

# **THE NEAR FUTURE OF THE PASSENGER CAR MARKET IN FINLAND**

## Abstract

Author(s) Tsesmelis, Alexandros	Type of publication Bachelor's thesis	Published Autumn 2020
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Title of publication <b>The Near Future of The Passenger Car Market in Finland</b>		
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Abstract <p>The thesis studied the near future of the passenger car market in Finland. The thesis was written with two main parts examined. These parts are the new passenger car market and the used passenger car market. The thesis was written to give a clear picture for a reader how the near future of the passenger car market in Finland will look like, examining affiliated phenomena and trends.</p> <p>The thesis was done mainly by analyzing data available from internet sources since the topic of the thesis required up-to-date information which would mainly be found on the internet. Additionally, the thesis included an interview of a field expert and a survey to not solely be based on internet sources.</p> <p>The key finding of the thesis was that both the new and used passenger car market in Finland will face significant changes in the near future. The main conclusions included the small rise in the new car registrations, the stable used passenger car sales numbers, the growth of the J-Segment, the engine fuel types of new passenger cars changing radically, the possible entrance of Chinese passenger cars to the Finnish market and the increase of used passenger car imports in the near future.</p>		
Keywords Passenger Car Market, Finland, Near Future		

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## 1 INTRODUCTION

### 1.1 Thesis objective

This thesis will examine the near future of the passenger car market in Finland. Its main objective is to give the reader a good and clear picture of the near future of the Finnish passenger car market and help the reader understand how the market has developed from its past state to its current state and how it will develop to its state in the near future which in this thesis is five to ten years from the year of writing, 2020.

### 1.2 Research questions

The main question this thesis will answer is what will the Finnish passenger car market look like in the near future. The passenger car market consists of cars that are registered as passenger cars. It doesn't include cars registered as vans, trucks, or buses. This thesis will additionally answer several sub-questions that are being examined and answered in the chapters. These sub-questions include questions that are related to both the new passenger car market and the used passenger car market. These sub-questions include the questions listed below.

- What will Finland's new passenger car market look like in the near future?
- Will new passenger car registrations be higher or lower in the near future?
- What fuel types will new passenger cars use in the near future?
- What type of new passenger cars will consumers prefer to buy in the near future?
- Will Chinese cars enter the Finnish new passenger car market in the near future?
- What will Finland's used passenger car market look like in the near future?
- What will Finland's used passenger car importing scheme look like in the near future?
- What other trends Finland's used passenger car market will have in the near future?

### 1.3 Research methods

This thesis uses different types of research methods. The most used research method used in this thesis is data analysis from internet sources. Since the topic of this thesis is current and thus demands fresh knowledge and data, fresh and updated internet

resources are vital for this thesis. The data collected from internet sources are supplemented by an interview with the company sales manager of new and used passenger cars of Toyota Vesijärven auto, Mika Myllypakka. The sales manager was being interviewed by email. Additionally, a survey, which got 165 responses was made to give an extra point-of-view of what kind of passenger cars consumers are currently using and what kind of passenger cars consumers would want to purchase in the future. The survey targeted people currently living in Finland. The survey was advertised on social media platforms such as Instagram, Facebook, and Snapchat. The age distribution of the survey responders was expected with almost half of the responders were 18-24-years-old. The reason for the high portion of young responders was the advertisement of the thesis in the writer's social media accounts with high numbers of 18-24-year-old persons reached. This was the reason for the advertisement of the survey in a public Facebook group where also older responders had the chance to respond to the survey. 54,5 percent of responders were females and 43 percent were males. 2.4 percent were of other gender or didn't want to respond. 75.2 percent of responders owned a car. Since the survey reached mostly people living in the Päijät-Häme area, 77,6 percent of the responders were from the said area with 7,9 percent of responders being from the Uusimaa region. The rest 14.5 percent of responders were from other areas of Finland.

#### 1.4 Research limitations

The research made for this thesis includes a few types of limitations. The first limitation is the lack of different types of information related to statistics. Even though official websites such as Traficom or the website of the Finnish Transport and Communications Agency (Autoalan Tiedotuskeskus) offers multiple different statistics, certain statistics that could have been used in this thesis are not available. For example, a very limited amount of information was found regarding the number of passenger cars sold in Finland by their body or chassis types. Another major limitation concerned certain topics in the near future of the Finnish passenger car market. There were no other new car sales statistics forecasts found on the internet to compare with the forecasts made by the author of this thesis. Also, the information regarding the used car market was much more limited compared to the information which was available for the new car market. Regarding the information, breaking down and explaining the statistic numbers was time-consuming work. The survey made for this thesis contained some limitations too. Since the survey was advertised on social media sites, almost half of the responders were 18 to 24-years-old and 77,6 percent were from Päijät-Häme. This is a limitation since the selection of the responders was not truly random. Most likely, the majority of responders from Päijät-Häme are from Lahti.

This means that since the responders are from a city, it is likely that the responders will answer the thesis according to the needs of a city resident and people living in the countryside are not as represented. Also, 165 responders, although not an insufficiently small number, is still a small number to make any certain conclusions.

## 1.5 Structure of thesis / Thesis structure

This thesis consists of an introduction, two main chapters, and a conclusion part in the end. The introduction part explains to the reader the basic information concerning the thesis which are the thesis objective, research questions, research methods, research limitations, and the structure of the thesis. The second chapter is about the past and the current state of the Finnish passenger car market. This chapter is split into two sub-chapters – the recent past and present of the new passenger car market and the recent past and present of the used passenger car market. Both of these sub-chapters contain additional sub-chapters. These sub-chapters contain information about the sales numbers, the impact of the COVID-19 virus on the markets, the fuel types, the sold models, and the car imports. The final chapter is similarly divided into two chapters – the new passenger car market in the near future and the used passenger car market in the near future. These two sub-chapters are also divided into other sub-chapters. These sub-chapters are containing information about the sales numbers, fuel types, passenger car types, Chinese cars, used car imports, and other trends in the near future.

## 2 THE RECENT PAST AND THE CURRENT STATE OF THE PASSENGER CAR MARKET IN FINLAND

### 2.1 The recent past and present of the new passenger car market in Finland

There are several reasons for a consumer in Finland to buy a new car. A new car will always have a warranty which an older used car will not necessarily have, depending on the age of the car. When a car, which is bought as new is being traded to a new one during its warranty being still valid, it has held its value quite well which reflects the car sales price being higher than the sales price of a car bought as used (Sortter 2020). A new car will also have other pros compared to a used car. Fewer services are needed to be made, unlike a used car that requires regular maintenance. The older the car is, the more often it needs to be maintained and maintenance costs can get high in an older car which economically is not profitable (Rinta-Joupin Autoliike). Tires won't be needed to be changed to new ones as often as to a used car, either. In Finland, it is mandatory to have both summer and winter tire sets which are being changed periodically leading to higher costs for a car owner. Also with Finland having rougher driving conditions on average compared to countries with milder winters, tires wear out much quicker (Rinta-Joupin Autoliike). Technology in cars always updates over time so usually, the newer the car, the odds for the car having newer, better, and updated technology is greater. For example, safety is something that car manufacturers are constantly updating on their newest models. Modern car technology also gives the car owner smaller fuel costs. And while modern car technology will get new cars a better fuel economy than their predecessors, it will still improve the car's engine's performance. The consumer will also save money especially if the car uses hybrid or electric technology as its power source which consumes even less fuel than traditional fossil-fuel-powered cars. More about the hybrid and electric technology in Chapter 3.1.2 (Rinta-Joupin Autoliike; Sortter 2020). To be able to determine, view, and analyze the future of both new and used passenger car markets of Finland, it is necessary to first take a look at the recent past and the current present of the Finnish passenger car market by observing the statistics provided by the Finnish Transport and Communications Agency.

#### 2.1.1 The statistics of new registrations of passenger cars

This sub-chapter will show and examine the statistics of newly registered passenger cars in Finland for the past ten years, from 2009 to 2019 with the help of a line chart. The statistics handled in this sub-chapter don't include passenger car imports to Finland.



Figure 1 Yearly New Registrations of Passenger Cars in Finland 2009-2019 (Finnish Transport and Communications Agency c)

Figure 1 shows the yearly new registrations of passenger cars in Finland from the year 2009 to the year 2019. By observing the figure it can be noticed that the largest change in the registration of new passenger cars between the mentioned years is between the years 2009 and 2011. In the year 2009, only 90 574 new passenger cars were registered in Finland which is the lowest number of registrations since the year 1995. Only 79 890 new passenger cars were registered in that year and it is also the only time the number of registrations went below 100 000 since 1997. The reason for the drop in that year from the 139 669 registered passenger cars in 2008 to the 90 574 registered passenger cars in 2009 is the financial crisis and the recession following it in years 2008-2009 which the whole world faced. It hit Finland hard too, causing an 8,3 % drop in GDP, impacting the buying power of the Finnish population (Finnish Transport and Communications Agency 2020 c) (Jorma Erkkilä 2017). The sharp drop in new car registrations shows the impact the crisis had on the Finnish new passenger car market.

2010 saw a healthy increase in the new passenger car registrations as the economic situation had gotten better – 111 968 cars were registered that year and the numbers went further up the next year, 2011 when the number of new passenger cars registered got to 126 123. From 2012 to 2019, the number of newly registered passenger cars has been



rather stable with the number of registrations varying between 103 450 (2013) and 120 499 (2018) (Finnish Transport and Communications Agency 2020 c).

### 2.1.2 The statistics of the fuel type used by newly registered passenger cars

This sub-chapter will show the statistics of the fuel type newly registered passenger cars are using. The Finnish Transport and Communications Agency's website's statistics show the statistics of the fuel type used by newly registered passenger cars only from the year 2015 onwards so the statistics shown on the line charts below will include only the years 2015 to 2019.

