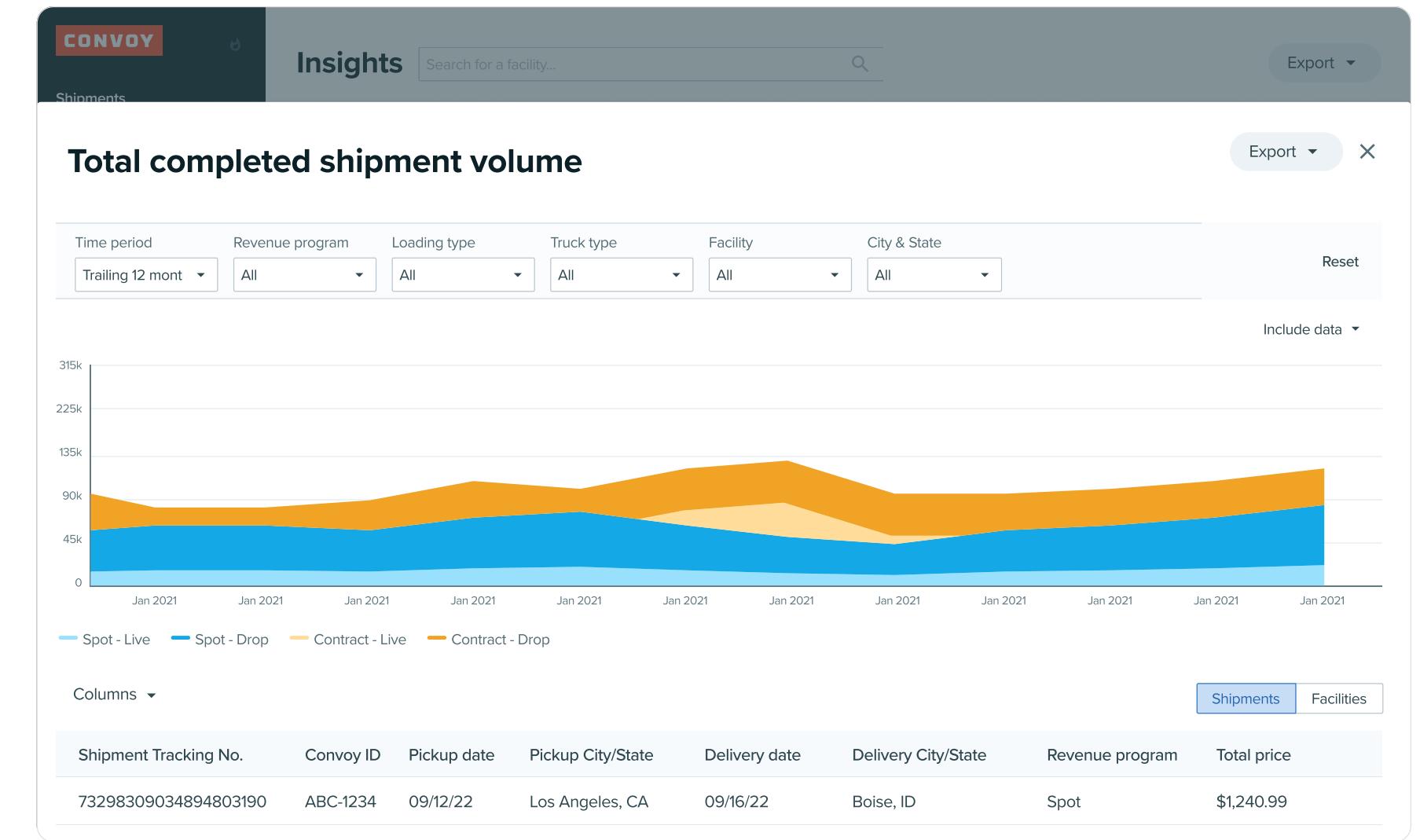
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CONVOY

Shipments

Insights

Network

Quotes

Bulk upload

Help & Support

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Unilever

Insights

Settings Export

Summary All facilities

All-time YTD QTD MTD 7D Yesterday Today Pickup facility Delivery facility Facility

Compared to facilities owned by other Consumer Packaged Goods companies, Walmart's are doing well
Some placeholder text here

