



Case Study: Analytics Informs Operational and Maintenance Strategies

Signal Analytics is the new best practice

In 2016, the City of Austin hired consultant Kimley-Horn to run Austin's Mobility Management Center. In 2017, Kimley-Horn initiated a subscription to INRIX Mobility Information Services to monitor traffic, identify trends, prioritize projects and tasks, and evaluate effectiveness of operational strategies. In 2018, after opening Austin's new MoPac Express Lanes, nearby Cesar Chavez Street was more congested. Using INRIX Roadway Analytics, engineers drilled down to a two-mile stretch of road, retimed select signals and solved the problem within weeks.

Austin asked: How can we do this system-wide with tight budgets and limited staff? It's a two step process

Step 1: 2020 Austin's Arterial Coordinator Program

Kimley-Horn created the 2020 Arterial Coordinator Program using INRIX Real-Time and Historical data. Aligned to operational objectives, the team launched a pilot project to manage and improve, on a granular level, three of the most critical arterials: Cesar Chavez Street, Loop 360 and Airport Boulevard.

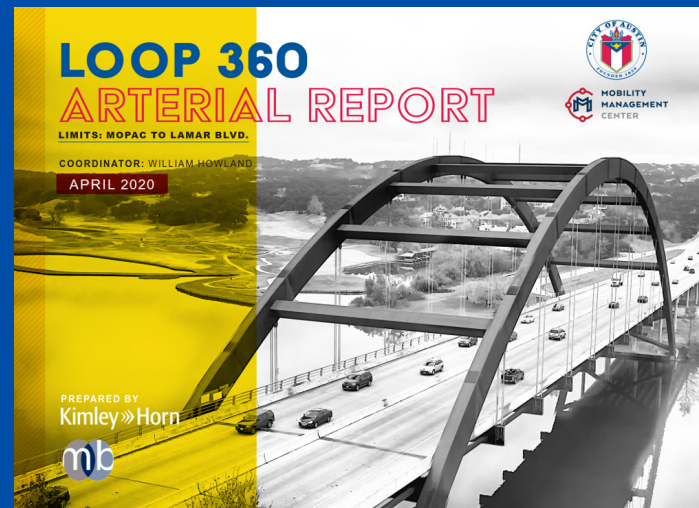
Step 2: Pilot INRIX Signal Analytics

"We are using it to quantitatively verify the extent of existing issues and the degree of improvement/benefit once we make changes and adjustments," said Kimley-Horn Engineer Lance Ballard.

