City of Dublin – Vendor Data Review and Project Delivery Objectives

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1.0	9/22/2025	Marc Dilsaver	No comments
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Purpose of Document

The Transportation Data Aggregation Dashboard project streamlines access to transportation data from eleven different data sources. Multiple vendor dashboards are now simultaneously viewable via web-based application and Power BI dashboards generated from data from vendors via API. This document provides a comprehensive review of vendors, their data capabilities, and the supporting technical infrastructure for the Dashboard.

1. Transportation Data Aggregation Dashboard

The dashboard's landing page and login were synchronized with the City of Dublin's Azure environment and local authentication, allowing City of Dublin employees to use their existing credentials and profiles to login. The Dashboard has four featured tiles – VendorLink, Parking Analytics, Signal Monitoring, and Crash Analytics. VendorLink features embedded dashboards from existing vendors while Parking Analytics, Signal Monitoring, and Crash Analytics leverage API data feeds from vendors to present data in a consolidated view by using Power BI
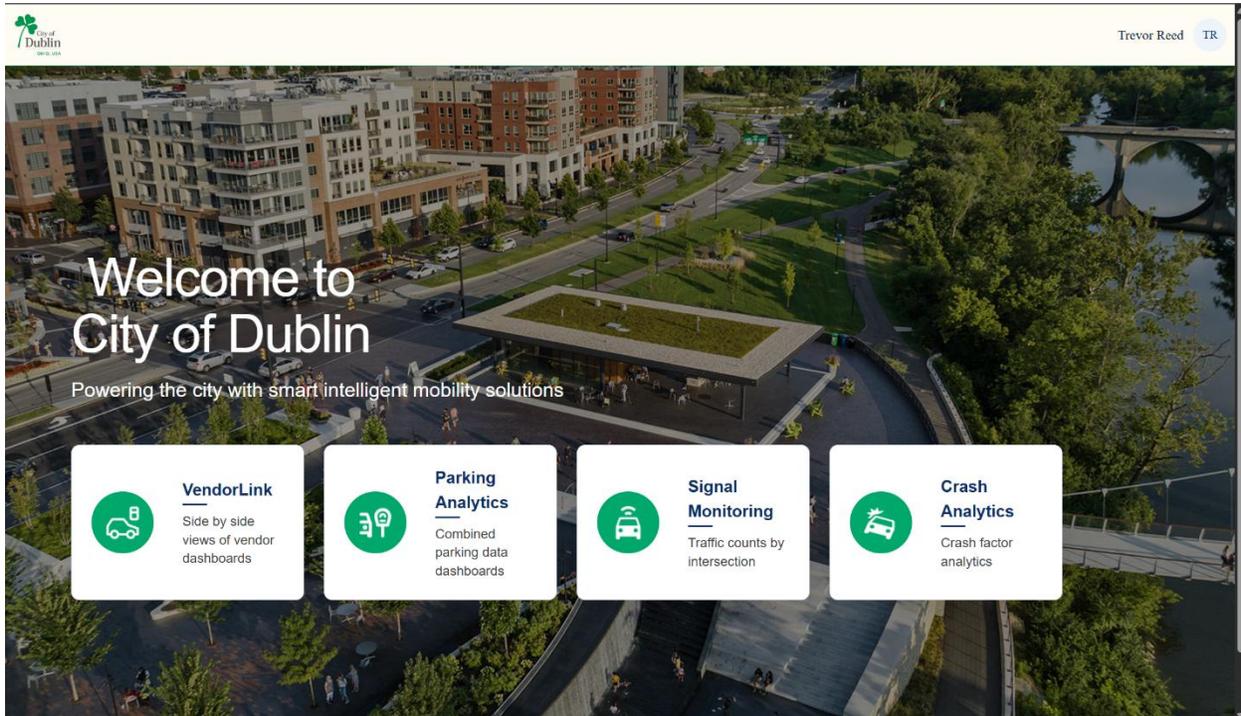

Figure 1: City of Dublin Transportation Data Dashboard Landing Page

1.1 VendorLink

VendorLink provides a single reference page for navigation to vendors who do not support embedding and the ability to view vendor dashboards within the tool for those who support embedding (Figure 2). Tiles are ordered based on the frequency of their use.
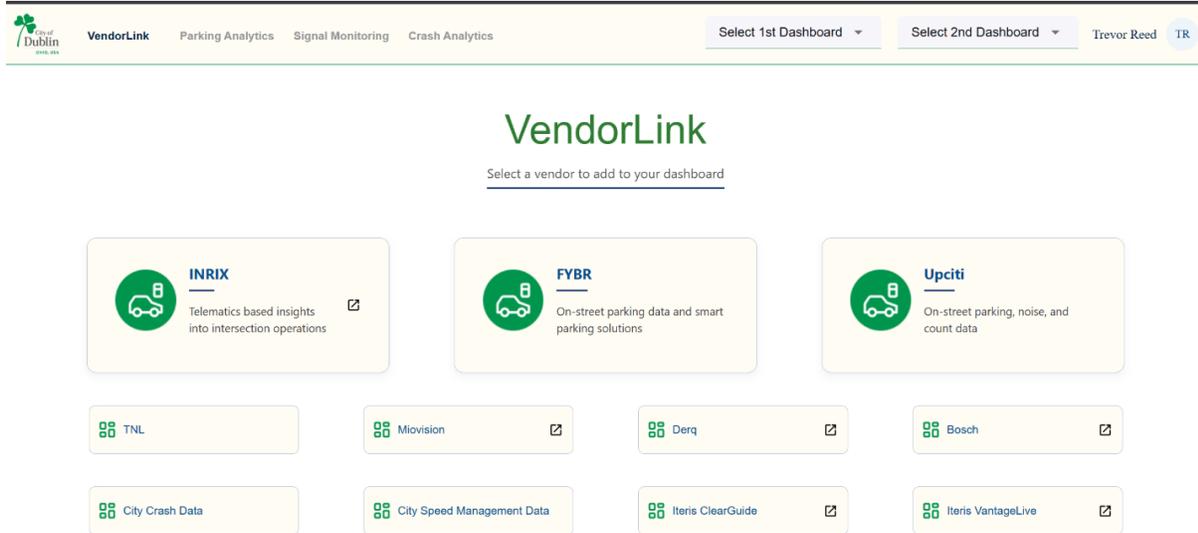

Figure 2: VendorLink Landing Page

VendorLink enables the simultaneous viewing and navigation of embedded vendors dashboards in a single pane. Links to vendor dashboards who do not support embedding are hyperlinked.
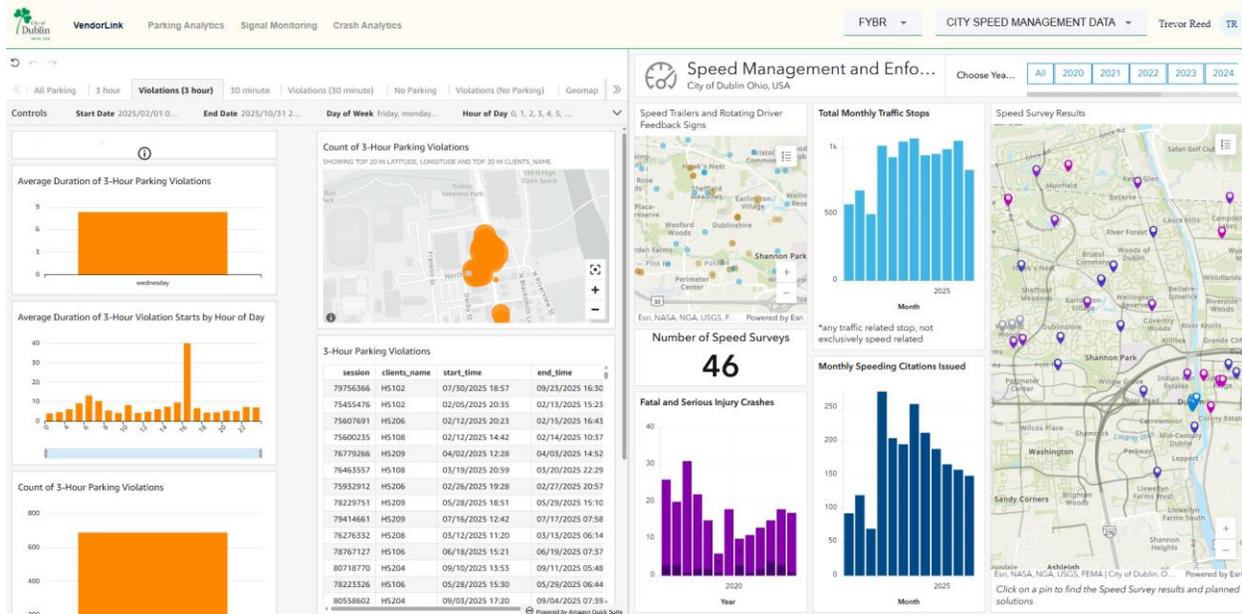

Figure 3: VendorLink Side by Side View

1.2 Crash Analytics

The Crash Analytics dashboard leverages historical crash records and logged crash attributes to facilitate rapid analysis of trends across the City of Dublin, Figure 4 below.
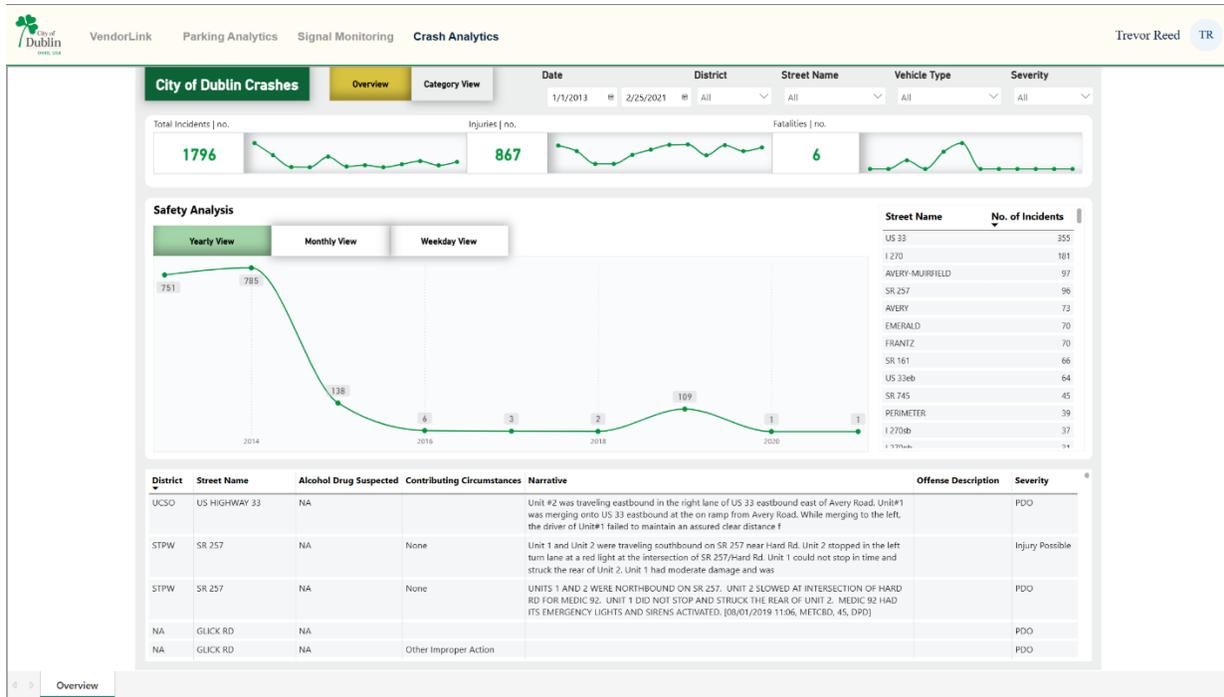
Figure 4: Crash Analytics Summary Dashboard

1.3 Signal Monitoring

Traffic counts from ten unique intersections and four vendors (Derq, Bosch, Miovision, and Iteris) are aggregated, providing a single repository of vehicle count information across vendors, Figure 5 below.