Walmart's ranking against similar sized shippers
#3

Total volume has increased by 10%
Some placeholder text here

Finished shipments
1,340

| Primary | Spot | Dynamic backup | Backup | Other program type |
| 340 | 340 | 340 | 340 | 340 |

On-time performance has decreased by 3%
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99.3%

On-time delivery
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Facilities worth review
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Facilities with poor performance
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Facility driven delays have doubled
Some placeholder text here

% of facility driven delays
340

#1 Root cause for facility delays
Product not ready to pickup

Incidental cost per shipment is expected to surpass $210 by end of Q3 2022
Some placeholder text here

New ideas to enhance insights

Performance overview
As of 08/16/2022

Finished shipments	Average dwell time	On-time %	Total incidental spend	Incidental per shipment	Avg facility rating
1,434	**138 min**	**91.3%**	**$143.79**	**$43.78**	**4.2**
+12% MoM	-11% MoM	+12% MoM	+17.4% MoM	+1.4% MoM	+1.4% MoM

Walmart Kirkland DC
13499 West Distributor St, Kirkland, WA 98130

KPI	Jan to Aug 2022	Jan to Aug 2021	Year over year insights ✦⁚
Finished shipments	1,323	822	Volume has increased at this facility, due to a nearby closure
On time pickup %	91.4%	95.8%	On-time percentage is down, due to higher volume
On time delivery %	89.3%	95.8%	On-time percentage is down, due to higher volume
Average dwell time	110 min	82 min	Volume has increased at this facility
Total incidental spend	$23,400.77	$14,040.50	Incidental spend has increased due to longer detention payouts
Average facility rating	3.9	4.3	Majority of low ratings are due to facility inefficiencies

(?) **Want more information?** Let your account team know you'd like more information!   **Meet with account team**
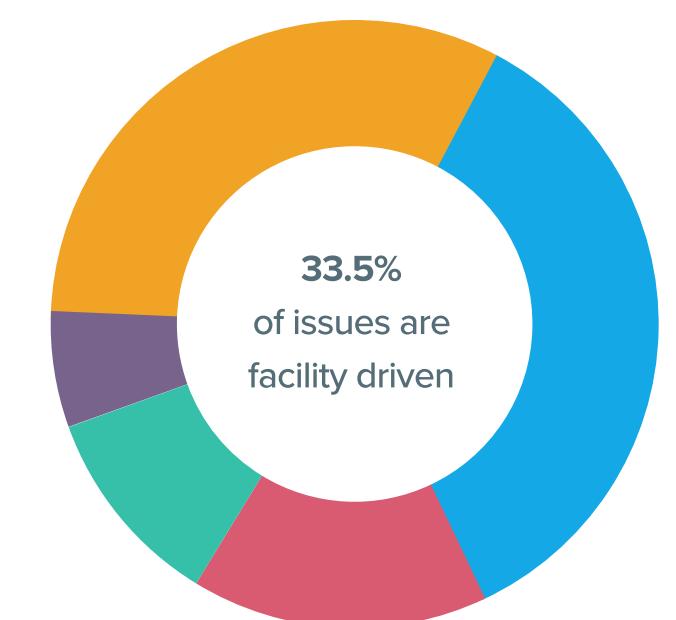
Compared to other Walmart facilities, this one's doing really well
Take a look at how this facility ranks against other similar facilities

Walmart Kirkland DC Kirkland, WA, 98130	#1 Rank	110 min Dwell time	3.2 Rating	94.5% On-time %
Walmart Bay Area DC San Jose, CA, 94076	#2 Rank	130 min Dwell time	3.2 Rating	93.9% On-time %
Walmart Rialto CA DC Rialto, CA 92104	#3 Rank	200 min Dwell time	3.3 Rating	90.2% On-time %