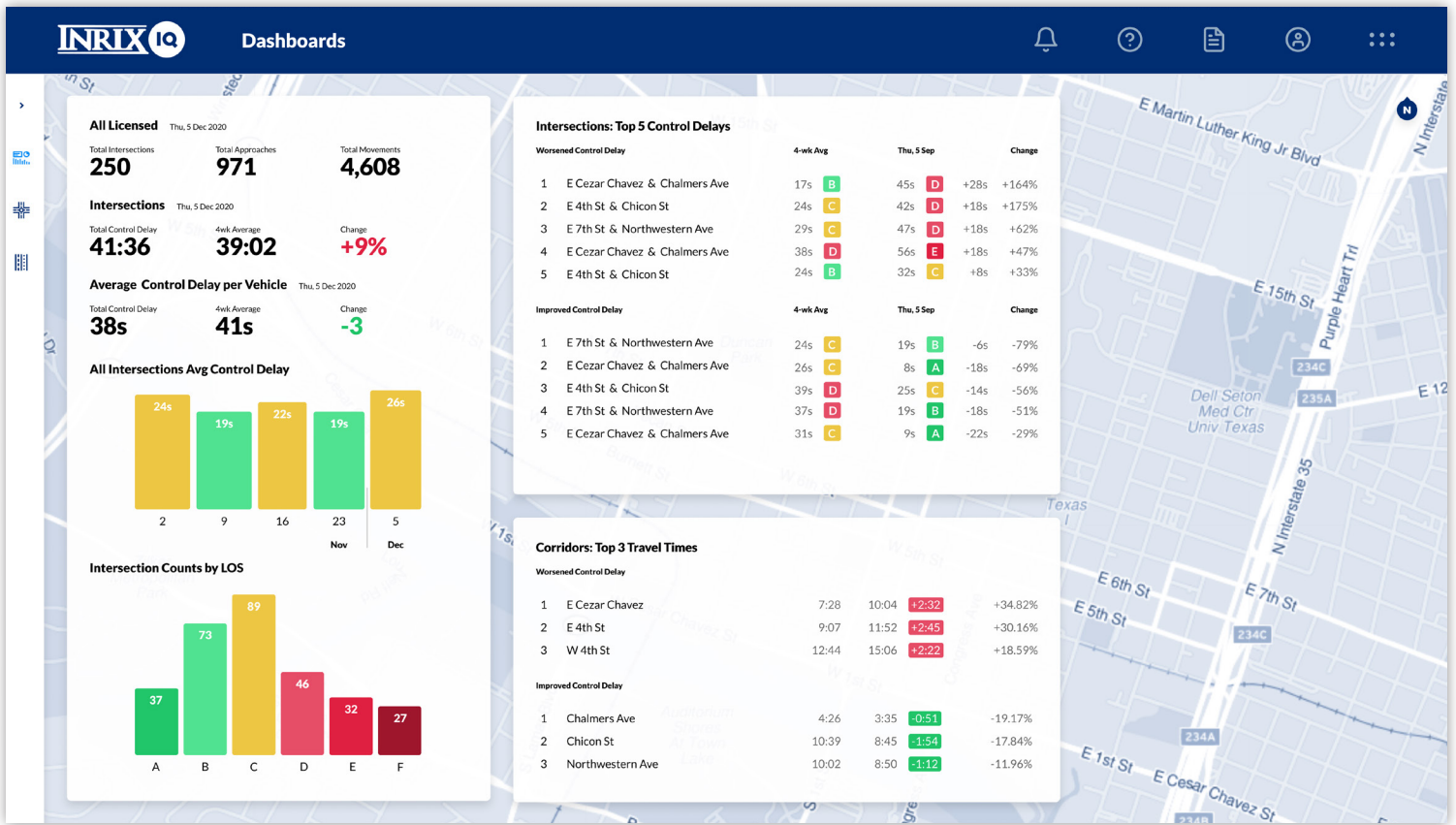
The comprehensive strategy tracked incidents, speeds, stops, delay, ITS, signal malfunctions.



The City of Austin has 33 critical corridors, 1000 signals, 600 + cameras, 13 variable message signs, and 72 music events each year, making it the live music capital of the world. Flexibility and dynamic planning are the guiding principles of traffic operations in the Mobility Management Center.



Corridor-based aggregation and regular reporting of trends will be HUGE for us. We will see trends geographically and over time to identify issues quickly that we may not have identified at all. Currently we must look at individual intersections for an individual time period. Soon we'll be able to quickly analyze all signals/corridors and their trends on a weekly/monthly basis.



Signal Analytics is Smart Management

Signal Analytics is a game-changing break-through in signal and corridor management. Harnessing the power of “virtual infrastructure” it requires no hardware and no installation.