Figure 5: Signal Monitoring Summary Dashboard

1.4 Parking Analytics

Parking trend data from FYBR and ParkPow is aggregated to enable ready comparisons of on-street parking performance versus off-street parking performance to enable trend tracking and effective parking management, Figure 6 below.

Figure 6: Parking Analytics Summary Dashboard

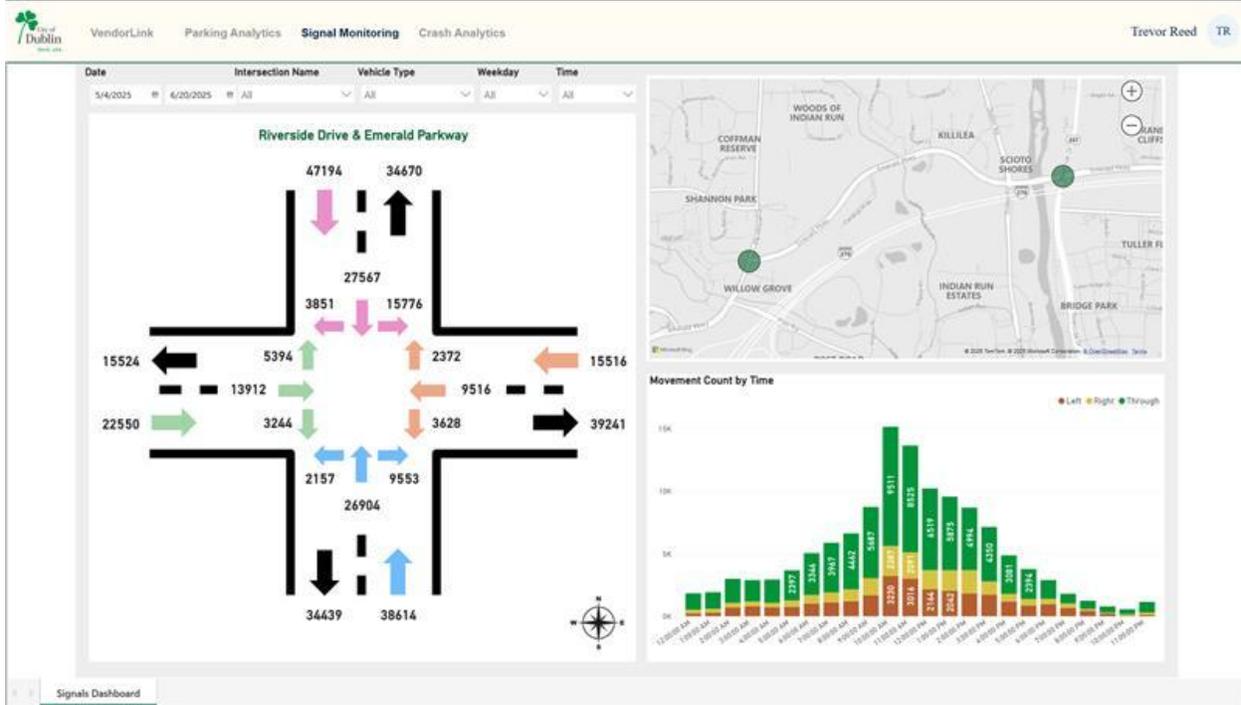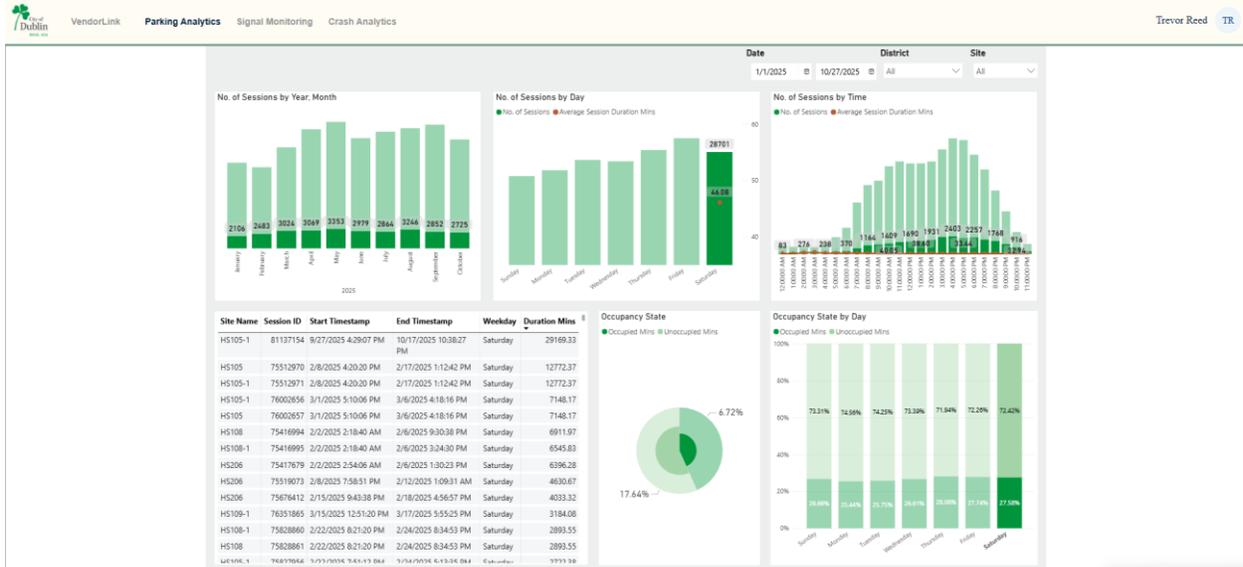## 2. Vendor Review and Cross Vendor Observations

2.1 Data Discovery

Data Discovery occurred in two. Phase 1 focused on developing a 'portal of portals' capability where users can login into all vendors portals via single login into a new City of Dublin Transportation portal. Phase 2 concentrated on data infrastructure and integration from vendor APIs. The Discovery process for each phase proceeded through a desk review of shared materials and multiple interviews/question rounds with vendor representatives to fulfill project delivery objectives.

2.1.1 Phase 1 Discovery – A Portals of Portals Integration

Phase 1 Discovery sought answers to the five following questions to identify integration capabilities by vendor.

1. Does the vendors platform support embedding?
    a. What visualization tools generate the dashboard(s)?
    b. What is the HTML/URL of the dashboard for embedding?
    c. If dashboard uses QuickSight, what is the associated AWS region?
    d. Provide City of Dublin URL domain for authorization.
2. Does the vendors platform currently support single sign on?
3. What is the methodology of signing on?
4. How can vendor data support viewing via portal?
5. How can Anser/Accenture secure access to the vendors portal?

The Anser/Accenture team has developed architecture for embedding the vendor's URL and adding the Dublin Transportation portal to their allowed list.

2.1.2 Phase 2 Build – Building the Infrastructure and Data Integration

Phase 2 focused on importing raw vendor data into a data lake for the development of purpose build use cases. Key questions center on the generation and integration of data via API calls.

1. Does the vendor support data export via API? If so, what is the access link and associated security token?
2. What data does the vendor generate? Is all data exportable via API or only a subset of data?
3. Is the data real-time or historical? What is the latency/data frequency of updates?
4. Are there any additional ways to access the data? For example, via data warehouse?

Anser/Accenture has developed custom scripts to run vendor APIs to support the efficient collection and integration of vendor data into a single data lake. Through this capability, the City of Dublin will be able to develop unique use cases and applications for their data.

2.1.3 Accelerator Data Validation

Anser/Accenture created two 'Accelerators' to validate API data inputs with data presented on Vendor dashboards. The Parking Data Stream Validation Accelerator is the collation of parking data vendor data streams into summary information, presented in the Parking Analytics dashboard. The Signal Monitoring Vehicle Movement Accelerator ingested data from signal analytics data providers and provides summaries via the Signal Monitoring dashboard.

2.1.4 Summary of Vendor Dashboard Integration

In contexts where vendors did not support embedding, links to their dashboards were hyperlinked. Single sign on was analyzed for all vendors, but presently no vendor supports the reconfiguration of their security to enable single sign on. Tables 1, 2 and 3 below provide a summary of embedding and data integration by vendor.

Vendor Name	Dashboard Embedding	API Data Integration
Fybr	Yes	Yes
ParkPow	Did not support embedding, data integrated via parking dashboard	Yes
Upciti	Hyperlinked	Endpoint established, Upciti has not completed activation

Table 1: Parking Data Providers

Vendor Name	Dashboard Embedding	API Data Integration
Bosch	Hyperlinked	Yes
Derq	Hyperlinked	Yes
INRIX	Hyperlinked	API forthcoming
Iteris	Hyperlinked	Yes
Miovision	Hyperlinked	Yes
TNL	Yes	API not supported, database cloning required

Table 2: Intersection Data Providers

Vendor Name	Dashboard Embedding	API Data Integration
City of Dublin Crash	Yes	Yes
City of Dublin Speed	Yes	Yes

Table 3: City of Dublin Data Sources

3. Data Vendors

3.1 Parking Data Providers

The City of Dublin has three parking data providers: Fybr, Upciti, and ParkPow. ParkPow monitors the Rock Cress Garage via cameras that monitor vehicles entering and leaving the garage. Fybr uses sensors that monitor space occupancy and violations via sensors in parking spaces (Figure 7) while Upciti uses multi-sensor installations to monitor parking, modal counts by type (bikes, cars, heavy vehicles), and noise. The following review of vendor capabilities, and their integration into the Dashboard, provides an overview of their capabilities relative to each other and whether they support embedding and API integration.