View more Walmart facilities
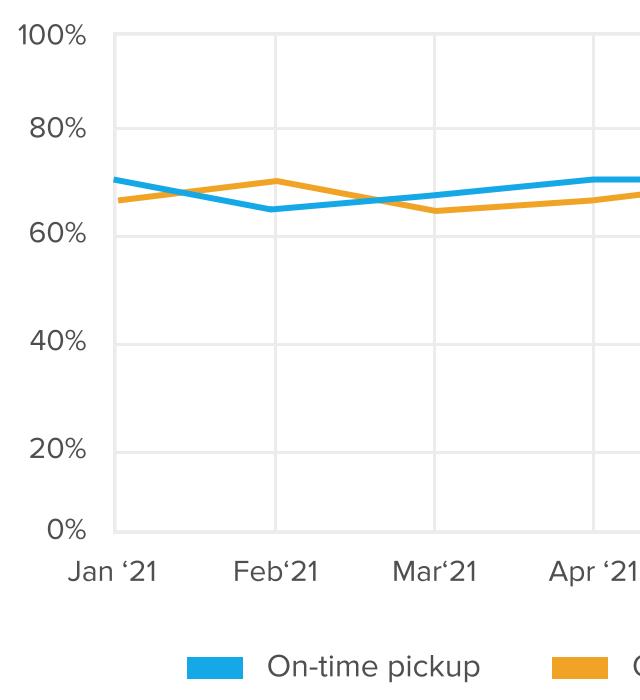
Majority of issues are facility driven

33.5% of issues are facility driven

- Facility fault
- Convoy fault
- Assigned carrier fault
- Shipper fault
- Unidentified fault

On-time performance is improv
Based on the past 5 months, we've been improve by 3%

100%
80%
60%
40%
20%
0%

Jan '21   Feb'21   Mar'21   Apr '21

— On-time pickup

Show designs broadly to collect feedback early and often

Frequent and informal share-outs helped me iterate, get new ideas, and land on the design goals for our Insights (data) experiences.

01   Insights need to communicate the key takeaway from data

02   Insights can be explored at different granularities

03   Insights experiences should be consistent across the product

03
Define scope and deliver designs

Our design system didn't account for data visualizations

Our design system hadn't been funded in over a year and we wanted to improve our design and development speed for future Insights features.

My engineers were involved in my design process and had a good understanding of what use cases we'd need to account for. We looked at available React charting libraries and landed on Recharts.

01 Recharts

02 Victory

03 Visx / Airbnb's Visx

Scope

Our company had just gone through a layoff recently, which is how I inherited this project. Leadership wasn't clear on the future of what would happen to our team and my working team was having a hard time committing and outlining a roadmap beyond the month. So instead of assigning sequencing to future ideas, we just put them on the back burner.

(In scope)

Reach parity, natively

Define reusable components and enhance the MVP dashboard to match the functionality of the existing Quicksights dashboard.

(Out of scope)

Offer new insights

Offer additional metrics or dashboards that were high priority. This included deeper dives on shipment exceptions, tender acceptance, emissions, etc.

(Out of scope)

Uplevel insights with AI

Summarize what the takeaway should to minimize time it takes to understand. be given the shipper's previous concerns, history with us, and other information we knew to tell stories, instead of just deliver KPIs and data visualizations.

Theming design decisions

I worked with another designer on my team, whose specialty was visual design. Together we collaborated on the UI for a reusable data visualization component library.

Here are a few pieces from the definitions we created.

Color

Data Visualization Color Palette

Categorical

Categorical colors help users map non-numberic meaning to objects in a visualization. Categorical colors are meant to be used in a specific order to maximize contrast.

1 Sky 500	2 Yellow 400	3 Dusk 500	4 Jade 500	5 Roarange 300	6 Blue 400

7 Lime 500	8 Dawn 500	9 Green 400

Primary Sequential

Sequential colors have numeric meaning. These are a gradation of colors that go from light to dark. We will use Sky Blue as the primary color for this gradient.

The lighter end of the palette should be used for lower numeric meaning, while the darker end of the palette should be used for higher numeric meaning.

1 Sky 50	2 Sky 400	3 Sky 500	4 Sky 600	5 Sky 800	6 Sky 900

Low numeric value — High numeric value

Primary Diverging

Divering colors have numeric meaning. They're used when dealing with negative values/ ranges that have two extremes with a baseline in the middle. Diverging palettes consist of 2 gradient color palettes that meet in the center. Diverging colors are ordered and may, or may not include a meaningful middle value.

