

Profile of Electric Vehicles in CT

Barry Kresch

Interactive EV Dashboard – EV Adoption in Connecticut

Note: These data are obtained via a **Freedom of Information Act** Request from the Department of Motor Vehicles. The data are registrations, not sales, and represent all light-duty electric vehicles registered in the state through the end of last year. The definition of “electric vehicle” or “EV” follows what is used in the MultiState Zero Emission Action Plan Memorandum of Understanding (MOU). This MOU has sets forth the EV adoption goals the state has set for itself, which are 150,000 registered EVs by 2025 and 500,000 by 2030. The definition of EV in the MOU includes Battery Electric Vehicles (BEV), Plug-in Hybrid Electric Vehicles (PHEV), Fuel Cell Electric Vehicles (FCEV), and Battery Electric Motorcycles (BEMC). These different “fuel types” are captured as a variable, enabling the report to be filtered, so for example, we can choose to only look at BEVs.

Why do this?

I don't do this just to make pretty charts. In my past life in media, we used to have a saying: “If you can't measure it, you can't sell it.” The same holds true for public policy. The ZEV MOU already suffers from the fact that it is a resolution and has no teeth. The real work is all of the under-the-hood advocacy and policies that will get us to where we need to be. Those of us who work on behalf of the EV Club or in other organizations such as the Sierra Club, Save the Sound, or the League of Conservation Voters, know all too well that the

devil is in the details. I put this out there for the purposes of policy planning, citizen advocacy, holding the state accountable regarding its progress toward achieving its ZEV Plan goals, and under the principle that transparency is best.

There are 21,382 EVs registered in CT as of Jan 1, representing 14.3% of the 2025 goal and 4.3% of the 2030 goal. It is obvious that we have a long way to go.

The DMV publishes top line data, but the details add texture and insight. Knowing where there are clusters (or deserts) of EVs can help with planning for charging expansion. We track the details of which fuel types are registered and which models are succeeding with consumers. The extreme example: there are only 3 fuel cell vehicles registered in the state. Is it a wise use of resources to promote this technology, which the state extensively does, and which inevitably comes at the expense of supporting electric vehicles and mass transit?

A new dataset is obtained every 6 months, based on current statutory reporting requirements. Changes in policy can be correlated with the differences we see over time in the trended data.

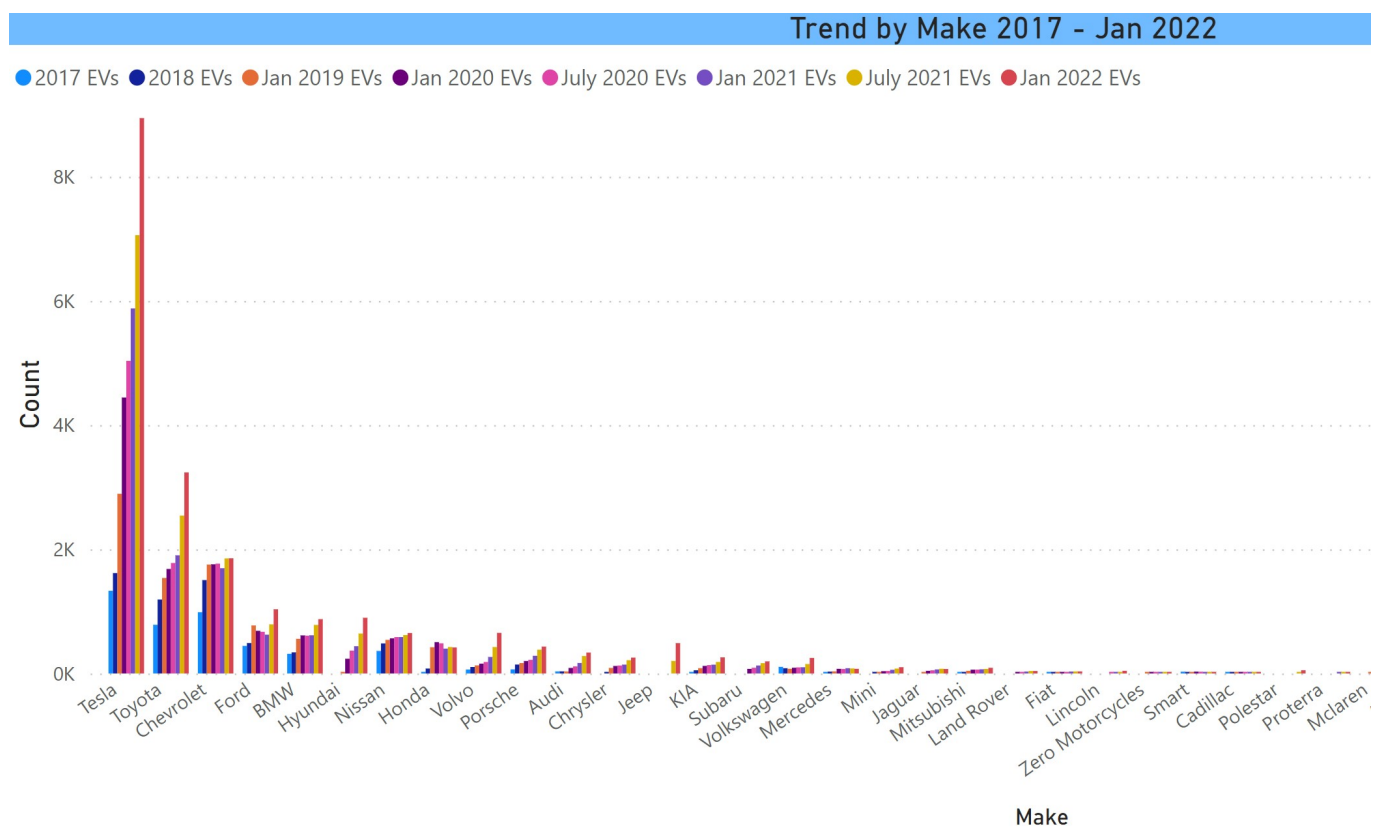
Finally, many people don't know that it is possible to get these data using public records requests and that it breaks no laws. In this and a [subsequent post](#), I summarize many, though not all, of the charts in the dashboard.

About the Charts

I have not displayed the values in some of the charts below due to lack of space. If you are interested in seeing all of the data that I have charted, it is in a BI dashboard and posted to the website [here](#). The values are displayed either by default or by hovering over a chart element. There are slicers (checkboxes) on most of the pages that can be used to filter

the data. To check multiple boxes, depress the command key on a Mac or the control key on a PC. There are 29 pages (subject to change). Pagination is below the fold. Scroll down and click on it, and it will display the other pages and page titles.

Some of the most widely anticipated new EVs have not yet appeared in the state. These include the Rivian R1T and R1S, Lucid Air, Electric Hummer, Ford F150 Lightning, and Mercedes EQS. The chart at the top of the page shows the number of vehicles by make as of January 1, 2022. Below is the trend by make for the largest EV makes since 2017. As you can see, there are a small number of makes that account for most of the EVs, followed by a long tail.

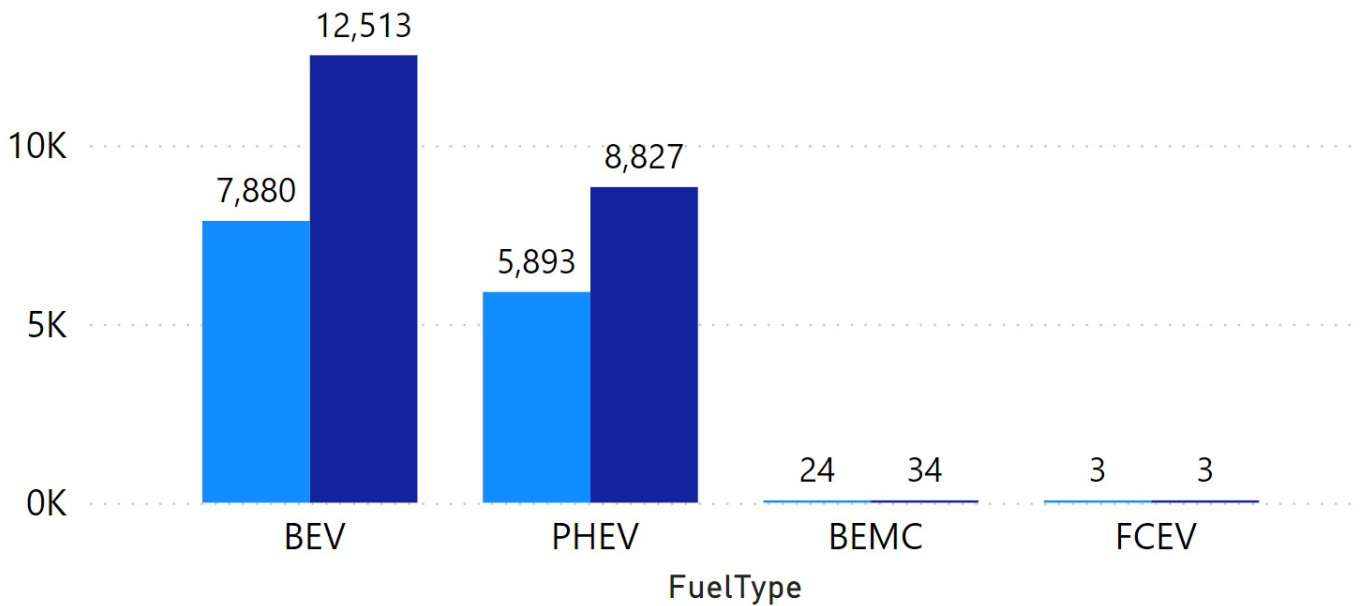


The chart below is the trend by model, again, for reasons of space, an excerpt of the most widely registered models. There is some zooming in of this detail in the charts by individual makes further along in the blog post

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Fuel Type Jan '22 vs Jan '21

● Jan 2021 EVs ● Jan 2022 EVs



Tesla still has a commanding lead among EV makes

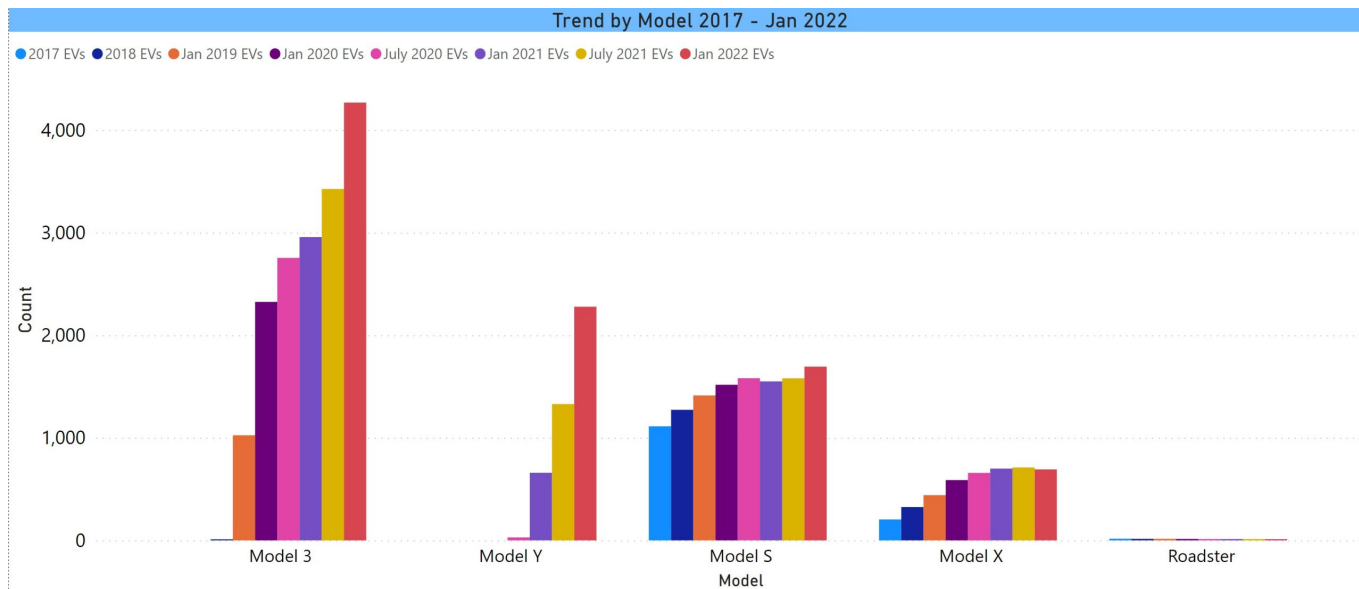
With 8944 registrations, Tesla is still way out in front of all other manufacturers. It is almost 3 times that of the number 2 make, Toyota, which has 3238, followed by Chevy with 1855. If the data are filtered for BEVs, the number 2 make is Chevy with 824.

Tesla accounts for 42% of all registered EVs and 71% of all battery electric vehicles (BEV). Despite numerous announcements from other manufacturers, this number has been holding steady with each successive wave of data.

Tesla – 8944 Registrations

There were more Model 3's entering the file than the Y even though the reporting is that the Y is Tesla's top-seller. This pattern is likely due to supply constraints. We know that customers are waiting a long time for their Model Y. The new plant in Austin, TX is expected to go online soon which will help alleviate the supply crunch. In the chart below, which is

the trend in net registrations, the Y is growing faster than the 3, which speaks to the 3 having higher turnover, not unexpected for a vehicle that has now been around long enough for lease expirations or turnover for other reasons.