3.1.1 Fybr

Fybr provides smart parking capabilities via the installation of sensors in roadside spaces in the City of Dublin that provide real-time occupancy information on North High Street and North Street. Data collected includes sessions and their duration by hour, day, and day of the week. This allows the City of Dublin to identify timed parking violations that can support active management of the spaces via enforcement. Fybr presents their data via summary charts and maps in Amazon's QuickSight analytics platform Figure 8 below.
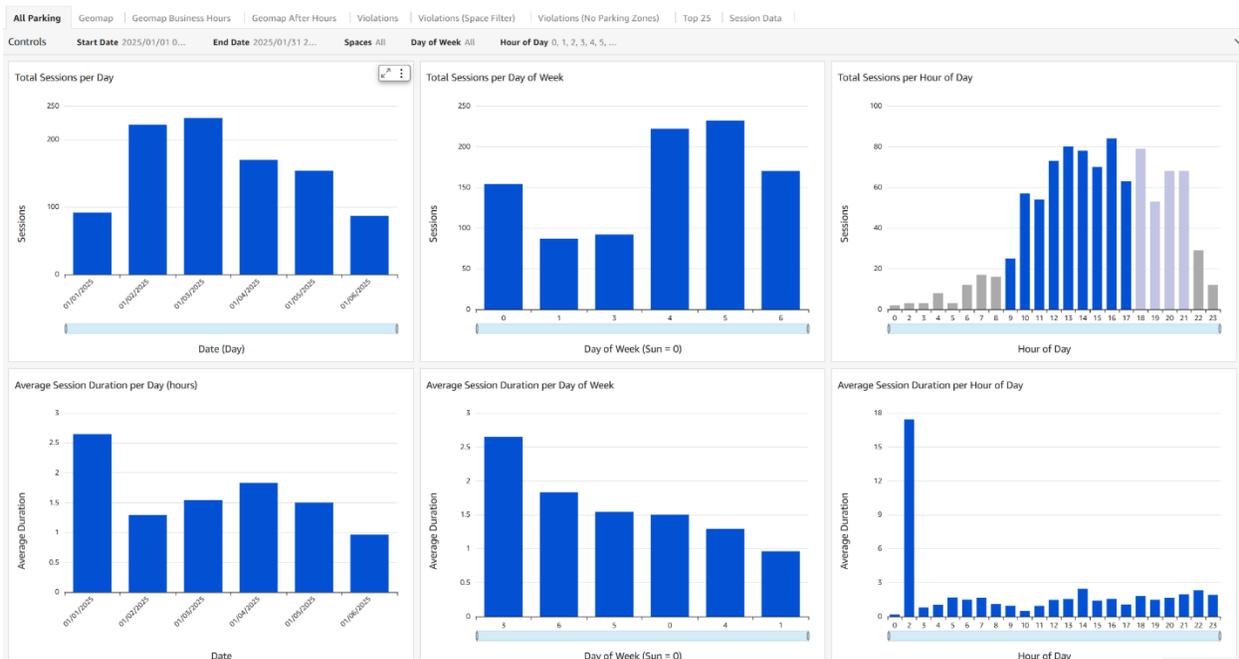

Figure 7: Fybr Parking Sensor

Figure 8: Fybr Dashboard of Summary Parking Statistics

The City of Dublin uses Fybr parking data to identify if delivery vehicles are blocking access through the deployment of sensors within the center left turn lane, multiple sensors in large loading/unloading zones, and single sensor installations for single spaces.

Fybr also provides Parking Genius and Enforce Products. Parking Genius combines mobile payment for metered parking while Enforce enables real-time parking enforcement by showing violations in real-time. Neither service is employed currently in the City of Dublin.

Figure 9: On Street Parking, loading, and unloading management (note sensors in center divider space)

Integration Ability for Embedding within the VendorLink

Fybr provides full integration capabilities via Amazon's Quick Sight data visualization dashboards. The dashboards were embedded within the City of Dublin Portal with users signing into the Quick Sight dashboard with their unique user credentials once inside the portal. The dashboards are comprehensive, providing key indicators including sessions counts, duration, and violations by parking space.
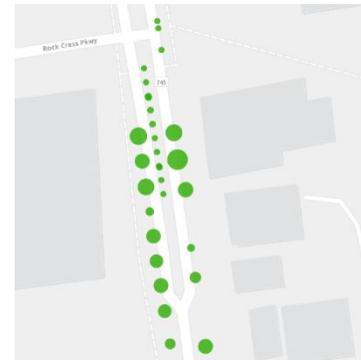
Integration Ability for APIs

Fybr supports the export of data via API calls, the data pipeline was validated via the Parking Data Stream Validation Accelerator outputs compared to Fybr's data dashboards.

3.1.2 Upciti

Upciti provides smart parking capabilities via the installation of camera and microphone sensors installed that provide real-time occupancy information, environmental noise, double parking, and vehicle counts on Longshore St. and North High Street (Figure 10).

Figure 10: Upciti Sensor

Parking

Data collected includes sessions and their duration by hour, day, and day of the week. This allows the City of Dublin to identify timed parking violations to support active management of the spaces via enforcement.
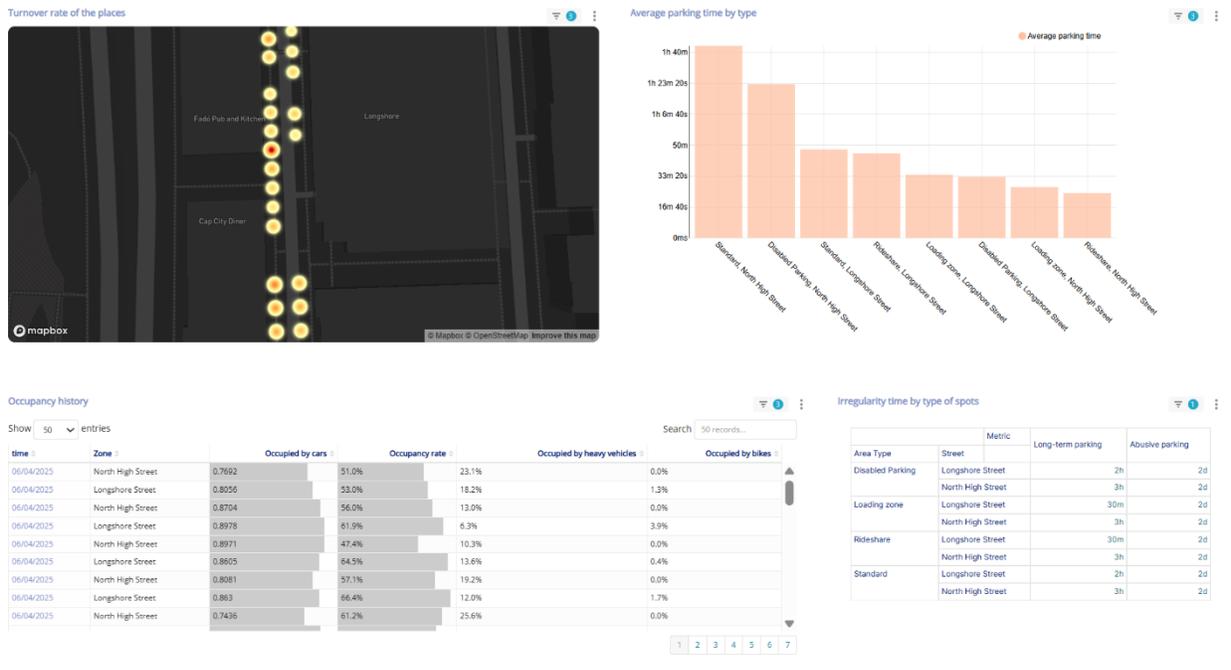

Figure 11: Upciti Summary Dashboard of Parking Trends

Environmental Noise

Upciti provides the capability to measure ambient noise by minimum, maximum, and average decibel level by time of day and location. Summary information is provided in table, graphics, and map formats.
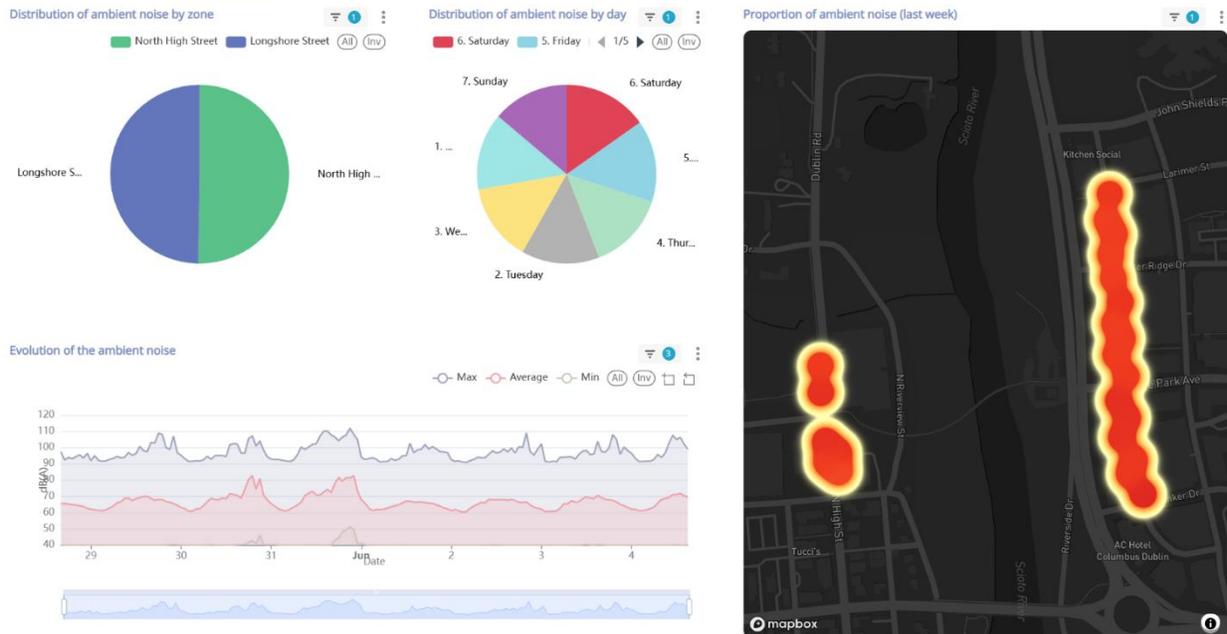
Figure 12: Upciti Dashboard Summarizing Noise Trends by Time of Day and Location

Double Parking

Upciti tracks double parking in real-time while aggregating summary statistics on the location, time of day, and average duration of the violation.

	Metric	Total																								Total (Sum)
	Hours	0:00	1:00	2:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
Days																									
1. Monday							3	8	14	7	7	10	6	8		6	3	2	7	2		1			84
2. Tuesday							12	10	3		7	12	1	2	3	8	2	2	1			3			66
3. Wednesday				1		2	1	9	5	12	10	2		2	8	2	5	7	6	9	7	1			89
4. Thursday				1	1	2	3	5	6	9	11	6	4	6	7	6	4	10	8	4	2				95
5. Friday			3	1	9	5	4	6	22	9	7	9	10	11	9	11	8	10	11	5	3	3			156
6. Saturday		4			7	48	20	12	9	5	41	3	5	7	6	4	9	4	7	7	7	2			207
7. Sunday	2	4	2	1					1	1	7	6		1	6	8	1	2	1	1	1				45
Total (Sum)	2	8	2	3	4	34	74	53	35	64	56	75	34	24	47	35	38	37	34	36	28	14	5		742

Figure 13: Upciti Summary Table of Parking Violations by Location

Vehicle Counts

Upciti cameras enable the counting of vehicles by Car, Heavy Vehicle, and Bike classifications in intervals as small as one-hour (Figure 14 below). Data is generated by location with vehicle directionality and type.
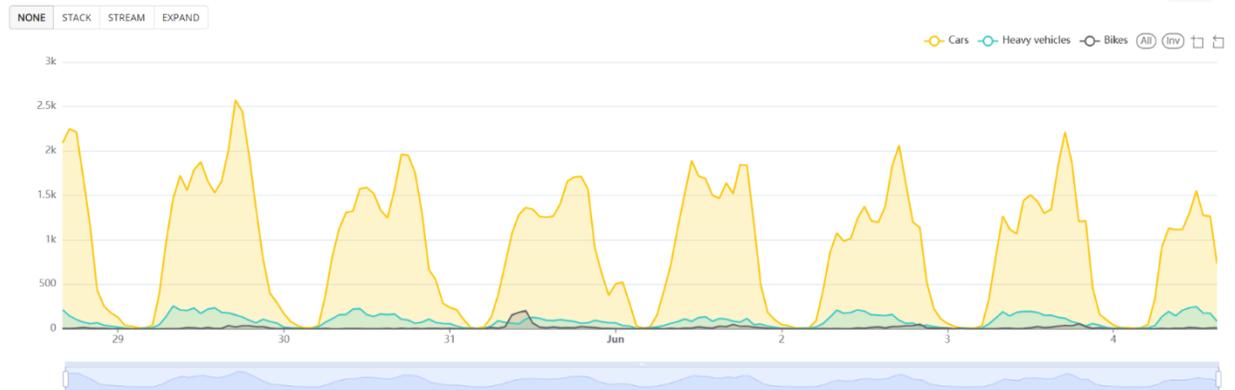
Figure 14: Upciti Vehicle Counts by Type

Integration Ability for Embedding within the VendorLink

Integration Ability for Embedding within the VendorLink

The City of Dublin, Upciti, and Accenture completed preliminary efforts to enable embedding, but were unable to reconfigure their data dashboard while maintaining preferred security configurations.