6 Sky 900	5 Sky 800	4 Sky 600	3 Sky 500	2 Sky 400	1 Sky 50
1 Yellow 50	2 Yellow 400	3 Yellow 500	4 Yellow 600	5 Yellow 800	6 Yellow 900
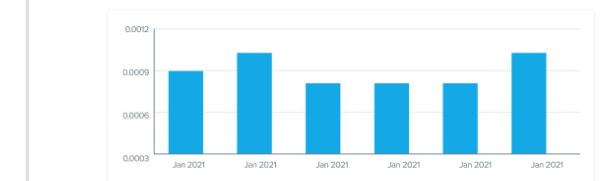
Doesn't have a meaningful middle color
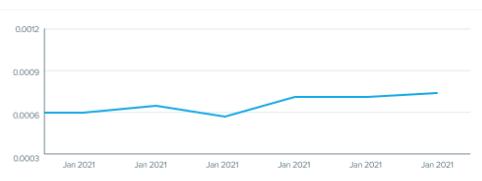
Data Visualization Color Palette Examples

Distribution, Single Category

For a single category of data viewed over time, we only need to pull the first color from the list of categorical color palette, to showcase that data.
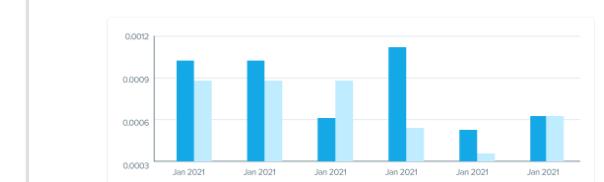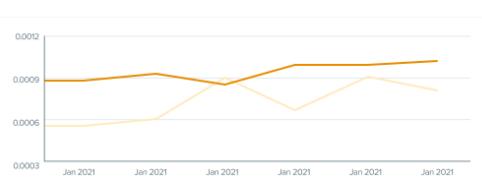
Bar chart example, Sky-500   Line chart example, Sky-500

Comparison, Single Category

For a single category of data, we can compare it against itself from the past, or even a benchmark in that category.
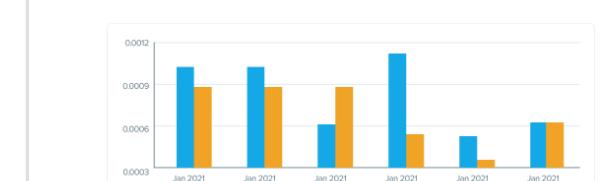
Bar chart example, Sky-500 vs. Sky-50   Line chart example, Yellow-500 vs. Yellow-50

Comparison, Multiple Category

For multiple categories of data, we can compare them against each other, using colors from the categorical data color palette.
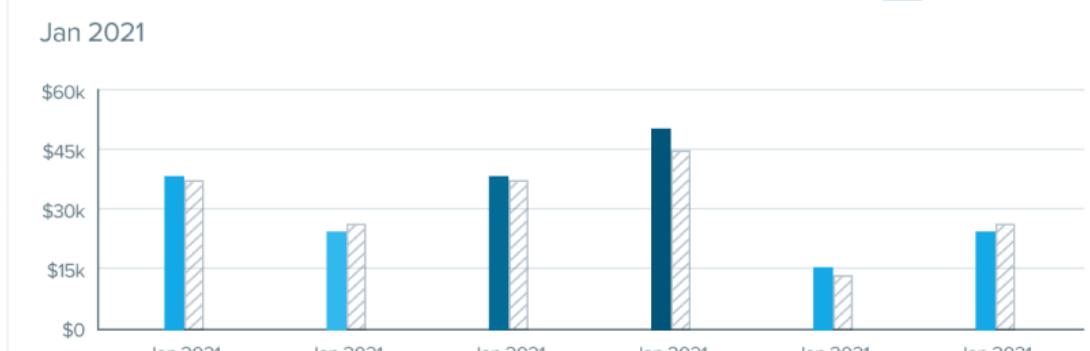
Bar chart example, Sky-500 vs. Yellow-500   Line chart example, Sky-500 vs. Yellow-500

Total incidental spend ⓘ

$40,000

Jan 2021

View →

Benchmark

$60k
$45k
$30k
$15k
$0

Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021

Dashboard design decisions

I worked with another designer on my team, whose specialty was visual design. Together we collaborated on the UI for a reusable data visualization component library.

