



Zero Emission Vehicle Availability

Estimating Inventories in Canada: 2022 Update

Prepared for:



Transports
Canada

Transport
Canada



Submitted to:



Transports
Canada

Transport
Canada

Transport Canada

Geoffrey Burgess

Manager, Clean Air Policy Analysis and
Evaluation, Environmental Policy, Transport
Canada

Prepared by:



Dunsky Energy + Climate Advisors

50 Ste-Catherine St. West, suite 420
Montreal, QC, H2X 3V4

www.dunsky.com | info@dunsky.com
+ 1 514 504 9030

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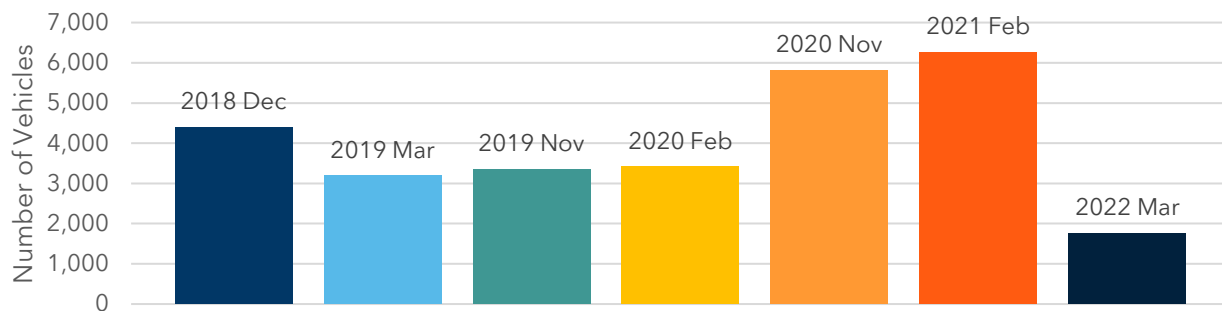
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EXECUTIVE SUMMARY

This report summarizes a snapshot of Zero Emission Vehicle (ZEV) availability in automotive dealerships across Canada captured in March 2022. This is the latest in a series of reports that have estimated ZEV inventory levels in Canada periodically since 2018. Throughout this period, the ZEV market has advanced considerably, with a significant growth in the number of ZEV options that are available in a wide range of vehicle segments and price points. Meanwhile, incentives for purchasing ZEVs are now available from the federal government and from a majority of provinces and territories, while the deployment of charging infrastructure across Canada is accelerating with the support of governments, utilities and the private sector. In the context of this rapidly evolving ZEV market and policy landscape, the degree to which consumers in Canada can find ZEVs at local dealerships continues to be a common topic of discussion.

Compared to previous studies **inventory levels decreased significantly**. Despite the increase in ZEV registration numbers compared to the previous year, inventory levels in dealerships have gone down across the country and across most manufacturers. While the drop in inventory is by no means limited to ZEVs¹, it does represent a setback compared to the progress we have tracked over the past few years as industry responds to increasing demand for ZEVs. Figure ES-1 below highlights that inventory levels in March 2022 are the lowest since we started tracking this data in December 2018, with a 72% drop compared to February 2021.

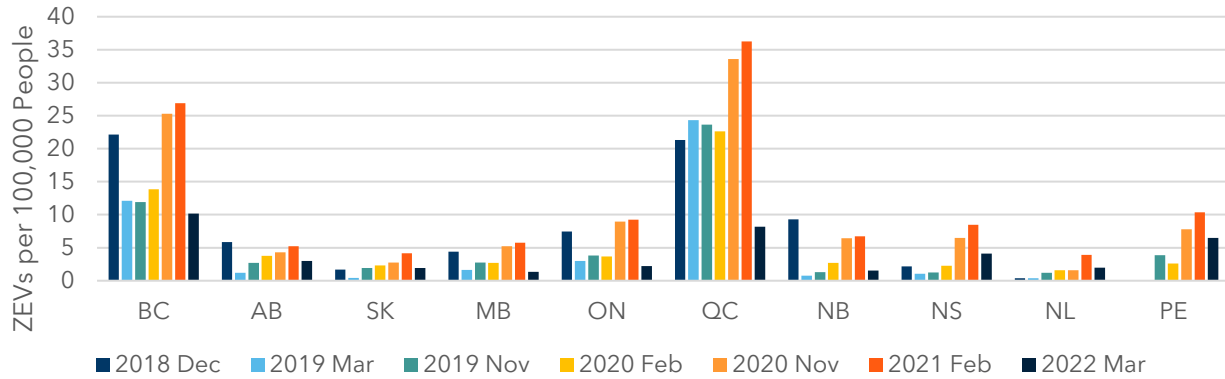
Figure ES-1. Vehicle Inventory Canada-wide - all results



Inventory continues to be **unevenly distributed** between provinces and automakers. Vehicle inventory continues to be concentrated in British Columbia, Quebec, and to a lesser extent, Ontario, leaving other provinces with less diversity of consumer choices. Figure ES-2 below shows the inventory data normalized to provincial population to allow for comparison between provinces for all data collection periods. For the first time since 2018, British Columbia leads the number of ZEVs available per 100,000 people (10 ZEVs), surpassing Quebec (8 ZEVs) who historically has been the leading province in this metric. Availability in other provinces continues to fall short of these two leading provinces.

¹ CBC. (2021). *How the COVID-19 semiconductor shortage has brought Canada's car industry to a halt - again*. Available online at: [this link](#).

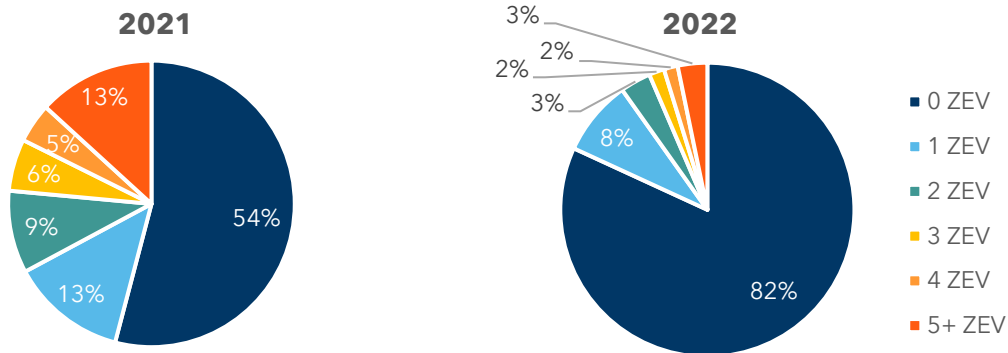
Figure ES-2. ZEVs Available for Purchase per 100,000 People, by Province



The availability of ZEVs varied significantly across automakers as well. Despite global supply chain issues, there are **signs of several automakers that are increasing their efforts to meet ZEV demand**. For example, Stellantis’ Chrysler and Jeep brands now offer among the highest ZEV inventory levels in Canada. Meanwhile, while Hyundai and Toyota had among the highest inventory levels observed in 2021, the current study found almost no ZEV availability at all for these two automakers. The top four spots for ZEV inventory were all held by North American automakers, suggesting that their supply chains may have been less vulnerable or more adaptive to global disruptions than other automakers with more production overseas.

The availability of ZEVs at individual dealerships also dropped considerably. Figure ES-3 shows the number of ZEVs available in inventory per dealership across Canada.

Figure ES-3 Number of ZEVs Available per Dealership



In March 2022, we found that **82% of dealerships across Canada did not have any ZEVs in inventory**, compared to 54% in February 2021. Out of the 18% of dealerships with ZEVs, nearly half of them only had one vehicle in inventory. Of those dealers without any ZEVs available, 38% of them said the wait time for a new order would be over 6 months, compared to 31% in 2021.

The continually evolving ZEV landscape and broader trends in the automotive industry can make it difficult to interpret the findings from this study and the potential implications for ZEV policies in Canada. Due to industry-wide impacts from global supply chain disruptions, the decrease of ZEV inventory levels mirrors significant decreases in inventory across all vehicle types, with one study finding an average reduction of 79% in inventory levels across Canada². While this is

² DesRosiers Automotive Consultants. (2022). *The Semiconductor Shortage: Future Outlook and Implications for Dealers*.

roughly inline with the reduction in ZEV inventory observed in this report from 2021 to 2022, the drop in ZEV inventory is arguably more concerning given their availability at dealerships has been limited for quite some time now, and demand for ZEVs has been growing relative to other vehicle types.

At the same time, new automotive retail models, such as the increasing shift towards online retailing, which is happening in parallel to the transitions to electrification, may be a sign that ZEV shoppers are less interested in the more traditional approach of buying a vehicle directly from a dealership lot. This could suggest that vehicle inventory may not be as important for someone who is willing to order a vehicle to their desired specifications, provided wait times are reasonable.