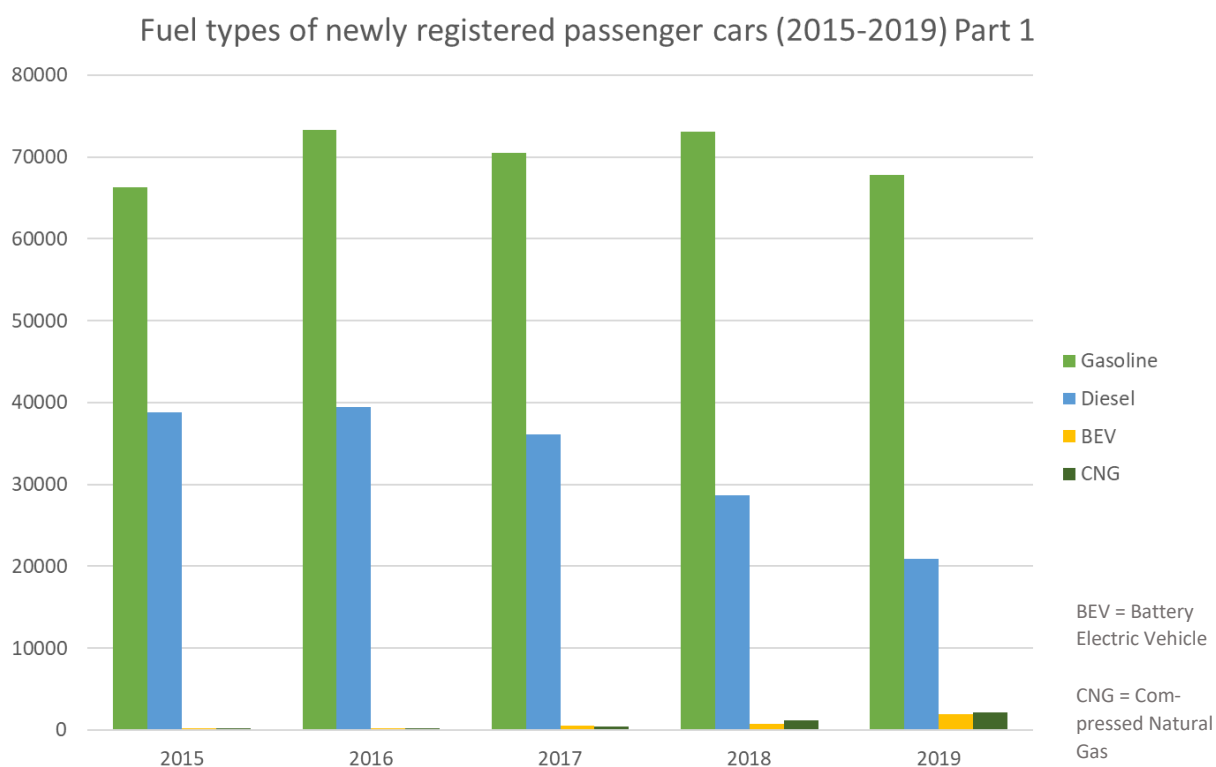


Figure 2 Fuel types of newly registered passenger cars (2015-2019) Part 1 (Autoalan Tiedotuskeskus 2020c)

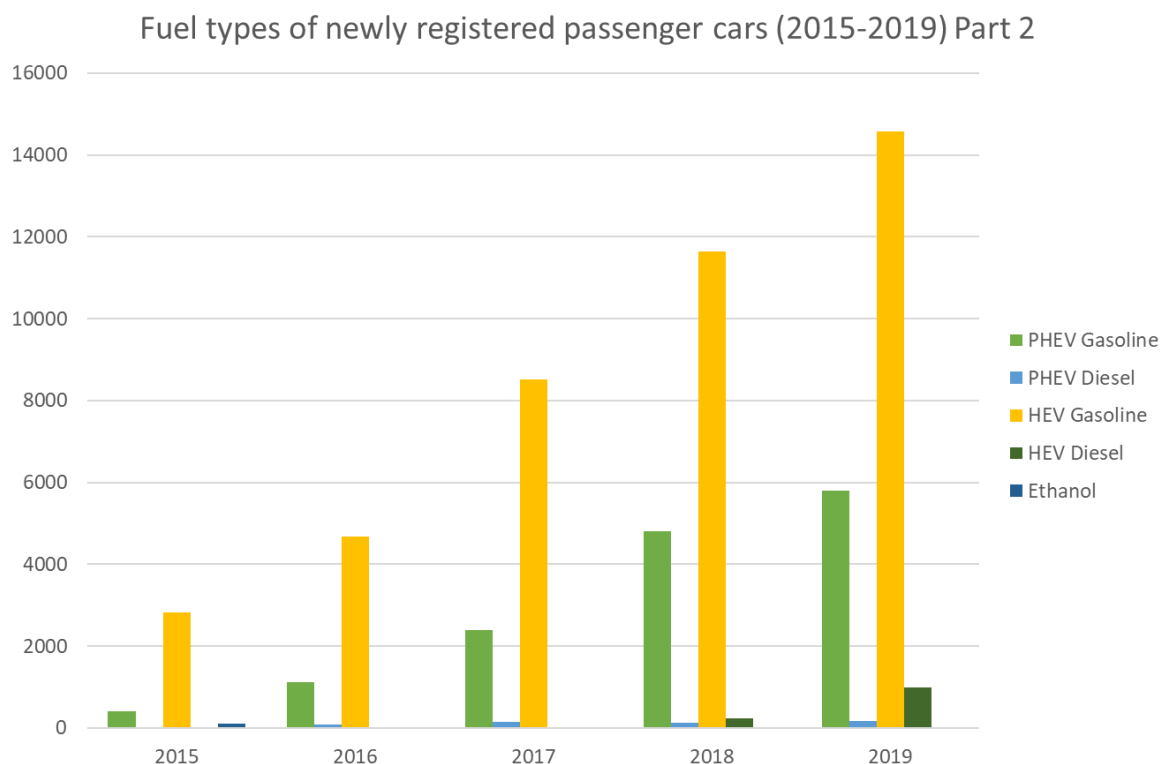


Figure 3 Fuel types of newly registered passenger cars (2015-2019) Part 2 (Autoalan Tiedotuskeskus 2020c).

By observing Figure 2 and Figure 3, it can be first noted that the number of passenger cars running on gasoline has stayed quite much the same when compared to the number of new passenger cars registered although it can be noted that the amount of gasoline-powered passenger cars has been getting a bit lower compared to the sales numbers. In 2019 there were approximately 6000 cars sold more than in the year 2015 but still, the number of newly registered gasoline-powered passenger cars was almost the same. Despite the small drop in the registrations, gasoline-powered cars remain the favorite of Finnish consumers (Finnish Transport and Communications Agency 2020b). Diesel-powered cars since 2017 have experienced a rapid drop in sales and registrations. Statistics show that although the number of newly registered passenger cars hasn't changed much between the years 2015 and 2019, the number of diesel-powered passenger cars registered has dropped significantly. In 2015 108 812 cars were registered of which 38 797 cars were diesel-powered while in 2019 114 199 cars were registered which is more than in 2015 but only 20 871 diesel-powered cars were registered (Finnish Transport and Communications Agency 2020b). There are different reasons for this. The major reason for the decline of diesel-powered car sales is due to the fact that the performance of gasoline-powered cars has been getting to the same level as diesel-powered cars and diesel-powered cars are also facing additional taxation (Rautio S. 2018; Veronmaksajat 2020).

Additional, more detailed reasons for the decline of diesel-powered passenger cars will be handled in Chapter 3.1.2.

CNG-powered (Compressed Natural Gas) passenger car registrations have gone up significantly since 2015 – only 158 new passenger cars were registered while 2019 saw 2 142 new CNG-powered passenger cars being registered (Finnish Transport and Communications Agency 2020b). The number of BEV-passenger car registrations has increased rapidly too. The term Battery Electric Vehicle stands for a vehicle with a battery pack powering the vehicle's electrically operating engine. 2019 saw 1 897 new BEV-cars being registered which is almost eight times more than in 2015 when only 243 new BEV-cars were being registered (Finnish Transport and Communications Agency 2020b). One of the main reasons for this increase is the prices of BEV-cars going down because of EU-commission set emission limits and the fuel cost savings a consumer will get (Kesko 2020). More information regarding BEV-vehicles in Finland can be found in Chapter 3.1.2. The last types of passenger cars are PHEV (Plug-In Hybrid Electric Vehicle) and HEV (Hybrid Electric Vehicle) passenger cars. The difference between a PHEV-hybrid and an HEV-hybrid is that a PHEV-hybrid car runs on electricity as long as there is enough charge in the battery and then using its gasoline or diesel-powered internal combustion engine. A PHEV-hybrid's battery is also chargeable while an HEV-hybrid car is non-chargeable and it uses both the gasoline or diesel-powered engine along with the electric motor (Erwin B. 2019). More of the hybrid technology and its advantages can be read in Chapter 3.1.2. By observing the statistics of the registrations of newly registered PHEV-hybrids and HEV-hybrids, it can be noted that these types of passenger cars have been the biggest growers in the Finnish passenger car market. Comparing the years 2015 and 2019, all together in 2015, 415 PHEV-hybrids were registered whereas, in 2019, 5 966 PHEV-hybrids were registered. This means that the number of PHEV-hybrid cars experienced a 1 337 % increase. HEV-hybrids experienced a smaller growth in registrations though still, a notable one. The year 2015 saw 2 846 new HEV-hybrids being registered while in 2019 the number was 15 572. This totals a 447 % increase (Finnish Transport and Communications Agency 2020b).

### 2.1.3 The statistics of the models of newly registered passenger cars

This sub-chapter will handle the statistics of the most popular models of newly registered passenger cars. The statistics will be analyzed by looking up the top 20 best selling passenger car models from 2015 to 2019 and then putting them into categories using the European Car Segmentation. This is to showcase the type of passenger cars preferred by Finnish buyers. The segments are the following listed below:

- A-segment: Mini Cars (*Examples: Skoda Citigo, Toyota Aygo, Volkswagen up!*)
- B-segment: Small Cars (*Examples: Ford Fiesta, Toyota Yaris, Volkswagen Polo*)
- C-segment: Medium Cars (*Examples: Skoda Octavia, Toyota Corolla, Volkswagen Golf*)
- D-segment: Large Cars (*Examples: Ford Mondeo, Mercedes-Benz C-Class, Volkswagen Passat*)
- E-segment: Executive Cars (*Examples: BMW 5-Series, Mercedes-Benz E-Class, Volvo S90/V90*)
- F-segment: Luxury Cars (*Examples: BMW 7-Series, Mercedes-Benz S-Class, Porsche Panamera*)
- S-segment: Sports Coupés (*Examples: Audi TT, BMW Z4, Porsche 911*)
- M-segment: Multi-Purpose Cars (Multi-Purpose Vehicles and Minibuses) (*Examples: Mercedes-Benz Vito Tourer, Volkswagen Caddy, Volkswagen Touran*)
- J-segment: Sport Utility Cars (Sport Utility Vehicles, Pick-Up Trucks). Can be split into three sub-segments depending on the size of the vehicle. (*Examples: Audi Q3, Hyundai Kona, Volvo XC90*)

(K. Van Miert 1999; Mikko Autio 2019)

	A-Segment	B-Segment	C-Segment	D-Segment	E-Segment	F-Segment	J-Segment	M-Segment
Year								
2015		7	7	4			2	
2016		5	8	6			1	
2017		6	6	4	1		3	
2018		6	7	3			4	
2019		5	7	3			5	
Sum		29	35	20	1		15	

Table 1 Top 20 Most Sold Cars in Finland (2015-2019) (adapted from Traficom 2020a)

By viewing and analyzing Table 1, it can be noted that B-Segment cars (Superminis) and C-Segment cars (Compacts) are among the favorites of Finnish consumers, followed closely by D-Segment cars (Large Cars). The table also shows that J-Segment cars (Sport Utility Vehicles and City Crossovers) have been starting to get more popular among Finnish consumers in the past two years, having more models among the top twenty most

sold passenger car models than what the D-Segment category has. Apart from D-Segment cars, J-Segment cars have also conquered the market of M-Segment cars (Multi-Purpose Vehicles). E-Segment cars (Executives) have had only one model among the best-selling passenger car models from the year 2015 to the year 2019, in the year 2017. The most up-class car category, F-Segment (Luxury Cars), hasn't had a single model among the best sellers which is not a surprise, considering that F-Segment cars are one of the most expensive cars in the passenger car market. A-Segment (City Cars), the smallest passenger car category, hasn't featured a single model either on the top twenty bestsellers (K. Van Miert 1999; Mikko Autio 2019).