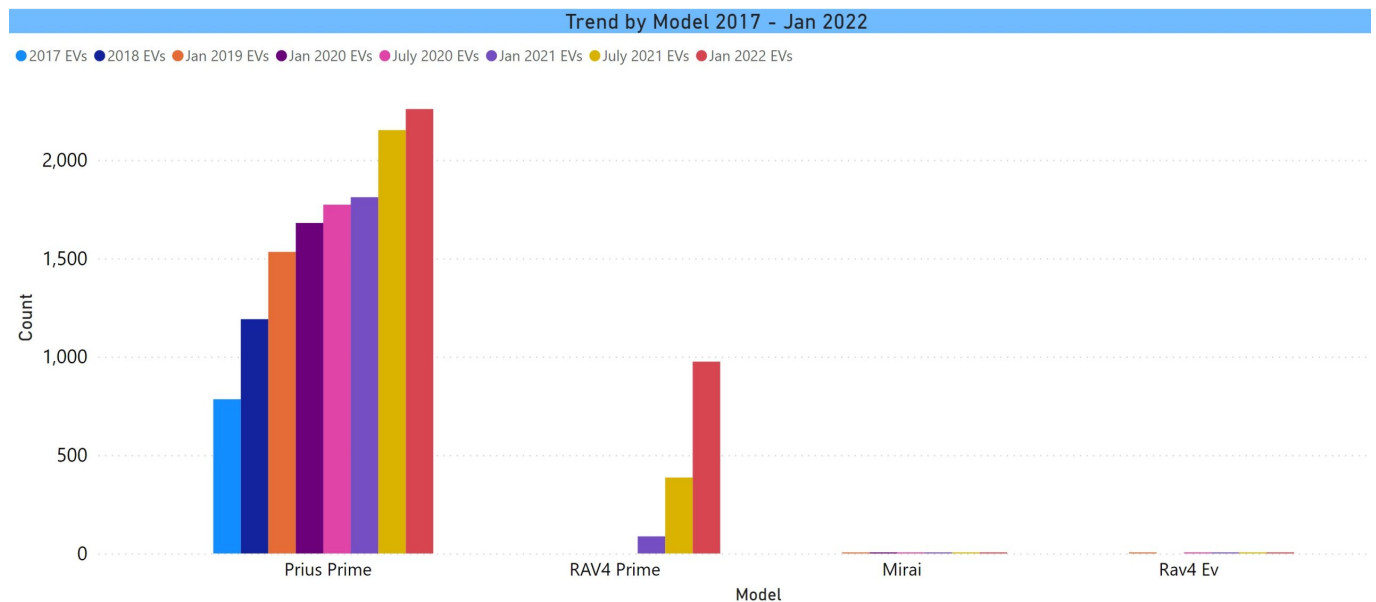


Toyota – 3238 Registrations

The Prius Prime and RAV4 Prime models, which account for almost all of the Toyota registrations, are plug-in hybrids. The RAV EV is a battery electric vehicle that was built in small numbers as a compliance car. The Mirai is a fuel-cell vehicle. There are 3 of them in the state and none currently for sale in CT as far as we know. Toyota did a refresh of the Mirai that became available in November 2021. They have been the manufacturer pushing hardest for fuel cell. Toyota is introducing its first battery electric vehicle, the bZ4X, an electric SUV (or EUV) later this year, according to its website.

It looks like Toyota has a hit on its hands with its RAV4 Prime. It came out of the gate strongly, but its success seems to be coming at the expense of the Prius Prime, where growth has greatly slowed. Note: The version of the Prius that predated the Prime, simply known as the Plug-in Prius (one of

those, “Why did they bother building this?” head-scratchers with a pitifully short electric range of only 11 miles), is folded into the Prius Prime numbers. (There are 1838 Primes and 421 of the older model.)



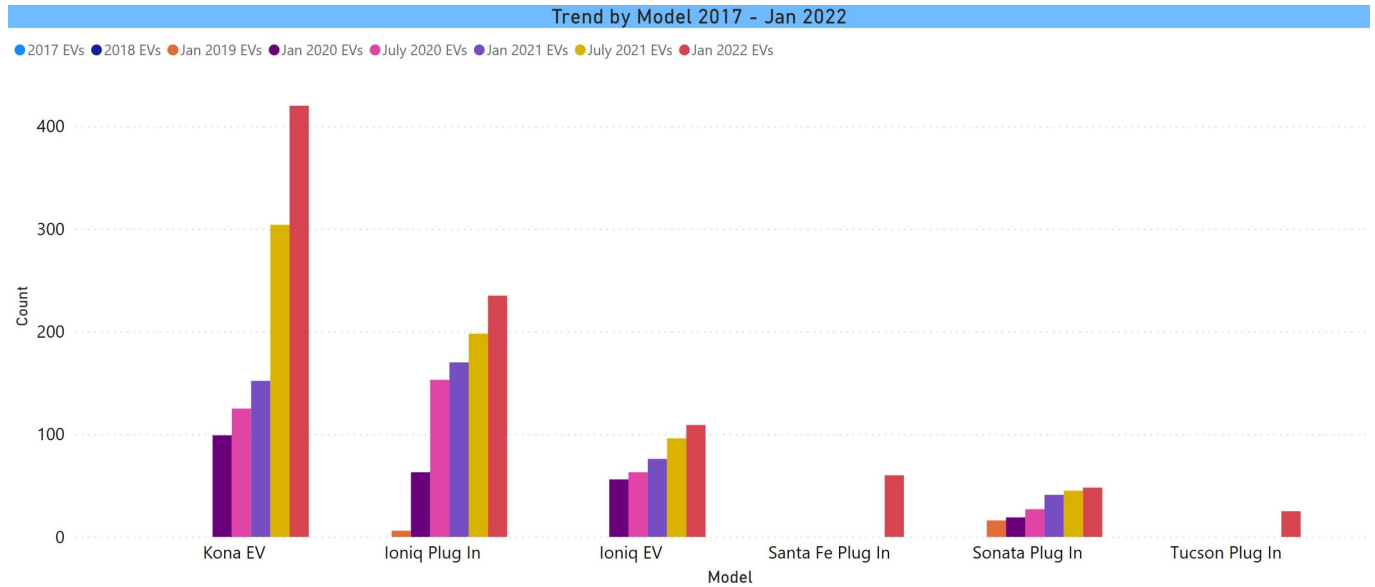
Chevrolet – 1855 Registrations

Chevy was at one time the leader in number of EVs registered, mainly driven by the now defunct Volt PHEV. Of course, Chevy is the tragic story of last year with the extensive recall of the Bolt due to a small, but unpredictable, incidence of battery fires. After the Bolt’s refresh with a lower price point, sales picked up, but the recall slammed on the parking brake. The Bolt has yet to overtake the declining Volt.

Chevy has made a number of high-profile announcements, including an electric Silverado pickup and an electric Equinox, both anticipated as 2024 model year vehicles.

Hyundai – 897 Registrations

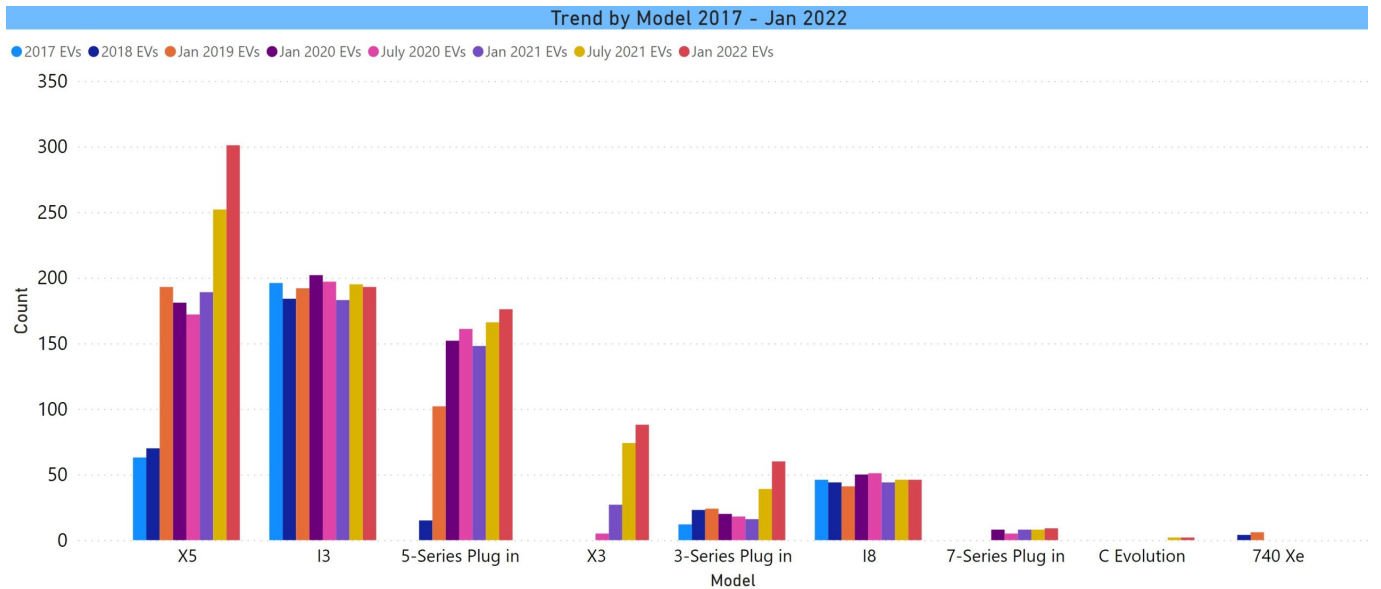
There was some progress with the Kona BEV. The big introduction of the year was the Ioniq 5. The file from the DMV includes the “Ioniq EV” with no “5” designation, so we may not yet be seeing it.



BMW – 875 Registrations

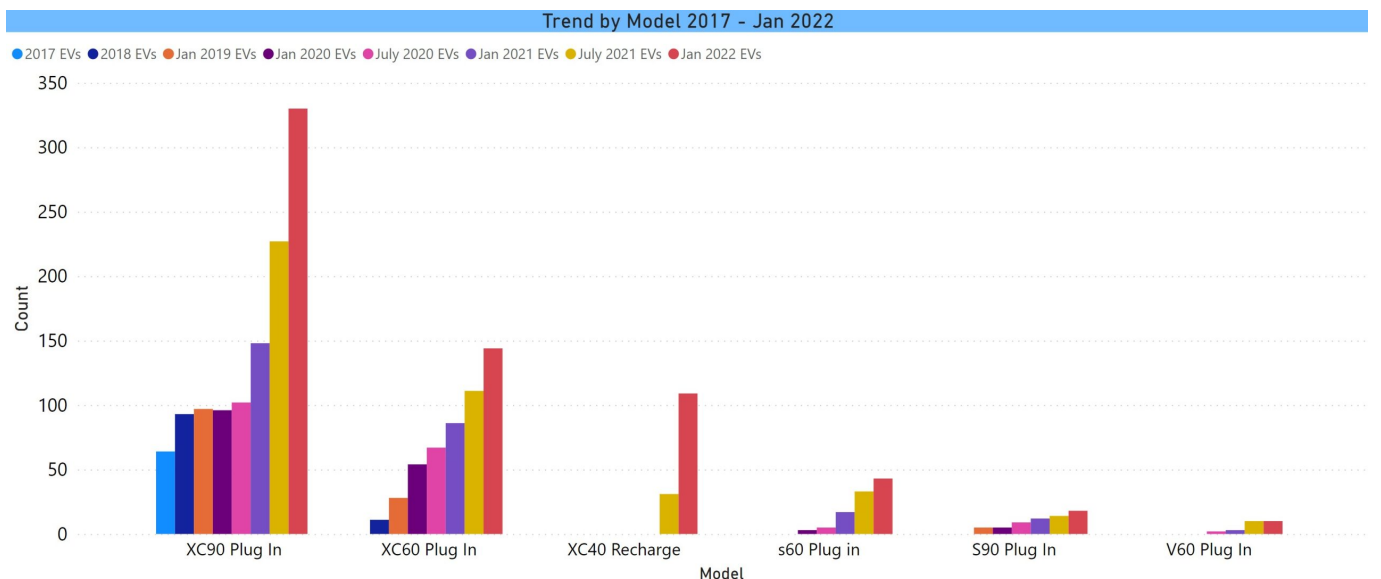
BMW was a relatively early EV player, with the BEV i3 and high-end, sporty PHEV i8 models. It has a relatively large number of models, mostly PHEV, mostly uninspiring performers. Recently, they have gotten some traction with the X5 PHEV. The imminent launches of the iX and i4 may build on this.

Note: for these charts, I combined the i3 and i3 REx. DMV classifies the i3 as a BEV and the REx as a PHEV, even though the range extender is an under-powered engine that enables you to get to a place to plug in, a preferable option to being dead-sticked, but not intended to function like a regular car as with other PHEVs. Most of the i3s are of the REx variety.