Integration Ability for API

Accenture worked with Upciti to create a data endpoint for Upciti to push data to. However, Upciti did not complete final set up of the connection.

3.1.3 ParkPow

ParkPow provides parking management information using cameras at the entrance and exit of the Rock Cress Garage. This data is presented externally on the City of Dublin parking website via GIS, Figure 15 on the following page.
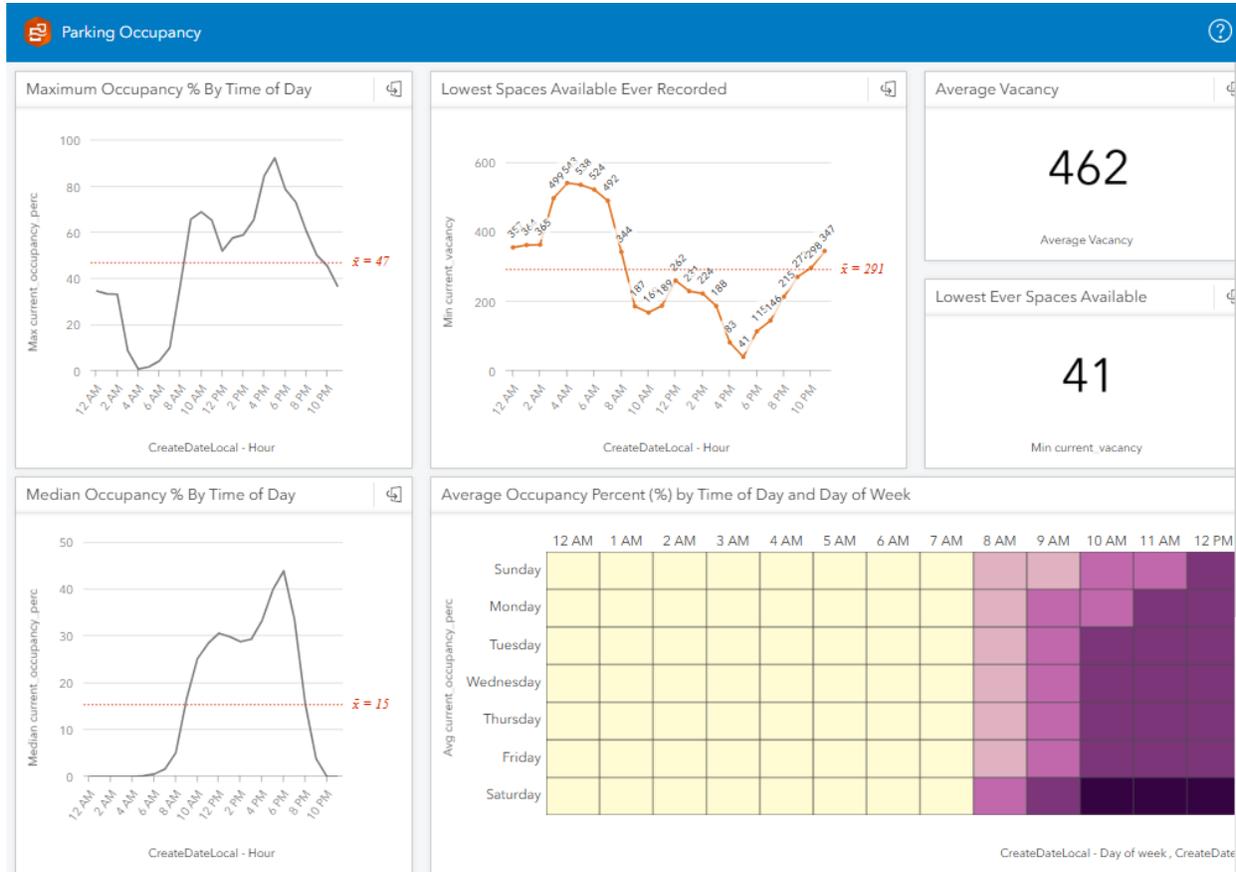

Figure 15: City of Dublin Rock Cress Garage Parking Garage Public Dashboard

Integration Ability for Embedding within VendorLink

ParkPow does not support embedding of their dashboards.

Integration Ability for APIs

ParkPow supports the export of data via API calls. The data pipeline was evaluated via the Parking Data Stream Validation Accelerator, by comparing data from API calls to external vendor application dashboards.

3.2 Parking Data Stream Validation Accelerator

With multiple providers contributing parking data, the opportunity to unify these disparate sources into a single, consolidated view emerged as a high-value use case—particularly for testing and validating API-driven data pipelines. This accelerator enables the aggregation of key on-street parking metrics such as parking duration, session counts, and violation data. By integrating this on-street data with off-street garage parking information, municipalities gain a more holistic understanding of parking behavior across the urban landscape. Critically, this combined dataset empowers city planners to develop targeted strategies that encourage long-duration curbside parkers to shift toward garage facilities, thereby improving curbside turnover and enhancing overall space utilization, Figure 16 below.

Figure 16: Parking Data Validation

4. Camera Based Traffic Analytics Data Providers

4.1 Signals Based Data Providers

The City of Dublin partners with multiple providers of camera-based transportation operations management and data collection providers, including: Miovision, Derq, TNL, Iteris, and Bosch. Data from these providers ranges in applications from traffic counts to the dynamic operation of multiple intersections. The following review of vendor capabilities, and their integration into the Dashboard, providing an overview of their capabilities relative to each other and whether they support embedding and API integration.

4.1.1 Miovision

Miovision Traffic Link provides detection and signaling services that employ pre-established signal sequences calibrated by the City of Dublin. Their deployment at the Riverside Drive & Emerald Parkway employs six cameras to monitor traffic from four directions to support signal timing management while collecting a range of Key Performance Indicators.

Miovision's Telemetry Dashboard provides a real-time view of traffic signal timing duration and light cycles by lane, while Insights provides a summary view of performance (Figure 17 below).
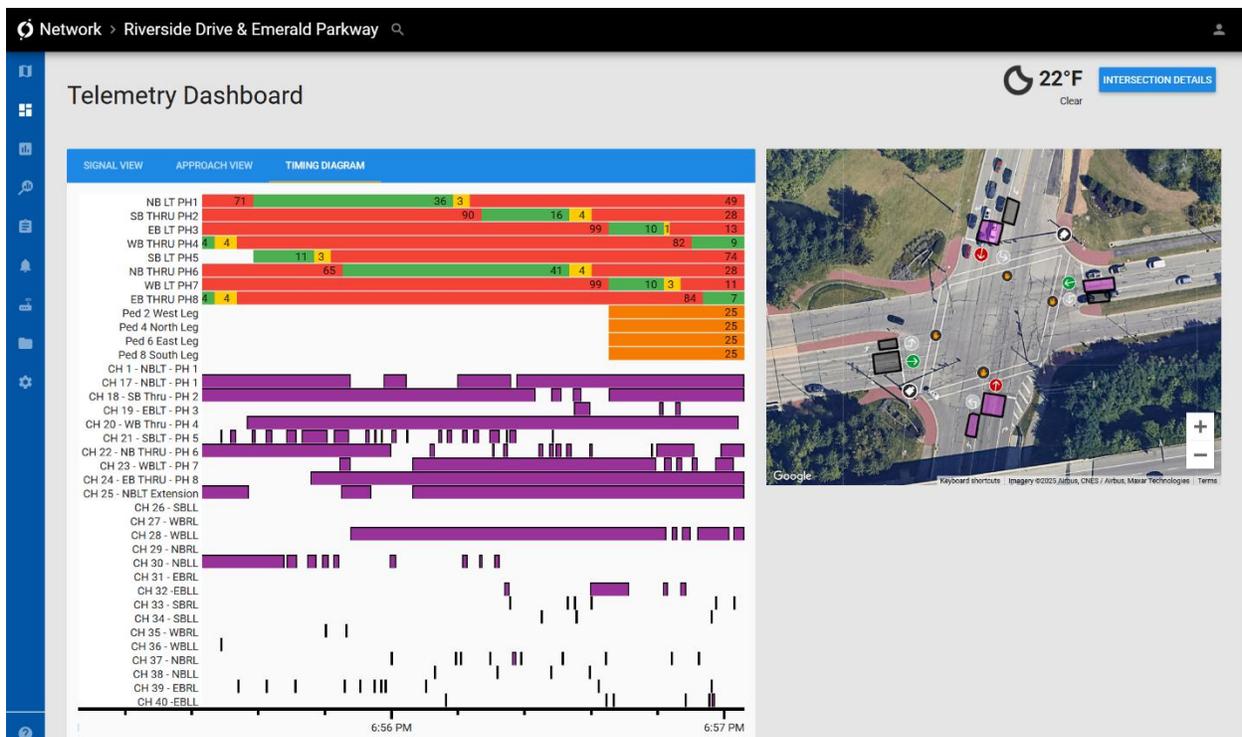

Figure 17: Miovision Telemetry Dashboard Signaling Diagram at Riverside Drive and Emerald Parkway

Miovision automatically identifies potential performance shortcomings for analysis (Figure 18 below).
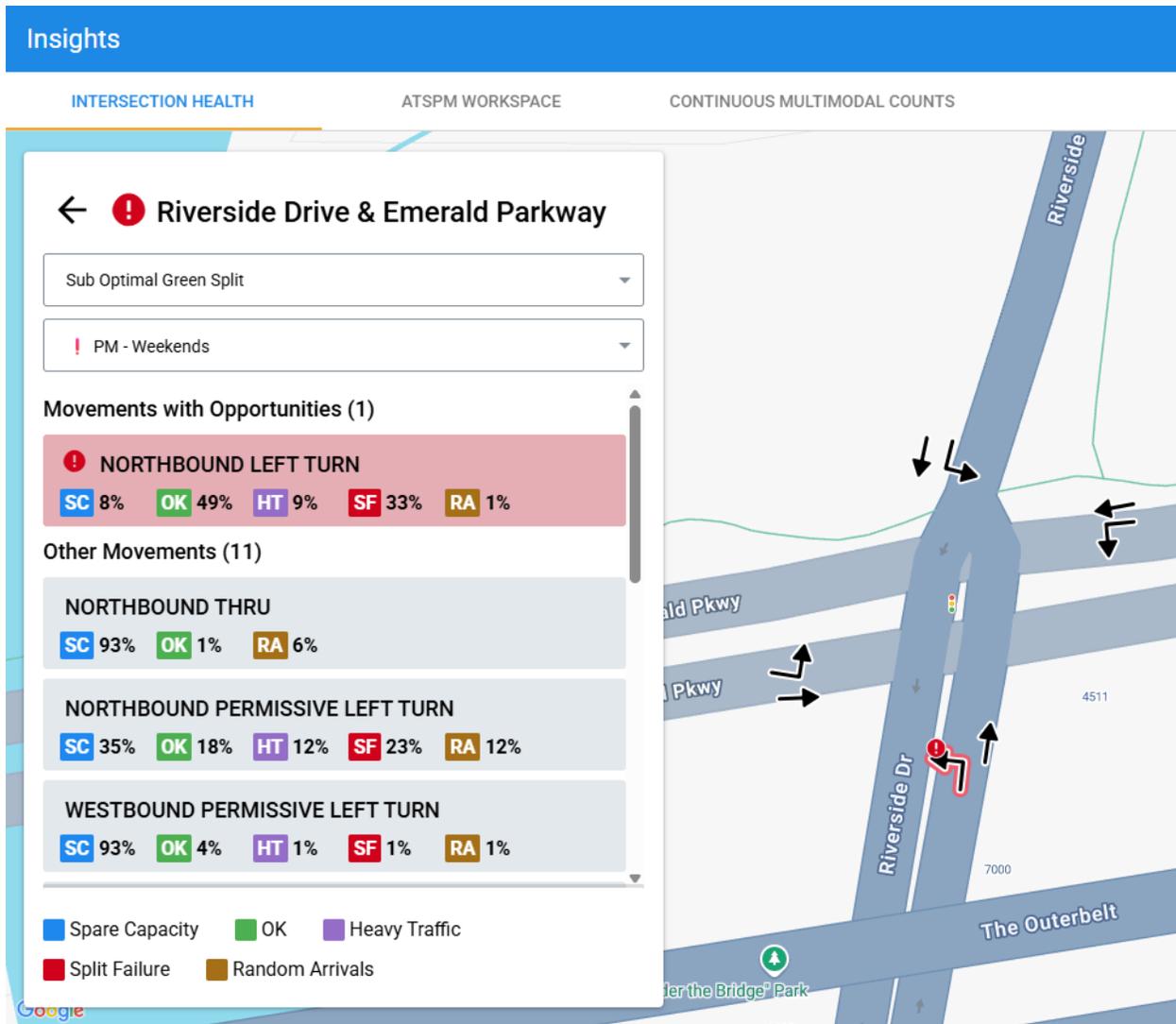