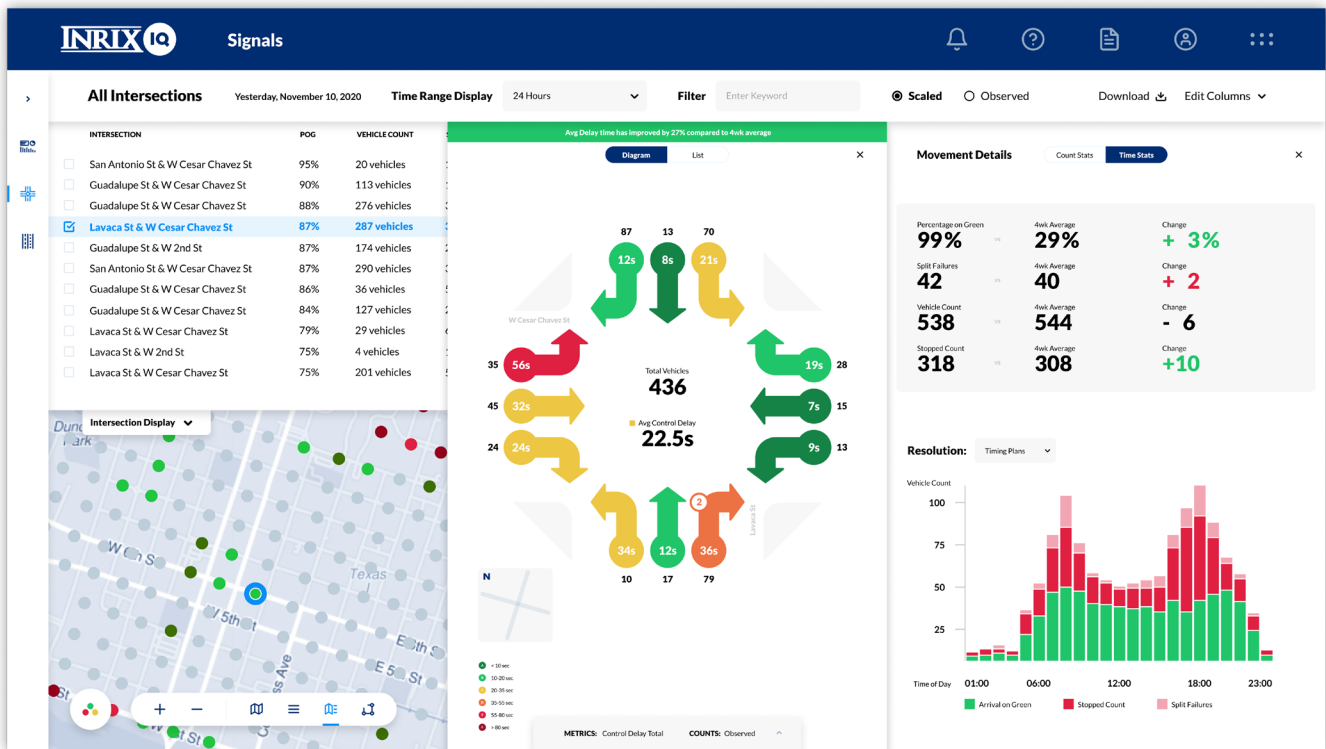
Signal Analytics tracks vehicle movement across the intersection. Using a floating car data (FCD) platform, grabbing billions of anonymous data points, Signal Analytics tracks a sample of vehicles, every three to five seconds as it approaches and leaves each intersection. Vehicles are measured 150 meters on approach to and 80 meters beyond the intersection.

It is the most comprehensive traffic analysis tool available.

The platform is scalable, easy-to-use, and cost-effective; it doesn't require special training and there is nothing to install. Users can easily access metrics to identify, rank and prioritize intersection signal projects to achieve maximum impact on traffic flow.

Previously, we could only get corridor travel times and had no great metrics for side streets. Now we get intersection-level control delay and split failure information, said Ballard. We will compile and aggregate it to identify new issues we would not have noticed otherwise (or at least not as quickly). This will also allow us to better prioritize corridors for retiming.

Signal Analytics allows users to easily conduct system-wide intersection comparisons, and it also provides the ability to drill down to individual intersection movements



Austin Uses Signal Analytics to Pivot, Save Time and Money

For years, Austin implemented industry best practices to review 1000 signals: visit 300+ signals every year on a three-year rotation. In three years, do it all again whether the signals need attention or not. In a time of tight budgets and decreased staffing, this 'best practice' is not practical or even possible for many agencies given the competing needs tugging on operational budgets.

Signal Analytics allows Austin to pivot. It is a plug-and-play, systemwide, constant review of every signal. Alerts highlight poor performers which allows staff to focus time and money on signals that need attention and leave high performers alone.

Prior to Signal Analytics there were still many issues we were not aware of due to limitations in alert systems, observation time, and staff limitations. We were made aware of many operational issues by residents and the traveling public. Now, we can be more pro-active in identifying operational issues before residents complain. With tight budgets and limited staff, this approach to signal management is an unparalleled return on investment.

“We will integrate it into our Annual Signal Retiming program,” said Ballard. “As signal engineers retime corridors, we’ll study before data to identify problem areas. We’ll then use after data to verify and quantify improvements.”

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