#### 2.1.4 The impact of the COVID-19 virus on the new passenger car market

The COVID-19 pandemic which started to spread across Europe in the first two months in 2020 has had several impacts on the European auto industry according to ACEA, the European Automobile Manufacturers Association. According to the association, over 1,1 million Europeans working in the automotive industry were directly impacted by the pandemic by April 2020. In Finland, the number of workers directly employed by automotive manufacturers is 4 500. These numbers don't include employees working in other occupations related to the automotive industry such as car dealership employees (ACEA 2020). Finland's passenger car market, like other passenger car markets in European countries, has suffered from the COVID-19 pandemic too. New passenger car registrations amounted to 34 252 vehicles from January to April which were 11,8 percent less than at the same time last year. It was forecasted earlier this year that only 85 000 new passenger cars will be registered altogether in 2020. By looking up the most recent statistics, it can be concluded that the number of new passenger cars registered in 2020 will most likely be greater. Still, the year 1994 was the last time there were fewer new passenger car registrations. (Autoalan Tiedotuskeskus 2020a) (Finnish Transport and Communications Agency 2020c). This will, for example, affect severely the average age of the passenger car fleet in Finland which has been increasing every year since 2008 (Finnish Transport and Communications Agency 2020a). Since new passenger car sales are much smaller than before, it is an advantage for a consumer who is thinking of buying a brand new car. The advantage is that car dealerships are giving better offers to attract more consumers into buying new passenger cars. Car dealerships who sell both new and used cars will give better compensations when a consumer trades their used car for a new car. Car dealerships also offer good financing offers and contracts such as low-interest rates – for example, Toyota car dealers in Finland are offering a contract to the buyer that if the buyer will get

unemployed while paying the new car monthly, Toyota will cover the paying fee for the buyer for three months (Järvinen J. 2020; Rönkkö P. J. 2020c).

## 2.2 The recent past and present of the used passenger car market in Finland

For many consumers, buying a used car is a more convenient choice than buying a new car. Despite a new car having several advantages over a used car such as a warranty or a better value, a used car will always be less expensive than its brand new equivalent. A consumer, budget-wise, might be able to buy a certain car as used rather than as new. A used car might also have plenty of factory or aftermarket options installed which as new would cost much more (Teemu Auto Nordic 2020). This sub-chapter will handle the recent past and present of the used car market in Finland. Statistics of used car sales will be analyzed and viewed as well as the trends in the used car market such as used car exporting from abroad to Finland or the impact of the COVID-19 pandemic on the used car market.

### 2.2.1 The statistics of sales of used passenger cars in Finland

In this subchapter, the statistics on the sales of used passenger cars in Finland will be viewed and analyzed. The statistics are provided by the Finnish Transport and Communications Agency using Traficom's databases. Trades between car dealerships and car owners have been excluded from these statistics while trade-in cars have been included in the statistics when they are being sold forward to new customers. Used car imports are also being excluded from these statistics. The statistics that are shown in the chart below are from the year 2015 onwards (Finnish Transport and Communications Agency 2020d).

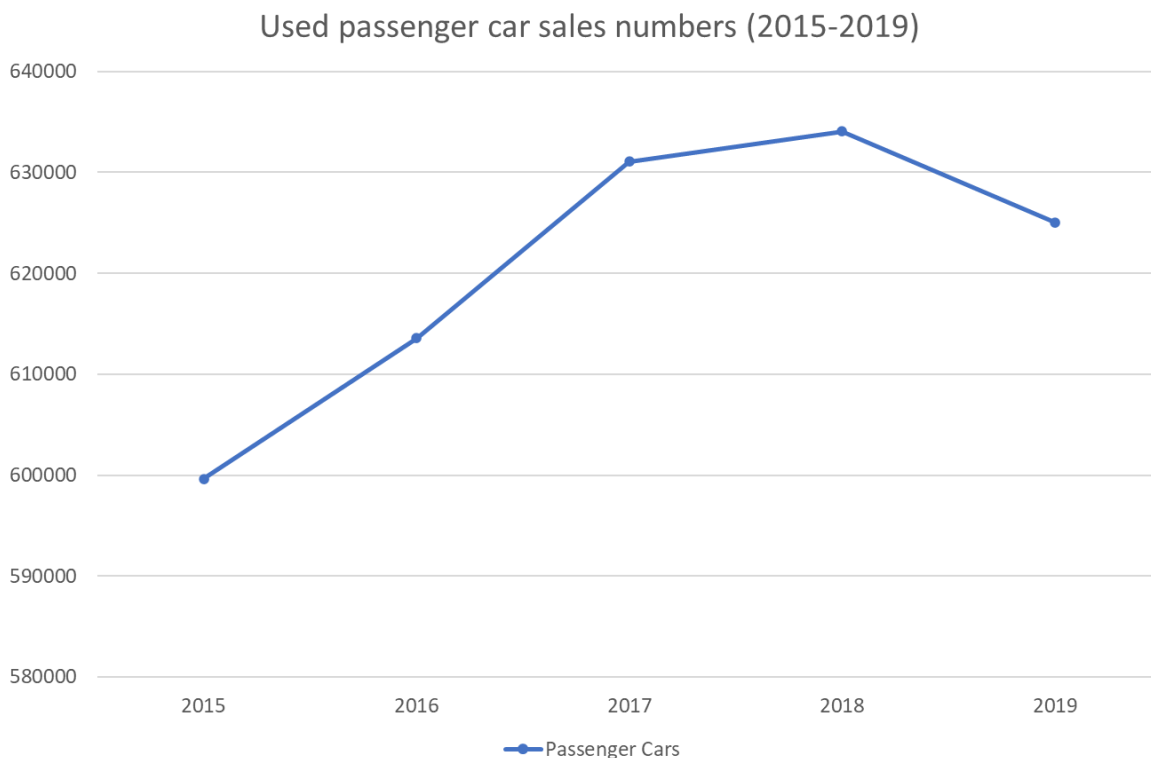


Figure 5 Used passenger car sales numbers (2015-2019) (adapted from Finnish Transport and Communications Agency d)

By observing the statistics shown on the line chart above, it can be noted that the used passenger car sales numbers from the years 2015 to 2018 have experienced a healthy rise from a bit less than 600,000 sold cars in 2015 to approximately 635,000 sold cars in 2018. 2019 saw a drop in sales numbers to approximately 625,000 sold cars. Roughly half of the sales of used passenger cars are in used car dealerships while the other half is done privately (Autoalan tiedotuskeskus b). The main reason for the high number of used car sales is the lower sales numbers of new cars (Lähitapiola 2020). More about the reasons affecting used car sales can be found in Chapter 3.2.1.

## 2.2.2 Used car importing to Finland

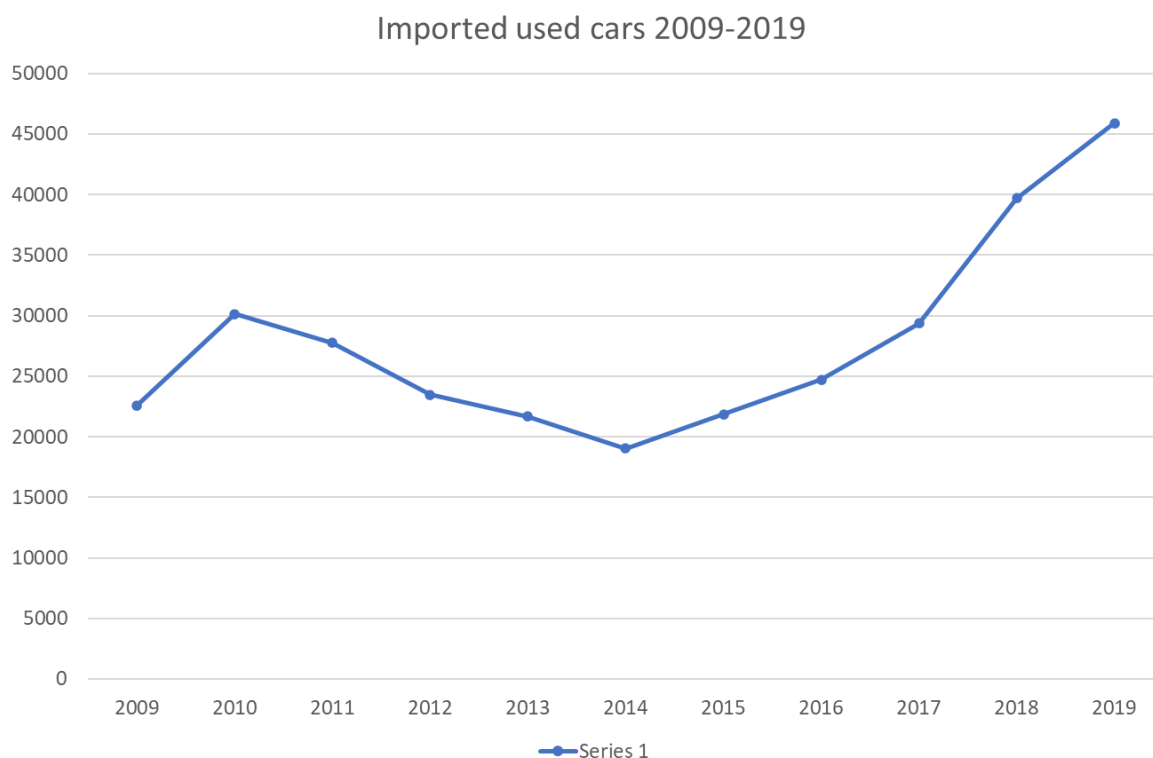


Figure 6 Imported used cars (2009-2019) (adapted from Autoalan Tiedotuskeskus 2020b)

Before the year 2003, used car import numbers in Finland were fairly small with approximately 2 000 to 5 000 used cars exported to Finland from abroad. In 2003, a sudden peak in used car imports occurred and over 31 000 used cars were imported that year. After that year, used car import numbers have stayed over 20 000 imported cars per year (Autoalan tiedotuskeskus 2020b). The line chart above that illustrates the number of imported used passenger cars per year shows that after the small peak of 2010, the number of imported used cars to Finland went down every year till the year 2014. In 2015, the number of imported used cars started to go up every year until 2017 when the number of cars imported took a small increase. In that year, Sweden surpassed Germany as the biggest used car exporter country for Finland. One of the causes of the increase in used car imports in 2015 has been the decision from the supreme administrative court to have the officials to find the smallest taxation percentage from the taxation laws for a car (von Bell C. 2018). The year 2018 saw a massive boost with a two times bigger increase in imported cars being registered than the year before. The increase was mainly the cause of used car imports from Sweden. The main reasons for Sweden becoming the favorite country for car exports to Finland have been the Swedish currency (krone) being almost all-time cheap and the massive used car stocks of Swedish new and used car dealerships which



have been caused by successful sales of new passenger cars (Autoalan Tiedotuskeskus 2020b; von Bell C. 2018). Last year in 2019, the boost was smaller but the number of imported cars was the biggest ever. Over 45 000 cars were imported to Finland as used in that year. The overall evolution has been remarkable during the last decade compared to even earlier years. As a comparison in 2001, only 1 925 used cars were imported compared to 2019 when 45 912 cars were imported (Autoalan Tiedotuskeskus 2020b; von Bell C. 2018).

