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Smarter Traffic and Transportation

At Wejo, our passion is making data work for you to make the world a better place. We partner with global auto manufacturers to create mobility intelligence that revolutionises the way we live, work and travel. By ingesting data from millions of connected vehicles, we provide public and private organisations with information that helps them better understand what's happening out on the roads. One of the key groups we serve is traffic management and government-based agencies like Departments of Transportations (DOTs).

This eBook will explore:

1. Priorities for traffic managers and government-based agencies today
2. Challenges that exist in accessing accurate and reliable data to achieve those priorities
3. How Connected Vehicle Data (CVD) is in a unique position to help overcome those challenges
4. Where CVD is already being used to deliver smarter transportation

Priorities in traffic and transportation

Our global customer base includes public and private organisations in the transportation planning industry including traffic management, traffic solution providers, local authority and government-based agencies. In spending time talking with our partners in the traffic, navigation, and government spaces and analysing millions of data points from vehicle journeys themselves, we've gained a deep understanding of the goals and objectives of professionals in the industry. While many are multifaceted, we continually hear that the priorities boil down to the following:

1

Safety

Not surprisingly, keeping community members safe is a top priority. With the Vision Zero strategy to eliminate all traffic fatalities and severe injuries gaining momentum globally, we see a shift in thinking from traffic deaths being inevitable accidents, to a better way to take a preventative systems-based approach.(1)

