



UNLOCKING EFFICIENCIES WITH CVD

Why Smart Infrastructure is
Key to Reaching 'Net Zero'

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In April, President Joe Biden committed to putting the US on a path to net-zero carbon emissions by 2050.⁽¹⁾ When it comes to achieving that goal, Biden has pointed to his recently announced Infrastructure Plan, noting that it will allow “transformational progress in our ability to tackle climate change.” In fact, the proposal would rank as one of the largest federal efforts ever to curb the country’s greenhouse gas emissions.⁽²⁾ But how exactly does infrastructure impact climate change? The answer may be deeper than you think.

While some efforts laid out in Biden’s plan are those you may expect when it comes to climate change –

electric vehicle tax credits and adding more charging stations throughout the country, for example – others may be less obvious. The plan calls for approaching infrastructure at large with efficiency front of mind, from modernizing cities and reducing traffic to investing in innovations that overcome wasteful energy consumption.

Building smart infrastructure, using reliable, accurate data sources, has the power to unlock huge efficiencies. One of those data sources is Connected Vehicle Data, or CVD. CVD offers unique and important insights that can inform smart infrastructure and help in the mission to achieving net zero.

(1) <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>

(2) <https://www.cnbc.com/2021/03/31/biden-infrastructure-plan-spending-on-climate-change-clean-energy.html>

Uncovering efficiencies with CVD

The key to implementing a smart infrastructure plan that meets sustainability goals starts with understanding where there is room for improvement. CVD provides a view into movement throughout a city or town, giving deep insight into traffic patterns and driver behaviors. Informed by tens of millions of vehicle journeys, CVD can accurately identify where traffic or congestion is occurring, why it likely is happening and provide insights into how it might be mitigated. Unlike annual or at best quarterly travel surveys, CVD provides near-real-time insight. This deeper understanding of what is occurring out on the roads, backed by accurate, unbiased and up-to-date information, helps uncover the biggest opportunities for impact both in making communities more livable and curbing emissions to meet efficiency goals.

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We can now carry out a month's worth of analysis in 45 minutes, which previously took 2 to 3 years, all using the Wejo data.

Darcey Bullock, Director of the Joint Transportation Research Center at Purdue University. Darcy is also a professor at the Purdue University School of Engineering.

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How can CVD lead to smarter infrastructure and ultimately, a greener world?

1 INCREASE DRIVER CONFIDENCE IN EV RANGE

A piece of Biden's plan that has received a lot of attention is the \$174 billion line item focused on electric vehicle charging infrastructure. This includes new guidance on how grants can be used to deploy charging infrastructure and newly designated alternative fuel corridors.

According to the White House, "One of the perks of driving an electric vehicle is never needing to go to the gas station. But public charging infrastructure will provide a key role for people without charging facilities in their homes and for longer trips. A robust, convenient, and affordable network of public chargers will increase confidence for drivers that they will always have a charging option when they need it."⁽¹⁾

It is understood that having a more robust charging infrastructure could solve for the range anxiety any drivers have around electric vehicles. Range anxiety is the fear an EV driver has when the battery charge is

low, and the usual sources of electricity are unavailable. Interestingly, fuel range anxiety also exists and similarly happens when drivers are low on gas and cannot find a gas station. The range anxiety, however, seems to be more common in electric vehicles and it is hindering adoption. Studies show driving range, and a lack of charging infrastructure are the main reasons why people don't buy EVs.⁽²⁾

Through CVD, you can monitor journey patterns to better understand how EVs are being driven and where there is opportunity to overcome range anxiety and infrastructure limits. CVD can help you analyze macro trends in journeys in relation to fuel and charging locations to determine where to place new charging stations in your smart infrastructure plans.

Educating the public on EV charging ranges is also more powerful when backed by credible data and CVD can help inform public service campaigns that support EV adoption.

(1) <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-biden-administration-advances-electric-vehicle-charging-infrastructure/>

(2) <https://www.weforum.org/agenda/2021/07/electric-cars-batteries-fossil-fuel/>



Wejo analyzed journey data and determined that gas vehicles are driven, in the US, around 36 miles per day and EVs are driven around 15 miles per day.

The data shows that drivers of both gas vehicles and EVs on a daily basis are driven below the average mileage an EV is capable of - 150 miles. Therefore, consumers could consider using the more environmentally friendly option, EVs and would still be well under the average mileage an EV is capable of.