Biggest car exporter countries for Finland (January-June, 2020)

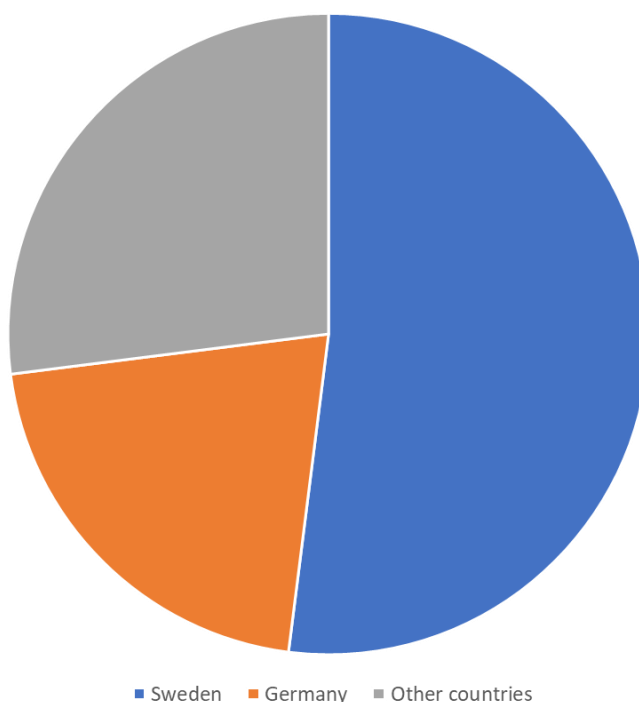


Figure 7 Biggest car exporter countries for Finland (January-June, 2020) (adapted from Yle)

The pie chart above shows the biggest car exporter countries for Finland from January to June of 2020. Sweden dominates the exporter scene by owning 52 % of the car exporter area while Germany, a former number one for Finnish car importers holds the number two position with 21 % of used cars being imported from the said country. Other countries total to 27 % of imported used cars (Pantsu P. 2020). These countries include countries such as the United States and Japan who's car brands are among the favorites of Finnish car enthusiasts and hobbyists (Auto Saksasta; Laitinen T. 2014).

The current passenger car taxation system which has a major impact on the importing of used cars is being criticized by some automobile industry experts. The taxation system enables a consumer to get a used car from a foreign country for almost the same money

but with a better equipment level and less mileage (Kuurio H. 2020). The affordability of used car imports have made the import of a used car an attractive option and not just for private importers but also car dealerships. The CEO of The Association of Automobile Industry in Finland, Tero Kallio, also says that the current passenger car taxation system favors used passenger car importing. The taxation system favors especially the importing of expensive, big cars which according to Kallio are doing no good for the employment numbers or the emission targets set by the Finnish government (Järvinen J. 2020). Kallio also noted that the Finnish economy doesn't benefit from the used car imports either. According to Kallio, when cars are being imported from other countries to Finland, it drains money from Finland to other countries (Jokela M. 2020).

### 2.2.3 The impact of the COVID-19 virus on the used passenger car market

As for the new passenger car market, the ongoing COVID-19 pandemic has had an impact on the used passenger car market too, though a bit differently. While during the initial impact the COVID-19 virus halted almost the whole car market including the used car market, the used car market eventually got back on its feet. After April which was the worst month for the used car market, used car sales started to heal again and during the summer, used cars sold very well in dealerships. One reason for this is the choice of using their own car for the fear of using public transportation as a way of commuting (Palokallio J. 2020a). In Spring 2020 in a survey made by Tori.fi, a Finnish online marketplace, it was concluded that the use of a private car had increased in Finland although, for example, decision-makers in Helsinki have been making restrictions and prohibitions on the use of a private car (Rönkkö P. J. 2020b). According to the survey, one-third of Finns decided to use public transportation less after the COVID-19 crisis. Also, over seventy percent of the responders in the survey decided to travel in their own car, rather than use public transportation. The lessened use of public transportation has been seen as one of the reasons for the boost in used car sales. For example, visits to a used car dealership had increased twenty-two percent from the year 2018 (Rönkkö P. J. 2020b; Rönkkö P. J. 2020d).

The notable boost in used car sales has created fear for car dealerships for having difficulties of not having enough inventory in their stock for consumers. The fear is caused by the new car market not being in its full form despite getting a bit better. And since fewer new cars are being sold, less new, used cars are being released to the market and this leads to a shortage (Järvinen J. 2020). Currently, used passenger cars and especially more expensive ones are experiencing price deductions to fill up the income void created by the sluggish new passenger car sales. If a shortage of used cars in the market is happening, prices of the most popular used car models might go up (Rönkkö P. J. 2020c). Used car

importing also experienced a halt during the worst months of the first major COVID-19 wave. April, which was the worst month for the used car market, also was one of the worst months for used car importing too. Compared to January when approximately 4 000 used cars were imported to Finland, April had only approximately 2 800 used cars imported to Finland. Sweden, which is the most popular country for used car exports to Finland was not an exception. A major reason for the smaller import numbers was the moving restrictions implemented by the Finnish government which didn't allow its citizens to travel abroad without a valid reason – most of the used car imports during the quieter months were mostly made by car dealerships (Niskanen S. 2020). The presence of the virus has also created a new trend in the used car market, more specifically in the behavior of consumers. Especially during Spring, used car deals and financing moved to the internet with consumers not visiting car dealerships to see the car live (Lähitapiola 2020).

### 3 THE NEAR FUTURE OF THE PASSENGER CAR MARKET IN FINLAND

#### 3.1 The new passenger car market of Finland in the near future

It is impossible to correctly predict the near future, especially when discussing different market areas in business. Unexpected and surprising events can suddenly occur, turning the market upside down. This year's COVID-19 pandemic, which had and will have a major impact on the car market not only in Finland but worldwide, is a very good example of this. If the pandemic never existed, the forecast of the Finnish passenger car market would be notably different. The best way to predict the near future of the new passenger car market in Finland is to take a look at the past and the present of the said market. With the help of the research made in Chapter 2 and also the existing sources and the interviews of the field's experts, a forecast of the near future of the Finnish passenger car market can be analyzed and presented in this chapter. As mentioned in the introduction, the near future handled in this chapter will be from five to ten years from the writing date, 2020.

##### 3.1.1 New passenger car sales in the near future

The most difficult part of predicting the near future of Finland's passenger car market is to predict the sales numbers of the said market. As explained in Chapter 3's intro, sudden events such as the current COVID-19 pandemic, a worldwide or local economic crisis, or new changes in the Finnish legislation might have a huge impact on the market. For this reason, predictions may never be trusted fully since sudden events affecting the market are almost impossible to predict. For that reason, predictions of the new passenger car market in this sub-chapter will also be predicted by analyzing first the current situation and then predicting which way the current situation is looking like to head as accurately as possible.

The first and the least difficult year to predict is this year 2020. Last year's new passenger car first registrations from January to October totaled 97 296 cars. This year's first registrations from January to October have totaled 80 899 cars which is 16 394 registrations less which is significantly less than last year, 2019. It should be reminded that the current COVID-19 pandemic has had a big impact on this year's numbers, especially during March and April. The summer months have been notably better for the new passenger car registrations. For example, when comparing the first registrations of August of 2020 (8 485 registrations) to the first registrations of August of 2019 (9 994 registrations), the difference between the two years is 1 509 registrations. The two last months of 2019 saw 16 893 passenger cars being registered. When taking into account that from the start of

autumn the number of new COVID-19 cases has been on the rise, the last two months of this year will most likely have fewer registrations compared to the summer months (Autoalan Tiedotuskeskus 2020a; Holopainen S. 2020). The increases of the COVID-19 cases will most likely keep being moderately high and this will most likely have a bigger impact on the new passenger car registrations for the rest of the year than what the pandemic has had in summer's registrations. By looking up the sales numbers of last year's two last months and taking all the factors explained in this paragraph into account, a forecast of the rest of this year's registration numbers can be made. The forecast for this year's registration numbers can be seen in the table below. Forecasts are shown in red font to enhance clarity.

FIRST REGISTRATIONS								
December 2019 - December 2020								
	Sep-19	Sep-20	Oct-19	Oct-20	Nov-19	Nov-20	Dec-19	Dec-20
	8 439	8 424	9 371	7 499	8 680	~ 7 000	8 213	~ 6 800

Table 2 First registrations September – December 2019 vs. September – December 2020 (adapted from Autoalan Tiedotuskeskus d; Autoalan Tiedotuskeskus f; Autoalan Tiedotuskeskus g; Autoalan tiedotuskeskus h)

Since the current situation with the COVID-19 virus is getting worse, the prediction is that in November and December 2020, 1400 to 1600 cars less will be registered than in 2019. And when combining the forecasted registration numbers with the rest of the registration numbers from this year (approximately 80 900 passenger cars), the forecast for the total number of new passenger car registrations for this year is 94 700. Forecasting the next year, 2021 will be a harder task. What makes it hard is the COVID-19 pandemic's situation and the uncertainty related to it. There have been several estimates of how long the pandemic will last and when will societies get back to normal permanently. Experts who have been researching the COVID-19 virus have given different views of when societies can return to normal life. It has been estimated that the first vaccines against the virus are being released in early 2021 and from the release of the vaccine the taming of the virus can be started (Kuuskoski K., Söderkultalahti O. 2020). It is clear that as long as the pandemic and its effects like lockdowns and regulations continue, the passenger car market in Finland will continue struggling and at least early 2021 won't be an exception. If the COVID-19 vaccine will be released in early 2021 and the vaccine program will get implemented quickly in Finland, late 2021 might be a start for the return of a normal life which in turn will normalize consumer behavior. This means that at the end of 2021, the new registrations of passenger cars of that year will most likely be in the same numbers as this year's registrations, perhaps a bit higher. The forecast based on this year's registration

numbers is that the number of new passenger car registrations will most likely be close to 100 000 registrations.