(1) https://visionzeronetwork.org/about/what-is-vision-zero/

2

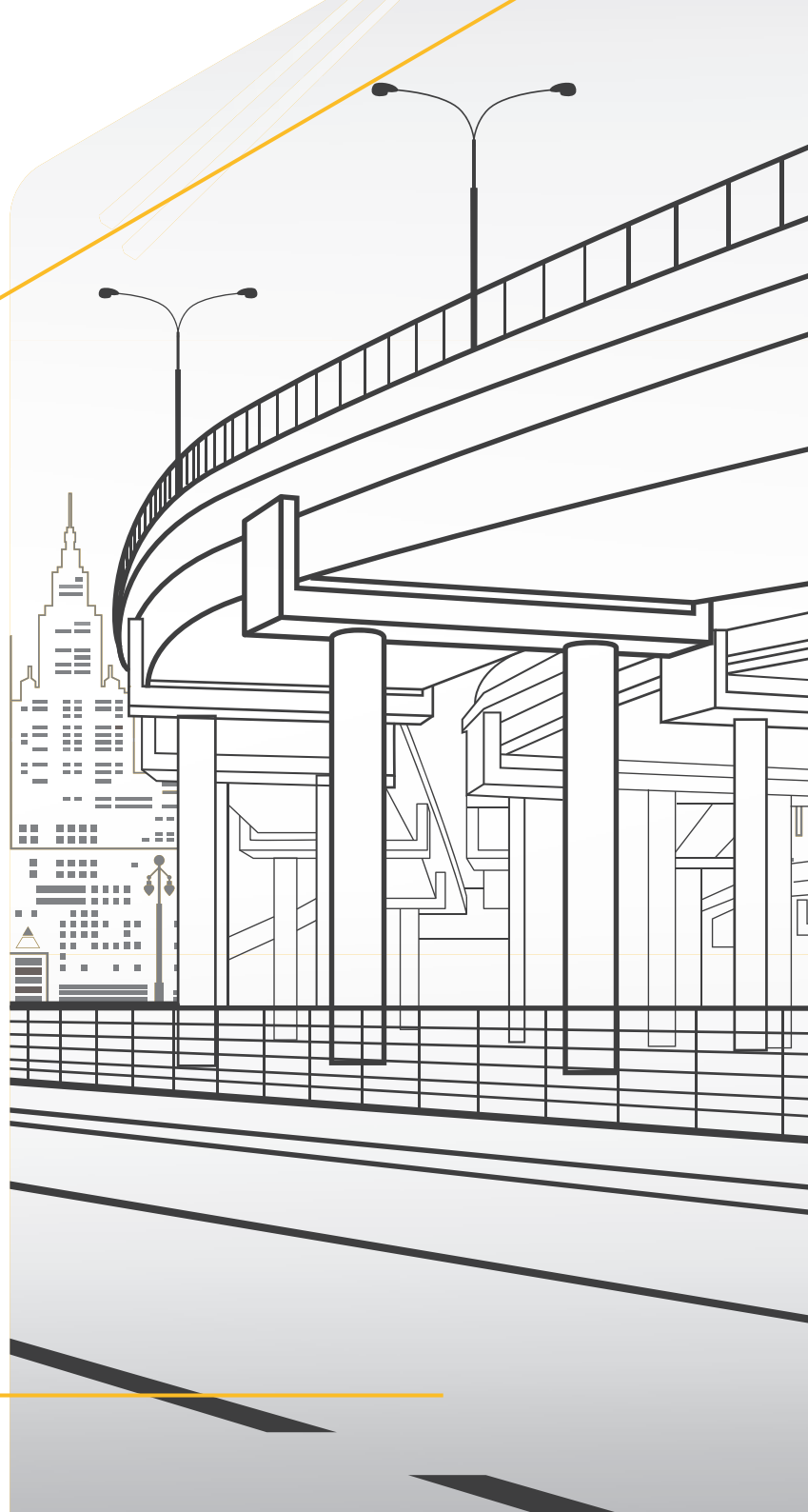
Congestion & Environment

With the increase in efficiency-focused regulatory requirements, there is a growing push to design urban spaces to ensure a greener, more sustainable mobility ecosystem. Addressing congestion by better understanding traffic trends and catalysing electrification like ensuring EV charging ports are easily accessible is a top focus for our customers.

3

Securing Projects

Whether it's winning a bid against a competitive firm or getting the necessary public funds to embark on a specific transportation initiative, securing projects is a focus for organisations. Many in the private sector are afraid of losing market share if they don't stand out from other organisations in their bids. Those in the public sector face an increasingly complex set of competing community priorities. This pressure is taxing and working on several bids and projects simultaneously can slow down delivery.



The quest to meet priorities with the right data

Most organisations quickly point out that the key to achieving these priorities often lies in data – accessing it, analysing it and using it to understand traffic trends, test mitigation strategies and measure results. The challenge, however, is when it comes to traffic and transportation - the right data is not always easy to get. It can be resource-intensive and complex, requiring significant investment to tease out necessary information, which can mean slow time to value, something many firms can't afford to do. While collecting data to analyse things like road congestion can be done manually using traditional data sources like roadside sensors and smartphone GPS locations, the process is hugely time-intensive and leaves room for human error and latency that can affect accuracy. For those in transportation planning, it is critical to gain visibility into the right data in time to use it. If it takes too long to gain insights or those insights are not based on accurate data, it is unlikely transportation professionals can utilise it in an impactful way.