36



**MILES
PER DAY**

15



**MILES
PER DAY**

2 OPTIMIZE FLOW OF TRAFFIC AND REDUCE CONGESTION

In approaching infrastructure planning with efficiency top of mind, a key area to evaluate is traffic. When roadways are congested it leads to more idling cars and ultimately more waste. Research shows that in New York City alone, idling cars and trucks produce 130,000 tons of carbon dioxide each year⁽¹⁾ and a Canadian study suggests if motorists avoided idling for just three minutes every day of the year, carbon dioxide emissions could be reduced by 1.4 million tons – equal to taking 320,000 cars off the road.⁽²⁾

(1) https://www.edf.org/sites/default/files/9236_Idling_Nowhere_2009.pdf

(2) <https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/cars-light-trucks/idling/4415>

Many traffic management teams are already using traditional methods and data sources to analyze traffic patterns, helping identify where vehicles are spending the most time idling. This information is used to create solutions to reduce that idling time. For example, optimizing traffic signals at a busy intersection, changing the pattern of the lights based on time of day and flow of vehicles. CVD takes this already effective approach a step further and enhances it with much more precise and accurate information.

Case study

Purdue University used Wejo's CVD to understand vehicle trajectories and analyze traffic signal performance measures such as: split failure, downstream blockage, and quality of progression. By analyzing CVD instead of static hardware devices placed at the intersections, Purdue was able to determine how trends in one intersection were impacting another⁽¹⁾ – for example, a downstream blockage, which is when someone in line at a traffic light holds up other cars from progressing through,

could impact not only the signal it is closest to but also signals ahead or down a cross street. Purdue published a report on the study and concluded that CVD, and its graphical interface capabilities, can quickly assess proportions of vehicles arriving to a signal when it is on green, identify the locations with insufficient green time and better understand the impact of downstream spillback. All of these insights can help direct governments in optimizing signals to avoid congestion and ultimately curb wasteful emissions.

(1) <https://youtu.be/xs4CbrqcyLI?t=847>

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MAKE COMMUTING MORE EFFICIENT

Taking a wide lens in considering how smart infrastructure can help push us toward a net zero future means thinking about transportation options and how to optimize them across the board. In addition to the electrification of cars and buses, there are ways in which communities can make travel more efficient by analyzing commuting patterns and offering solutions that help curb unnecessary emissions. Take for example in Denver, Colorado where analysis of a bike sharing program showed 41 percent of bike trips were replacing car trips, avoiding more than one million pounds of carbon dioxide emissions.

With CVD, you can make decisions on where to invest to get the best result when it comes to making commutes easier and more sustainable. By analyzing start and end locations across millions of vehicle journeys you can understand where new transportation options will be most impactful. Perhaps a new train or bus stop would make sense in an area where there are several journeys that start and stop near the same locations. Car sharing applications can also be more effective using CVD to ensure the route with least traffic is taken, and drivers and passengers are matched with more precision to avoid wasteful emissions.

Commuter data is powerful when it comes to implementing smart infrastructure as it informs decision making based on movement tied to the car, meaning direct view of traffic and emissions. Wejo analyzed commuting trends throughout the **Covid19 pandemic** to observe how shutdowns impacted commuter journeys. Our team of data scientists found overall commute journeys were down by **63%** from 2020 to 2021, with Fridays being the busiest day of the week and Sundays being the quietest. These insights, when applied to broader commuter activity, can be useful in providing more sustainable infrastructure — such as providing incentives for travelling in off-peak hours or providing alternative routes for peak times.



2020-2021

63%



The Power of CVD

UNIQUE Wejo CVD is captured from billions of connected vehicle journeys from across the US through exclusive data partnerships with the world's leading automotive manufacturers. CVD can uncover insights unique to the car and its 100+ sensors, allowing users to understand trends in traffic and consumer behavior that are not accessible through other data sources.

ACCURATE Wejo CVD is 95% accurate within a 3-meter radius and transmitted every 1-3 seconds. This accuracy and low-latency ensures data-driven decision making is based on true information and not assumptions of travel patterns.