The year 2022 won't most likely be impacted by the COVID-19 virus as much as the year 2020 and 2021. This means that as the regulations and sanctions caused by the pandemic are lifted, the economy will heal as people are less afraid to consume products and services. This also impacts the passenger car registrations in Finland. Consumers will be more willing to buy new cars as the COVID-19 situation is getting better. This leads to more new registrations than in the years 2020 and 2021 which COVID-19 has hit the worst. Based on the first registration statistics and predictions made in the former paragraphs, the year 2022 will have between 110 000 and 115 000 new registrations. In 2023, the COVID-19 pandemic will likely be mostly over except for some occasional cases in countries where the vaccination program hasn't reached. Most of the Finnish population will likely be vaccinated and daily life is close to normal again. This means that the consumers are even more willing and active in buying new cars and the first registrations will likely be higher than in the year 2022. Based on the analyzes and predictions made in the former paragraphs, the first registrations will be between 115 000 and 120 000 registrations. Finally, the first registrations of the years 2024 and 2025 will be the hardest years to predict since the timespan to these years from the current year 2020 is long and therefore difficult to predict correctly. Nevertheless, first registrations will most likely be between 110 000 and 130 000 registrations between the years 2022 and 2025 if the market area is not being faced by anything significant which would have an impact on consumer behavior.

#### **Estimated first registration numbers of passenger cars in Finland (2020-2025)**

<b>2020</b>	~ 94 700
<b>2021</b>	~ 100 000
<b>2022</b>	~ 110 000 - 115 000
<b>2023</b>	~ 115 000 - 120 000
<b>2024</b>	~ 110 000 - 130 000
<b>2025</b>	~ 110 000 - 130 000

Table 3 Estimated first registration numbers of passenger cars in Finland (2020-2025)

The COVID-19 pandemic had and will have an impact on the first registrations of the passenger cars in the Finnish new car market in the following couple of years but the future might have other events and factors that might affect the new car market either negatively or positively. Possible future events and factors can be as sudden as the pandemic happening currently. One of them is a financial crisis that has had a huge, negative impact on the first registrations of new passenger cars in the Finnish car market in the past, pushing

registration numbers down significantly when taking place. A good example is the financial crisis in the years 2008 and 2009 which hit the Finnish new car market harshly (Erkkilä J. 2017). Other impacts on the Finnish new passenger car market can happen also. Apart from the opposite of a financial crisis, rapid financial growth might happen too which will have an opposite, positive effect on the new car market. Another example that might happen is a new, radical change in the taxation system of passenger cars. According to a survey made by Tori.fi, a Finnish online market place, sixty percent of car-buying consumers won't most likely ever buy a new car. Ninety percent of the responders stated that the main reason for not buying a new car is the harsh taxation new cars are suffering. The Finnish government plans to severely reduce the emissions caused by traffic and major action to do this would be the renewal of the vehicle fleet. The vehicle fleet in Finland is one of the oldest in Western Europe with the average age been growing all the while (Palokallio J. 2020b). The need for the renewal of the vehicle fleet might drive the decision-makers to reduce taxation significantly in order to boost new car sales. Also, considering that currently other, greener alternative power sources for cars are being preferred over traditional fossil fuels such as gasoline and diesel by the government but with a growing interest from consumers too, vehicle taxation in the near future might change to be more strict for these power sources. There are already plans by the Finnish government to give tax reductions for example for company cars that use hybrid and electric technology with already existing grants supporting consumers buying a hybrid car or an electric car (Honkamaa A. 2020; Pantzar M. 2020).

In an interview with the company sales manager of Vesijärven Auto Oy, Mika Myllypakka, Myllypakka mentions that he believes the new car sales in the near future will boost up since the car fleet in Finland is currently the second oldest in the European Union. One factor he mentions what might boost the new car sales is a scrapping reward the government has been planning to release. The main reason for the release of this type of grant is to renew the automotive fleet of Finland by replacing old cars with new cars (Myllypakka M. 2020). The scrapping reward itself is a planned system that would be given to a car owner who would have the possibility to replace their old, scrappable car and get a grant to purchase either a brand new car, an electric bicycle, or to use the grant for public transport. The owner's car should be at least ten years old and when the owner gets a scrapping certificate for their old, scrapped car, they would get this reward for certain cars. The grant is for consumers buying a new plug-in hybrid car or an electric car with CO<sub>2</sub>-emissions staying under 95 grams per kilometer. The grant is also applicable when buying new gasoline or diesel-powered car but the CO<sub>2</sub>-emissions should stay below 120 grams per kilometer except for certain exceptions. For natural gas-running cars, there are no

CO<sub>2</sub>-emission limits to get the grant so it is applicable for all natural gas-running car models. The amount of the reward is two thousand euros when buying a plug-in hybrid or a natural gas-running car, and one thousand euros for gasoline and diesel-powered cars. For consumers buying an electric car, they can connect this reward to the already existing grant for electric car buyers which is also 2 000 euros, meaning that the overall benefit for a consumer buying an electric car would be 4 000 euros. The law is meant to come into effect at the end of the year 2020 and would be valid until the end of the year 2021 (Honkamaa A. 2020; Lempinen T. 2020; Myllypakka M. 2020). The scrapping reward itself is a factor that encourages consumers to scrap their old car and buy a new one which might affect the new car sales numbers. Only when the reward system is implemented it can be seen how strongly it will affect the new car sales numbers.

### 3.1.2 Fuel types of passenger cars in the near future

One of the major changes happening now and in the near future of the passenger car market in Finland is the fuel types the passenger cars are and will be using. Car manufacturers around the world have slowly been moving from traditional fossil fuel consuming engines to engines using partly fossil fuels and partly electricity or only electricity. As more and more car manufacturers have released new hybrid or electric passenger car models or made their already existing models a hybrid or an electric version, the more available they have been made for consumers (CarsDirect 2020). Due to this and other factors that will be examined in this subchapter, the number of cars using hybrid technology or electricity as their power source has seen a big boost in the past few years in Finland as seen in Figure 2 and Figure 3. These figures show that the sales of gasoline-powered cars dropped by 2 372 cars, and the sales of diesel-powered cars dropped by 7 072 cars in the year 2019 from the year 2018. The sales of Battery Electric Vehicles (BEV) increased by 1 121 cars from 2018 to 2019, though. Hybrid cars saw a big boost in sales too. Non-chargeable gasoline hybrid cars (HEV) saw a boost of 2 951 cars from 2018 to 2019 while non-chargeable diesel hybrid cars (HEV) saw an increase of 776 cars from 2018 to 2019. Plug-in hybrid cars had a slightly milder increase – from 2018 to 2019 the number of new plug-in gasoline hybrid cars increased by 1 010 cars while the number of new plug-in diesel hybrid cars increased by 24 cars. Finally, cars utilizing natural gas (CNG) followed the same trend – the difference between the years 2018 and 2019 was 980 cars more registered. As a summary, it can be noted that the sales of all alternative fuel vehicles had increased from the year 2018 to 2019 and thus it can be concluded that the sales numbers of these cars will continue their rise while the sales numbers of traditional fossil-fuel cars will get lower (Autoalan Tiedotuskeskus 2020c).



Why have hybrid and electric cars gained popularity in Finland, though? The reason lies behind the technology and its advantages it gives to the consumer using a car utilizing one of these technologies. A hybrid car, as its name says, utilizes two power sources. The other power source a hybrid car uses is fossil fuel like gasoline or diesel and the other one is electricity. There are a few types of hybrids existing. A parallel hybrid car combines the car's transmission it uses to both power sources – the most popular type of transmission being automatic. A series hybrid however doesn't combine both power sources to the car's transmission but rather lets the electric engines give power to the engine, leaving the gasoline engine to give power to the batteries of the electric engines. A plug-in hybrid, instead of using the gasoline engine at all uses electricity which is generated by charging the car from an electric source. If the car runs out of electricity, it uses the gasoline engine the same way as in a normal parallel hybrid. Besides, there are several, different hybrid cars that don't necessarily fit into any of the categories as the hybrid technology they use can be a mix of technology solutions used in different types of hybrid cars. In addition to these hybrid types which are called full hybrids, many modern-day cars can be considered as mild hybrids. Mild hybrids work the same way as full hybrids but their electric engines are not capable of moving the car itself as the electric engines in a full hybrid (Riswick J. 2019). An electric car, as its name says, uses only electricity as its sole power source. An electric car has a battery pack that gives power to the electric engine and the batteries need to be charged by connecting the charger to a power source which nowadays can be found in different, mainly urban locations in Finland such as street sides or supermarket parking lots (Goodwin A. 2020). What does a consumer benefit from this technology, though? The main reason for a consumer to choose a hybrid or an electric car is fuel costs. As a hybrid car or an electric car consumes little or no gasoline or diesel, fuel costs are going to be significantly smaller than in a traditional fossil fuel consuming car. Hybrid cars and electric cars are also additionally equipped with a Start & Stop system. This system saves gas in a way that when the car is being stopped, the car's engine is turned off automatically and when the gas pedal is being pressed, the car's engine is turned on again. This is a factor important for Finnish consumers since in general, distances in Finland are long. An average car driver in Finland drives 15 000 kilometers per year (Jardine Motors Group; Malin R. 2020).

Another major reason for a consumer to choose a hybrid car or an electric car is the yearly road tax and the tax for new cars which is lower for hybrids and electric cars. For the yearly road tax, passenger cars that are registered after 1.1.2001 and weigh less than 2 500 kilograms or passenger cars that are registered after 1.1.2002 and weigh over 2 500 kg are being taxed based on their CO<sub>2</sub> emissions. Passenger cars registered before

those dates are being taxed by their overall mass. Further changes were made for the yearly tax for the year 2016 so that cars that pollute less suffer even smaller yearly tax expenses. For example, a person driving an electric car in which emissions are zero grams per kilometer would have to pay only 70 euros road tax per year. In 2008, the taxation system for newly bought passenger cars in Finland also changed the way that they were taxed from then on by their CO<sub>2</sub> emissions level. This change to the taxation system was made to steer consumers to choose less polluting cars. For the year 2016, a new change for car taxation was made at the same time as the change for the road tax. From 2016 and onwards, passenger cars polluting less than 140 grams per kilometer would get reductions to their buying tax while cars polluting over that amount would get no changes to their buying tax. Again, this change was made for consumers to favor less polluting cars (Autoalan tiedotuskeskus a; Autoalan tiedotuskeskus c; Jardine Motors Group). Finally, hybrid cars and electric cars are also technically quite advanced. As mentioned in the fourth paragraph, hybrid and electric cars feature the Start & Stop – system as standard, and also they always feature an automatic gearbox as standard (Jardine Motors Group; Santos J. 2020). This means that they hold up their value well when they are being resold (Jardine Motors Group).