Volvo – 654 Registrations

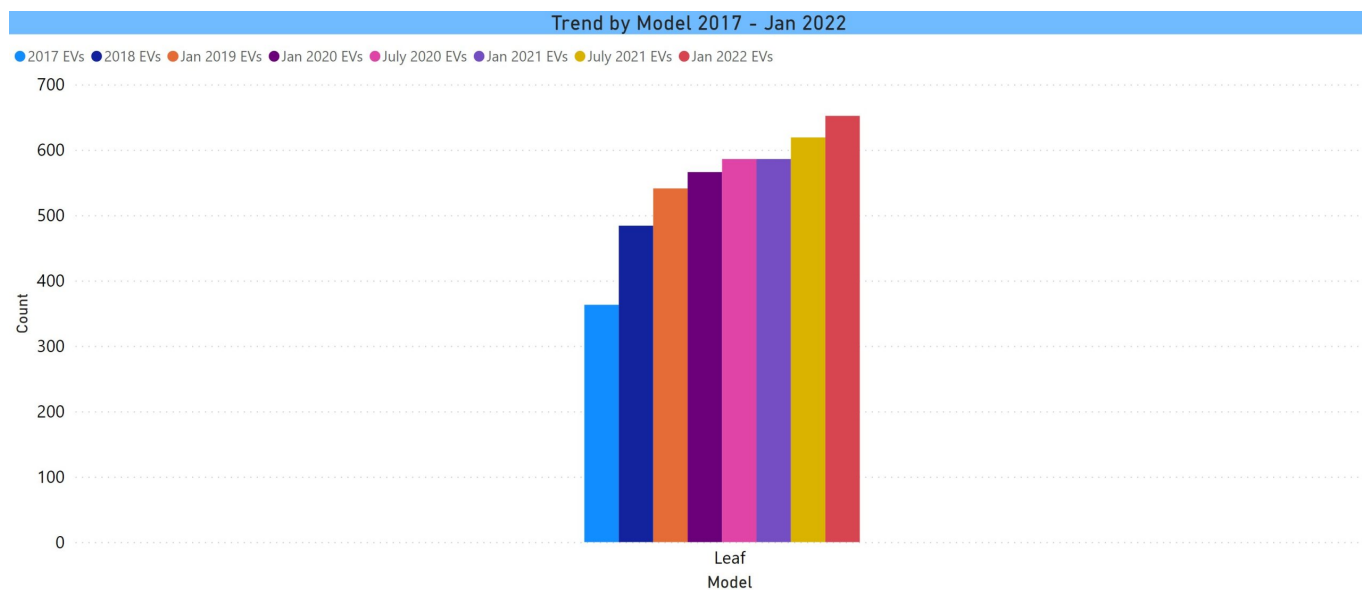
Volvo had exclusively been selling PHEVs with modest success with its XC90. More recently it introduced the BEV XC40 Recharge.



Nissan – 652 Registrations

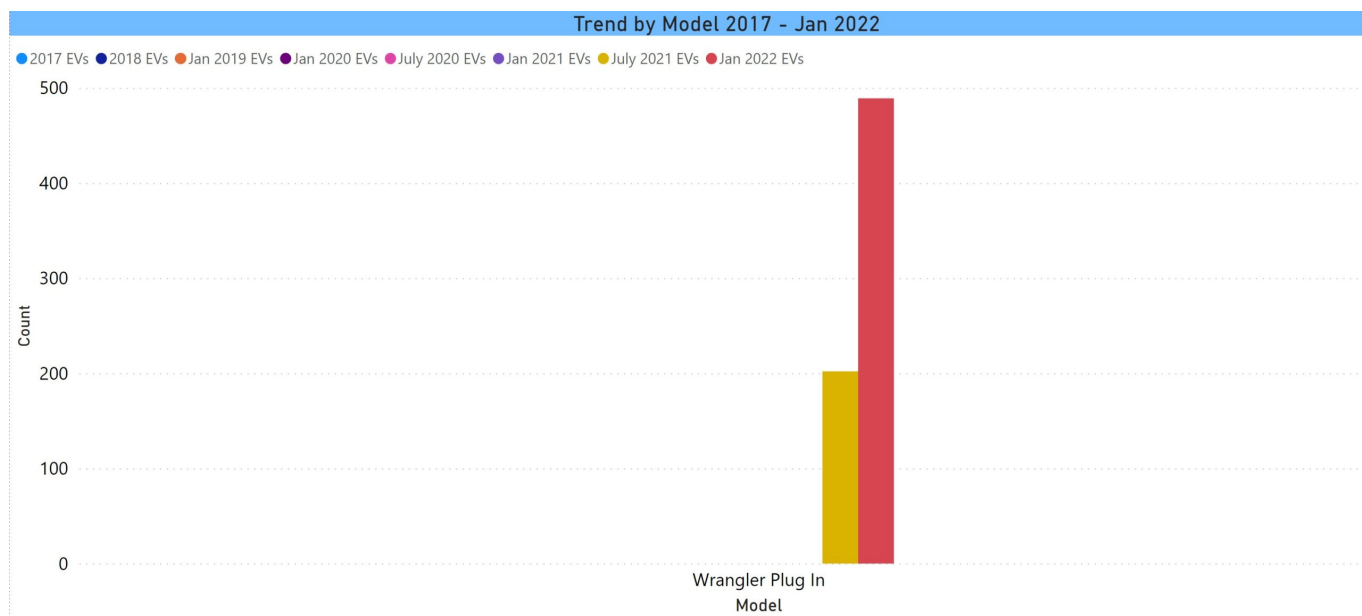
Nissan sold the first mass market EV to go on sale in this country, the BEV Leaf. It is still with us, though never a particularly strong seller. Nissan has announced an electric

SUV called the Ariya, scheduled to be on sale by the fall of this year as a 2023 model.



Jeep – 489 Registrations

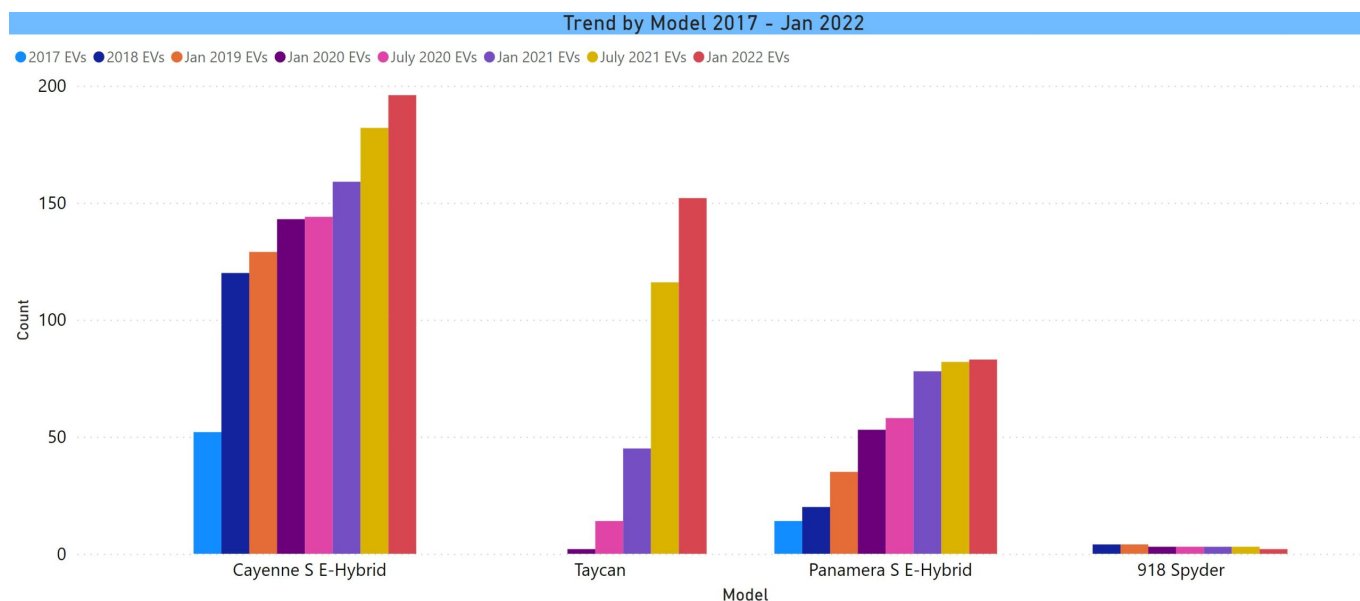
The first plug-in from Jeep became available in the state this year, a PHEV Wrangler, and it has gotten off to a decent start.



A few more charts:

Porsche – 433 registrations

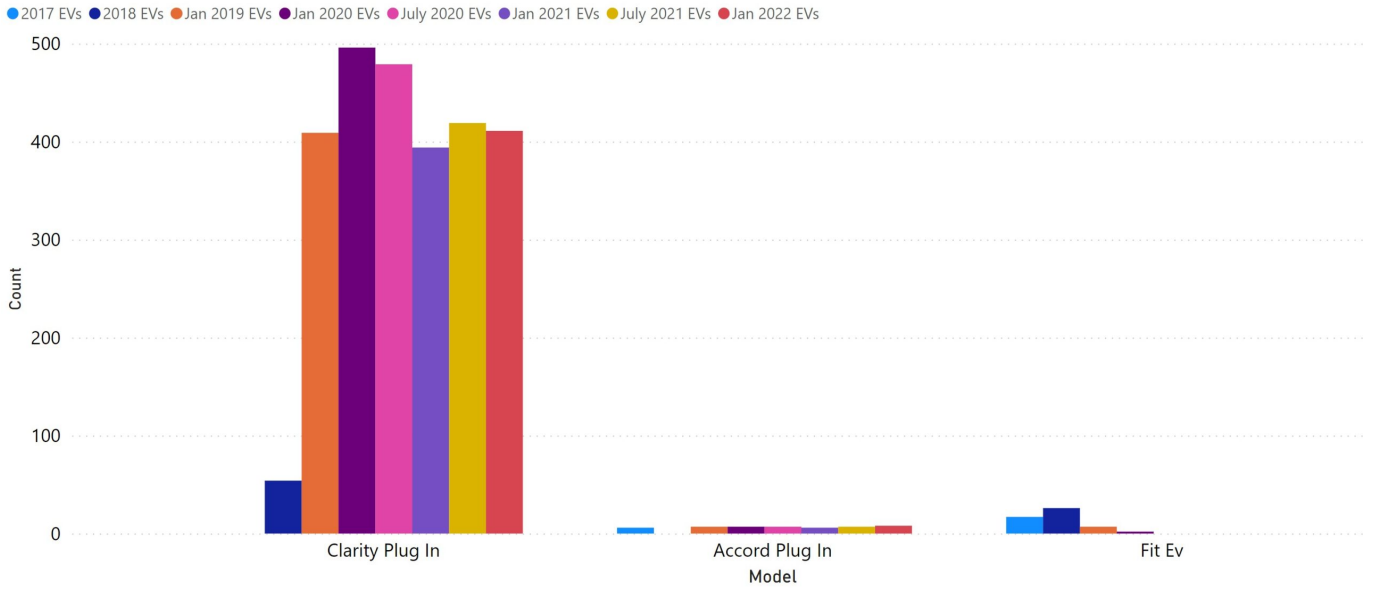
Its most recent model, the expensive BEV Taycan has had a faster growth curve than earlier PHEV entries.



Honda – 419 registrations

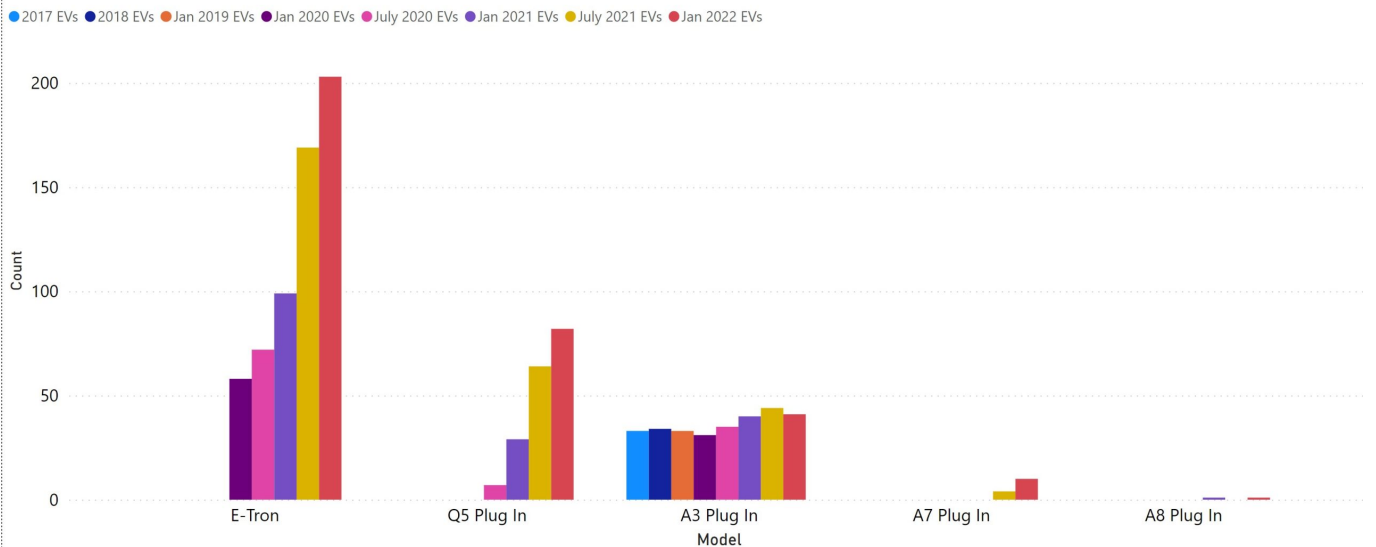
Despite its having gotten off to a strong start, Honda stopped supporting the PHEV Clarity in this state a couple of years ago. It has now been discontinued. Honda also made a short-range BEV Clarity that was never sold in CT. The registration count for this model will gradually erode. Honda has announced a BEV SUV called the Prologue, schedule for a late 2023 introduction as a 2024 model.