Figure 18: Intersection Health Operational Insights

These real time insights are complemented by Report Cards that provide summary statistics for Weekday and Weekend 4-week trends and AM/PM Peak for their respective selected periods (Figure 19).
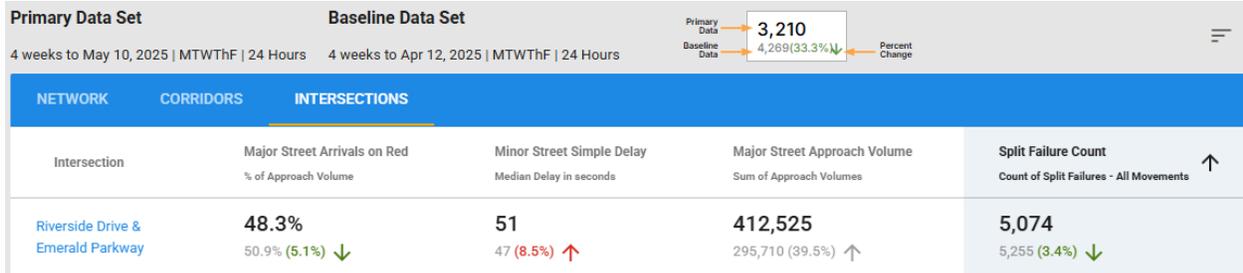
Figure 19: Intersection Performance Report Card

Within the Insights tab, users can analyze signal performance metrics for vehicles and pedestrians by time of day shown in Figure 20 below. Miovision also summarizes road user movements by time of day and user type.
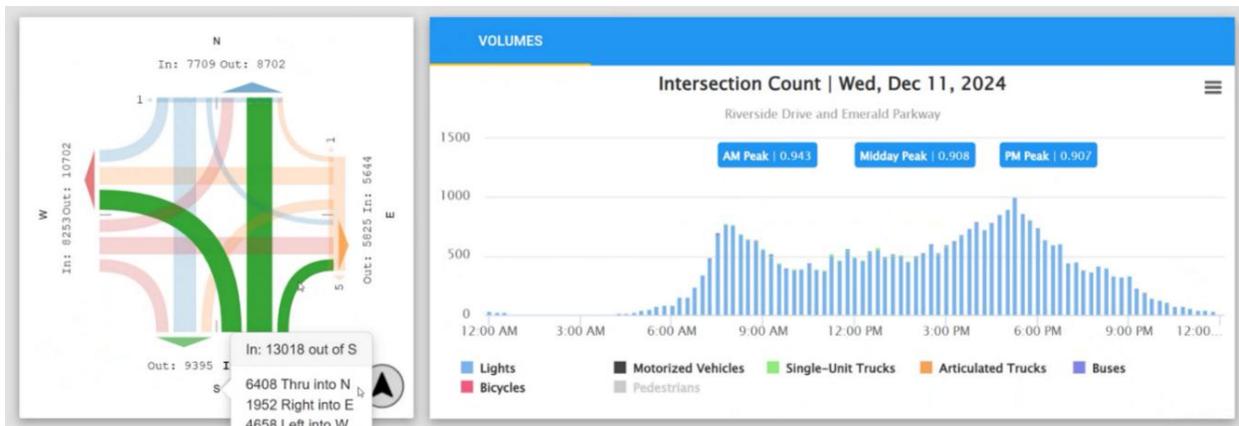

Figure 20: Miovision Insights - Turning Movement Counts by Time of Day

Integration Ability for Embedding within the VendorLink

Miovision does not support embedding for the Portal of Portals approach as of August 2025, to create an embedded portal Miovision would need to provide an authorized URL of their embedded dashboards.

Integration Ability for API

Miovision supports the export of data via a comprehensive suite of API calls. The Vehicle Movement Count Accelerator was leveraged to validate data inputs by comparing API summary charts to dashboard charts.

4.1.2 Iteris

The City of Dublin subscribes to the VantageLive and ClearGuide Products provided by Iteris for the intersection of Emerald Parkway and Coffman Road. VantageLive provides speeds and volumes by user type and movement by time of day (Figure 21) and vehicle speeds and volumes (Figure 22).
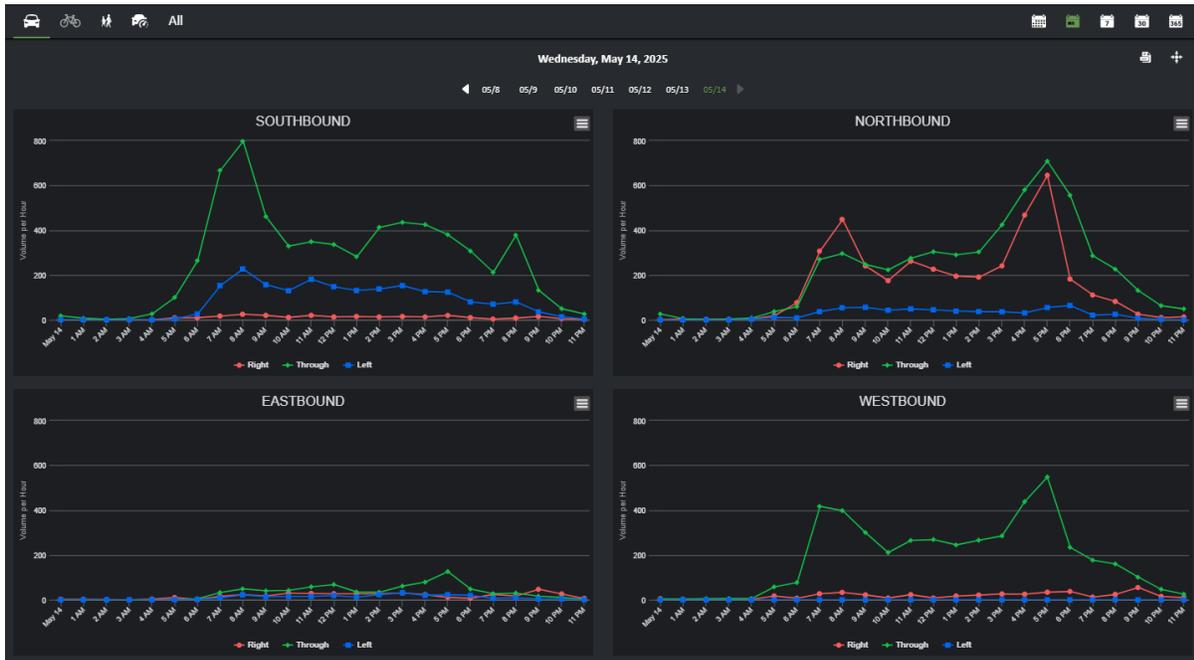

Figure 21: Iteris VantageLive Volumes by Movement and Time of Day

Figure 22: Iteris VantageLive Volumes and Speeds and Volumes by Movement and Time of Day

ClearGuide provides a set of autogenerated reports that summarize intersection performance relative to key performance indicators that are selectable by intersection. The following figures provide examples of intersection performance indicators as shown in the ClearGuide dashboard.
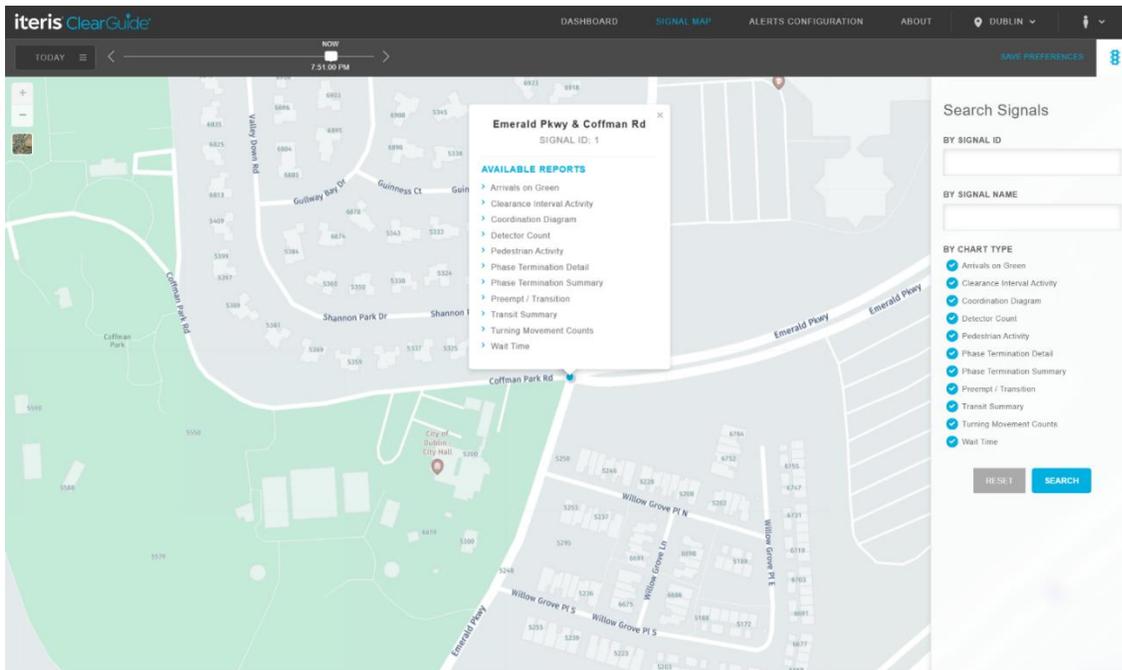