The survey made for this thesis backs up the statement that cars using an alternative power source such as hybrid cars and electric cars have sparked interest among Finnish consumers. 64,1 percent of responders who owned a car stated that their car uses gasoline as fuel while 28,1 percent of responders stated that their car used diesel. Only 3,9 percent of survey responders owned a gasoline-hybrid car and 4,0 percent of responders owned a car using some other fuel type. According to the survey, 29,1 percent of responders would buy a gasoline-powered car as new or as used. As gasoline-powered cars have been the traditional cars Finnish consumers have been driving, as seen from the survey too, it is not a surprise that they would still be a popular option among consumers. But then, coming as second, 20,6 percent of responders would buy a gasoline-electric hybrid car, and 13,3 percent of responders would buy a plug-in gasoline-electric hybrid car. Fully electric cars had a notable portion in the survey too (7,9 percent) and 6,7 percent of responders would buy a gasoline-powered car with a CNG (compressed natural gas) tank. Finally, diesel-powered cars were the third most popular option in the survey with 18,2 percent. The results of the survey mirror quite well which way the trends of fuel types in recent years have been going and which way they are heading.

Future of fossil-fuel-powered cars	
2023-2025	Electric cars reaching competitive prices with fossil-fuel cars
2028	Hybrid cars/electric cars reaching sales numbers of fossil-fuel cars
2030	Sales of diesel-powered cars will come to an end
2035	Sales of gasoline-powered cars will come to an end
2040-2050	Production of fossil-fuel cars will come to an end

Table 4 Future of fossil-fuel-powered cars (adapted from Myllypakka M. 2020; STT 2020)

Since the statistics are showing that hybrid cars and electric cars are getting more and more popular among Finnish consumers, a question will inevitably arise – what will happen to cars using fossil fuels in the near future? Most likely, it doesn't take too long for electric cars and hybrid cars to reach the sales numbers of cars using fossil fuels, according to various experts working in the field of automotive industry and market in Finland. According to Outi Ampuja, an expert working for the Finnish Transport and Communications Agency (Traficom), new electric cars will reach competitive prices with gasoline and diesel-powered cars between the years 2023 and 2025. For the year 2028, the CEO of Autoalan Keskusliitto (Congress of Automotive Industry), Pekka Rissa forecasted that electric cars and hybrid cars will reach the sales numbers of fossil fuel running cars. A similar forecast is made by Mika Myllypakka who has been dealing with hybrid cars for the past 23 years. Myllypakka forecasts that it takes only a few years until hybrid and plug-in cars will reach the sales of fossil fuel cars. Myllypakka says that a consumer is being motivated to buy a hybrid or an electric car by the government grant system for low-polluting vehicles, the lower taxation system, and the smaller carbon footprint when buying and using a non-fossil-fuel car (Myllypakka M. 2020).

According to a report published by the Ministry of Transport and Communications, the sales of new gasoline-powered cars will halt in 2035 with the sales of diesel-powered cars stopping a bit before (STT 2020). This is also being estimated by VTT Technical Research Centre of Finland and Mika Myllypakka, the company sales manager of Vesijärven Auto Oy. Myllypakka believes that the sales of diesel-powered cars will become to an end at the latest in 2030 and the sales of gasoline-powered cars will halt during the next ten years after the halt of diesel-powered cars' sales. According to Myllypakka, the impact of the halt of diesel and gasoline-powered cars will only be positive (Myllypakka M. 2020). Rissa also forecasted that the production of gasoline and diesel-powered cars will come to halt in the 2040s or 2050s. According to Rissa, it will be a completely new situation in the automotive industry and market when the sales and later the production of gasoline and diesel-powered cars will come to halt. The end of sales of fossil fuel-powered cars might somehow affect their aftermarket trade value but it is not easy to forecast in which way it

will (STT 2020). The policies made by other European countries, especially the policies of other Nordic countries might also have an impact on the legislative decision that will be made in the near future considering fossil fuel-powered cars. Norway wants to stop selling fossil-fuel-powered cars by 2025 and Sweden, Denmark, and Iceland have decided to end the sales by 2030 (Matintupa M. 2019).

### 3.1.3 New passenger car types and other trends in the near future

Besides the fact that there is a change going on in the fuel types preferred by Finnish consumers in their passenger cars, other currently evolving trends will also take place in the Finnish new car market. This sub-chapter will handle the new passenger car types and other trends of the automotive market of Finland in the near future.

What kind of passenger car types will Finnish consumers prefer in the near future? Since there are no official statistics available of the most popular cars by their body types or by their segment types, Table 1 must be used as a help to determine the favorite car types of Finnish consumers in the near future. In Table 1, the top twenty most popular passenger car models from the year 2015 to the year 2019 are being presented. Table 1 shows that from the year 2015, C-Segment (Compact) passenger cars have had the most models among the top twenty most popular, followed by B-Segment (Supermini) cars. But the table also shows that J-Segment (Sport Utility Vehicles and Crossovers) cars have had an increasing amount of models among the favorites in the years 2018 and 2019. As such, also Mika Myllypakka believes that in the near future, B-Segment and C-Segment city-cross cars will rise to fame among Finnish consumers (Myllypakka M. 2020). Since these B-Segment and C-Segment city-cross-over cars feature off-road features, they can and many times are being classified into the J-Segment category. The survey made for this thesis further confirms that J-Segment and B/C-Segment cars will continue to be popular in the Finnish market. The top three car types owned by the survey responders are hatchbacks (35,9 percent), station wagons (22,7 percent), and sedans (21,1 percent). The majority of the survey responders would either buy a hatchback (25,5 percent of responders) or a sports utility vehicle (26,7 percent of responders) either as new or as used. 17 percent of responders would buy a station wagon and 15,2 percent of responders would buy a sedan. In summary, it can be concluded that the preferred type of passenger cars Finnish consumers will buy in the near future will mostly be the same type of cars that are currently among the favorites but with the J-Segment/cross-overs standing out by growing in terms of popularity significantly, leading the market's favorite segments.

### DEVELOPMENT OF SALES OF NEW CARS BY GEARBOX TYPE (2010 – 1-9, 2019)

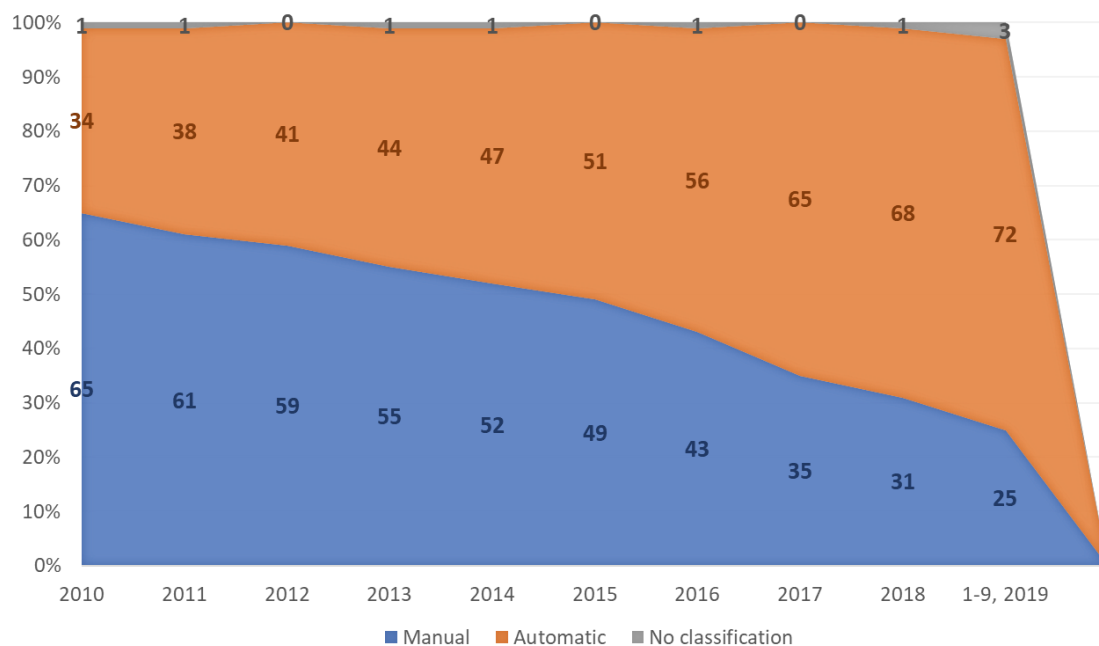


Figure 8 Development of sales of new cars by gearbox type (2010 – 1-9, 2019) (adapted from Rönkkö P. J. 2020a)

One of the most notable, current trends in the Finnish car market is the decline of cars using a manual or a stickshift gearbox and the increase in the popularity of cars with an automatic gearbox. The figure above shows that whereas in 2010 the number of new cars sold with a manual gearbox was 65 percent, the same number in January – September 2019 was only 25 percent. Meanwhile, the number of cars with a traditional automatic transmission or with a continuously variable automatic transmission (CVT) has increased from 34 percent of the year 2010 to 72 percent of the year 2019 (January – September). When viewing the whole current car fleet of Finland, approximately half of the cars still have a manual gearbox (Rönkkö P. J. 2020b). The shift from manuals to automatics will be quick, though. Mika Myllypakka estimates that it will take a maximum of five years until cars with manual gearboxes will be mostly replaced by cars with an automatic gearbox (Myllypakka M. 2020). Why have cars with an automatic transmission gotten so popular in Finland, though? There are several reasons for this. Firstly, many consumers nowadays consider a car to be more than just a way for transportation and demand more comfortability. An automatic transmission demands much less attention from the driver as gears are not needed to be changed all the time and the lack of a clutch pedal means also that the driver only has to press the brake and gas pedals. An automatic transmission is also easier for the driver because the lack of a clutch pedal means that a hill start or a normal

move from a stop doesn't demand anything else from the driver than just a press of the gas pedal and thus there is no danger for the driver to stall the car from an error of using the clutch pedal. Manual gears will still feature in certain types of cars in the near future, though. For example, many sporty car models such as the BMW M3 and the BMW M4 are being preferred as manuals because of the tradition of sporty cars having a manual transmission (Rönkkö P. J. 2020a; Sortter 2020). The increase in the popularity of cars with automatic transmissions will also have an impact on the driver's licenses which are being driven. In Finland, a driver's license can be driven either with a car with a manual gearbox or a car with an automatic gearbox. If a person decides to complete their driver's license with an automatic car, they'll get a special mark on their driver's license to be only allowed to drive a car with an automatic gearbox. Because of this, one to three percent of people complete their driver's license with an automatic car. The share of drivers driving their driver's license with a car mated to an automatic gearbox is going to increase in the near future, though. Since automatic gearboxes are now a more popular option when buying a new car, this also increases the amount of used automatic cars which in turn increases the share of automatic cars in the Finnish car fleet. This means that new drivers won't have a big need for a driver's license with permission to drive both manual and automatic cars (SE Makinen).