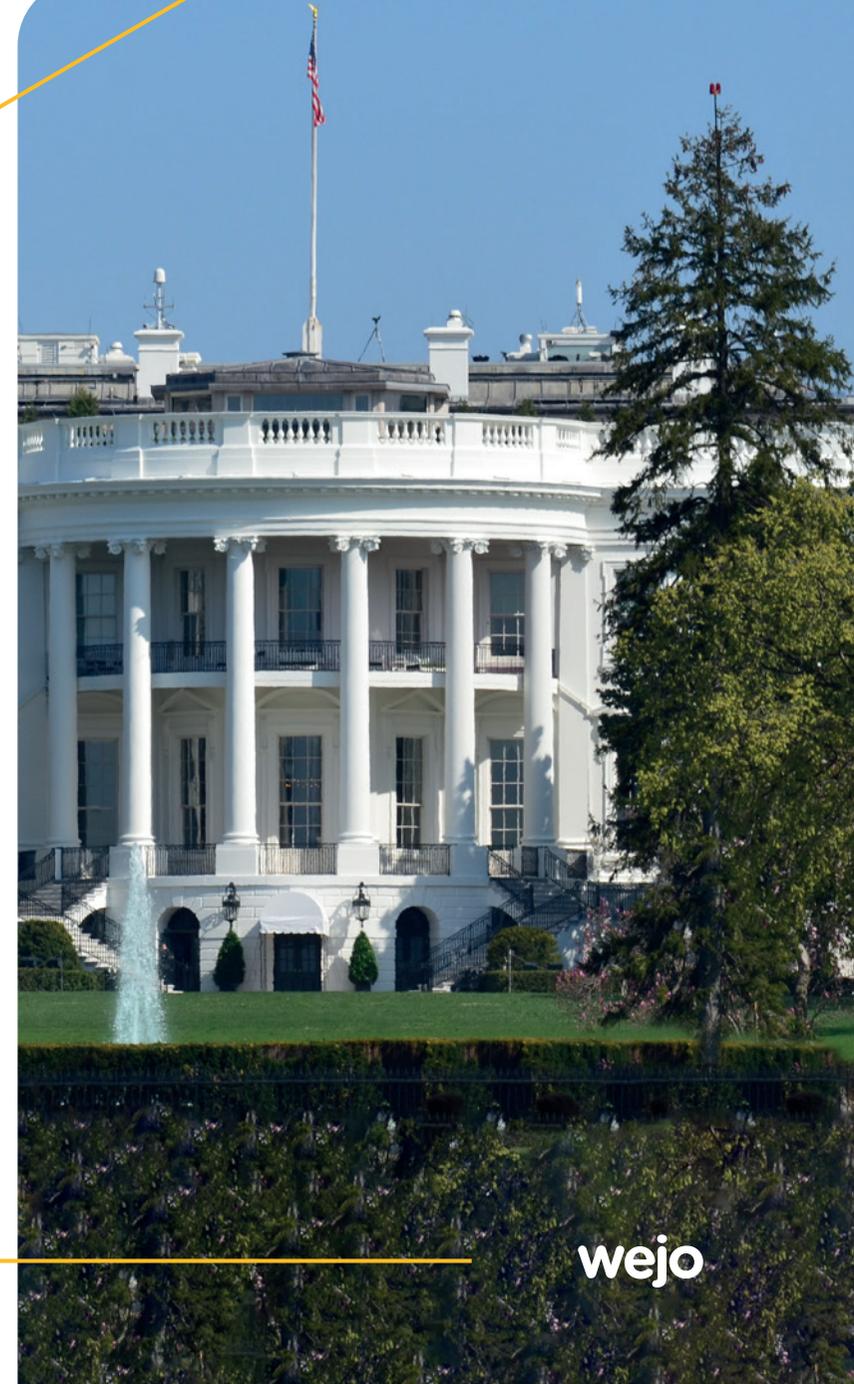
UNBIASED Wejo's data is from multiple manufacturers' makes and models, providing a wide spread of density and demographics, key in understanding macro-level trends without data bias.

EASY-TO-USE Wejo's CVD intelligence products allow users to more easily access trends in data, meaning you don't have to be a data scientist to glean powerful insights.



CVD is already helping to make infrastructure smart and is foundational to intelligent mobility. In addition to curbing accidents and making communities more livable, intelligent mobility can reduce traffic congestion by a fifth and carbon emissions by a tenth.⁽¹⁾ Infrastructure is the pillar of Biden's climate change plan. CVD should be the pillar of your infrastructure plan.

(1) <https://phys.org/news/2015-11-traffic-congestion-carbon-emissions-accidents.html>





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Unlocking Efficiencies with Connected Vehicle Data: Why Smart Infrastructure is Key to Reaching 'Net Zero'

This is your opportunity to unlock the value in connected vehicle data to understand how big data can shape and change the way we live, work, and travel.

Contact us to learn more about partnering with Wejo.

Get in touch at
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