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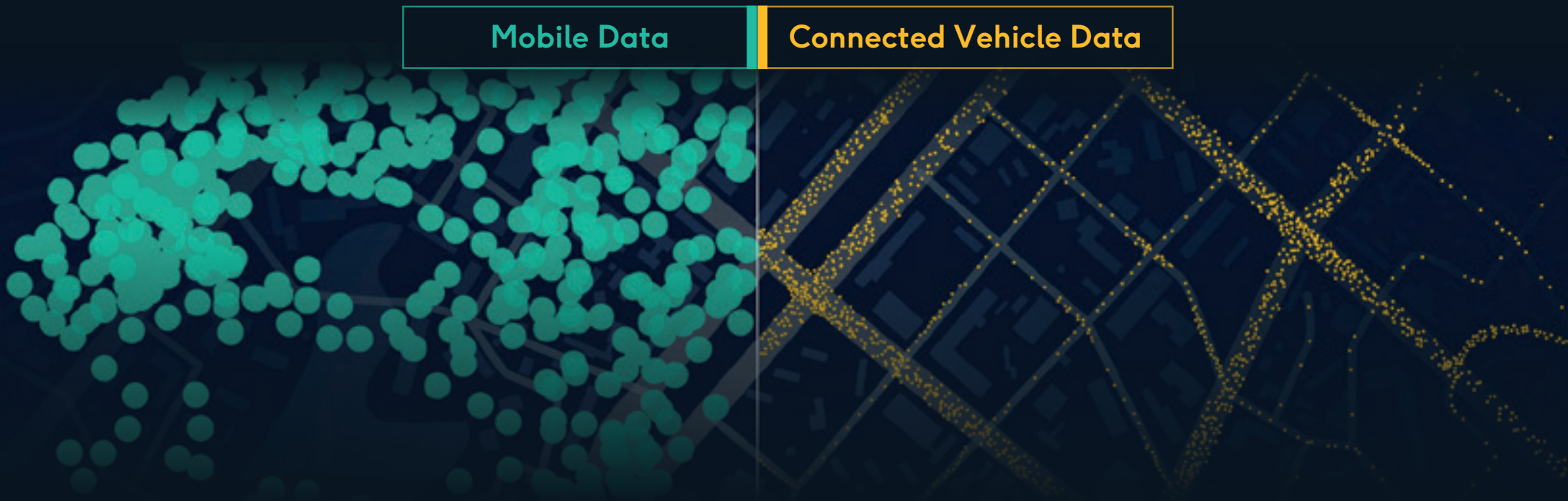
The CVD solution

Connected vehicle data (CVD) is information generated and transmitted from connected vehicles. A connected car is a car that can wirelessly connect to outside networks or devices. Like all connected devices, connected cars are part of the Internet of Things (IoT) and generate a huge amount of data. Today, each connected vehicle is manufactured with hundreds of built-in sensors that can monitor everything from diagnostics to driving behaviours, sharing that information to the cloud. What makes CVD so powerful is the collective set of information in the cloud that is generated from millions of connected vehicle journeys at the same time, every second of every day.

CVD is unique in its ability to provide insights specific to vehicle journey patterns. It can be a great addition to an organisation's decision-making toolset – helping those in transportation planning overcome some of the challenges they have faced in the past with accessing data and ultimately helping to meet their priorities of safety, congestion mitigation and sustainability. Because CVD comes from the car itself, it is unmatched in its ability to illustrate accurately and reliably what is happening out on the roads, helping organisations stand out from competitive project proposals.

Accuracy

Organisations are starting to integrate CVD into their mix because it provides confidence in data accuracy and helps them stand out from the competition. CVD is unique in that it is coming directly from millions of actively connected vehicles. With their advanced embedded sensors, connected vehicles know far more about the roads than we do. Wejo's CVD has an accuracy of between 0-3 metres, meaning it provides a detailed view into vehicle locations down to their exact spot on the lane of a highway – something other data sources find challenging.



Accuracy
Mobile Data vs. CVD

While mobile device data offers significant volume and supports many use cases across sectors, it is best used to determine broad people movement – going into buildings, retail shops and the like. The data map on the left shows mobile phone geolocation data in a specific area. The data itself represents all kinds of transport modes, from individuals ride sharing or on a bus to those cycling or walking. Comparatively, CVD, the image on the right, only illustrates movement from vehicles themselves in that same area. CVD can be a better fit if you are focused on analysing traffic trends. Not only is the data accurate because it is coming directly from the in-built car sensors, but it is also far easier to access without the need for manipulation or dynamic sampling that some broader data sets require. Wejo partners have shared that they filter out less than 1% of our data compared to traditional data sources requiring up to 50% of data filtered out to get an accurate picture, a resource-intensive job.

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CVD View

Arc De Triomphe

The Arc de Triomphe is the busiest roundabout in Europe. CVD provides an accurate and easy-to-understand view of the Arc de Triomphe traffic. Each dot represents an individual car (not an individual person) on or near the roundabout. The green dots are moving faster while the yellow dots are slowing down. You can see slowdowns are happening as vehicles approach the roundabout, which is not surprising. Still, CVD also lets us look at precisely where those slowdowns are happening and when they are causing accidents on the road. With this accurate and specific information in hand, transportation planners can gain a deep understanding of what is happening at the roundabout and use those insights to make decisions on where to place signage, make changes to traffic signalling, or redirect traffic, to avoid congestion and improve safety.