Nevertheless, with 82% of dealerships having no ZEVs available at all and 38% of dealership reporting wait times of 6 months or more, our overall conclusion is consistent with previous reports: **the lack of availability of ZEVs continues to be a challenge across Canada**, and raises question about whether ZEV sales in Canada would be higher if these vehicles were more readily available. Industry and government stakeholders will need to continue to collaborate to ensure that access to ZEVs is consistent with demand, all in parallel to ongoing efforts to address other barriers to adoption of ZEVs.

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INTRODUCTION

1. Introduction

This report summarizes the sixth Canada-wide primary data collection effort to quantify the ZEVs in inventory across the country on behalf of Transport Canada. The data was collected in February and March 2022. Dunsky has also collected and reported on similar data sets on five previous occasions: February 2021, November 2020, February 2020, November 2019, and December 2018.

1.1 Methodology

The data presented in this report was collected through two primary means.

- 1. Automaker³ inventory databases.** Where available, inventory data was collected directly through automaker websites. This was the case for 10 of the 19 automakers in this study.
- 2. Dealership phone surveys.** For the remaining 9 automakers that do not currently provide a public-facing inventory database on their website, individual dealerships were contacted by phone by researchers posing as interested buyers and asked how many of each PEV model were available to purchase at the dealership.

Between these two methods, data on PEV inventory levels was collected for 3,208 dealerships across Canada. In all cases, both plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEVs) were counted (collectively referred to as PEVs). All data was collected through February and March 2022.

Table 1. Data Collection Methodology and Number of Dealerships by Automaker

	Data Collection Methodology	Number of Dealerships Across Canada
Audi	Web	52
BMW	Phone	48
Chevrolet	Web	470
Chrysler	Web	480
Ford	Web	466
Honda	Phone	295
Hyundai	Phone	205
Jaguar	Web	27
Jeep	Web	211
Mercedes	Web	59
Mini	Web	30
Mitsubishi	Phone	91
Nissan	Phone	200
Porsche	Web	20

³ For simplicity's sake, the term "automaker" is used in this report to refer to automotive brands. Brands that are part of the same automotive company (e.g., Cadillac and Chevrolet as two brands under General Motors) are referred to as individual "automakers".

	Data Collection Methodology	Number of Dealerships Across Canada
Subaru	Phone	94
Tesla	Web	21
Toyota	Phone	239
Volkswagen	Phone	147
Volvo	Web	53
Total Web		1,889
Total Phone		1, 319
Total		3,208

It should be noted that both web and phone survey data collection methods have limitations. The web-based data collection method is an efficient means of collecting a large amount of data. If the inventory database does not accurately reflect actual inventory, however, it may misrepresent the actual customer experience of shopping by suggesting there are either more or less ZEVs on the lot than is truly the case.

While the phone survey more closely approximates the customer shopping experience, it does include other opportunities for data collection error. For example, automakers may offer several versions of the same vehicle with different powertrains, such as plug-in hybrid and conventional hybrid versions of the Hyundai Ioniq and Toyota Prius, which may introduce confusion. In an attempt to mitigate this, phone survey staff were given clear descriptions of each powertrain configuration and warned of specific cases where there might be possible confusion between available vehicle models. An example of the script used for the phone surveys is included in **Error! Reference source not found.**

1.2 Structure of Report

This report is structured as follows:

Context: Electric Mobility in Canada

An overview of the ZEV market and supportive policies and programs across Canada.

ZEV Inventory: Data and Observations

A description and analysis of ZEV inventories by province and manufacturer, including absolute inventory levels, inventory relative to sales, split by drivetrain, and selection of makes and models.

Conclusion

A summary of the key takeaways from this study.

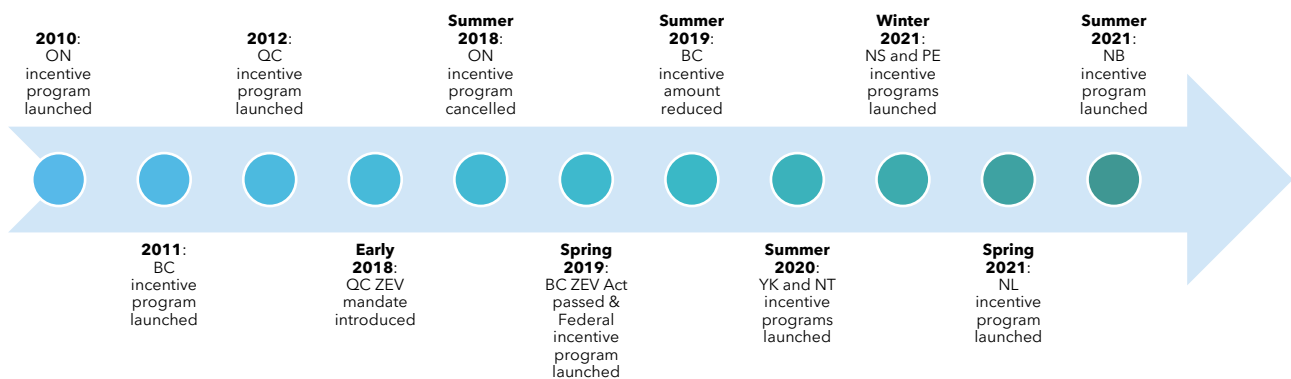


**CONTEXT: ELECTRIC
MOBILITY IN CANADA**

2. Context: Electric Mobility in Canada

The timeline below highlights key provincial and federal policies related to ZEVs since 2010.

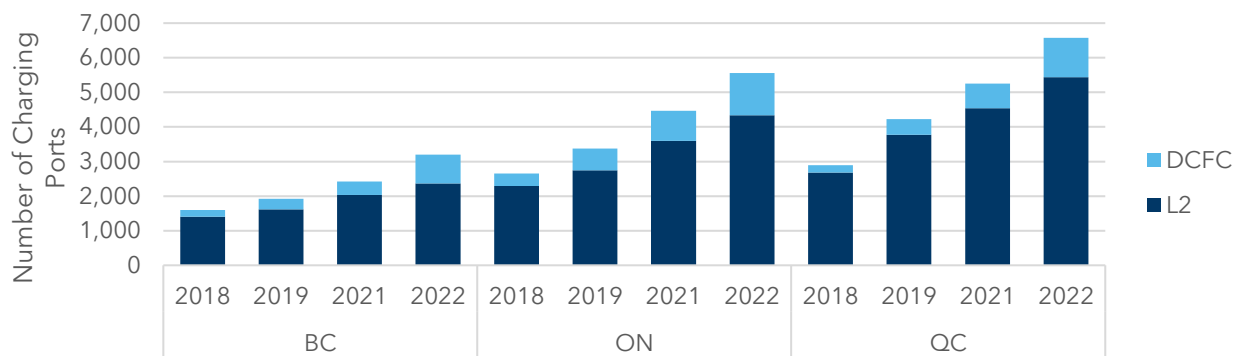
Figure 1. Timeline of Key Provincial and Federal ZEV policies



Since the last report (March 2021), financial incentive programs were announced in Newfoundland & Labrador and New Brunswick. These now leaves Alberta, Saskatchewan, Manitoba and Ontario as the only provinces not currently offering financial incentives for ZEVs.

Most current ZEV drivers do the majority of their vehicle charging at home⁴. Public charging infrastructure can be important for longer trips or for those without home charging access, however, and therefore limited public charging infrastructure may discourage adoption. Below, Figure 2 and Figure 3 summarize the public electric vehicle charging infrastructure available in each province.

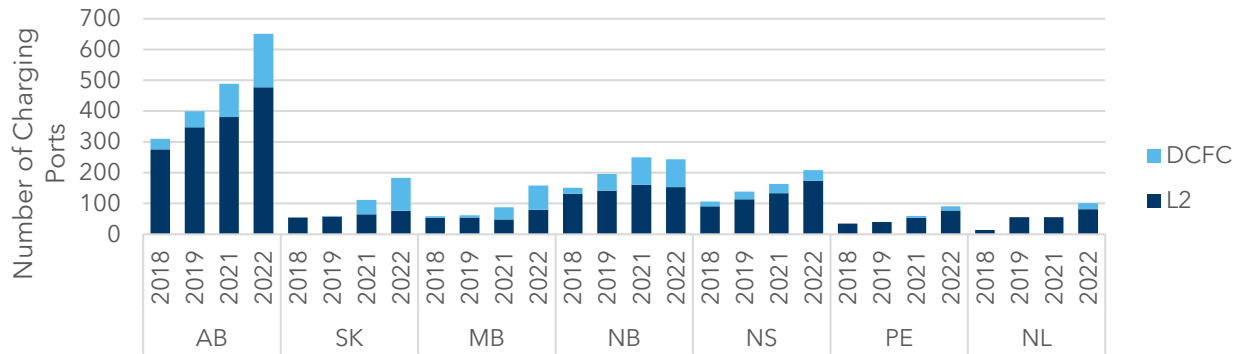
Figure 2. Number of Level 2 and DCFC Ports by Province: BC, ON, and QC⁵



⁴ Fleetcarma. (2019). *Charge the North*. Available online at: [this link](#)

⁵ Data from Natural Resources Canada Electric Charging and Alternative Fueling Stations Locator. Available online at: [this link](#). Data extracted March 2022.