Trend by Model 2017 - Jan 2022

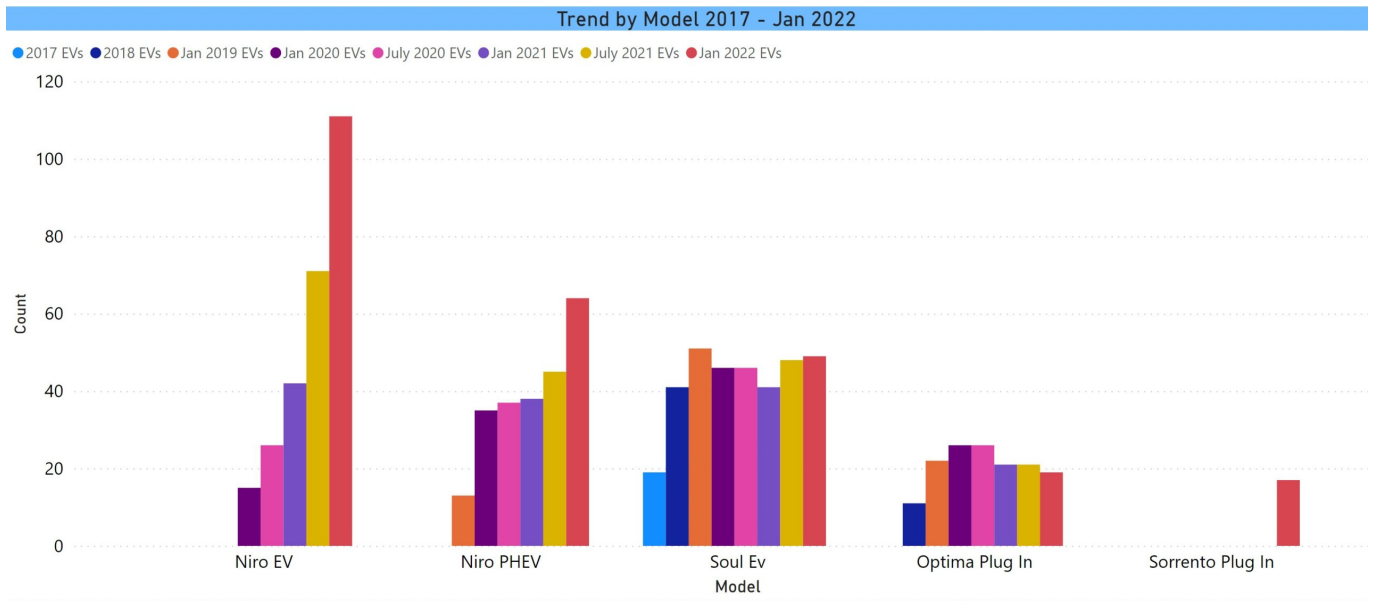


Audi – 337 registrations

Trend by Model 2017 - Jan 2022

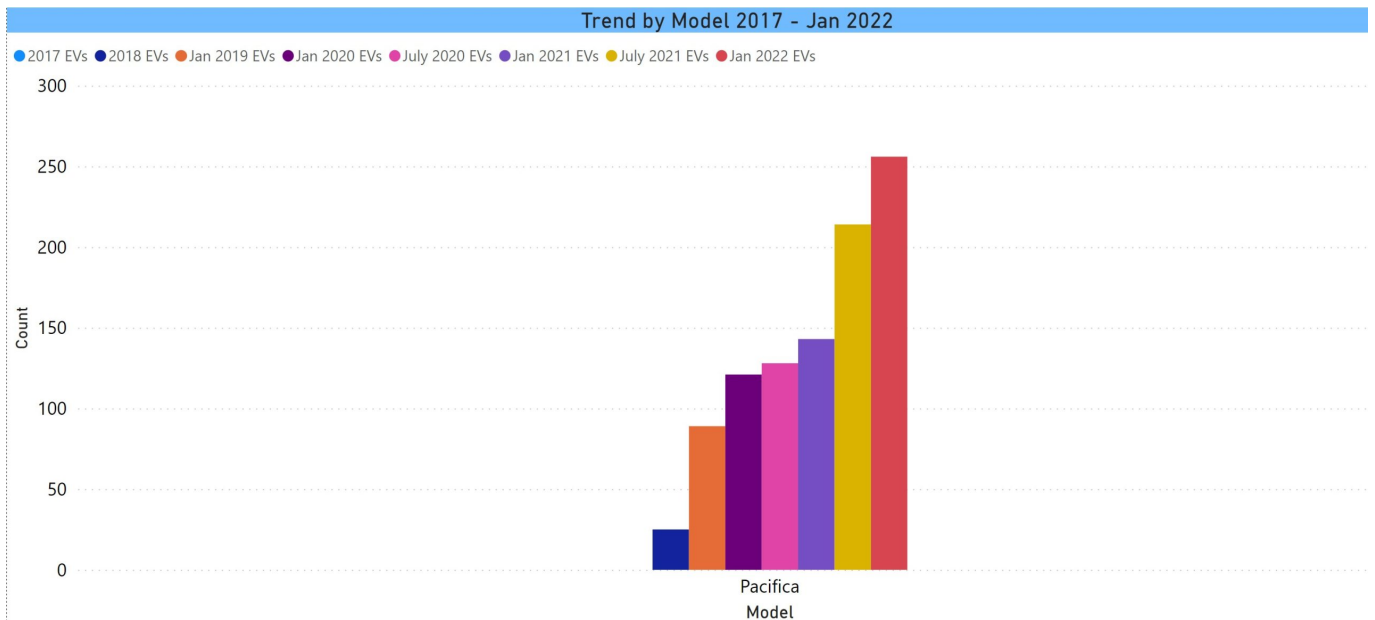


Kia – 260 Registrations



Chrysler – 256 Registrations

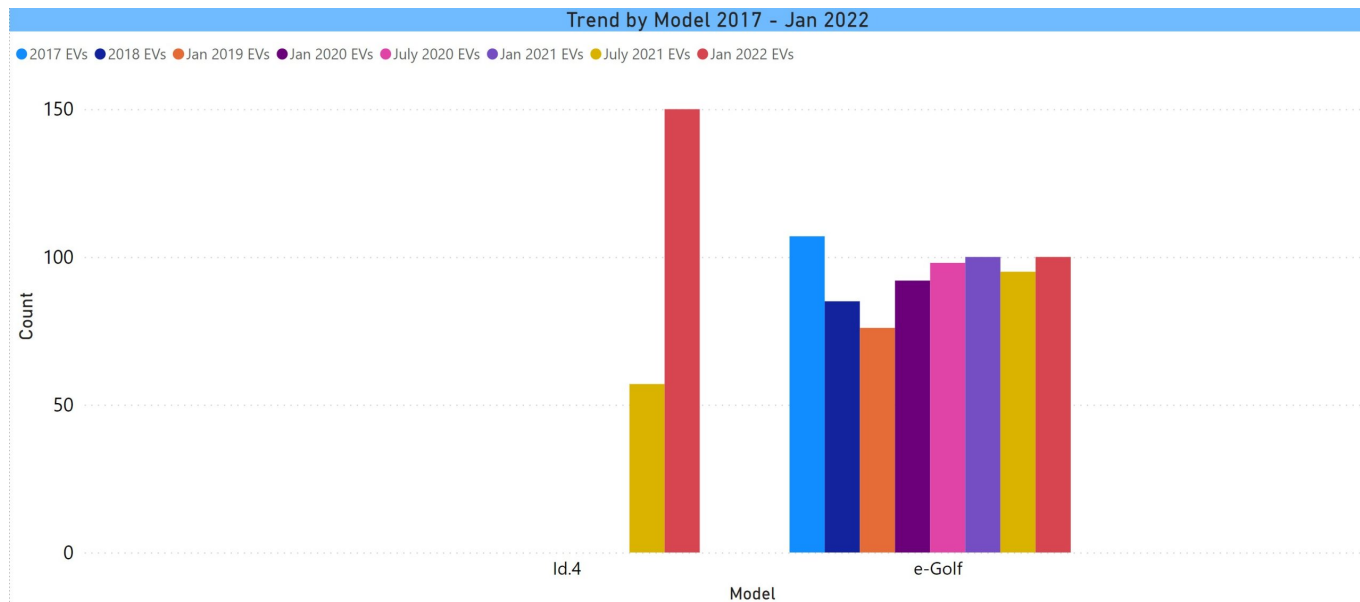
Chrysler introduced the Pacifica, the first PHEV Minivan, but never sold very many. They arguably still have the category to themselves.



Volkswagen – 250 Registrations

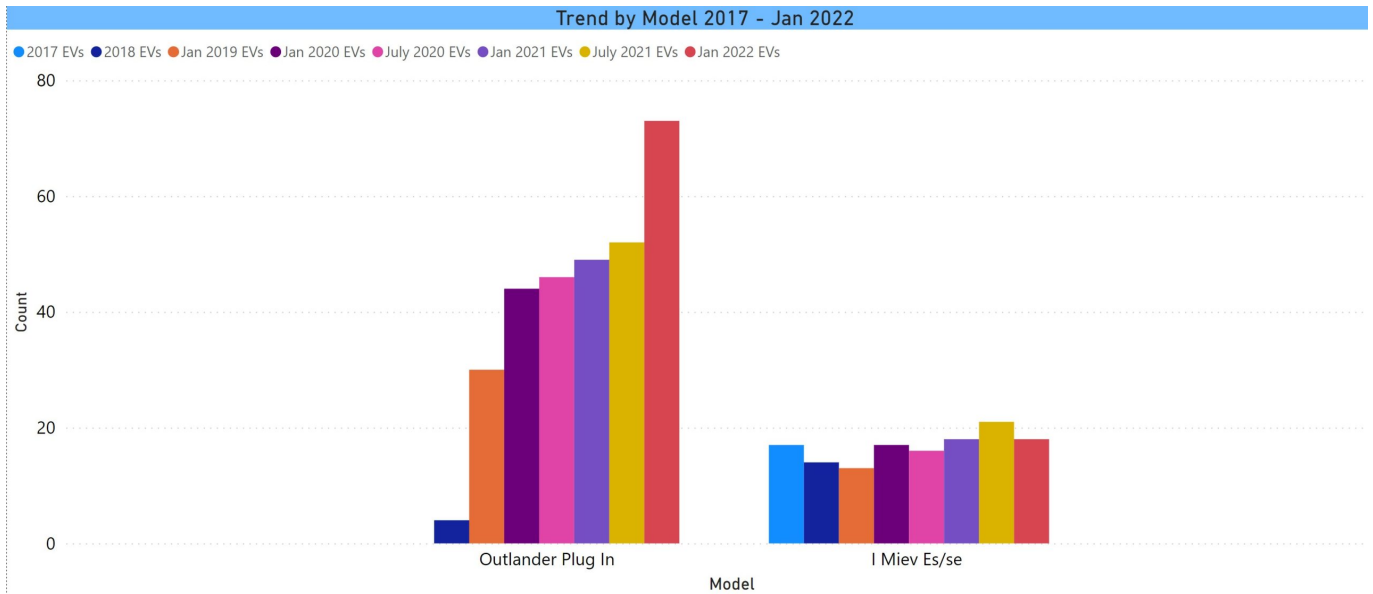
VW has moved on from the BEV e-Golf to its new platform and

its introductory vehicle, the BEV ID.4 (there is a smaller ID.3 that has been a success in Europe). The ID.4 looks to be an improvement over past sales performance, but this was a supply constrained vehicle in 2021.