I also worked with engineering to understand customization and theming needs with Recharts.

Card layouts and information

Chart title
This headline should tell the user what metric / data they're looking at

Metric value (optional)
This should be the latest value of that data set

Metric descriptor (optional)
This should be the time period that reflects the metric value

Info icon (optional)
On hover, this should showcase a description of what the metric is, how it's measured

Tooltip message

Total completed shipment volume ⓘ
2,320
Jan 2021

315k
225k
135k
90k
45k
0

Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021   Jan 2021

● Spot - Live   ● Spot - Drop   ● Contract - Live   ● Contract - Drop

12 col / 100% width; flex height

9 col / 75% width; flex height

3 col / 25% width; flex height

8 col / 66.6% width; flex height

4 col / 33.3% width width; flex height

6 col / 50% width; flex height

6 col / 50% width; flex height

4 col / 33.3% width width; flex height

4 col / 33.3% width width; flex height

4 col / 33.3% width width; flex height

3 col / 25% width; flex height

3 col / 25% width; flex height

272 px width; flex height

272 px width; flex height

Dashboard design decisions

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Error and loading states

Average Dwell Time ⓘ
159 min
12M | Oct 18, 2022 - Oct 18, 2021

⚠️
Unable to load chart
Try again

Total Incidental Spend ⓘ
$40,030
12M | Oct 18, 2022 - Oct 18, 2021

◠
Loading

⚠️
Unable to load chart
Try again
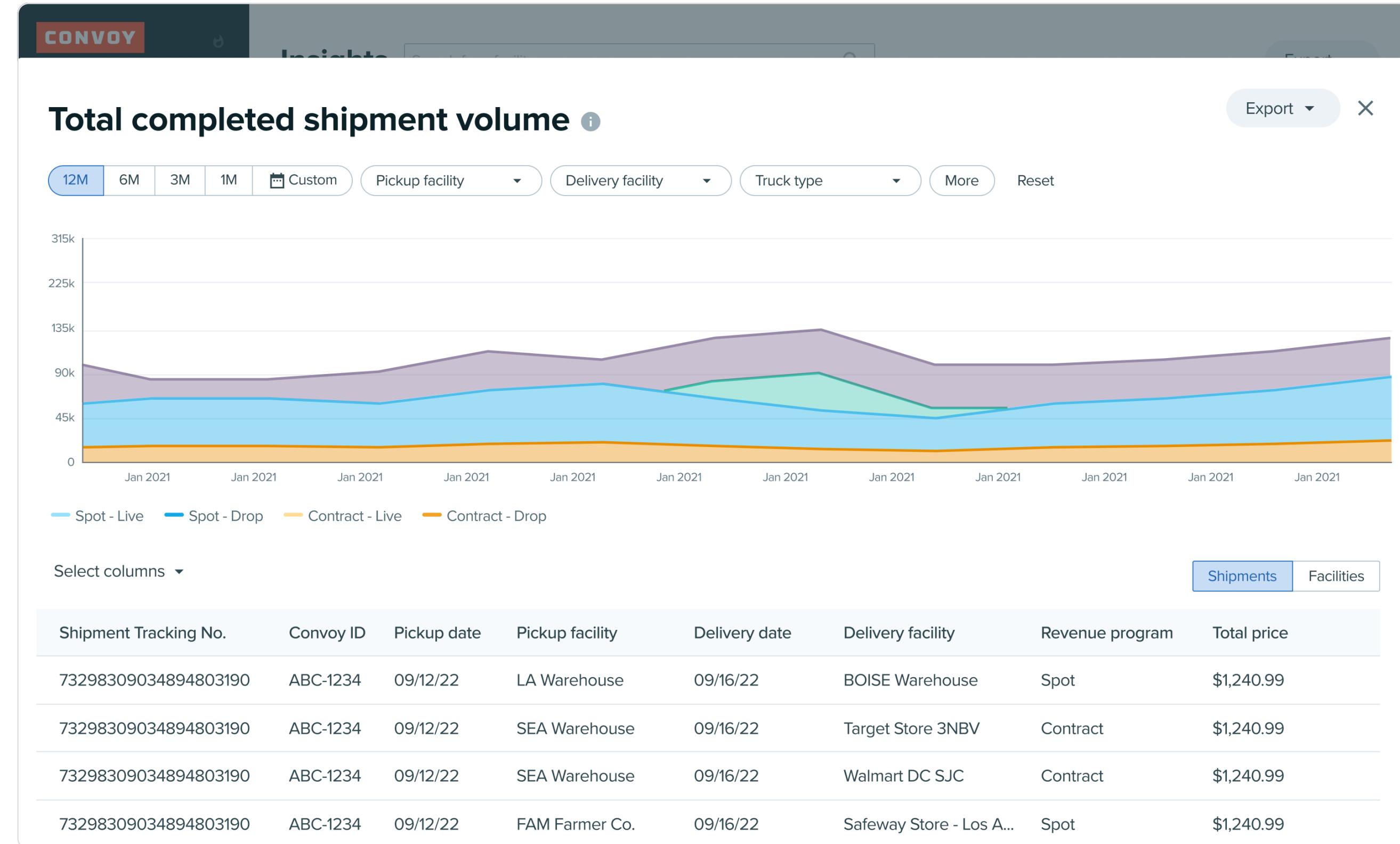
Redesign