Figure 3. Number of Level 2 and DCFC Ports by Province: AB, SK, MB, NB, NS, PE, NL⁶



Since the last report, market actors (including private corporations, municipal governments, utilities, and others, often with the support of Natural Resources Canada) have installed additional public charging infrastructure in all provinces, leading to a 20% increase in Level 2 ports and a 64% increase in Direct-Current Fast-Chargers (DCFC) ports Canada-wide. The largest absolute increase in number of ports in a single province was in QC, where 894 Level 2 and 428 DCFC ports were installed between March 2021 and March 2022. Of note in Canada’s emerging ZEV markets, the number of DCFC fast chargers increased considerably in Alberta, Manitoba and Saskatchewan, and the first fast chargers were installed in Newfoundland and Labrador.

2.1 ZEV Registrations and Supply Chain Disruptions

Total ZEV registrations in Canada has been in an upwards trajectory since 2017, both in terms of actual ZEV registration and as percentage of all vehicle type registration, as seen in Figure 4. With registrations dropping for roughly 89% of automakers in Canada, the year 2020 was an unusual year for vehicle sales due to the COVID-19 pandemic⁷.

The Canadian ZEV market saw a significant surge in 2021 with sales going up by 58% compared to 2020 and by 56% compared to 2019⁸. Despite this resurgence, the Canadian ZEV market was not isolated from the impact of global semiconductor chip shortage which resulted in a shortage of production, as reflected in inventory levels across automakers Canada-wide, ZEV and otherwise⁹. One study of dealership inventory levels of all vehicle types across Canada saw an average reduction of 79% in inventory levels¹⁰.

ZEV registrations in British Columbia, Ontario, and Quebec continue to drive nation-wide registrations in 2021; 93% of last year’s ZEV registration were in these three provinces with Quebec leading at 43%, followed by British Columbia at 28% and Ontario at 23%¹¹.

⁶ Data from Natural Resources Canada Electric Charging and Alternative Fueling Stations Locator. Available online at: [this link](#). Data extracted March 2022.

⁷ S&P Global Mobility, New Vehicle Registration data, extracted on Nov 2, 2022.

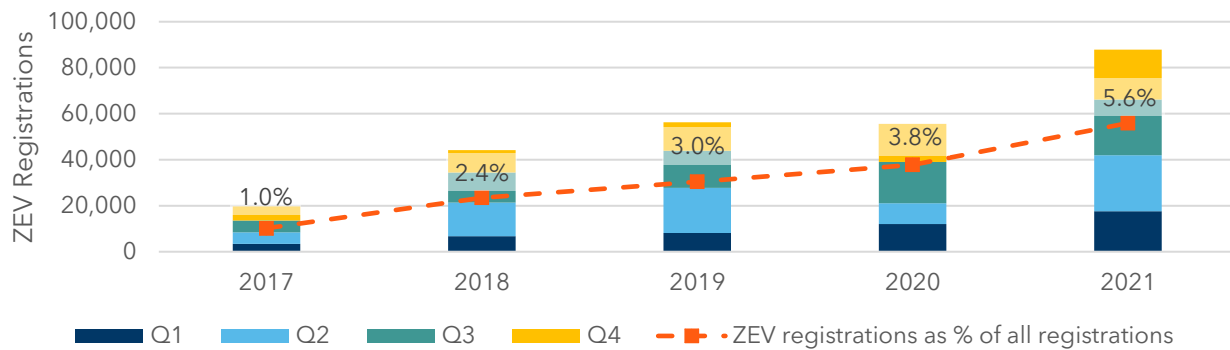
⁸ S&P Global Mobility, New Vehicle Registration data, extracted on Nov 1, 2022.

⁹ CBC. (2021). *How the COVID-19 semiconductor shortage has brought Canada’s car industry to a halt - again*. Available online at: [this link](#).

¹⁰ DesRosiers Automotive Consultants. (2022). *The Semiconductor Shortage: Future Outlook and Implications for Dealers*.

¹¹ S&P Global Mobility, New Vehicle Registration data, extracted on Nov 1, 2022.

Figure 4. ZEV registration numbers in Canada since 2017 and as percentage of all vehicle type registration¹².



Two Tesla models, Model 3 and Model Y, top the most popular models sold in 2021, followed by Hyundai Kona, Toyota Prius Prime, and Ford Mustang Mach-E. These 5 models accounted for 55% of total ZEV registrations in 2021. The number of vehicles sold for the top 5 models in 2021 is shown in Table 2.

Table 2. Top-Registered Electric Vehicles in Canada, 2021

Model	Powertrain	2021 registrations
Tesla Model 3	BEV	17,524
Tesla Model Y	BEV	13,856
Hyundai Kona Electric	BEV	6,948
Toyota Prius Prime	PHEV	5,279
Ford Mustang Mach-E	BEV	4,321

Source: S&P Global Mobility, New Vehicle Registration data, extracted on Nov 1, 2022.

¹² S&P Global Mobility, New Vehicle Registration data, extracted on Nov 2, 2022.



ZEV INVENTORY: DATA AND OBSERVATIONS

3. ZEV Inventory: Data and Observations

This section presents the ZEV inventory data that was collected under this study and highlights observations from the data. The data is presented in four main subsections:

- 1. ZEV Inventory Levels**, where the absolute inventory numbers are presented by province and by automaker.
- 2. Inventory Relative to Sales**, where the data is presented in terms of “days of supply” based on the sales rate of each automaker.
- 3. Availability of Distinct ZEV Models**, where the number of distinct ZEV model options are presented by province and by automaker.
- 4. Availability by Dealership**, with a focus on the number of ZEVs available in each dealership.
- 5. Wait Times**, based on survey results from select automaker dealerships.

3.1 ZEV Inventory Levels

Compared to previous studies, ZEV inventories across Canada dropped significantly in March 2022, with the lowest nation-wide inventory of ZEVs since our first analysis in December 2018, see Figure 5 below. March 2022 inventory levels dropped by 72% compared to February 2021, making this the largest change between data collection periods since the 70% increase between February and November 2020.

Figure 5. Vehicle Inventory Canada-wide - all results

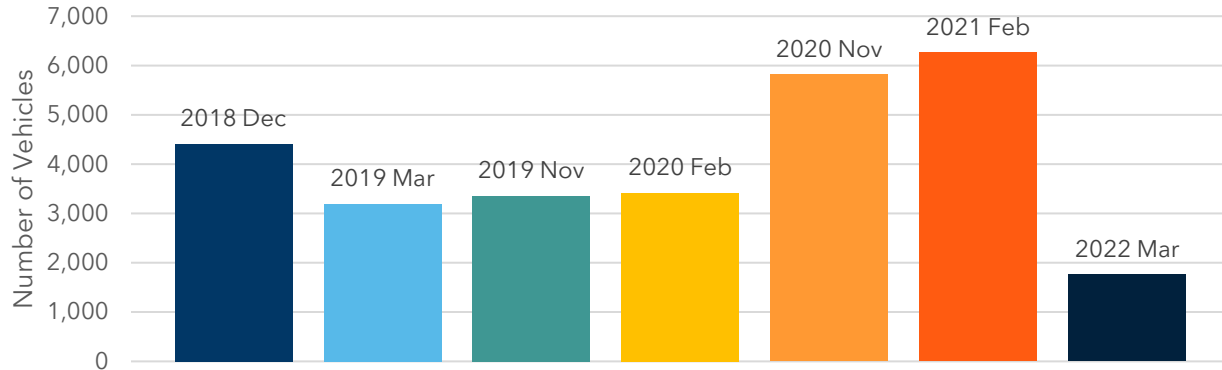


Table 3 below provides a detailed breakdown of inventory results by province and by automaker for this data collection period. We can see that, similar to previous iterations of this report, inventory levels are still very unevenly spread between provinces and geography (columns are organized from west to east). While the overall number of vehicles significantly dropped, a small number of automakers still represent the bulk of ZEV inventory, and the majority of that inventory is concentrated in British Columbia, Ontario, and Quebec.