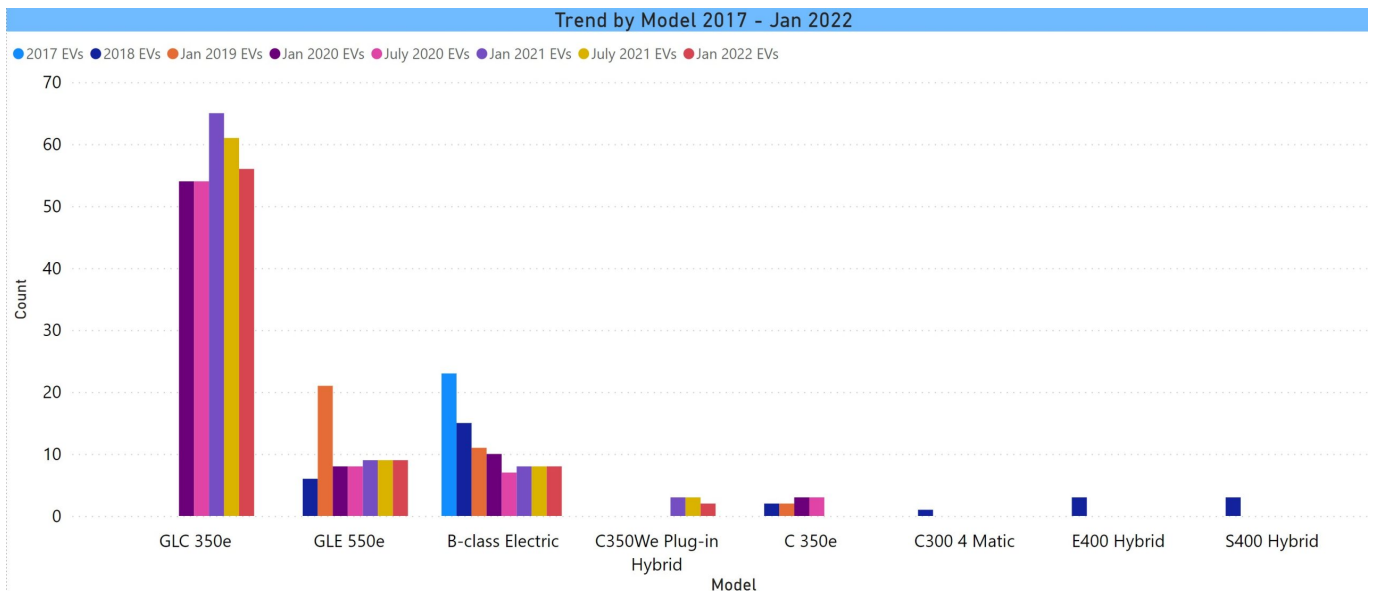
Mitsubishi – 91 Registrations

Mitsubishi is another manufacturer that was one of the earlier movers in terms of introducing EVs. There is the micro-compact BEV iMieve and the PHEV Outlander. The former never seemed like a serious entry. The latter was the first plug-in SUV available in the country but has never done more than minimal volume.



Mercedes-Benz – 75 Registrations

Mercedes is an example of a major manufacturer that prides itself on cutting-edge technology that has thus far failed to have even a minimal impact with electric vehicles. The company now has a new EVA2 platform and EQ branded vehicles with the EQS sedan to be available this year.

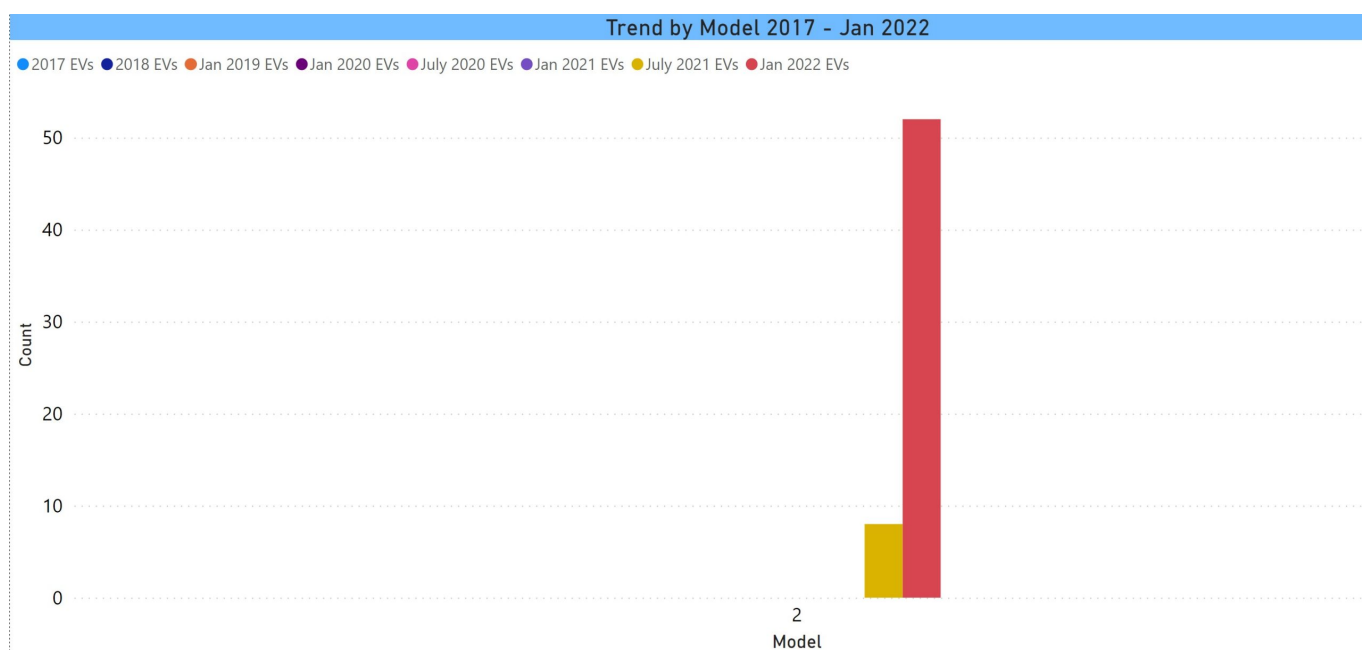


Polestar – 52 Registrations

Polestar manufactures 2 EVs, the Polestar 2, a BEV and the

Polestar 1, a high-performance, expensive plug-in hybrid. The chart below may not appear to have a vehicle label, but if you look closely, you will see a “2” at the bottom. Only the Polestar 2 has any ownership in CT.

Polestar, owned by Geely, which also owns Volvo, initially opened only 3 dealerships, 2 in CA and one in NYC. It was their way of avoiding this state’s retrograde laws against direct sales. One of our Polestar-owning members advises that the car is appearing in at least some local Volvo dealerships. Volvo dealerships can be certified to repair them, as well.



These charts are not an exhaustive review of every make. There is quite a large long tail with 22 makes having fewer than 100 registered EVs.

Electric vehicles may have finally reached a tipping point in consumer interest. 7 of the 9 auto ads in the Super Bowl featured EVs. Gas prices are high, which in years past caused hybrid sales to spike. The main headwind seems to be the chip shortage. Bloomberg just released a report that in Europe, overall car sales in January declined year over year for the 7th straight month due to this reason.

EV Registrations up 55% in 2021

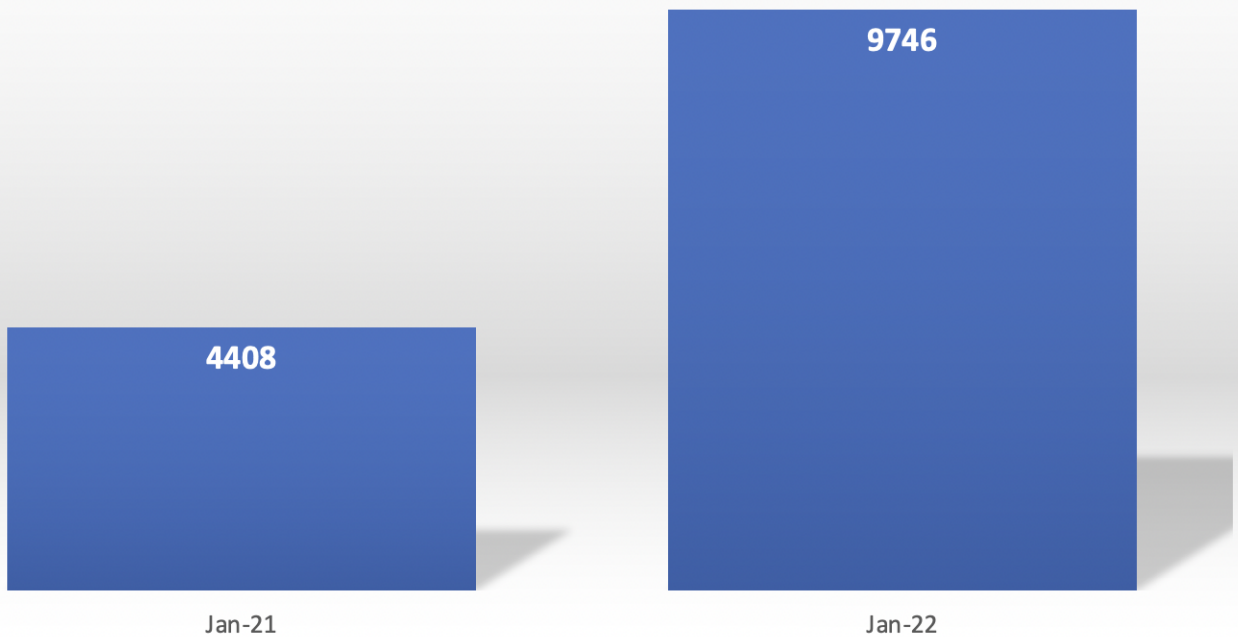
Recovery Induced Rebound in EV Sales

After a truly dismal, pandemic-influenced 2020, where EV registrations increased by an anemic 18.2%, there has been a rebound in 2021 to an increase of 54.9%. CT now has 21,382 EVs, up from 13,800 one year ago. Of course, the pandemic is still with us, but the brief, severe recession is over. Demand has been sharply stronger. If anything, the current numbers are supply constrained.

Newly Registered Vehicles

Keep in mind these are net registration numbers and that there is always turnover in the fleet. If we look at the number of new EVs registered in 2021 vs 2020, the trend is steeper with a 121% increase.

Newly Registered Vehicles in by Year



There was an administrative extension of registrations in 2020 that may have caused the Jan '21 number to be somewhat overstated.

This increased rate of growth is good news, but on a more cautionary note, it puts the state at only 4.3% of the way toward its 2030 goal of 500,000 registered EVs.

The underlying detail of these numbers, which allows us to chart fuel type, make, model, city, etc. is not yet available. We expect it within the next couple of weeks. Nationally, the big sellers have been the Tesla Model Y and 3, Mustang Mach-E, VW ID.4, and Toyota RAV4 Prime. There were several important introductions that happened too late in the year to have much of an impact, such as the Hyundai Ioniq 5, Mercedes-Benz EQS, GMC Hummer, and Rivian R1T and R1S. Of course, GM suffered a serious blow with its large recall and manufacturing interruption of its Bolt and Bolt EUV. The Honda Clarity PHEV ceased to be produced in 2021, though there is reportedly some dealer stock around.

CT Electric Vehicle Registrations Grow 36%

Post by Barry Kresch

17,217 electric vehicles are now registered in Connecticut

This is a topline description of the new dataset. A more in-depth profile will be available when the EV dashboard is updated in a few weeks. The usual disclaimer: This is registrations (not sales). It is cumulative and net and includes new and used vehicles, as well as someone who already owns an EV who moved into the state. On the other hand, vehicles turn over all the time, and these exit the dataset.

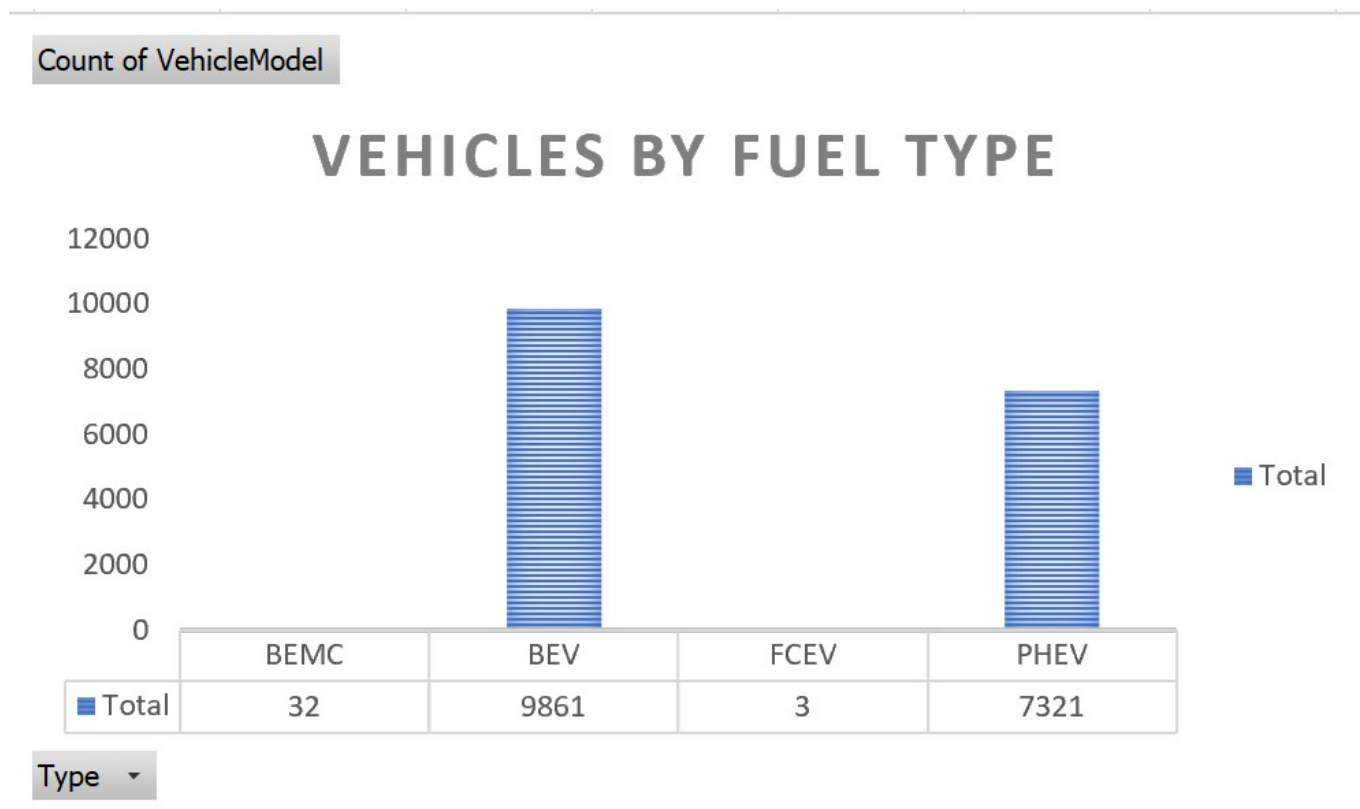
The new count of EVs as of July 1 has been released by the Department of Motor Vehicles. The new count of 17,217 represents a 36% increase from the 12,624 one year ago. This is an improvement from the 18% 12-month growth rate we saw in January, but it still falls short of the level of growth needed to achieve the 2030 goal of 500,000 electric vehicles set forth in the MultiState Zero Emission Vehicle Action Plan Memorandum of Understanding. There is obviously still a pandemic influence over the growth rate as the economy didn't begin to recover until the last few months. The growth rate for the past 6 months is 25%. If we were to double that, then we would be roughly on pace with what we need. I will calculate a new required compound annual growth rate and include it in a subsequent post.