Another trend that also stems from the increased need of a modern-day consumer for comfortability is self-driving robot cars. Self-driving programs have already been tested out by different automotive producers and carmakers of which Tesla has been one of the pioneering companies to test out self-driving robot technology (Sortter 2020). In Finland, there are already plans and preparations been made for the arrival of self-driving robot cars and vehicles. In Helsinki for example, the city's innovation company has been testing out robotized minibusses traveling short distances with a low speed (Mokkila M. 2020). Another sign of the preparation of the coming of robot cars is the replacement of yellow lane lines with white lines during a three-year period. The main reason for the replacement is the easier visibility of white color for the human eye but also for a camera which a robot car utilizes to observe its surroundings (Koskinen A. L. 2020). One of the main advantages of this self-driving robot technology used in cars is the robot AI making the decisions on the road instead of a human driver which would eliminate human-made errors and thus decrease the number of road accidents (Sortter 2020). A robot AI, as the driver of the vehicle, will also eliminate the risk of a human driver being tired, having a sudden attack, or being under the influence of alcohol or narcotics. Robotized cars do have downsides too, though. One problem is the weakness in recognition and observation made by the robot car via cameras. A robot car's camera is able to recognize an object in the road

but won't recognize the material of the object. The reaction speed is also a problem for the robot car's camera. If an object suddenly gets in the way of the car, the car might not be able to react to the situation fast enough whereas a human is more probable to act fast enough to avoid the collision. This problem occurs, especially in dark. A major problem for the robot car's camera also is snow. In Finland, where it is snowy in the winter, lane lines are covered by snow and as such create recognition problems for the robot car's camera (Koskinen A. L. 2020). In conclusion, it can be stated that robot cars will most likely be part of the future in Finland but they certainly need a lot of improvement operating nearly immaculately.

#### 3.1.4 Chinese cars in the new car market of Finland in the near future

China has been the biggest operator in the automotive manufacturer area since 2009. The year 2018 saw China manufacturing thirty percent of the cars in the world. (Wong S. 2020). Still, Chinese cars are yet to enter the Finnish automotive market and there are a few reasons for this. The first reason is the concern for quality and safety. In the last decade, most of the Chinese car manufacturers went for reverse engineering which meant the manufacturers using technology already been developed by other, foreign automotive manufacturers. This meant that a limited amount of tests were made to assure that the quality was on point and this led to bad product quality (Dytianquin F. 2020). Cars sold in Europe have to pass certain levels of quality and that has been a problem for various Chinese manufacturers. Safety hasn't been either a trait where Chinese carmakers did well. Chinese carmaker Brilliance had to cancel its car models' launch in Europe because of poor results in the Euro NCAP – crash tests (Tisshaw M. 2018). This is an example among other manufacturers why many Chinese cars couldn't be sold in Europe – their safety simply hasn't been at the level of European standards. A final major reason is the design culture Chinese carmakers have practiced over the years. Since Chinese automakers have been saving in technology by using the technology of foreign car models, they have been doing the same thing with the design of their products. Chinese carmakers became notorious for copying different car model designs and applying them to their own models. Some of these copies were done legally by obtaining licenses from other carmakers but some design copies have been illegally implemented, bringing up lawsuits against the copying carmakers. As an example, a Chinese carmaker called Shuanghuan copied the design of the German carmaker BMW's X5 and used it in its SCEO-model which was sold in Germany. As a result, BMW sued Shuanghuan and the carmaker was forced to withdraw its model from the German market (Autocar 2020). These factors have gained Chinese carmakers a reputation and thus prevented their entrance to the Finnish

market even though plans have been made in the past. For example, back in 2009, it was reported that Chinese carmaker Great Wall would start selling its models in all Nordic countries in 2011 or 2012. The company already made a deal with International Motors Nordic Ab, the importer of the car make Subaru. For unknown reasons, though, plans didn't work out with the company and the Finnish car market didn't get to see the entrance of the first Chinese carmaker and brand (Heikura M. 2009).

In recent years, though, Chinese automotive manufacturers have improved their models in terms of quality, safety, and design. One aim for these manufacturers is to start sales in Europe and Finland is one country among others the carmakers have been eyeing (Tisshaw M. 2020). When will Chinese passenger cars enter Finland, though? Mika Myllypakka doesn't believe currently that Chinese cars will enter the Finnish market because of their problems in terms of safety and design (Myllypakka M. 2020). Still, some Chinese carmakers have already done some preparation work for the entrance to the Finnish car market. A Chinese carmaker called Byton, which manufactures electric cars, made a letter of intent with the Finnish automotive retail company Laakkonen Yhtiöt. The same carmaker has already aimed at the Scandinavian and Central European markets and 14 000 pre-orders have already been made in Norway. The news source found from 2019 is the latest source found of a Chinese carmaker entering the Finnish car market and there is a reason why – COVID-19. Byton planned to deliver its first models to Europe in 2020 and make a launch in Spring or Summer 2021 (Pitkänen K. 2019). The most recent news found from Byton's official website is from March 2020 and the news the company published announced that Byton targets to enter the European markets by the end of the year 2021, later than what was originally planned (Byton 2020). Because of the COVID-19 virus, Chinese carmakers like Byton will most likely delay their plans to enter Europe and Finland. This means that the Finnish car market, most likely, won't see any Chinese carmaker enter before the worst phases of the virus will be over. But since some Chinese automotive makers like Byton have already been making serious plans to enter Europe and have improved their models to match rivals sold in Europe, it can be likely that the Finnish passenger car market will receive its first Chinese passenger cars during the 2020s.

### 3.2 The used passenger car market of Finland in the near future

The biggest impact on the new passenger car market currently and has undoubtedly been the COVID-19 virus which will affect the new passenger car market also in the near future. How will the used passenger car market's near future look like, though? In this subchapter, the near future of the Finnish used passenger car market will be researched and reviewed with the help of available statistics and sources.



### 3.2.1 Used passenger car sales in Finland in the near future

In order to predict the sales numbers of the used passenger car market in Finland, statistics from last year must be examined. Also, current trends such as the aging vehicle fleet and the ongoing COVID-19 situation must be taken into account.

#### **Estimated sales numbers of used cars in Finland (2020-2025)**

<b>2020</b>		~ 627 400		
<b>2021</b>		~ 620 000 - 640 000		
<b>2022</b>		~ 620 000 - 640 000		
<b>2023</b>		~ 620 000 - 640 000		
<b>2024</b>		~ 620 000 - 640 000		
<b>2025</b>		~ 620 000 - 640 000		

Table 5 Estimated sales numbers of used cars in Finland (2020-2025)

The first year which is to be predicted first is the whole current year, 2020. Last year, in 2019, 625 064 used cars were sold which was 8 998 cars less than in 2018. This year, from January to October, 537 426 used cars have been sold. Now, the last two months, November and December, must be predicted to get an overall number of the sales of 2020. The statistics show that the sales of Spring months were only a bit lower compared to 2019 with April being an exception, having 9 430 cars less sold than the year before. Summer months and Autumn months have been more successful in 2020, with either almost the same sales numbers or higher sales numbers achieved. As the sales numbers of August (60 419 sales in 2019 versus 60 922 sales in 2020), September (57 864 sales in 2019 versus 59 896 sales in 2020), and October (58 318 sales in 2019 versus 58 283 sales in 2020) have been close to last years' sales numbers, a prediction can be made for the last two months of the year 2020. November of 2020 will most likely have approximately 49 000 sales since November last year had 48 469 sales. December 2020 will have approximately 41 000 sales compared to December of last year which had 40 171 sales. This means that the used car sales this year in total will be approximately 627 400, a couple of thousand more than last year (Finnish Transport and Communications Agency 2020d).

The year 2021 and the years after are much more difficult to predict. Factors such as the progress of the COVID-19 situation in Finland, the sales of new passenger cars, the number of used car imports to Finland, the average age of the vehicle fleet, and possible

legislative changes will have an effect on the used car sales numbers. If the new car sales numbers will go up as predicted in Table 2, used car sales will go up too since more consumers are willing to dispose of their used cars in favor of a new car. This year has been a minor exception, though. Because of the COVID-19 situation, more consumers have opted to use a car rather than public transportation. Mika Myllypakka also states that the used car imports have had a major impact on the used car sales numbers and this is caused by the ongoing COVID-19 situation. Since the new car sales have sacked, the natural secondhand car cycle is slower and because of this, used car dealerships have imported more used cars from abroad to avoid the store stocks having a shortage (Myllypakka M. 2020). The increase in the number of used car imports in recent years has increased the number of affordable cars available in the Finnish used passenger car market, which is another reason for the boost in the sales numbers (Autoalan Tiedotuskeskus 2020b; von Bell C. 2018). Also at the same time, the average age of the vehicle fleet in Finland has been growing which means that more used cars are available in the Finnish used car market (Finnish Transport and Communications Agency 2020a). The growing average age of the vehicle fleet is partly because of the low sales numbers of used cars but also because of the growing number of used car imports too. In a summary, it can be concluded that the number of sold used cars between the years 2020 and 2025 will most likely follow the current trend if no sudden events impacting the used car market will happen. The most less likely event to happen is a major drop in the used car sales numbers. This statement is backed up by Mika Myllypakka who states that the demand for used cars will grow significantly in the coming years (Myllypakka M. 2020). Also, Kamux which is a Finnish used car dealership chain store expects their used car sales to reach 74 417 sold cars in 2022 which is sixty percent more than in 2018 when they sold 46 596 used cars (Kamux 2020). Thus, it can be stated that the used car sales numbers in the next five years will be in the same range as in recent years but most certainly won't drop.

### 3.2.2 Used passenger car importing in Finland in the near future

Passenger car imports from foreign countries to Finland have been increasing since the year 2014 when only 19 047 used passenger cars were imported to Finland. The year 2014 was an all-time low year with fewer cars imported last time in 2002. From 2014, though, used car import numbers started to go up, and in the years 2018 and 2019, more cars were imported to Finland than ever before. The year 2018 saw 39 690 used cars imported which was over 10 300 cars than in 2017. The year 2019 continued breaking the record with 45 912 cars imported (Autoalan Tiedotuskeskus 2020b). The main reason for the success of used car imports has generally thought of being the current automobile

taxation system implemented (Kuurio H. 2020). What will the future of used passenger car imports look like, though?