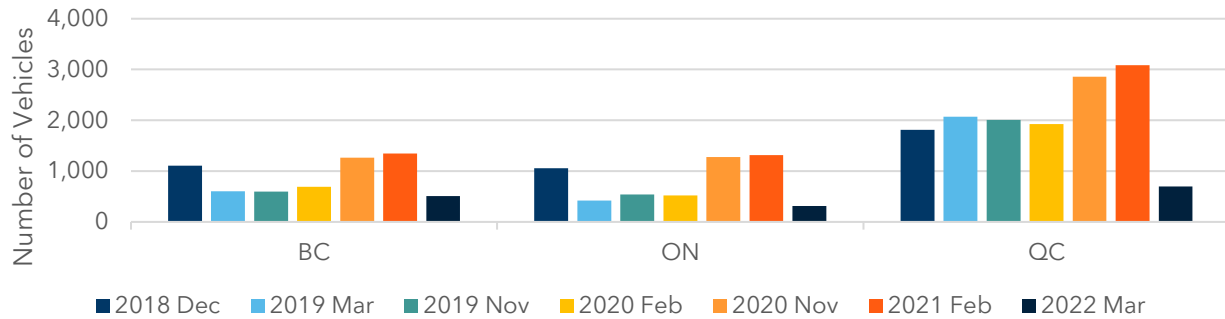
Table 3. Vehicle Inventory by Province and Automaker - March 2022

Automakers	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	Total
Audi	12	4	1	3	5	11		1		1	38
BMW	17	1	6		13	9	1			1	48
Chevrolet	167	24			52	347	4	20	6		620
Chrysler	120	35	3	2	104	75	1	13	4	4	361
Ford	122				30	203					355
Honda	1										1
Hyundai		6	4		4						14
Jaguar					3						3
Jeep	28	27	2	10	58	18	2	3		1	149
Mercedes											0
Mini	8	3	1		8	8	2	1			31
Mitsubishi	8	16		1	13	3	2			1	44
Nissan	3					2					5
Porsche	12	10	4	2	18	19					65
Subaru											0
Tesla	9	1	1		4	1					16
Toyota					1						1
Volkswagen											0
Volvo	2					1		2		2	7
March 2022	509	127	22	18	313	697	12	40	10	10	1,758

3.1.1 Availability by Province

At the provincial level, the March 2022 inventory levels represent the lowest we've recorded for the three leading provinces: British Columbia, Ontario, and Quebec. Despite this significant drop, 86% of inventory remains concentrated in these provinces, continuing trends noted in previous reports with 92% (2021) and 90% (2020) of light-duty ZEV vehicle inventory.

Figure 6. Vehicle Inventory by Province - all results (BC, ON, QC)



The drop observed in the leading provinces is also apparent in other provinces. For most of the remaining provinces that have historically had very low ZEV inventory levels, March 2022 was roughly comparable to inventory levels recorded in 2019.

Figure 7. Vehicle Inventory by Province - all results (AB, SK, MB, NB, NS, NL, PEI)

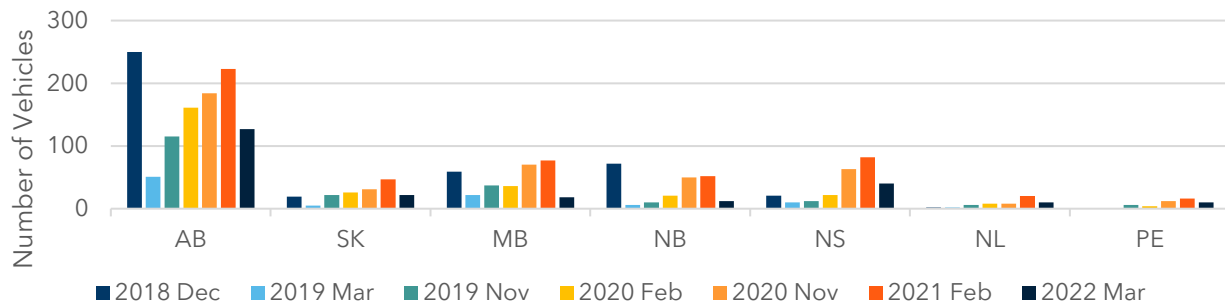
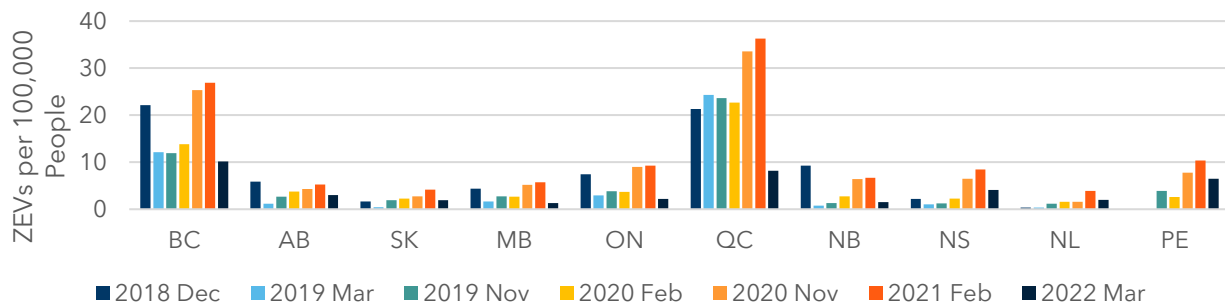


Figure 8 below shows the inventory data normalized to provincial population to allow for comparison between provinces for all data collection periods. For the first time since 2018, British Columbia leads the number of ZEVs available per 100,000 people (10 ZEVs), surpassing Quebec (8 ZEVs) who historically has been the leading province in this metric.

Figure 8. ZEVs Available for Purchase per 100,000 People, by Province



3.1.2 Availability by Automaker

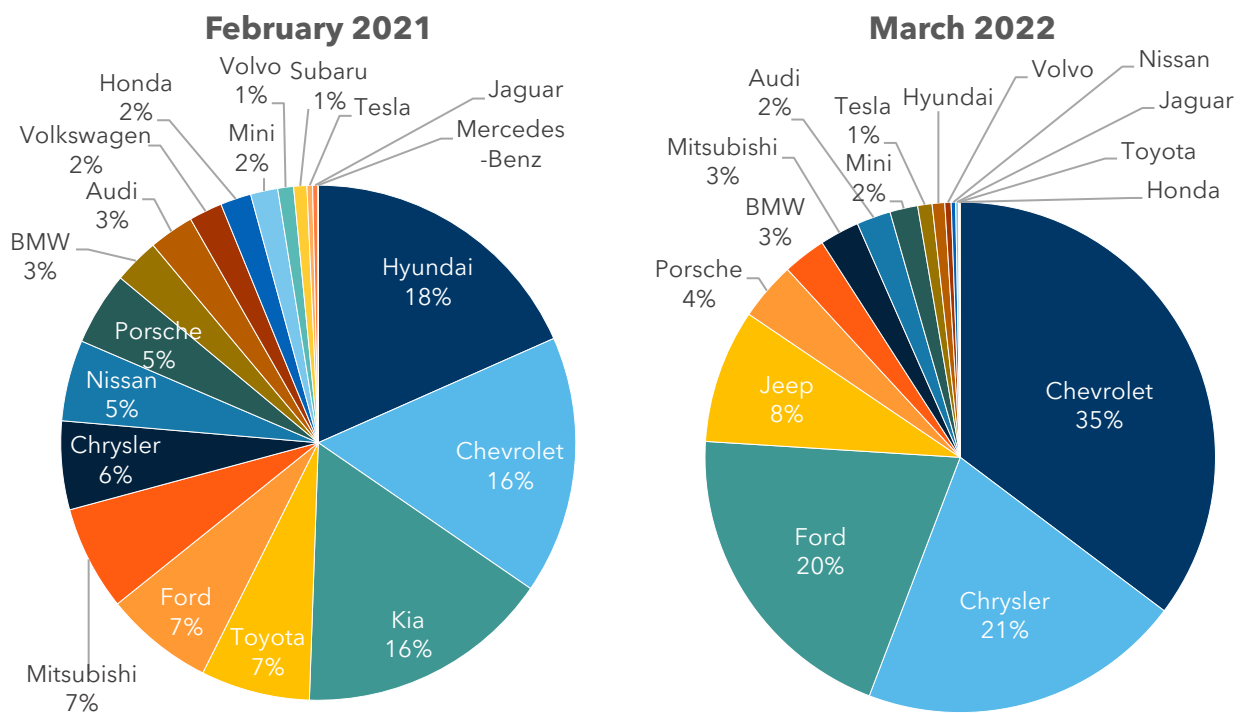
While previous reports showed a progression to a much more even distribution of ZEV availability across automakers, our latest snapshot shows a return to the bulk of inventory being provided by a small number of automakers. Whereas February 2021 saw seven automakers representing just over 75% of totally inventory, March 2022 saw the same portion of inventory from just three automakers: Chevrolet, Chrysler and Ford. Note that data from Kia was not

available for the current study due to a change to Kia’s website that occurred during this study that removed online inventory information.

Chrysler was the only automaker with ZEV inventory in all 10 provinces at the time of data collection, although others came close to cross-country coverage with Audi, BMW, Chevrolet, Jeep, Mini, and Mitsubishi all having inventory in 7 or more provinces in March 2022. Ford was able to maintain a similar level of inventory compared to February 2021 despite reducing their coverage from 5 to 3 provinces.

There was a significant drop in ZEV inventory levels from Hyundai and Toyota who were both among the highest inventory levels under the last study. On the other hand, PHEV models from Chrysler and Jeep (two brands under the Stellantis automotive conglomerate) both saw significant increases in availability. This may indicate that vehicles assembled in North America are somewhat less susceptible to global supply chain disruptions, although there are likely many other factors at play as well. As was the case in previous reports, Tesla’s inventory remains extremely low despite recording the highest number of ZEV vehicle registrations in 2021. The automaker continues to operate using showrooms and a factory-order business model while relying less on “brick and mortar” dealerships. Figure 9 below provides a summary of the ZEV inventory by automakers as a percentage of total ZEV inventory in Canada.