One hopeful sign is that the 4335 EVs registered in the first

half of 2021 was about the same as the total for all of 2020, which was 4408. (These may not be completely apples to apples as COVID affected how registrations were handled. I think it still gives a reasonable general picture.)

Fuel Type

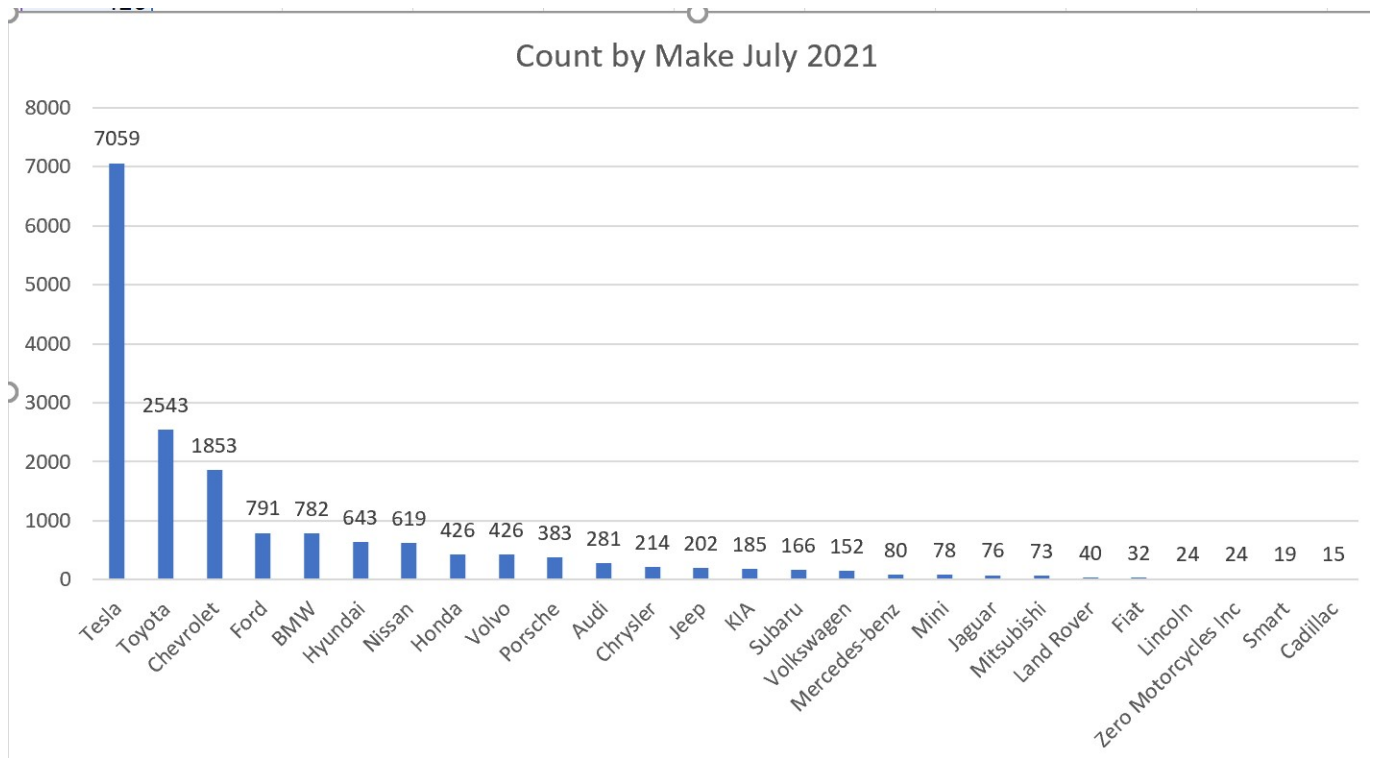
The definition of EV in the file includes battery electric vehicles (BEV), Plug-in Hybrid Vehicles (PHEV), Fuel Cell (FCEV), and electric motorcycles (BEMC). Below are the numbers for each.



BEVs account for 57% of all EVs. The FCEV count remains where it has been as these are not sold in the state at this time. BEMCs went from 25 to 32.

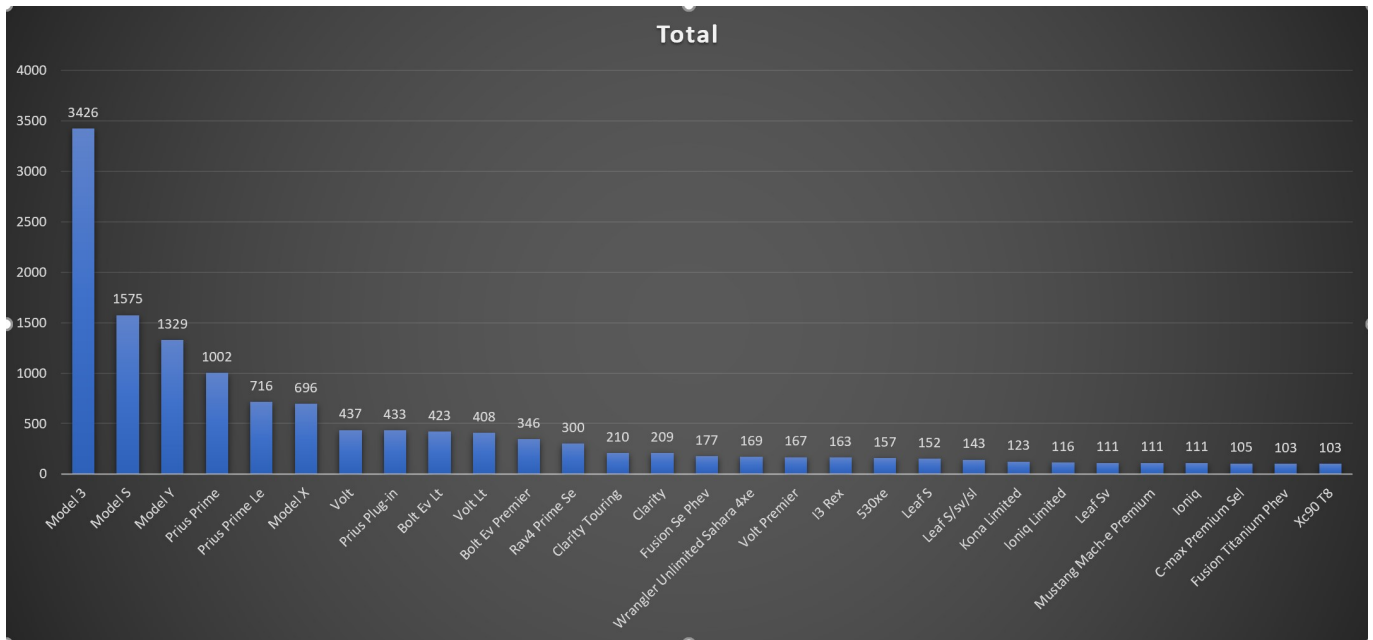
Top EV Makes

Tesla continues to lead all EV Marques by a mile.



This pattern is consistent with what we have been seeing. There are a small number of makes that account for almost all registered, followed by a long tail. This chart includes any make in double digits, not a very high bar, but there are quite a few below that level. When the dashboard is updated, it will have the full list. The only real change is that Toyota had a nice increase of 33% from January. Toyota saw increased registrations for its Prius Prime models as well as a good start for the RAV4 Prime. Tesla had a 20% increase, obviously off a larger base. Chevrolet reversed its net decline and increased 9%. The net declines were caused by the discontinued Volts gradually declining. This implies an improvement for Bolt sales.

The top make is the Tesla Model 3, which increased 16% since January. The top models are below.



The Model Y has now surpassed the Model X. It increased 101% since January. You will note that some models have multiple names due to different names for different trim levels. This is how the file comes. I will consolidate it for the dashboard as I think that is an easier comparison to make for our purposes. There are 3 Prius variations and they total 2151, making it the second most widely registered EV.

Some New Brands

These is an arbitrary list and counts of some of the newer EVs on the market. In some cases, there are still limited production runs, so it will not be indicative of how successful the vehicle will be.

- Audi Q5 Plug-in – 64
- BMW X5 Plug-in – 252. This has quickly become the most widely registered BMW EV.
- Ford Mustang Mach-E – 136
- Jeep Wrangler Plug-in – 202
- Polestar 2 – 8

Proterra Electric Buses – 4

VW ID.4 – 57

Volvo Xc40 Recharge – 31

EV Ownership Increases 18.2% In a Difficult Year

DMV Releases Updated EV Registration Data

There are 13,800 EVs registered in CT as of January 1, 2021, according to data released by the Department of Motor Vehicles in its statutorily required semi-annual reporting. This represents an increase of 18.2% over the 11,677 EVs registered in January 2020. This is a lower rate of growth relative to 2020 over 2019, when it was 25.7% (and way lower than Jan 2019 over Jan 2018, when it was 45.8%). The featured image at the top of the post contains the number of registered EVs for each data point that we have obtained from the DMV. This began in 2017 with annual updates, then moving to semi-annual updates in 2019.

The pandemic induced lockdown and severe recession led to highly restrained growth of 8.1% during the first half of the year. Things picked up a little in the latter half of 2020 when the rate was 10.1%.

A total of 4,408 EVs were added to the file in 2020. This

means that there was turnover of 2,285 vehicles.

Briefly, the DMV is reporting a snapshot of registrations. Vehicles can be added to the file as a result of the acquisition of a new vehicle, a used vehicle, or someone moving into the state who already owns an EV. Vehicles can leave the file due to the owner selling the car, having an expiring lease, or moving out of state.

The DMV has only reported these top line numbers as of the date of this publication. Subsequently, we will receive more detailed data including fuel type, city, make, and model. The diagnostic details are what really tell the story.

We do not have the “full file” of all vehicles and so we are not able to say how EVs trended relative to ICE vehicles. There has been reporting that EV sales have generally held up a little better, but we can’t comment on CT specifically.



The state continues to lose ground with respect to the goals articulated in the Multi-State ZEV Action Plan Memorandum of Understanding. I have updated the

needed compounded annual growth rate chart, and the curve is going in the wrong direction. In this case, up means we’re down. As of January 1, a CAGR of 49.02% would be required to reach 500,000 EVs by 2030. This is up from 47.29% in July and 45.6% one year ago.

BEV Registrations Show 35% Increase Over Past 12 Months

Fuel Type Trend

The mid-year 2020 update for the interactive [EV Dashboard](#) has been published. The relatively strong performance for BEVs contrasts with the change for PHEVs, which increased only 1% over the past 12 months. As of July 1, there were 6874 BEVs and 5092 PHEVs (along with 25 electric motorcycles and 3 fuel cell vehicles).