Figure 23: Network Level View of Monitored Intersections

Iteris provides detailed insights into signal operations and their efficacy relative to vehicle movements and efficiency (Figures 24 and 25)
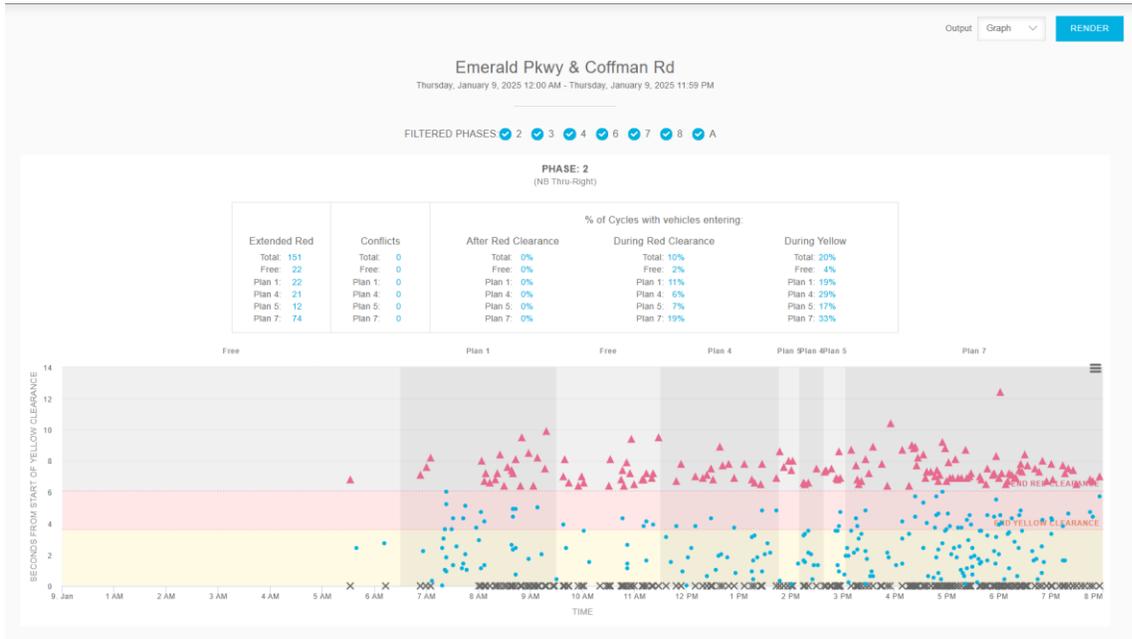

Figure 24: ClearGuide Clearance Interval Activity

Figure 25: ClearGuide Coordination Diagram

ClearGuide also provides a detailed breakdown of vehicle turn movements, enabling validation of API data inputs via the Vehicle Movement Count Accelerator, Figure 26.
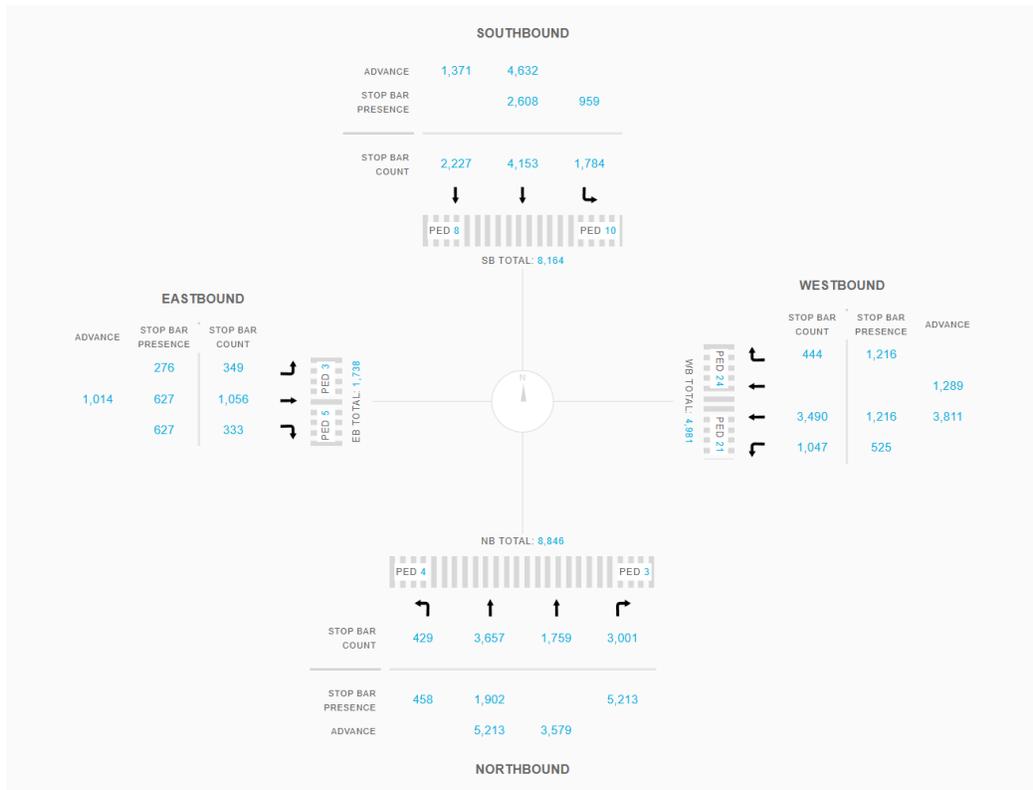

Figure 26: ClearGuide Detector Count

Integration Ability for Embedding within the VendorLink

Iteris does not support embedding for the Portal of Portals approach as of August 2025, to create an embedded portal Iteris would need to provide an authorized URL of their embedded dashboards.

Integration Ability for API

Iteris supports the export of data via a comprehensive suite of API calls. The Signal Monitoring Vehicle Movement Accelerator was employed to validate inputs, by presenting vehicle turn movements by time of day in a standardized output format that was validated by Iteris dashboards.

4.1.3 Bosch

Bosch provides video-based telematics information at two intersections in the City of Dublin: The intersection of Frantz Road with West Bridge Street and Rock Cress Parkway with North High Street, Figures 27 and 28 below.
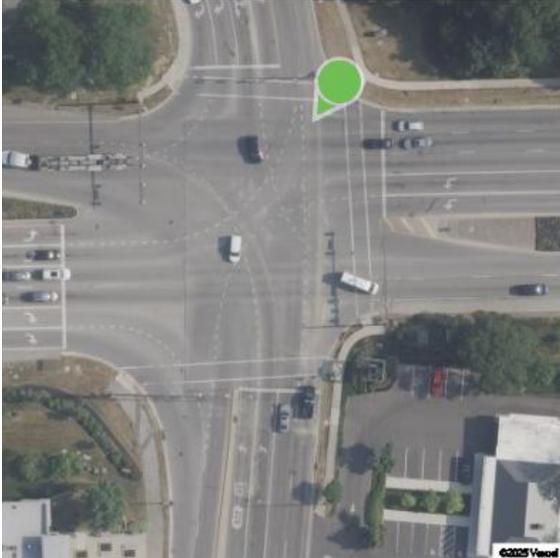

Figure 27: Frantz Road & West Bridge Street with camera orientation indicator

Figure 28: Rock Cress Parkway & North High Street with camera orientation indicator

Bosch enables the drawing of unique polygons by users. Within these polygons, counts by road user type (Class) and Alarm Events (identifiable actions) are tabulated across the selected duration in one hour or 15-minute increments (Figure 29 below).
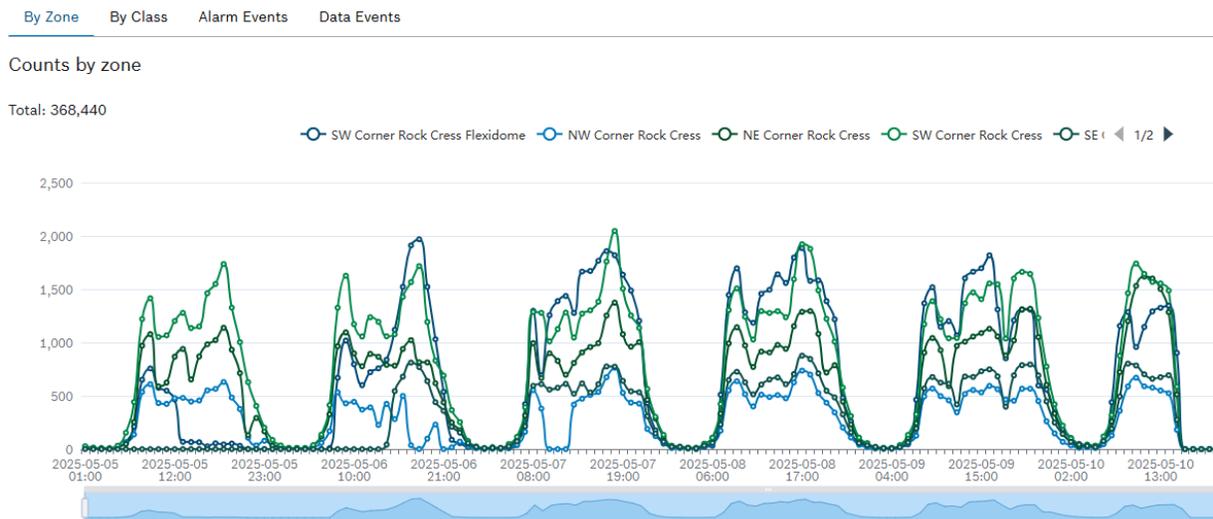

Figure 29: Summary Statistics of Zones by Hour

Road user trajectory data is collected and aggregated into heatmaps. Users have the capability to draw zones where road user type, speed, and duration in zone are calculated. The outlined

box in each image shows the area of data capture of Southbound and Northbound at Rock Cress Parkway and North High Street. The ability to draw zones allows for the analysis of critical locations as seen in Figure 30 below.
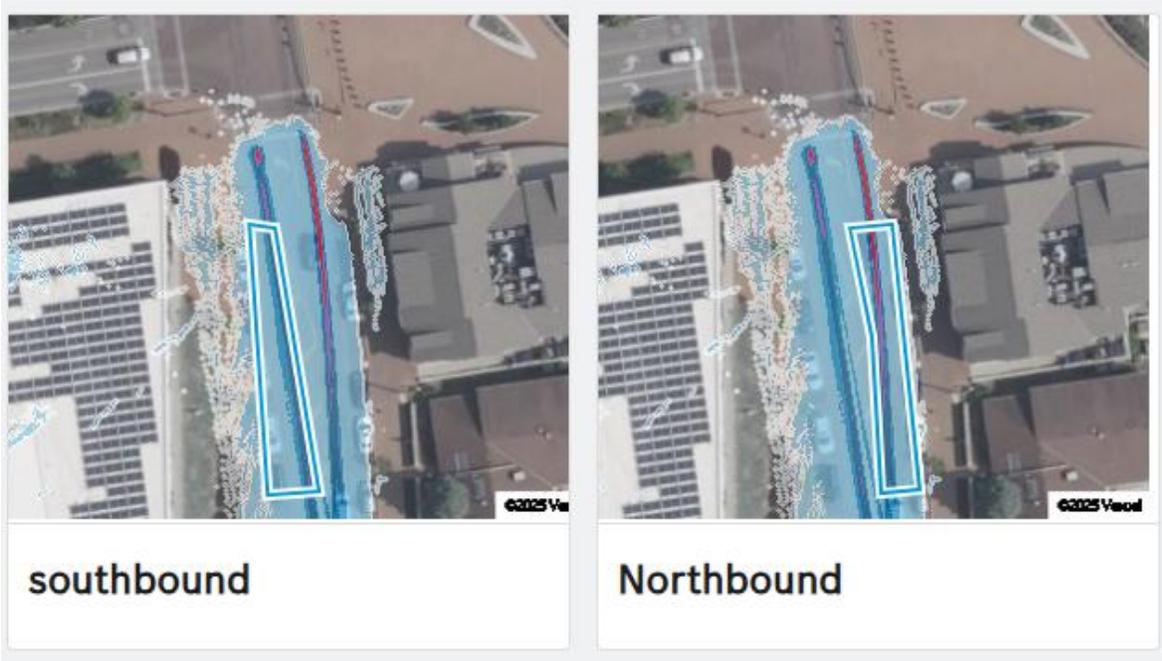