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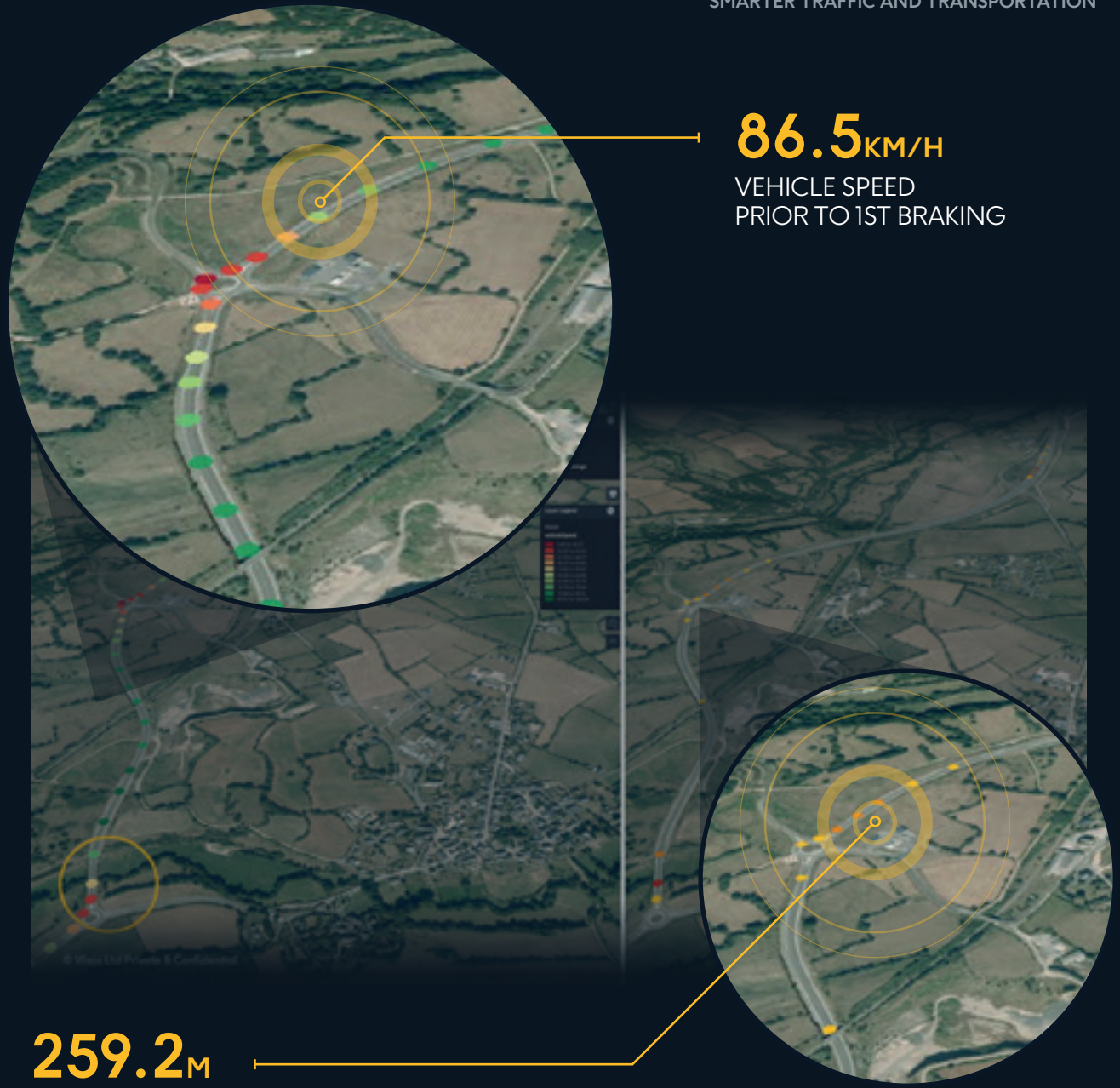
Speed of visibility

Visibility for our customers is about accessing the data they need when they need it – by location or sensor groups, in near-real-time to support with emergency response and activating traffic redirection, or over a historical period to analyse driving behaviour to improve road networks. Critical to the speed of data visibility is frequency. Accurate and near-real-time information requires data that is updated regularly. At Wejo, our CVD is updated every 3 seconds. This means a slowdown can be spotted accurately to 40 metres which can save valuable seconds when responding to road incidents – getting emergency vehicles to a scene faster and rerouting traffic to avoid significant delays.