User monitors overall broker performance at a birds eye view

CONVOY

Shipments

Insights

Network

Quotes

Bulk upload

Help & Support

KV Karena Vongampai
TPW Company

Insights   Search for a facility...

Export

Here's some insight into the freight we run for you. Looking for other information? Let us know

12M 6M 3M 1M Custom Pickup facility Delivery facility Truck type More Reset
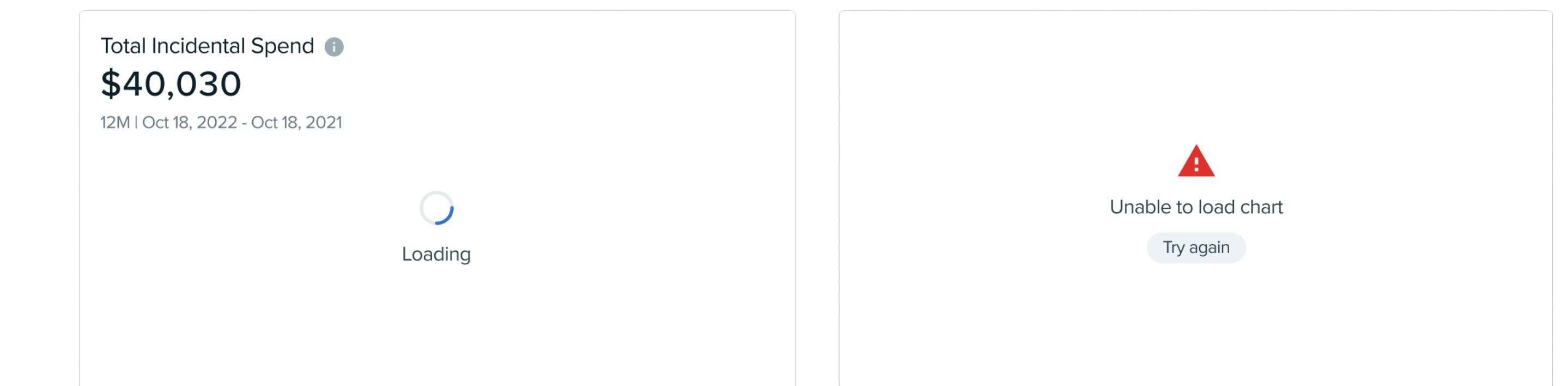
Review the shipments we've executed   Dashboard List

Total completed shipment volume View details
2,320
Jan 2021

Jan 2021 shipments
4,500
10,000
0
12,000

Spot - Live   Spot - Drop   Contract - Live   Contract - Drop

Understand service and performance

Average On-Time Pickup % View details
92.5%
12M | Oct 18, 2022 - Oct 18, 2021

TPW Company Benchmark

Average On-Time Delivery % View details
86.8%
12M | Oct 18, 2022 - Oct 18, 2021

TPW Company Benchmark

Average Dwell Time View details
159 min
12M | Oct 18, 2022 - Oct 18, 2021

TPW Company Benchmark

Check how much has been spent on incidentals

Total Incidental Spend View details
$40,030
12M | Oct 18, 2022 - Oct 18, 2021

Average Incidental Spend Per Shipment View details
$274.55
12M | Oct 18, 2022 - Oct 18, 2021