Figure 30: Heatmap of Road User Trajectories and Zones Mapped

Analysis of speeds by road user type within the Southbound and Northbound Zone is presented in Figure 31 below.
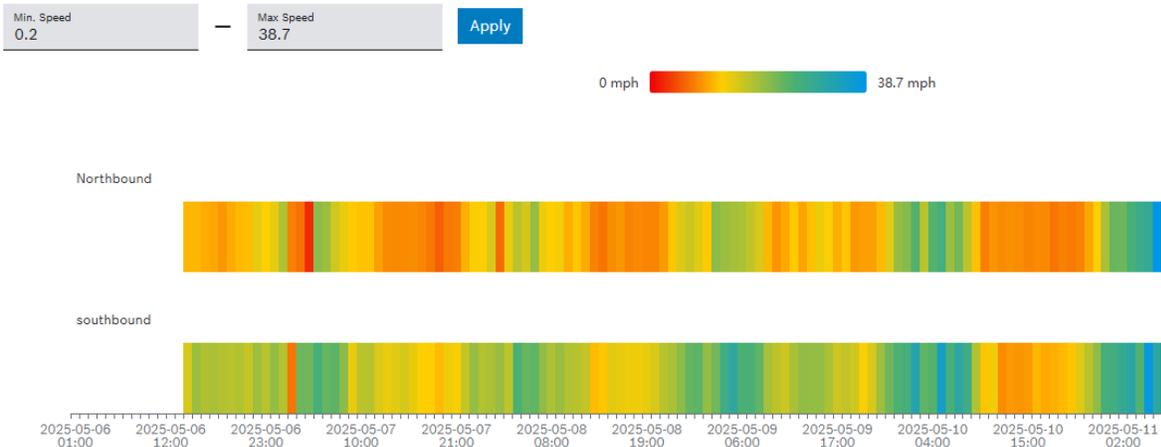

Figure 31: Average Speed by Selected Zone by Hour

The analytics capability also comes equipped with the ability to draw zones by lane, or assemble zones at intersections, to establish vehicle movements, Figure 32 next page.
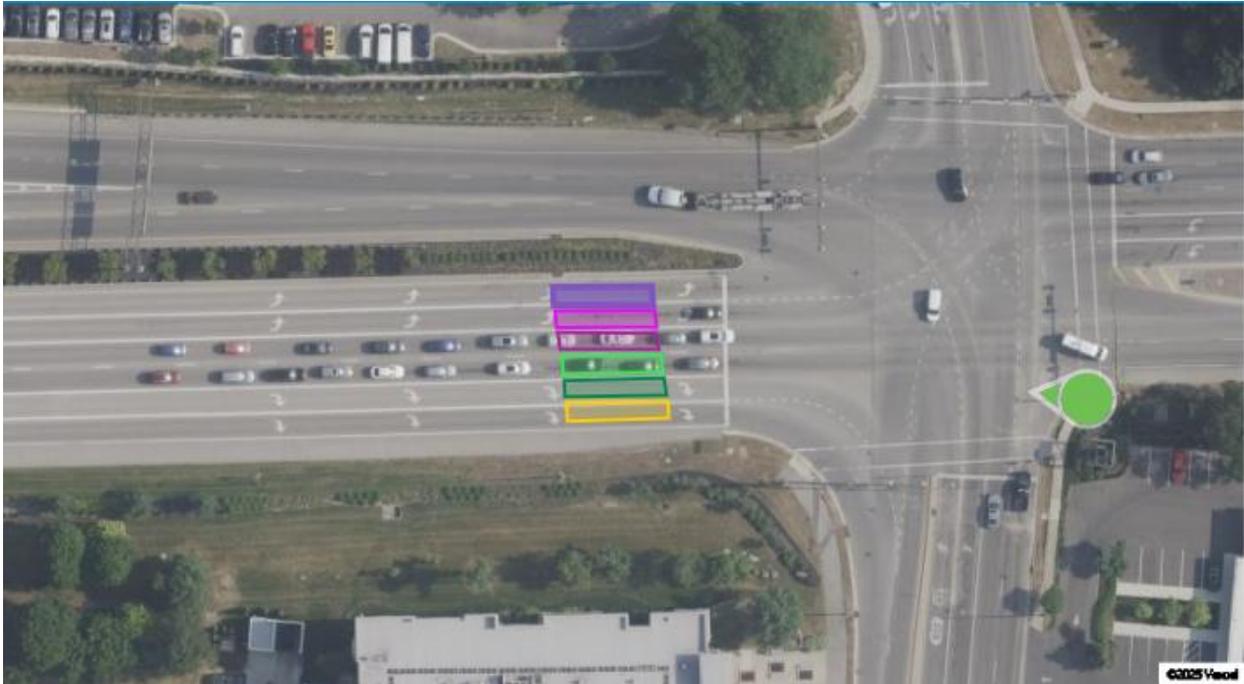
Figure 32: Vehicle Movements by Lane – SE Corner Bridge at Frantz

Integration Ability for Embedding within the VendorLink

Bosch Analytics does not support embedding for the Portal of Portals approach as of August 2025, to create an embedded portal Bosch would need to provide an authorized URL of their embedded dashboards.

Integration Ability for APIs

Data pipelines were evaluated using the Vehicle Movement Count Accelerator. While Bosch does not report counts specifically in their data generation, movements can be calculated by drawing polygons within designated lanes as shown on SE Corner Bridge at Frantz or by drawing multiple zones at an intersection and calculating movements.

4.1.4 TNL

Integration Ability for Embedding within the VendorLink

TNL, Accenture, and the City of Dublin successfully configured the City of Dublin firewall and TNL's data platform to support embedding over multiple working sessions. Due to intellectual property concerns, TNL did not provide access for the consulting team to the data platform, hence no analysis of their data dashboards and capabilities.

Integration Ability for APIs

TNL does not support APIs. TNL proposed creating a database clone for data ingestion. However, the consumption costs were greater than financially feasible to support.

4.1.5 Derq

Derq operates camera-based analytics at three intersections in the City of Dublin approach Riverside Drive and SR-161. They are capable of adaptively controlling signals at these three intersections while also generating Safety Scores, Figure 33 below, and Camera Health metrics.

Figure 33: Derq Dashboard Safety Insights

Derq provides advanced near miss metrics, including potential severity and the plotting of incidents by speed and post encroachment times as seen in Figure 34 below.
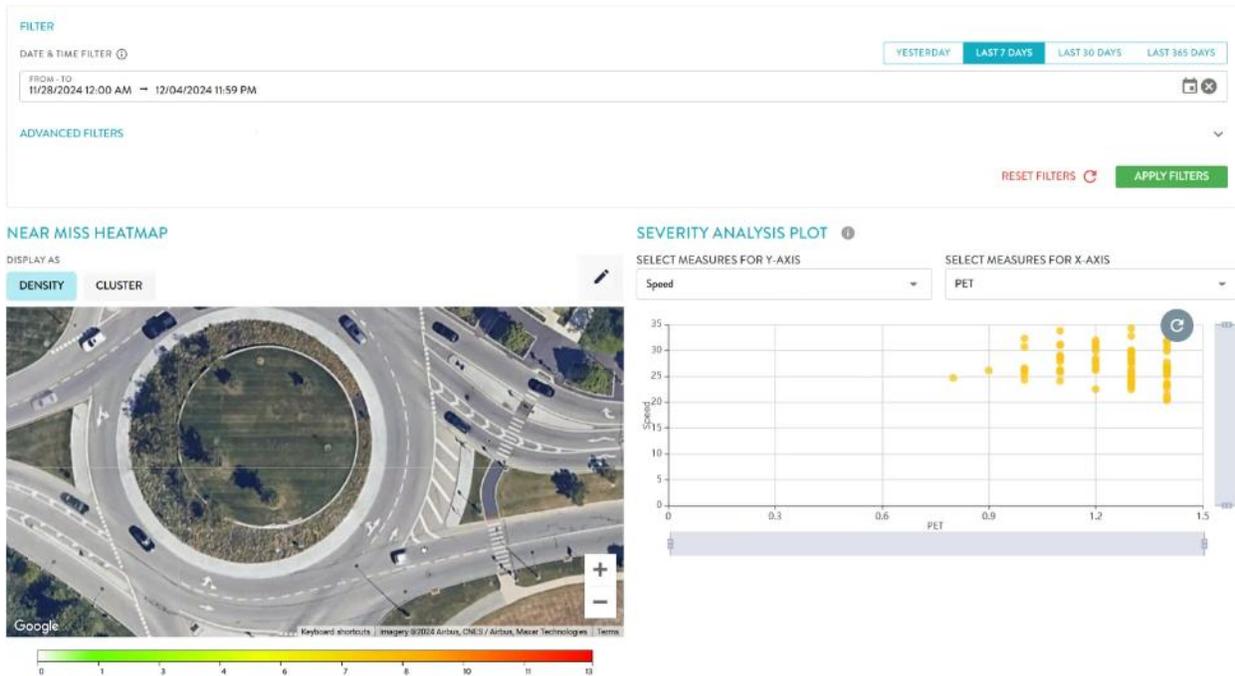

Figure 34: Derq Near Miss Dashboard

Integration Ability for Embedding within the VendorLink

Derq does not support embedding for the Portal of Portals approach as of August 2025, to create an embedded portal Derq would need to provide an authorized URL of their embedded dashboards.

Integration Ability for APIs

Data pipelines were evaluated using the Vehicle Movement Count Accelerator.

4.2 Vehicle Movement Count Accelerator

The accelerator enabled the creation of a consolidated view of vehicle turn movements by time of day across vendors. Ingesting data feeds across vendors via the API allows for the reconciliation of these distinct data sources and will facilitate the delivery of future use cases by establishing a sole source of truth via standardizing and pooling vendors data.

The accelerator enabled the creation of a consolidated view of vehicle turn movements by time of day across vendors. Ingesting data feeds across vendors via the API allows for the reconciliation of these distinct data sources and will facilitate the delivery of future use cases by establishing a sole source of truth via standardizing and pooling vendors data. Through the accelerator multiple adjustments were made and data dictionaries built to support reconciled views of vehicle movements.