Analysing Sensor Data

Sensors embedded in the car are foundational to the accuracy and reliability of CVD. In this image, sensors tracking vehicle speed and hard braking, or situations when the driver quickly needs to hit the brakes, are shown. You can easily see the speed vehicles travel before they hit the junction and exactly how far in advance they are braking. Insights like this are hugely valuable in determining, for example, if a junction is operating as safe as it could be. You could use data like this to better design junctions or select the best spot for road signage to alert drivers of the upcoming need to slow down which could mitigate congestion and reduce collisions.



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CVD for Insight on Weather

While weather data is abundant today, weather information specific to roadways is not. CVD uniquely positions you to understand road conditions. CVD shows when and where windshield wipers are on and can help you uncover how that weather impacts traffic in real-time. In the image above, vehicle temperatures are analysed per car's location, and you can see the precise detail CVD can provide. Each car has a temperature reading that forms a weather map with granular road-related detail vs. using only large weather stations that can be kilometres away. Because CVD includes input generated from other sensors, it can also share how vehicles are responding to certain weather conditions, for example, the typical speed limit on a given roadway during a snowstorm, that can be used for future planning and design ideation.

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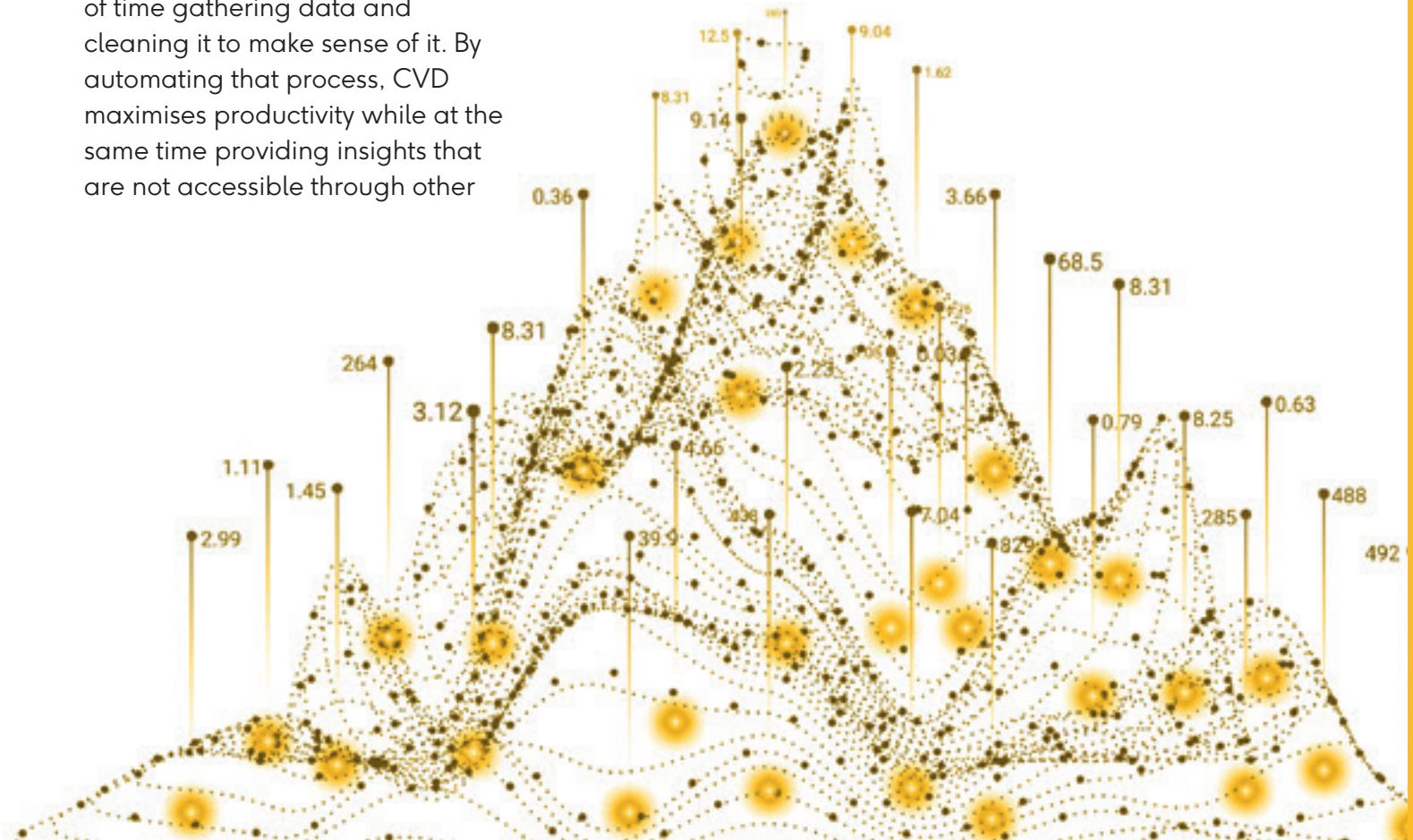
Operational Efficiency