Ideal state explorations

Redesign

User deep dives into a specific KPI and can see the raw data set

CONVOY

Insights

Total completed shipment volume ⓘ

Export ▾   ✕

| 12M | 6M | 3M | 1M | 📅 Custom | Pickup facility ▾ | Delivery facility ▾ | Truck type ▾ | More | Reset |

315k

225k

135k

90k

45k

0

Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021 Jan 2021

━ Spot - Live ━ Spot - Drop ━ Contract - Live ━ Contract - Drop

Select columns ▾   Shipments | Facilities

Shipment Tracking No.	Convoy ID	Pickup date	Pickup facility	Delivery date	Delivery facility	Revenue program	Total price
73298309034894803190	ABC-1234	09/12/22	LA Warehouse	09/16/22	BOISE Warehouse	Spot	$1,240.99
73298309034894803190	ABC-1234	09/12/22	SEA Warehouse	09/16/22	Target Store 3NBV	Contract	$1,240.99
73298309034894803190	ABC-1234	09/12/22	SEA Warehouse	09/16/22	Walmart DC SJC	Contract	$1,240.99
73298309034894803190	ABC-1234	09/12/22	FAM Farmer Co.	09/16/22	Safeway Store - Los A...	Spot	$1,240.99

Ideal state explorations

Redesign

User can investigate raw data points

Ideal state explorations

Redesign

Insights

Search for a facility...

Here's some insight into the freight we run for you. Looking for other information? Let us know

12M 6M 3M 1M Custom Pickup facility Delivery facility Truck type More   Reset

Export

Review the shipments we've executed

Dashboard | List

Total completed shipment volume
2,320
Jan 2021

View details

Jan 2021 shipments
4,500
10,000
0
12,000

Spot - Live   Spot - Drop   Contract - Live   Contract - Drop

Understand service and performance

Average On-Time Pickup %
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12M | Oct 18, 2022 - Oct 18, 2021

View details

TPW Company   Benchmark

Average On-Time Delivery %
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12M | Oct 18, 2022 - Oct 18, 2021

View details

TPW Company   Benchmark

Average Dwell Time
159 min
12M | Oct 18, 2022 - Oct 18, 2021

View details

CONVOY

Insights

Search for a facility...

Export

Here's some insight into the freight we run for you. Looking for other information? Let us know

| Time period | Facility | City/State | Customer | Payment terms | |
| Trailing 12 months | All | All | All | All | Reset |

Columns

Dashboard | List

Facility name	Address	State	Zipcode	Finished shipments	Avg dwell	On time pickup %	On time delivery %
COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%
COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%
COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%
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COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%
COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%
COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%
COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%
COSTCO WHOLESALE 94V	134193 W Elephant Rd	CA	94037	1,243	34 min	85.6%	94.3%