5. Telematics Data Providers

INRIX

City of Dublin receives INRIX Signal Analytics product under their Franklin County license and has access to the RITIS Intersection Analysis Platform. Signal Analytics provides summary data on intersection performance in the coverage area. It does not currently support APIs. Leveraging the data requires selection of the desired time periods that users can download in CSV format. Signal Analytics provides delay and count information for pre-determined periods, for example AM/PM peak, off-peak, and 24-hours. Preconfigured dashboards present summary statistics.
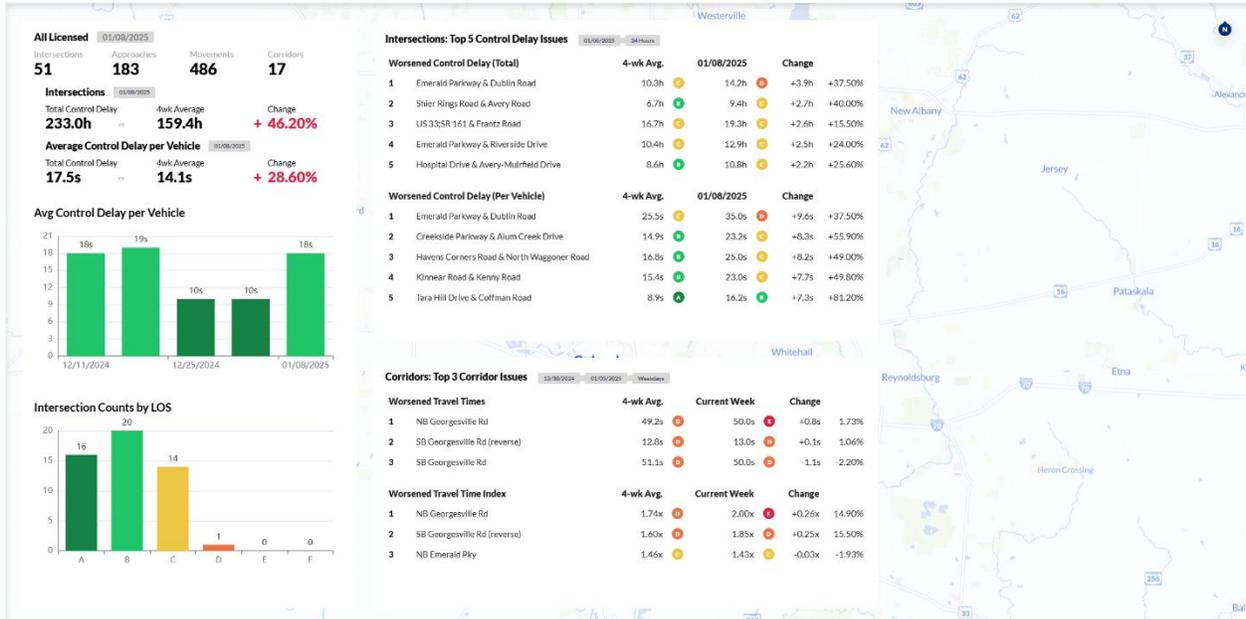
Figure 35: Signal Analytics Dashboard Landing Page

INRIX Signal Analytics strength is its high geographic coverage, the downside of telematics data is low penetration/coverage compared to physical installations. Figure 36 at right captures this shortcoming, for Emerald Parkway and Riverside Drive, INRIX Signal Analytics captured 5.5% of the vehicles a camera-based system did for the same day. Broadening the period of coverage can decrease volatility driven by low capture rates and facilitate trend analysis. This data provides a means to undertake network level trend analysis without significant investments in hardware. Furthermore, due to the City of Dublin's high coverage rates with physical infrastructure, there are opportunities to INRIX outputs to actual observations in the City of Dublin's network once INRIX supports API calls.
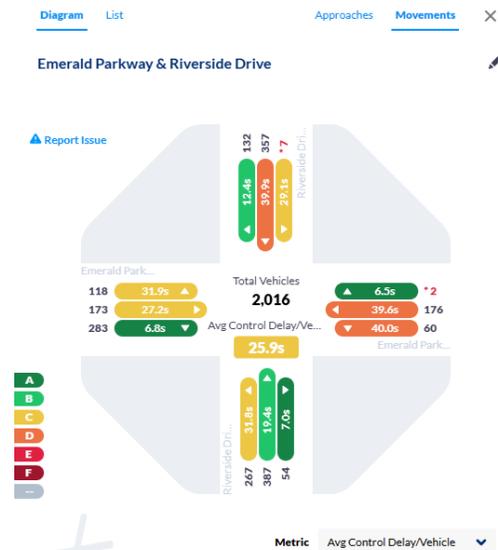

Figure 36: Average Control Delay/Vehicle Riverside Drive on 12/11/2023. 2,016 vehicles observed, for comparison, a physical controller captured >35,000 vehicles (~5.5%)

Integration Ability for Embedding within the VendorLink

INRIX Analytics does not support embedding as August 2025, to create an embedded portal INRIX would need to provide an authorized URL of their embedded dashboards.

Integration Ability for APIs

INRIX Signal Analytics does not support API's as of August 2025. However, APIs are on their product roadmap, and the capabilities exist to support integration once available.

6. City of Dublin Resources

City of Dublin

The City of Dublin maintains two GIS enabled data dashboards summarizing crashes and speed management data. The Crash Dashboard supports grant funding requests, responses to resident complaints, and police operations (Figure 37).
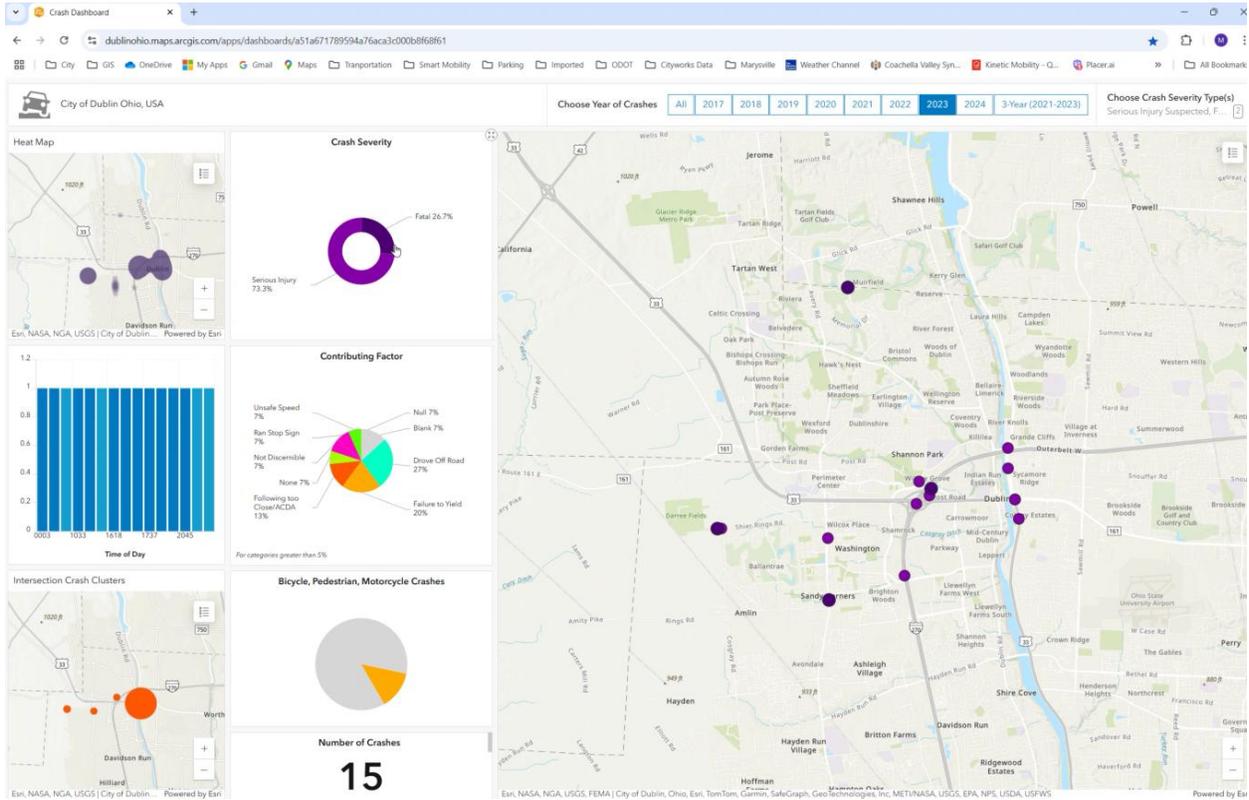

Figure 37: City of Dublin Crash Dashboard

The Speed Management dashboard summarizes information generated by speed monitoring units used to conduct speed surveys on weekdays at select locations in the City of Dublin.
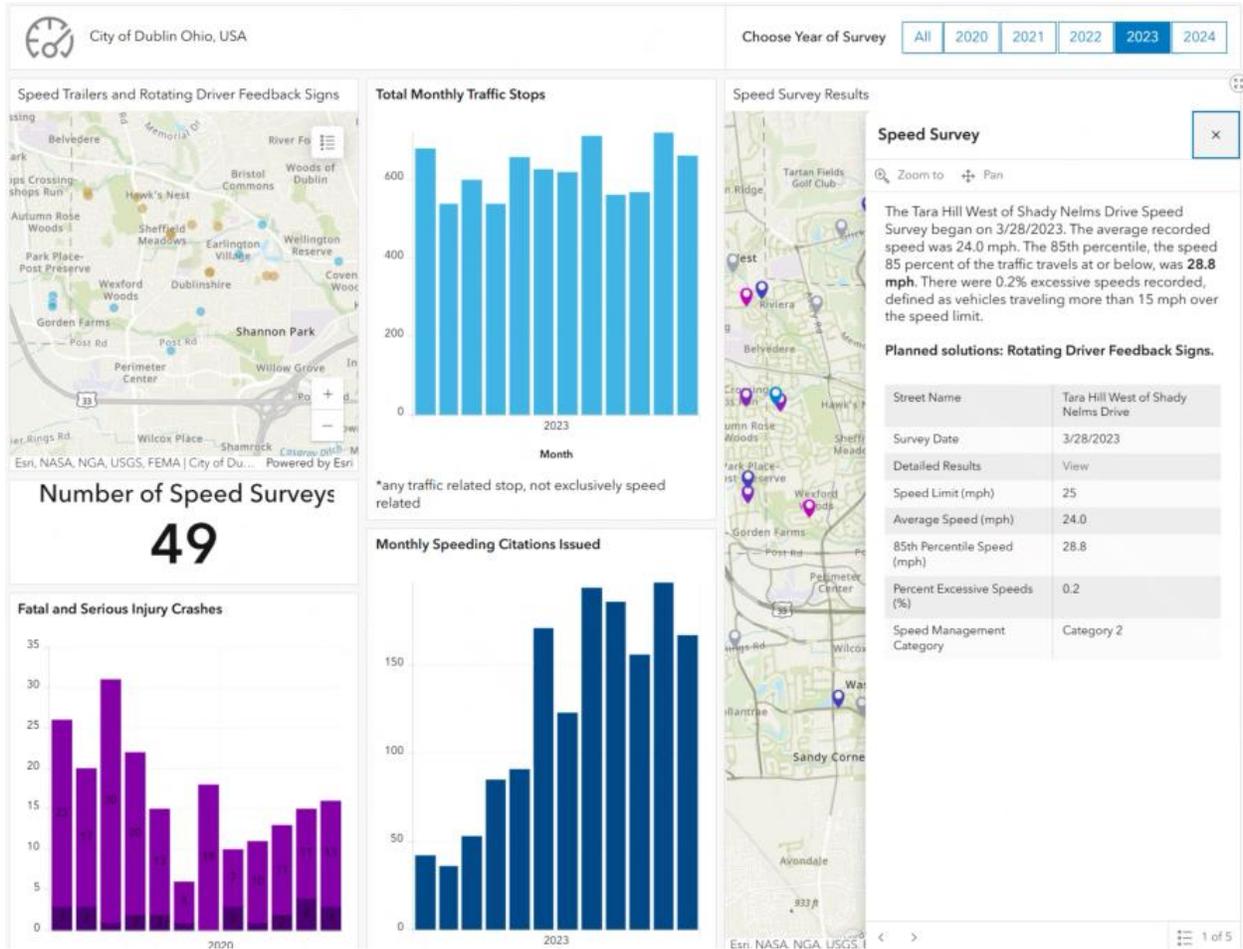
Figure 38: City of Dublin Speed Management Dashboard

Integration Ability for Embedding within the VendorLink

Esri GIS dashboard supports embedding, with both successfully integrated into the City of Dublin's Transportation Data Aggregation Dashboard. Access to the Crash dashboard is dependent on signing into the Esri platform from the web browser.

Integration Ability for APIs

City of Dublin GIS data was and successfully integrated into the City of Dublin data dashboard to support potential future use-cases.