Figure 9. National ZEV Inventory by Automaker as a Percentage of Total



3.2 Inventory Relative to Sales

This section evaluates the adequacy of ZEV inventories using a common dealership inventory metric that combines inventory levels with historic vehicle sales rates: days of supply.

Days of Supply

A Metric for Dealership Inventory

Car dealerships use inventory management practices to balance the selection of vehicles available to customers with the demand for those vehicles. Days of supply is a common metric used to manage inventory, developed using historical sales data and used when determining which and how many models should be ordered. Using sales data, dealerships can calculate the number of a particular model of vehicle that are sold per day. These values are then used to fill orders for new vehicles to ensure that enough vehicles will be available to meet expected demand.

Dealerships will typically have guidelines for the minimum and maximum number of days they aim to stock vehicles for. Based on industry feedback, this report uses an optimal days of supply threshold range between 40 and 80.

For any given period "X", the following equation is used to calculate the days of supply metric:

$$\text{Days of supply}_{\text{period } X} = \frac{\text{Current inventory}_{\text{period } X}}{\text{Number of vehicles sold}_{\text{period } X}} \times \text{Number of days}_{\text{period } X}$$

Below, Table 4 summarizes days of supply for inventory collected in March 2022 and sales data from November 2021 to January 2022 (latest available continuous 3-months period data at the time of writing).

Table 5 then summarizes days of supply from all data collection periods - aggregated to a provincial level.

As noted in previous sections, Tesla uses a factory-order model - an inventory model most seen in the luxury vehicle market. Factory-order models do not typically stock a variety of vehicles for purchase on the lot, instead allowing consumers to place customized orders. Given Tesla's high sales per day rates and inventory model, the days of supply metric may be of limited use for the automaker and will skew the aggregated province- and Canada-wide calculations.

Chevrolet sales plummeted since September 2021 following GM's ongoing battery recall and stop-sale for Chevrolet Bolts¹³. Dealerships across Canada were required to pause all customer deliveries of Chevrolet Bolts until the battery recall is complete. For this reason, Chevrolet is excluded from the analysis of days of supply.

In this report, we calculate days of supply for all automakers except Chevrolet (Bolt stop-sale resulted in roughly zero sales while inventory remains), Kia (no inventory data was collected), Mercedes (no inventory data was collected), and Tesla (factory-order business model - high sales numbers with little inventory).

¹³ Green Car Reports. (2022). *GM plans to restart Chevy Bolt EV production April 4, as recall battery replacements continue*. Available online at: [this link](#).

Table 4. Days of Supply by Province and Automaker - March 2022

Over-supply	> 80	Target-supply		Under-supply	< 40
No inventory		No sales data			

Automaker	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	Total
Audi	18	46		138	6	16		31			42
BMW	7	4	138		6	3	31				32
Chrysler	368	268	55	37	79	29	18	171	368	368	176
Ford	21				22	18					20
Honda	15										15
Hyundai		5	10		1						5
Jaguar					20						20
Jeep	12	24	18	48	13	5	12	21		15	19
Mercedes											0
Mini	12	31	46		18	6	184	23			46
Mitsubishi	6	41		46	14	2	184			46	48
Nissan	3					1					2
Porsche	23	102	123	92	19	32					65
Subaru											0
Tesla	0	0	1		0	0					0
Toyota					1						1
Volkswagen											0
Volvo	1					0		14		46	15
Total¹⁴	44	65	65	72	18	11	86	52	368	119	36

Table 5. Days of Supply by Province and Data Collection Period - all periods

Period	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	Total
Mar 2022¹²	44	65	65	72	18	11	86	52	368	119	36
Feb 2021¹⁵	67	120	177	119	98	49	109	130	147	86	62
Nov 2020¹⁶	56	89	87	132	86	40	115	126	79	37	51
Feb 2020	19	47	53	50	22	29	47	43	28	67	26
Nov 2019	12	24	39	35	16	24	16	20	20	31	19
Nov 2018	49	100	87	128	23	37	501	115	0	56	36

Despite the general drop in inventory levels across all provinces and automakers, the days of supply from this data collection period shows positive results in Alberta, Saskatchewan, Manitoba, and Nova Scotia. Ontario and Quebec days of supply drop to under-supply levels, whereas New Brunswick, Prince Edward Island and Newfoundland & Labrador retain their over-supply levels. British Columbia’s province-wide days of supply shows a positive result; however

¹⁴ Excluding Chevrolet and Tesla

¹⁵ Excluding Tesla

¹⁶ Excluding Tesla

this is skewed by Chrysler's over-supply while all other automakers in the province drop to under-supply levels.

3.2.1 Results by Province

In this latest data collection period, five provinces (British Columbia, Alberta, Saskatchewan, Manitoba, and Nova Scotia) fall within the target days of supply range of 40 to 80, three provinces (New Brunswick, Prince Edward Island, and Newfoundland & Labrador) have over-supplies, and two provinces (Ontario and Quebec) are under-supplied. Since two of the leading provinces, Ontario and Quebec, are in the under-supply category, the Canada-wide days of supply also fell below target.

“It should be noted that the days of supply metric has limited use when assessing emerging EV markets, where apparent ‘over-supply’ can be a result of low historic sales rather than high inventory levels.”

It is important to assess the days of supply metric in combination with the absolute inventory values presented in Table 3 to allow for a fulsome picture of how inventory is tracking with sales rates. It should also be noted that the days of supply metric has limited use when assessing emerging EV markets, where apparent ‘over-supply’ can be a result of low historic sales rather than high inventory levels. In these markets, a higher days of supply target may be warranted to recognize that historic sales are likely a poor indicator of true demand given the historic lack of availability.

3.2.2 Results by Automaker

Assessed on a Canada-wide basis, only four automakers were within target days of supply: Audi, Mini, Mitsubishi, and Porsche. Chrysler managed to meet or exceed demand (as measured through days of supply) in 5 provinces, resulting in being the only automaker with an over-supply Canada-wide. All other automakers fell short of the 40-80 days of supply target range, some by considerable distance.

Tesla had by far the highest Canada-wide sales per day throughout 2021 of any automaker, nearly tripling the next highest on an annual basis. Tesla's popularity was also consistently high across provinces and across all four quarters. These high sales values paired with low inventory values - due to their factory-order model - results in skewing province-wide and Canada-wide days of supply calculations. Hence the rationale for excluding them in the calculations. Tesla's performance also highlights that having ZEVs available in inventory is not essential for achieving high ZEV sales, at least for some segments of the market.

3.3 Vehicle Choice: Availability of Distinct ZEV Models

3.3.1 Availability by Province

The number of unique makes and models available in inventory in each province are shown in Figure 10 and Figure 11 below, highlighting the selection available to consumers who are shopping for a ZEV. Despite the drop in absolute inventory levels across provinces, British Columbia, Ontario, and Quebec remains the leading provinces with the greatest number of selections for customers - both in terms of makes and models.

We see reductions in the number of available automakers and models in most provinces, except for Saskatchewan - which maintained the same number of automakers & models - and Newfoundland & Labrador - which had an increase in number of automakers with ZEV options

despite the large inventory drop of several large automakers which previously supplied the province.

Figure 10. Number of Makes Available by Province

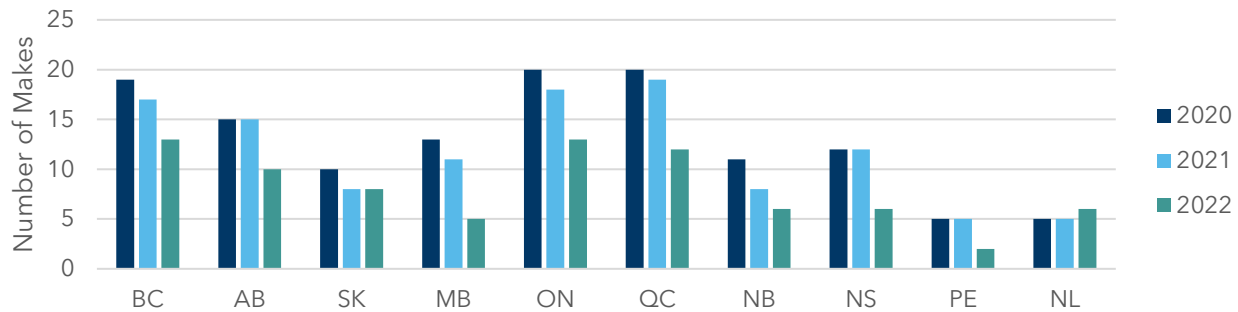
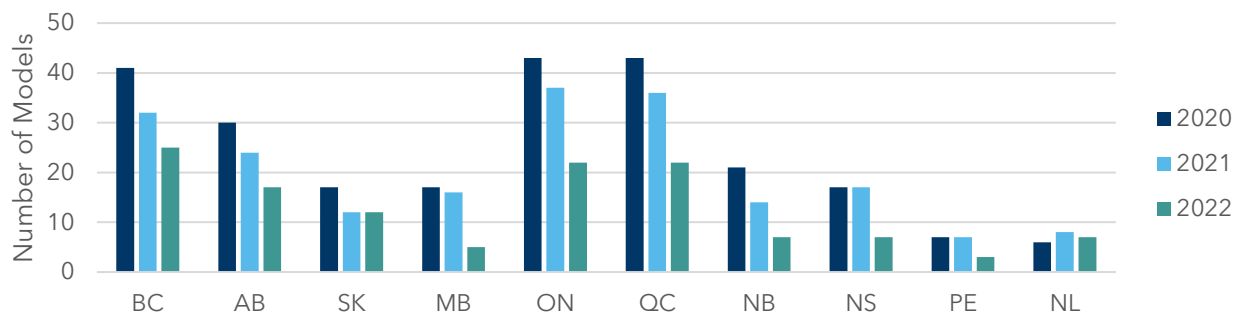