CVD is unique in its ability to boost operational efficiency by cutting down the resources it requires to access and leverage accurate roadway information. Before CVD, transportation professionals were required to spend vast amounts of time gathering data and cleaning it to make sense of it. By automating that process, CVD maximises productivity while at the same time providing insights that are not accessible through other data sources. The speed of access to granular, accurate CVD, both historically and near real-time, saves organisations time, resources, enables faster response time, and decreases risk.



Data analysts spend most of their time cleaning and filtering data. Working with Connected Vehicle Data, I spend my time generating impactful insights to help drive business decisions.

Phrances Perez, Senior Data Analyst, Wejo

We can now carry out a month's worth of analysis within 45 minutes, that previously would have taken 2-3 years, all using the Wejo data.

Darcy Bullock,
Director of the Joint Transportation Research Center at Purdue University

Use cases

Transport & Infrastructure

When implementing a road diet, a strategy where roads are narrowed to create more space for cyclists and pedestrians, CVD provides insight into how that road diet itself is performing, and it helps you understand how it affects the surrounding area. If you take 50% of traffic off the road, where do those vehicles reroute? Is it a residential area that is not equipped to handle that level of volume? CVD can help extrapolate the broad impacts of a road diet regarding speed, traffic, and stationary time, giving transportation and infrastructure professionals accurate insights to make informed, data-driven decisions.

Government & Public Sector

Government organisations can look to CVD to access historical traffic trends both pre-Covid and during Covid. This information can help uncover the changes in commuting behaviours at a more granular level than traditional travel demand surveys. By analysing origin and destination data across millions of journeys, CVD can capture mobility trends in an incredibly accurate way and help ensure you are identifying and investing in the areas proven to have the most opportunity for efficiencies.

GIS & Location Data

Retailers can use CVD to determine the best location for a store site. CVD has the unique ability to track incoming and outgoing journeys and destination analysis. This helps uncover insights like how much through traffic a location has, the time it may require customers to park, and where vehicle journeys are coming from and going to around a given site.

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Smarter Traffic and Transportation

At Wejo, we are reimagining the world we live in with connected vehicle data. Our CVD comes from **11.3 million** active vehicles with more than **391 billion** miles curated and can help uncover opportunities and unleash the potential for organisations across sectors. Because we hold exclusive relationships with vehicle manufacturers around the globe, Wejo CVD is one of a kind and uniquely positioned to help you reach your objectives – saving lives, making commuting more enjoyable and sustainable, and securing projects.

To learn more about Wejo get in touch at **info@wejo.com**