1 to 25 of 200

Shipments
Insights
Network
Quotes
Bulk upload

Help & Support

KV Karena Vongampai
Encore Glass

CONVOY

Shipments
Insights
Network
Quotes
Bulk upload

Help & Support

KV Karena Vongampai
Unilever

< Back

View facility details   Export

ABC Distributor 32

1549 N Matilda St, Sunnyvale, CA 94087

Volume | Dwell time | Carrier feedback | Incidentals

Completed shipment volume
2,320

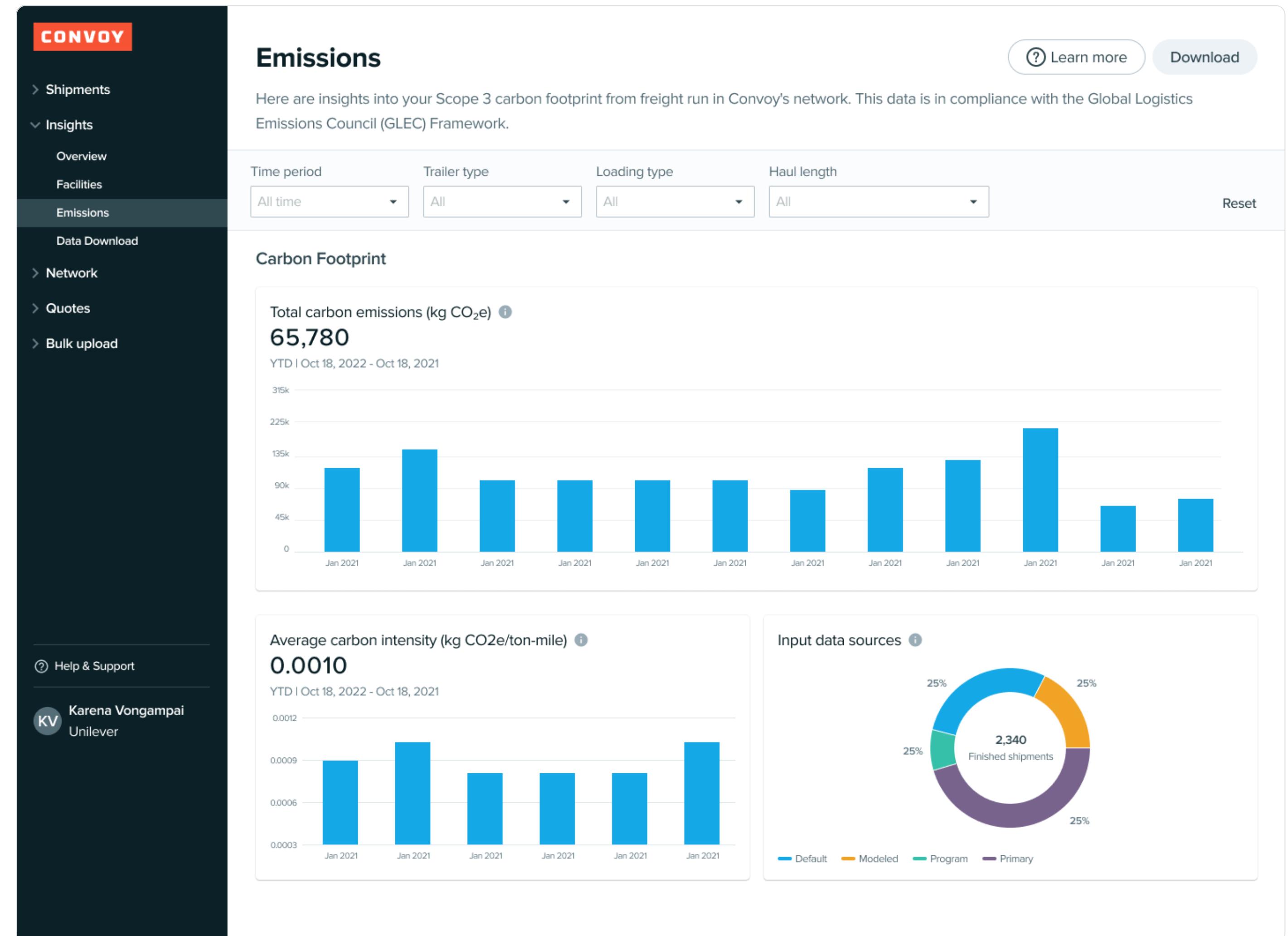Spot - Live   Spot - Drop   Contract - Live   Contract - Drop

04
Conclusion & Reflection

Conclusion

Unfortunately, the reduction in workforce and other cost cutting measures defunded this project.

Immediately after this, there was a company wide hackathon. The engineers, product manager, and I decided to re-use our work to deliver a new data experience for shippers to track their CO_2 emissions.

Reflections

After we were able to learn from our pilot, Convoy shutdown due to the on-going freight recession.

Though this project ended abruptly, I learned a ton along the way.

01 Don't be afraid to draw the "wrong" things. Design helps people develop a perspective. Throughout this experience, I learned that having something down on paper is better than nothing at all.

02 Build relationships with other designers who can help you elevate your craft. In this project, I loved building up my visual design chops by jamming with another designer.