Figure 11. Number of Models Available by Province



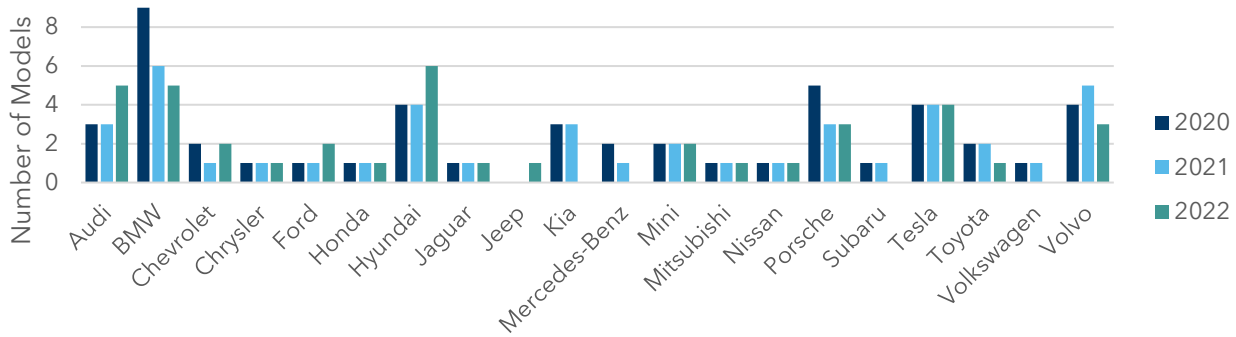
As seen in previous studies, the number of makes and models available to ZEV shoppers varies significantly from province to province, with shoppers in Atlantic Canada and Manitoba all only having 7 or fewer ZEV model options available to them, compared with over 20 in BC, Ontario and Quebec.

3.3.2 Availability by Automaker

The number of models available in inventory from each automaker varies between automakers, as shown in Figure 12 below. Half of automakers still offer two or less ZEV models as of March 2022. Audi, Chevrolet, Ford, and Hyundai have added more models since February 2021; the latter now overtaking BMW as the leader following a slight drop in models available by the German manufacturer. Toyota dropped to a single ZEV model whereas Subaru and Mercedes dropped to zero¹⁷. Jeep with their Wrangler 4xe represents the latest market entrant, seen for the first time in this data collection period.

¹⁷ Note that inventory for Kia in 2022 was not collected as noted earlier in the report.

Figure 12. Number of ZEV Models Available in Dealership Inventory by Automaker across Canada



3.3.3 Split of BEV vs PHEV

In addition to the overall selection of ZEV models, powertrain type is also an important consideration for ZEV shoppers. The ZEV categories included in this analysis are:

- Battery Electric Vehicle (BEVs) which run only on electricity
- Plug-in Hybrid Electric Vehicles (PHEVs) which offer sufficient electric-only range for typical daily driving distances while relying on an internal combustion engine for longer trips

Figure 13 and Figure 14 below show the percent of vehicles available in inventory in each province by powertrain type for the two latest data collection periods.

Figure 13. Split of BEV vs PHEV Available for Purchase by Province - March 2022

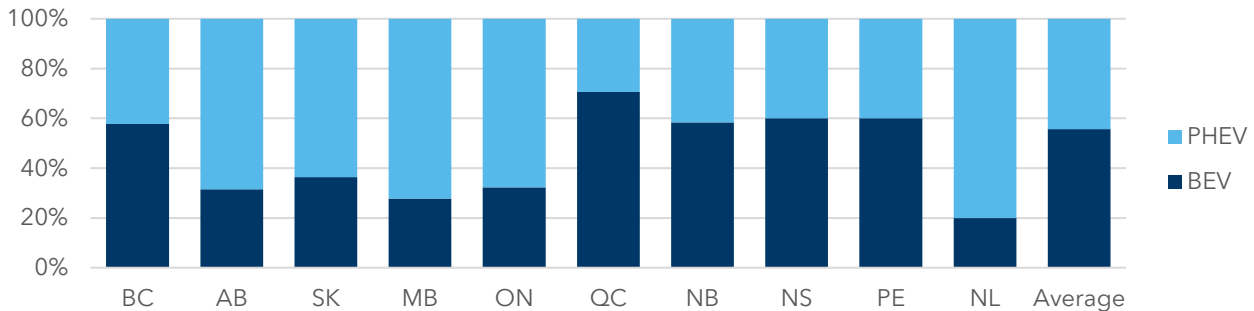
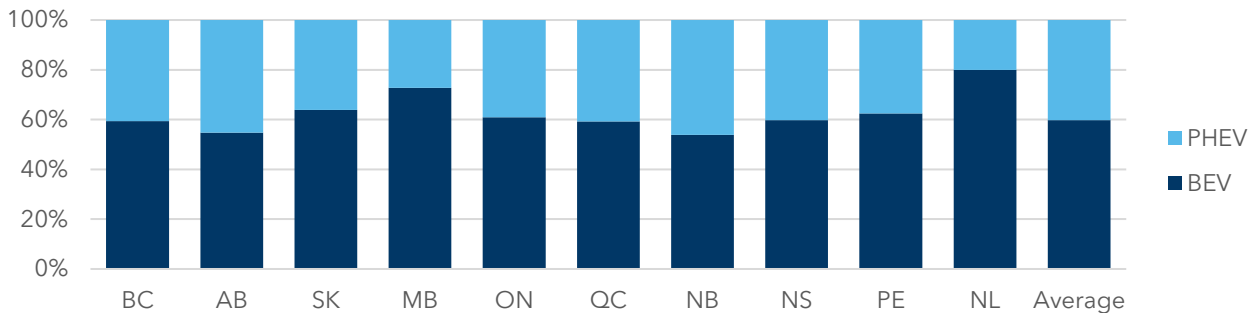


Figure 14. Split of BEV vs PHEV Available for Purchase by Province - February 2021



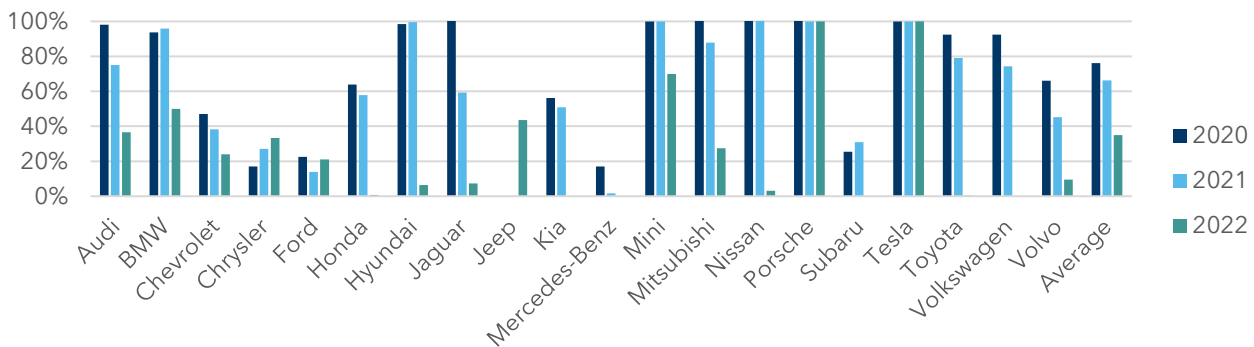
Between 2018 and 2019, we observed an upwards trend in BEV's share of the inventory, reaching a peak of 72% inventory share in November 2019 primarily due to the introduction of widely popular BEVs, reduced concern among consumers in BEVs range, growing charging infrastructure, and price reduction. Canada-wide inventory share for BEVs has since remained stable at 55%-60% - including this period.

There are greater variations when we look at each province’s ZEV technology inventory share. In Alberta, Saskatchewan, Manitoba, Ontario, and Newfoundland & Labrador, the BEV inventory share dropped significantly from an average of 66% in February 2021 to 30% in March 2022. To note that this is also coupled with a significant drop in inventory levels in this latest data collection period. The Canada-wide average remains at 55% in March 2022 due to the strong inventory share of BEVs in the other five provinces.