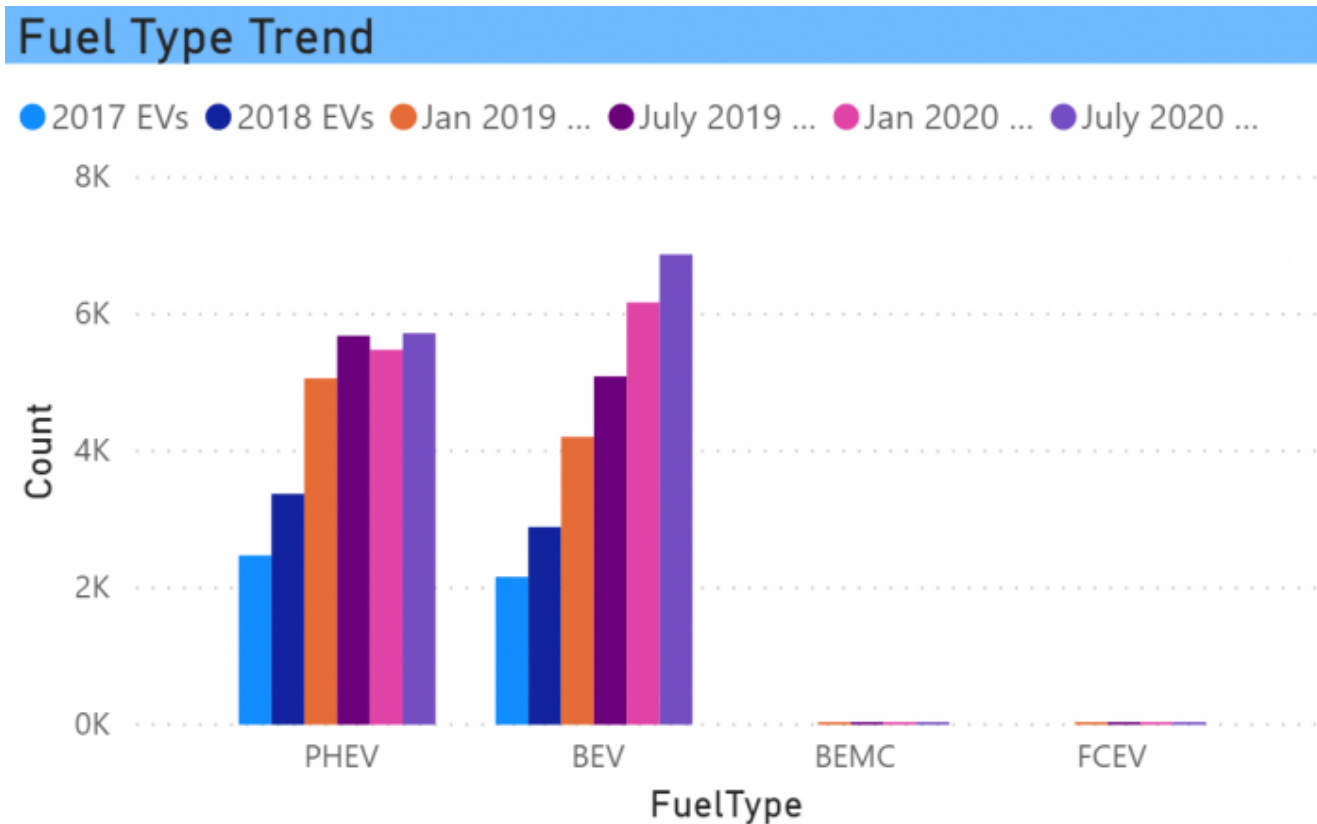


Chart: Barry Kresch

This has been the recent trend, with PHEV growth leveling off beginning with the January 2019 data point (covering the 2018

calendar year).

Trend of Registered EVs

There are now 12,624 EVs registered in the state, as of July 1.

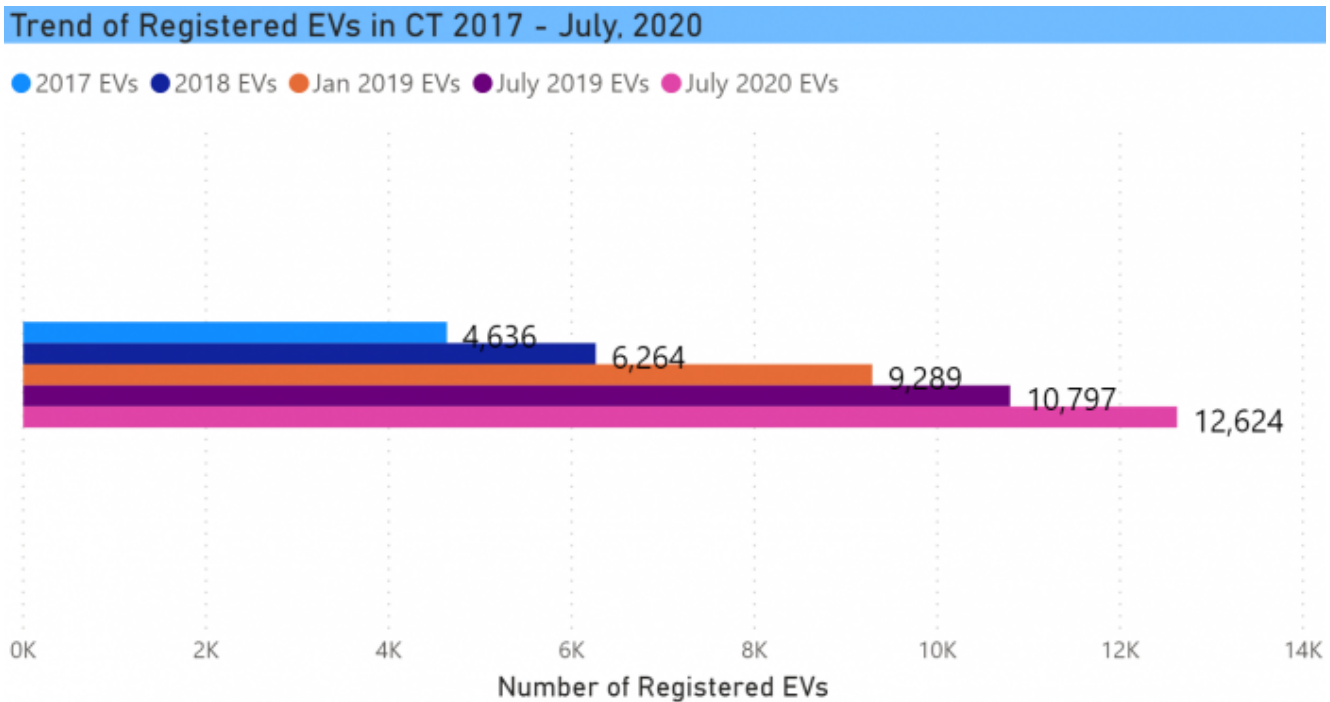


Chart: Barry Kresch

While the overall EV growth was slower than we would like, the last 6 months, perhaps surprisingly since they included the pandemic, was similar to the prior 6 months. There have been reports of EVs suffering a smaller sales decline than the industry at large. The 16.9% growth rate of the past 12 months is almost exactly double the 8.1% of the last 6 months.

% Change by Period

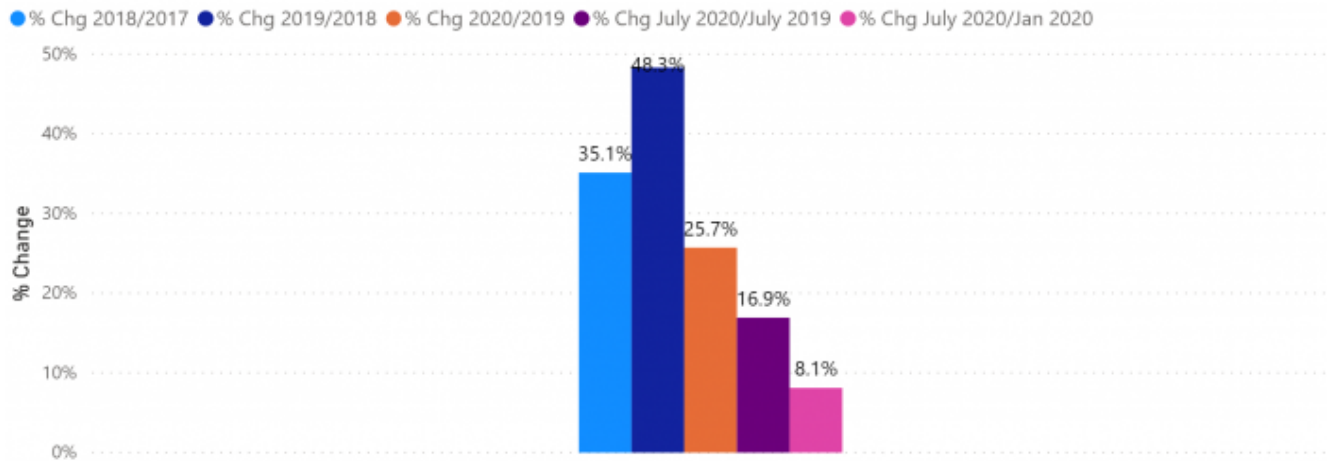


Chart: Barry Kresch

Trends by Make

The pattern that we have seen over the last few iterations of the dashboard holds here, namely that Tesla is the big driver. This chart tracks the change in EV registrations by Make since 2017. It is an excerpt – all makes are available in the dashboard.

Trend of EVs by Make

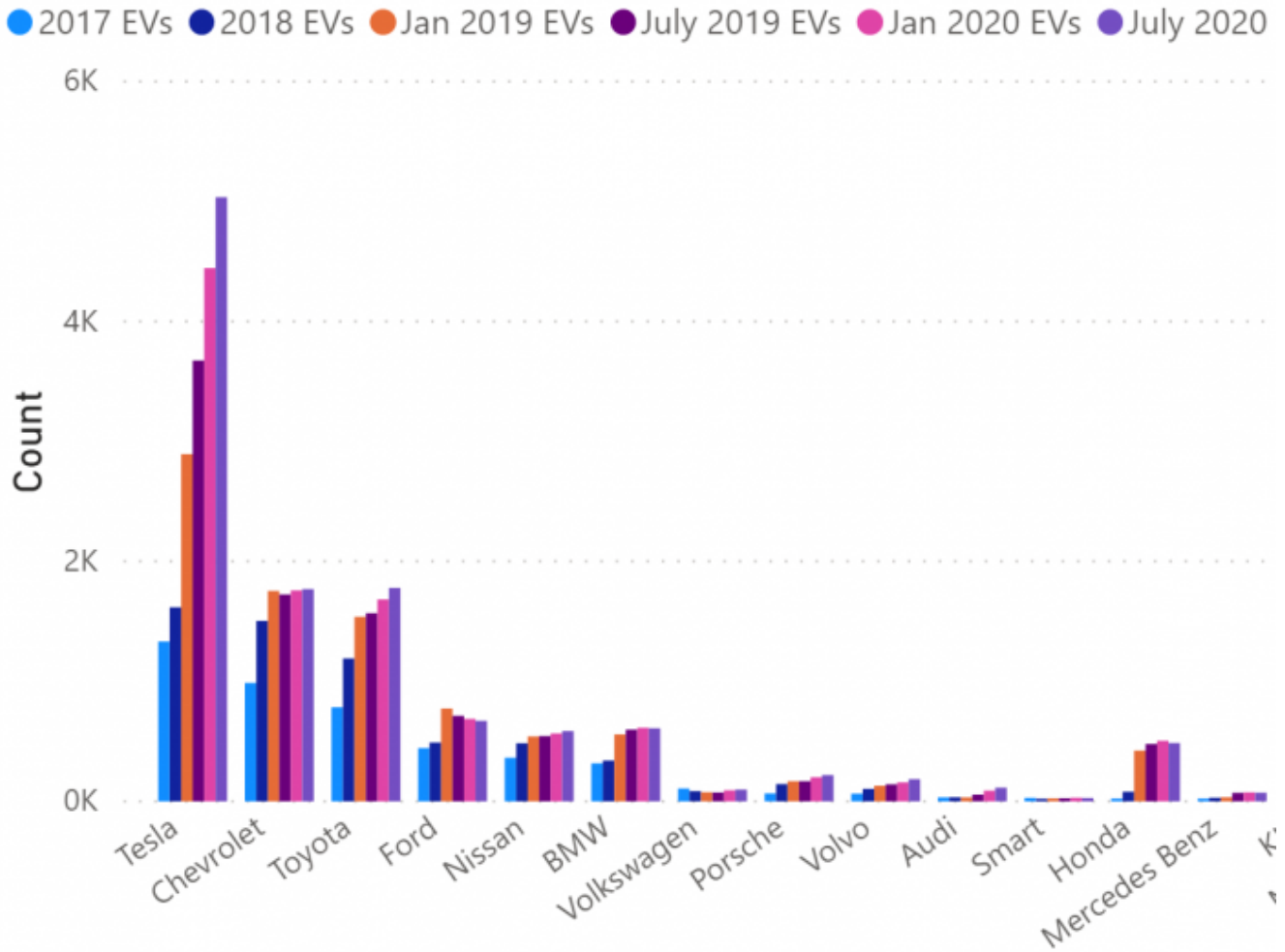


Chart: Barry Kresch

Tesla now accounts for 40% of all registered EVs in the state with 5035 vehicles. (For charts in this blog post that do not display values, those can also be seen on the dashboard by hovering over a chart element.)

July 2020 EVs by Make

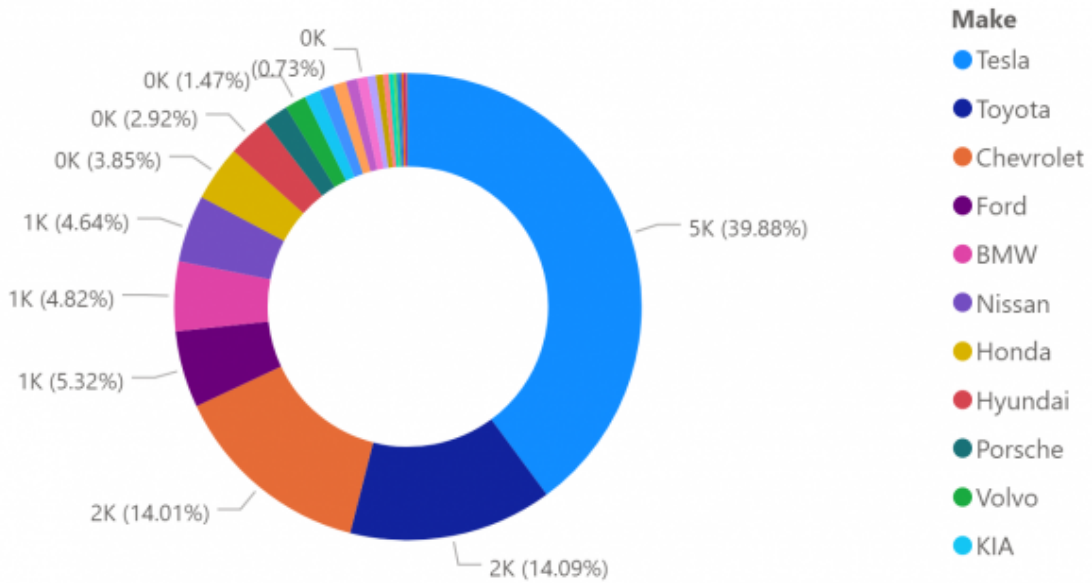


Chart: Barry Kresch

If we look at it from the perspective of the contribution of each make to the increase of the past 12 months, it is even clearer. This waterfall chart shows that Tesla was responsible for 74% of EV growth (all EVs, not just BEVs). Some manufacturers, as can also be seen in the trend chart, are seeing declines in net cumulative registrations.