3.4 Availability by Dealership

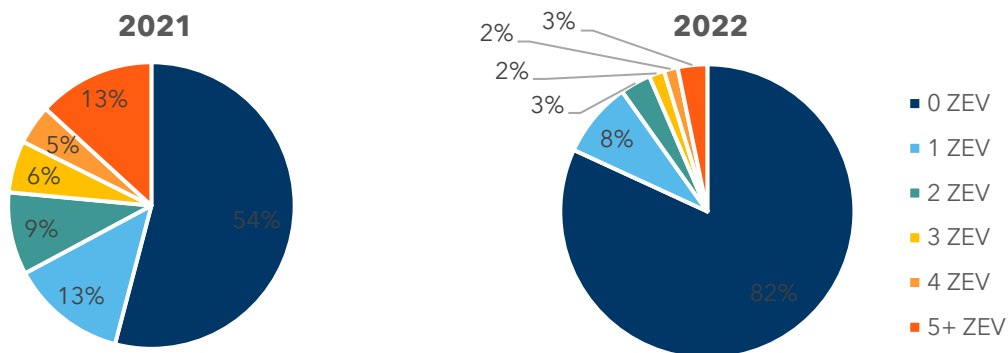
One way to measure the consumer’s ZEV shopping experience is by looking at the number of ZEVs in stock at a given dealership and available for consumer to choose from. Figure 15 below shows the percentage of dealerships for each automaker with at least one ZEV in inventory. Porsche and Tesla are the only two automakers that have maintained a 100% dealership coverage since 2020, which in Tesla’s case is to be expected because the automaker only sells ZEVs.

Figure 15. Percentage of dealerships with at least one ZEV available



While having at least one ZEV available at a dealership can, at least, ensure that interested shoppers can see a ZEV model in person, having more than one ZEV in stock can help ensure that a potential buyer is likely to find a model that fits their expectations in terms of personalization (e.g., trim level, colour) and that they can make a purchase that day if they find a vehicle they like. Figure 16 shows the number of ZEVs available per dealership across Canada.

Figure 16. Number of ZEVs Available per Dealership

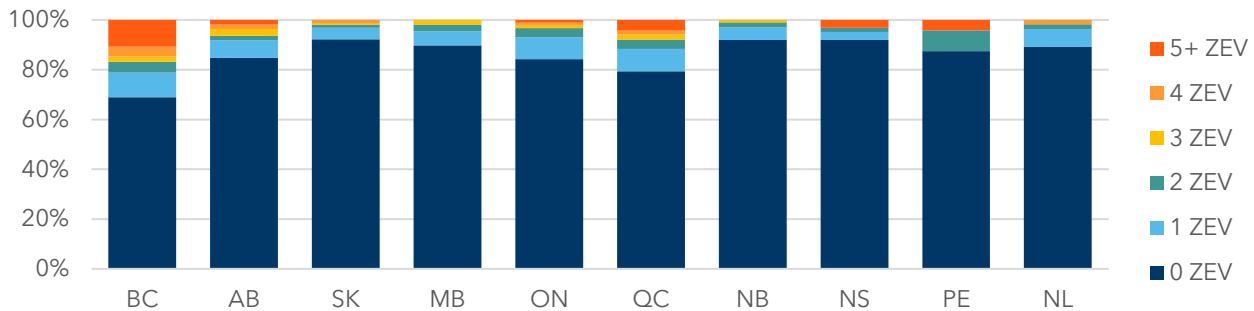


Although more than half of dealerships had no ZEVs in inventory in November 2020 and February 2021 (58% and 54%, respectively), these were still improvements compared to February 2020 where 67% of dealerships were without ZEVs. March 2022, however, saw that 82% of dealerships across Canada do not have any ZEVs in their inventory. Out of the 18% of dealerships with ZEVs, nearly half of them only have one model in inventory. Note that some of

the automakers with the greatest inventory have ZEVs in a relatively small portion of their total dealerships as a result of their stock being concentrated in a few provinces.

Figure 17 below shows the number of ZEVs available per dealership by province for March 2022. Compared to the previous report, where a majority of dealerships in British Columbia and Quebec had at least one ZEV (60% and 70%, respectively), the difference between provinces this time around isn't quite as stark. British Columbia and Quebec are still the two leading provinces with 31% and 21% of dealerships having at least one ZEV in inventory, whilst other provinces average 11% of dealerships with one or more ZEVs. British Columbia also had the greatest number of dealerships (11%) with 5 or more ZEVs available in inventory.

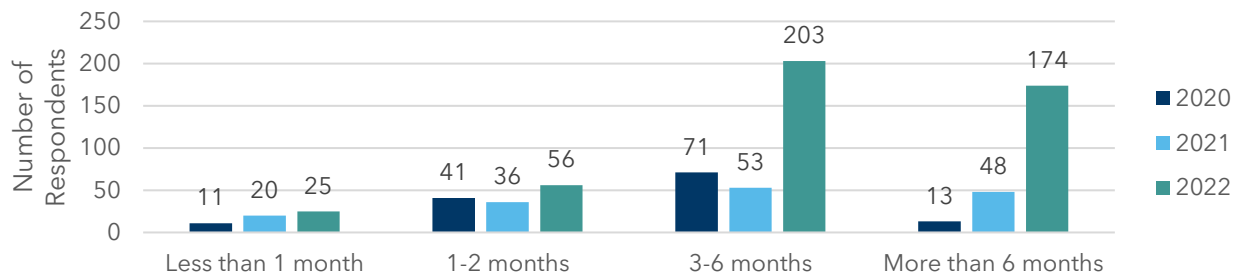
Figure 17. Number of ZEVs Available per Dealership by Province, March 2022



3.5 Wait Times

Wait time is another important consideration for consumers looking to purchase a new vehicle, especially in the case of automakers that do not have significant inventory. For example, a low inventory may be acceptable for some shoppers if a ZEV can be ordered and received promptly. Dealerships that were surveyed by phone (1,319 out of 3,208 dealerships were surveyed by phone, i.e., 41%) and did not have any ZEVs available were asked how long the wait would be before a ZEV was available. Figure 18 includes the wait times suggested by these dealerships.

Figure 18. Expected Wait Times for Dealerships with Zero ZEVs Available



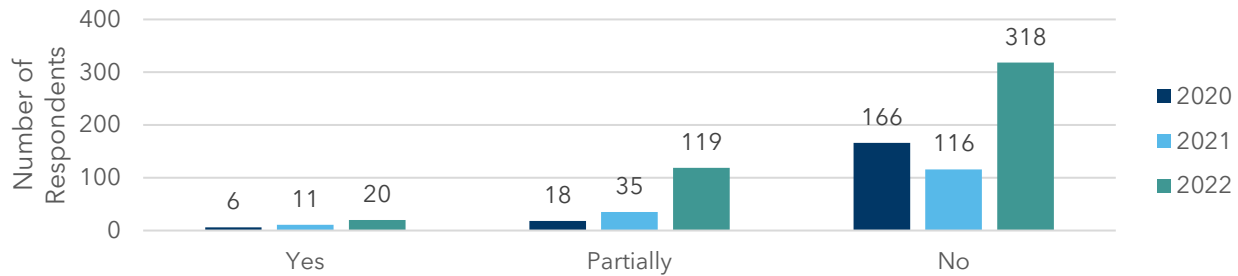
As noted in our previous report, the increase in wait times from November 2020 to February 2021 may at least be in part attributable to factory shutdowns and part shortages caused by the COVID-19 pandemic¹⁸. A similar survey conducted by DesRosiers Automotive Consultants on non-ZEV average order time shows 21% reporting wait times of more than 6 months¹⁹, compared to 38% reporting a wait time of more than 6 months according to our findings

¹⁸ Driving. (2021). *What the global chip shortage means for the auto industry and car buyers*. Available online at: [this link](#).

¹⁹ DesRosiers Automotive Consultants. (2022). *The Semiconductor Shortage: Future Outlook and Implications for Dealers*.

specific to ZEVs. Given the disruptive impact of COVID-19 on supply chains across many industries, dealerships were also asked if the ZEV wait times were a result of the pandemic. The results are shown in Figure 19 below.

Figure 19. Dealership Response to “Is the wait due to the COVID-19 pandemic?”



The number of respondents in 2022 significantly increased from previous years simply because the trigger point at which this question is asked is the lack of ZEV availability in inventory. Given that more dealerships do not have any ZEVs it is only natural to have more respondents to this question. While COVID-19 may have had some impact on ZEV availability, these results show that most dealerships who offered a response do not see the pandemic as the main factor leading to wait times. That said, whether the ongoing supply chain challenges are directly linked specifically to COVID-19 may not be immediately obvious to the sales staff responding to the survey.

Surprisingly, 47% of dealerships with no inventory were able to offer an estimated wait time when asked, a large improvement to the 10% in our previous report. Of those that provided wait times, the vast majority of dealerships (82%) responded that the wait time would be longer than three months. This delay would require potential buyers to be patient and to plan ahead for a new ZEV purchase, particularly those buying from a dealership that expect wait times to exceed six months (38%). Figure 20 and Figure 21 below show expected wait times by province for data collected in March 2022 and February 2021, respectively. Data labels in these charts show the number of respondents.

Figure 20. Expected Wait Times by Province (Number of Responses) - March 2022

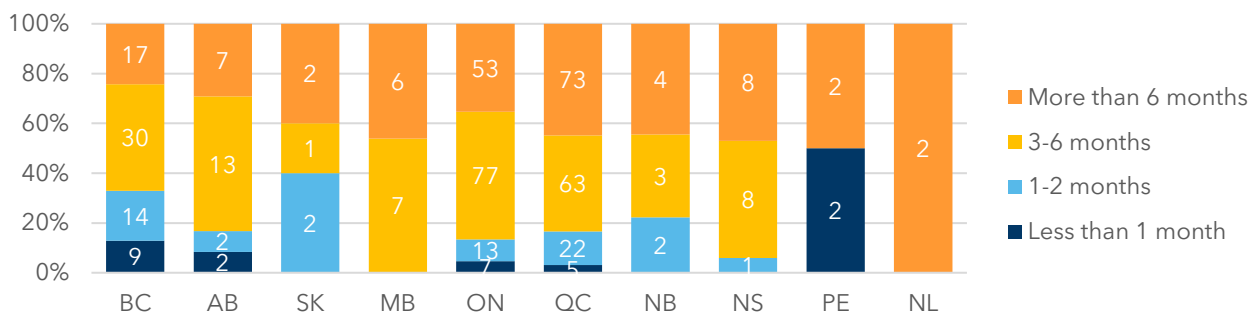
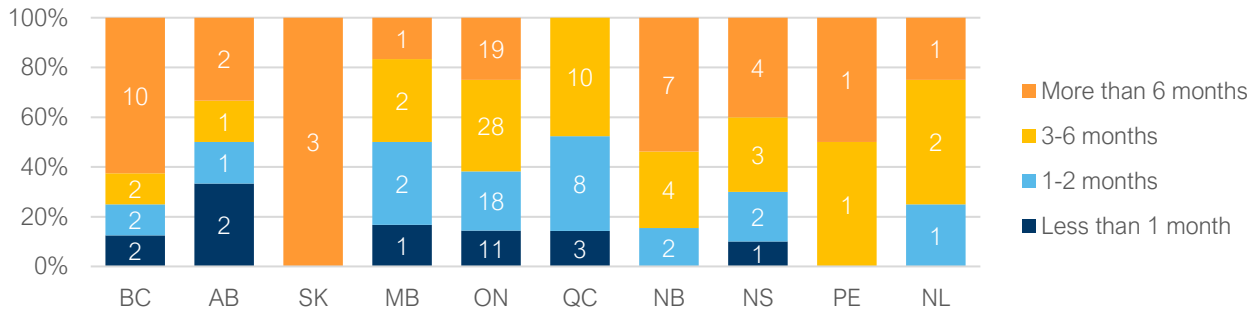


Figure 21. Expected Wait Times by Province (Number of Responses) - February 2021



The relative portion of respondents who indicated that wait times would exceed 3 months continues to grow in most provinces with the exception of British Columbia, Saskatchewan, New Brunswick and Prince Edward Island. It should be noted that the sample sizes in the last three provinces are rather small compared to other provinces. Despite this, the data suggests that wait times have significantly increased across the country.

Those fielding the survey also took note of information dealership representatives provided without prompting. This information included recommendations for future ZEVs that would be available near-term, recommendations for non-ZEV alternatives, and mention of government rebates for ZEVs. The result is summarized in Table 6 below.

Table 6. Unprompted Responses from Dealerships

	Feb. 2021		Mar. 2022	
	Yes	No	Yes	No
Unprompted Responses				
Recommended future ZEVs that would be available soon	0	1,096	84	964
Recommended non-ZEV instead	4	1,092	16	1,032
Mentioned government rebates	29	1,067	8	1,040

We saw a large jump in dealerships spontaneously mentioning upcoming availabilities of ZEVs: nearly 60% of them from Subaru dealers, followed by 20% from Toyota dealers and 15% from Honda dealers. Mention of government rebates remain infrequent, although one respondent did mention new incentives available in New Brunswick since summer 2021.

The low response rate to the wait time questions and limited unprompted responses likely also reflects the limitations of the phone-based approach. We presume that an in-person secret shopper approach would be more effective at receiving responses to these additional questions and would give a more fulsome representation of the typical ZEV shopping experience.

A blue-tinted photograph. In the foreground, the corner of a car's headlight is visible, showing its lens and internal structure. The background is out of focus, showing several people in what appears to be an indoor setting, possibly a showroom or office. The overall mood is professional and modern.

CONCLUSION

4. Conclusion

This report summarizes a snapshot of ZEV inventory in dealerships across Canada captured in March 2022. Previous reports in this series summarized data collected in 2018, 2019, early 2020, November 2020, and February 2021. In each report, absolute inventory numbers are highlighted then contextualized using historic sales rates to measure inventory in terms of days of supply. Inventory levels are analyzed by province and by automaker. Additional data is also provided regarding the split of powertrain types, the number of vehicles per dealership, and - for those dealerships with no ZEVs in stock - the wait time to receive a vehicle. Several key observations emerge from the latest data collected:

- **Inventory levels decreased significantly** compared to previous reports. Despite the increase in ZEV registration numbers compared to the previous year - indicating an increase in demand levels - inventory levels in dealerships have gone down across the country and across most manufacturers - indicating a reduction in supply levels. While the sudden drop in inventory is by no means limited to ZEVs²⁰, it does represent a significant setback compared to the progress we have tracked over the past few years as industry responds to increasing demand for ZEVs. Notably, while Hyundai and Toyota had among the highest inventory levels observed in 2021, the current study found almost no ZEV availability at all, with only 14 for Hyundai and only a single plug-in Toyota available in all of Canada.
- Despite global supply chain issues, there are signs **of increasing efforts to meet ZEV demand from some automakers**. For example, Stellantis' Chrysler and Jeep brands now offer among the highest ZEV inventory levels in Canada. Sales of Chrysler's Pacifica Hybrid, the only plug-in minivan available on the North American market, increased from last year whilst maintaining a similar level of vehicle inventory. Combined with Jeep's plug-in hybrid Wrangler 4xe and relatively strong inventories at Ford and Chevrolet dealerships, the top four spots for ZEV inventory were all held by North American automakers, suggesting that their supply chains may have been less vulnerable to global disruptions than other automakers with more production overseas.
- Inventory continues to be **unevenly distributed** between provinces and automakers. Several automakers continue to concentrate their inventory in British Columbia, Quebec, and to a lesser extent, Ontario, leaving other provinces with less diversity of consumer choices. This reporting round also saw the largest percentage of dealers having zero ZEVs in inventory (82%) since the first iteration of this series. Of those dealers without any ZEVs available, 38% of them said the wait time for a new order would be over 6 months, compared to 31% in 2021.

This report highlights findings from the latest collection of data on ZEV inventories across a wide variety of automakers and regions, all in the context of a global supply chain crisis and a continually evolving ZEV policy landscape.

Meanwhile, we are also witnessing a growing trend towards new automotive retail models, with a number of automakers shifting towards online retailing in parallel to their transition towards an increasingly electrified model lineup, including Ford²¹ and Volvo²². This may be a sign that

²⁰ CBC. (2021). *How the COVID-19 semiconductor shortage has brought Canada's car industry to a halt - again*. Available online at: [this link](#).

²¹ TechCrunch. (2022). *Ford wants to restructure its dealership model to boost EV sales*. Available online at: [this link](#)

²² Bloomberg. (2021). *Volvo to go electric-only and shift sales online from 2030*. Available online at: [this link](#).

vehicle shoppers interested in ZEVs are less attached to the traditional approach of buying a vehicle directly from a dealership lot. A broad selection of vehicles to choose from in inventory may not be as important for someone who is willing to order a vehicle to their desired specifications, provided wait times are reasonable.

This evolving landscape can make it difficult to interpret the findings from this study and the degree to which ZEV policies in Canada may need to be adapted in response. Industry wide impacts from global supply chain disruptions have led to significant decreases in inventory across all vehicle types, with one study finding an average reduction of 79% in inventory levels across Canada²³. While this is roughly inline with the reduction in ZEV inventory observed in this report from 2021 to 2022, the drop in ZEV inventory is particularly concerning given that it was not particularly strong to begin with, and sales of ZEVs are growing significantly relative to sales of all other vehicle types.

With 82% of dealerships having no ZEVs available at all and 38% of dealership reporting wait times of 6 months or more, our overall conclusion is consistent with previous reports: the lack of availability of ZEVs continues to be a significant challenge across Canada. Industry and government stakeholders will need to continue to collaborate to ensure that sales of ZEVs are not held back by constrained supply, all in parallel to ongoing efforts to address other barriers to adoption of ZEVs.

²³ DesRosiers Automotive Consultants. (2022). *The Semiconductor Shortage: Future Outlook and Implications for Dealers*.



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Dunsky is proud to stand by our work.