Growth Contribution July 2019 to July 2020 by Make

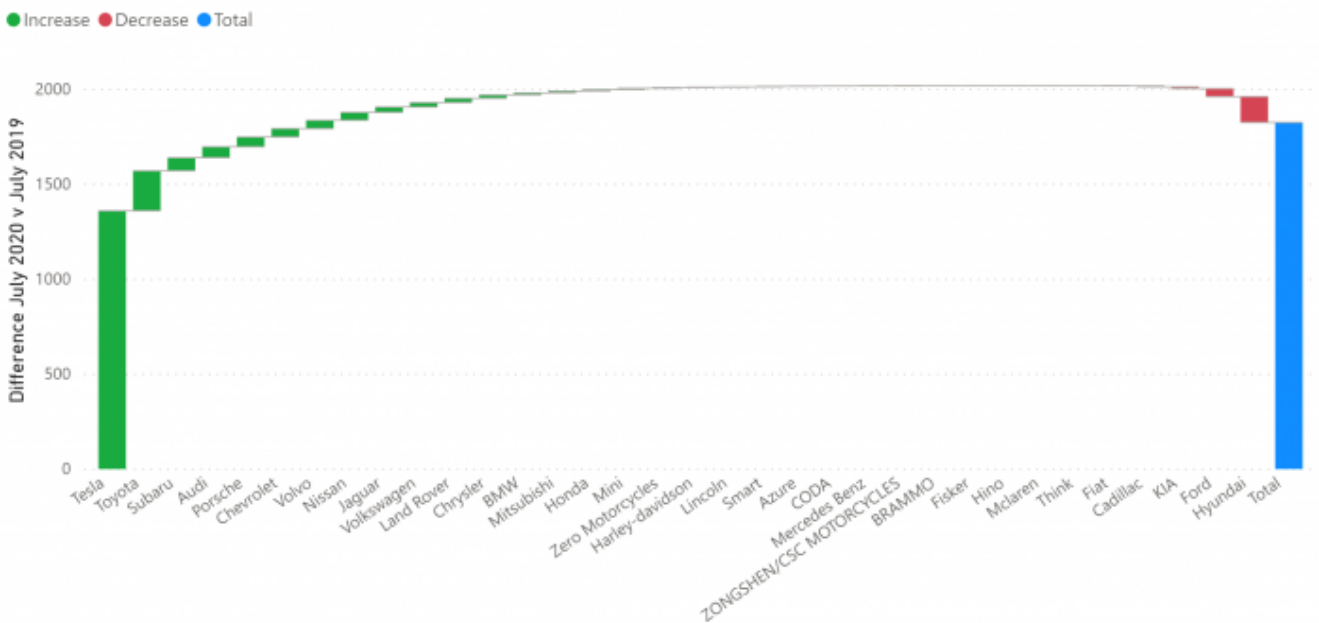


Chart: Barry Kresch

Trends by Model

When we drill into the individual models, it is the Model 3 that defines the picture. The growth of the Toyota Prius Prime (Prius Plug-in and Prius Prime are combined in these charts) has greatly slowed. The Model S and X have a steady, but not terribly large increase (and it is likely the Model 3 is cutting into sales of the S in particular). The Model Y has yet to make its presence felt with just 29 of them in the file. The Chevy Volt, once the most widely registered model in the state, has been discontinued. It has a presence in the used EV marketplace, but the overall numbers are showing a gradual decline. The Nissan Leaf is another major early EV that has slowed considerably in recent years.

The outlook for the rest of the year has to be characterized as uncertain. We aren't close to being done with the pandemic and the bad economy. Manufacturers have delayed refreshes and new introductions until 2021. We are expecting significant refreshes for the and Bolt, the new Ford Mach-E, Rivian SUV and pickup, among others. The chart below is also an excerpt of individual model trends with the full chart available on the dashboard.

EV Trend by Model

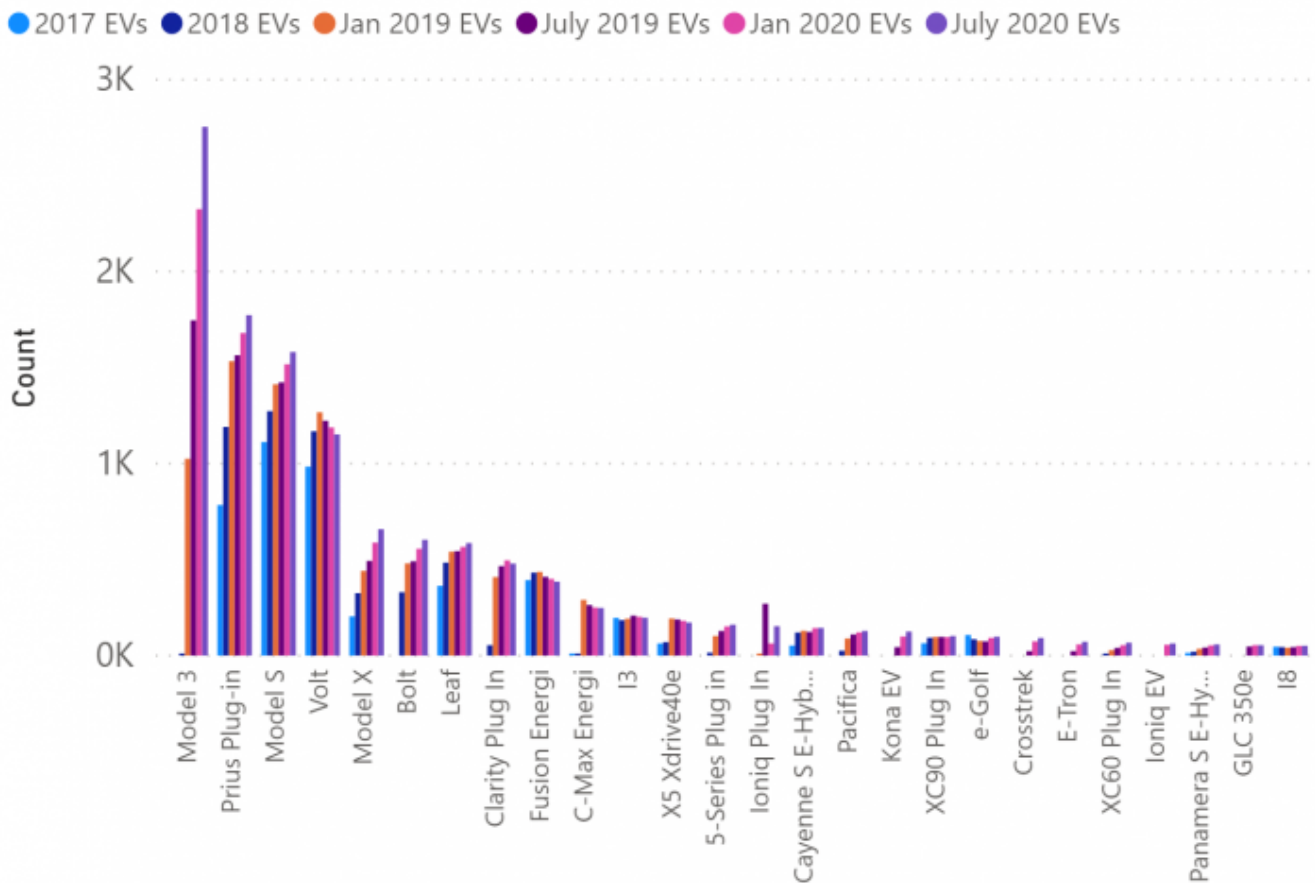


Chart: Barry Kresch

Newly Registered EVs

This is the chart of EVs by Make registered in the past 6 months. Tesla accounted for 47% of all new registrations, which is why it's current share has increased, and why BEVs are growing. There were a total of 1525 vehicles registered in the past 6 months. With a turnover of 578 vehicles, the net increase was 947.

Count by Make

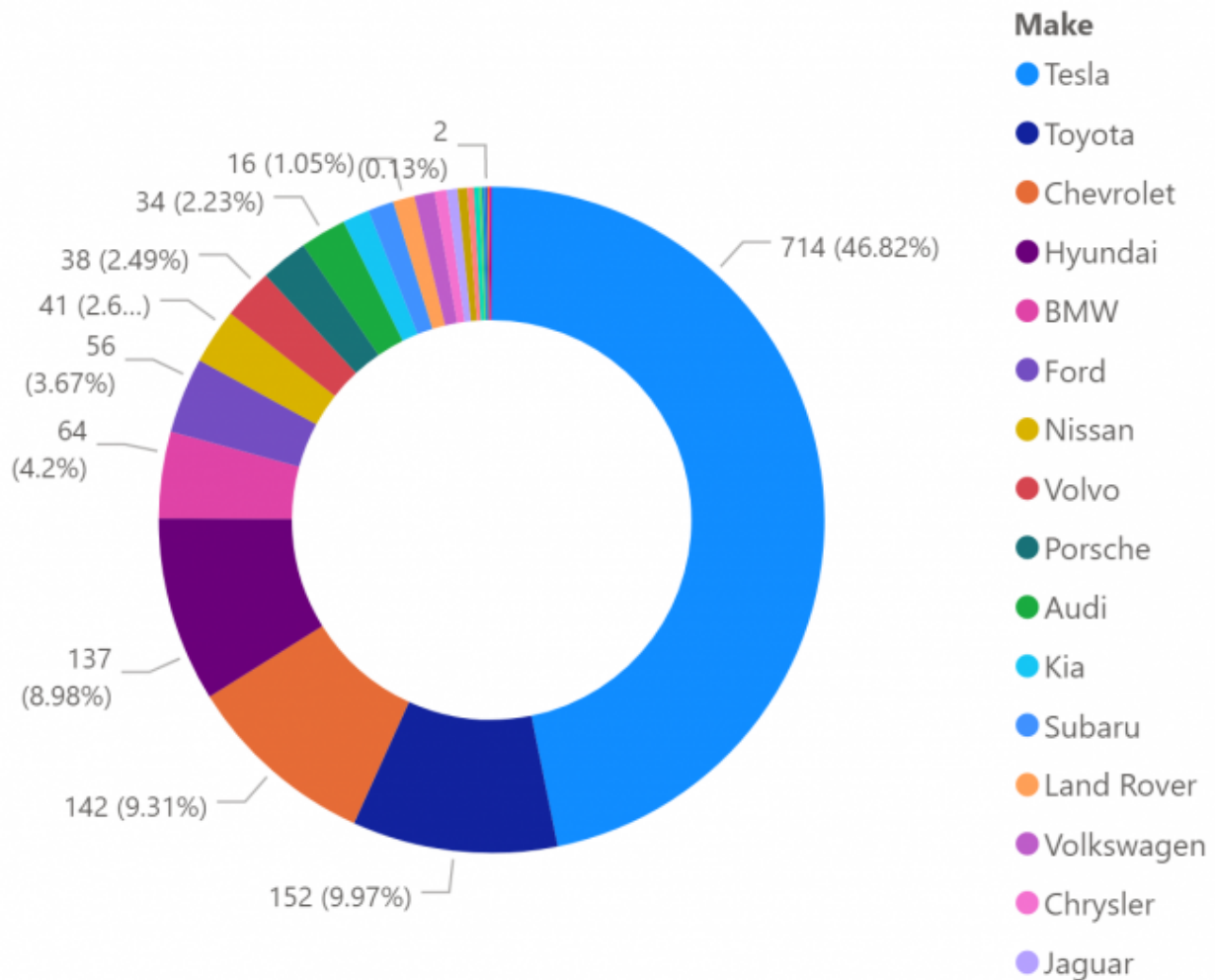


Chart: Barry Kresch

The increase we are seeing, assuming it remains similar for the second half of this year, is pacing below the necessary compound annual growth rate to meet the objectives of the ZEV MOU.

A word about the data:

The EV Club of CT has a standing Freedom of Information Act Request with the Department of Motor Vehicles. The DMV updates its census of EVs semi-annually, and when they do, they send us a file of the vehicle details. A reminder that this dataset is registrations, not sales. It includes new vehicle sales or leases, used EV purchases, people moving into the state who own EVs. We do not get the "denominator," meaning all of the vehicles registered in the state, so we are not able to look

at EV share of the total market.

The dashboard itself is interactive. Hovering over a chart element will display the value. The charts can be filtered by clicking in a chart element or by checking the boxes in the slicers. Multiple boxes can be checked. Please contact us if you have any questions.