### **Estimated import numbers of used cars (2020-2025)**

<b>2020</b>	~ 46 500
<b>2021</b>	~ 50 000 - 55 000
<b>2022</b>	~ 54 000 - 60 000
<b>2023</b>	~ 57 000 - 62 000
<b>2024</b>	~ 60 000 - 65 000
<b>2025</b>	~ 62 000 - 67 000

Table 6 Estimated import numbers of used cars (2020-2025)

The first year which should be predicted is the current year, 2020. The CEO of the Association of Automobile Industry in Finland, Tero Kallio, estimated in July 2020 that the year 2020 could be a record year for used car imports, despite the ongoing COVID-19 situation (Jokela M. 2020). Now, according to Traficom's online database, used car imports from January 2020 to October 2020 account 36 293 cars. 9 917 cars were imported last year, 2019, in November and December (Traficom 2020b; Traficom 2020c). If in this year's November and December over 9 619 cars will be imported, the record for car imports will be broken. Most likely, the import numbers for November and December of 2020 will be at least as much as last year so the likelihood for a record-breaking number of used imported cars is significant. It can be predicted that the overall number of imports will be quite close to last year's number but that it will still be a bit bigger than last year. The import numbers for the years 2021-2025 are harder to predict but when the current trends are taken into account, it can be concluded that the number of used car imports will grow if no major changes in the taxation regarding both the used car imports and the new cars will not change. This growth is being estimated also by Kamux, a Finnish used car dealership chain store. In their business report, Kamux estimates that the growth percentage of used car imports from Germany and Sweden will be high in the upcoming years (Kamux 2020). Currently, Sweden exports over 100 000 used cars per year (MTV Uutiset 2020). There is a possibility that the Finnish government will at some point take action into the current trend of increased used car imports. Used car imports are one reason for the obsolescence of Finland's car fleet as they are replacing new car sales and registrations. This is backed up by the statistic that over sixty percent of cars imported to Finland are over eight-years-old, diesel-powered cars (MTV Uutiset 2020). And since the government

has set emission targets of which one part is to renew the car fleet, it can be possible that the government will update the taxation system to be more favorable for consumers to buy new cars instead of domestic used cars or imported used cars from abroad (Lähitapiola 2020).

### 3.2.3 Other trends in the used passenger car market in Finland in the near future

The evolution of the used passenger car market in Finland has been generating different trends that will evolve more in the near future. One of the major changes in the used passenger car market is the digitalization of the used car market. Traditionally, a consumer would go to visit the used car dealership itself to see the car the consumer is interested in. Partly because of the ongoing COVID-19 pandemic, more and more consumers are not going to see the car but are relying on the information made by the seller via the internet. One way that a consumer would be getting more information about the car would be a video tour of the car made by the seller via an app such as FaceTime. After that, if the consumer is willing to buy the car, they will get the car delivered to their home. Used car purchases made this way will most likely get even more popular in the near future with the help of the technology available (IS 2020; Lähitapiola 2020). Another trend that has recently been getting more and more popular in Finland is online used car auctions with one of the most popular auction sites on the internet being Huutokaupat.com. The overall estimated amount of used passenger cars sold yearly on auctions is 50 000 cars with approximately half of them sold on the Huutokaupat.com website. Especially during the COVID-19 pandemic, the sales on the website have been busy. In the near future, Huutokaupat.com estimates that their yearly growth will be between fifteen to twenty percent. The auction system itself is a useful way to get rid of an old car. Since the car fleet of Finland is getting older, car auctions are an alternative option for consumers and car dealerships to sell their older and cheaper cars besides the traditional way of selling (Tiihonen O. 2020). As the used car market has continued its digitalization, online car auctions will most likely, as Huutokaupat.com has predicted, become even more popular (Lähitapiola 2020).

## 4 CONCLUSIONS

### 4.1 Validity and reliability

Reliability and validity in research are determining the quality of the research. Reliability measures the consistency of the research results and validity answers how accurate the research results are (Middleton F. 2020). In this thesis, the reliability of the research results is acceptable though the near future part of the thesis can generate different results depending on how up-to-date the resources are. The newer the resources are, the more reliable they are. As an example, an article published by the Finnish Transport and Communications Agency in May 2020, predicted that the first registrations of passenger cars in 2020 will be approximately 85,000 (Autoalan Tiedotuskeskus 2020a). Updated statistics provided by the same source in November 2020 indicated that the first registrations of 2020 will be higher than what they predicted in May 2020 (Finnish Transport and Communications Agency 2020c). Different online sources where different experts were being interviewed created similar results when they were analyzed and put together. These sources complied with the official statistics found from official statistics sites such as the website of the Finnish Transport and Communications Agency. The interview made for this thesis itself complied the same line and the survey results followed the same pattern, too. Validity wise, it cannot be fully known how valid the thesis results are. The past and the present part of the thesis can be said to be valid. The validity of the near future part of this thesis, though, can be fully evaluated only later when the predictions are supposed to take place. In a conclusion, even if the reliability of this particular thesis topic would be at a good level, the validity for the near future part can never be fully verified since the near future is not easy to be fully predicted correctly.

### 4.2 Recommendations for future work on the topic

For future work on this particular topic, it is recommended to always do research on the past and the present of the passenger car market before starting to predict the near future to be able to understand the possible future changes in the market and the reasons behind them. Using valid sources is vital and opinion-based sources, even if they come from a field expert, should be carefully analyzed for their legitimacy. A diverse amount of resources are also needed since some statements and opinions from the experts of the automotive industry might differ from each other.

## 5 SUMMARY

This chapter will give a summarized answer to the main research question of this thesis. Additionally, it will conclude and summarize what was found in the research. The main research question of this thesis is what will the near future of the passenger car market look like. The answer to this question is not as simple as this thesis handles different aspects of the Finnish passenger car market. Firstly starting from the new car market, it can be concluded that the sales numbers in the market will most likely grow in the next five years from the current, COVID-19 affected low sales numbers. Possible aid and changes for example to passenger car taxation from the decision-makers might boost new car sales as the goal is to renew the car fleet of Finland to meet emission goals. Emissions play a significant role also in the change of engine types that new passenger cars are using. Currently, Finland will be seeing a historical change. Traditional, fossil-fuel-consuming passenger cars are being replaced by passenger cars using an engine with either electricity and a fossil-fuel as fuel, or plain electricity. During the writing of this thesis, it was found out that the change is actually not that far away and that the Finnish new passenger market will most likely see new hybrid and electric passenger cars become as popular as passenger cars using traditional fuels in this decade. Other growing near-future trends in the new car market were also handled. From the type of cars, it can be concluded that J-Segment crossover SUV's will grow in the term of popularity while B/C-Segment cars will also be among the most popular in the near future, too. Automatic transmission will become the new mainstream in the Finnish new passenger car market, mostly replacing the traditional manual transmission likely already in this decade. This is partly because of changing consumer demand but also because of the development of technology. Related to the development of technology are also self-driving robot cars. The research in this thesis, though, concluded that these types of cars won't most likely debut in the new passenger car market in the near future. Finally, Chinese cars and their possibility to enter the Finnish new car market were examined. It was concluded that Chinese cars might enter the Finnish automotive market in this decade as Chinese cars have developed rapidly in recent years and several Chinese manufacturers are planning to enter Western European markets. The used passenger car market in Finland will also face some changes but not as radical as the new passenger car market. Sales numbers of used passenger cars will most likely not drop in the next five years but a massive increase in sales numbers might not happen either. Used passenger car imports, though, will keep on increasing in the near future if the new passenger car registrations will stay low and if laws and taxes regarding the imports will stay the same. Sweden and Germany will most likely stay as the top export countries for Finland. Finally, the used passenger car market in Finland will

also continue its digitalization in the near future. Online car auctions as well as buying a car online without seeing the car physically itself will get more frequent.

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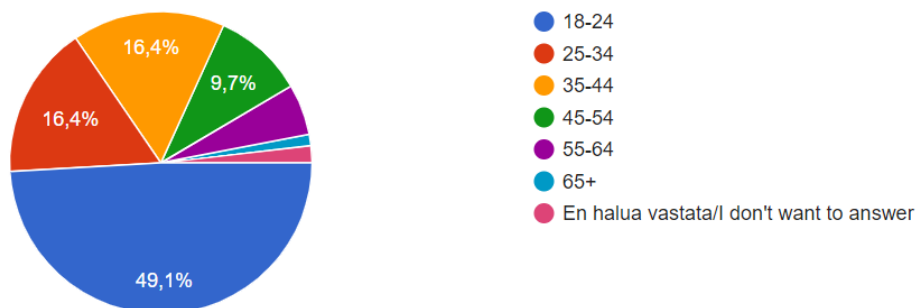
## APPENDICES

## Appendix 1. Survey: The future of the passenger car market in Finland

## Question 1

Ikä? / Age?

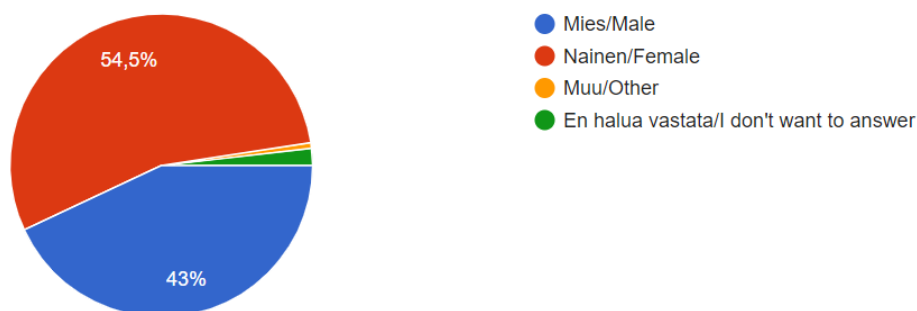
165 vastausta



## Question 2

Sukupuoli? / Gender?

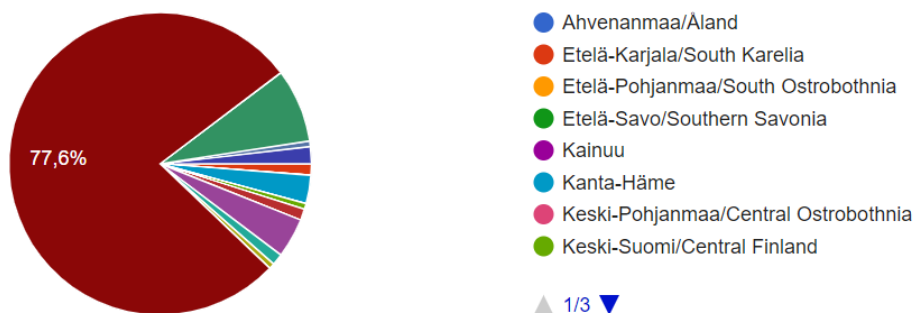
165 vastausta



## Question 3

Missä Suomen maakunnassa asut? /Which region of Finland do you live?

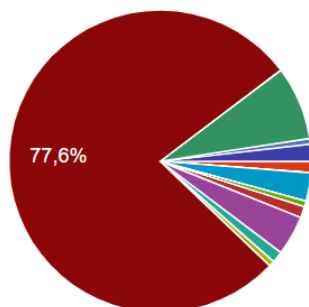
165 vastausta





Missä Suomen maakunnassa asut? /Which region of Finland do you live?

165 vastausta

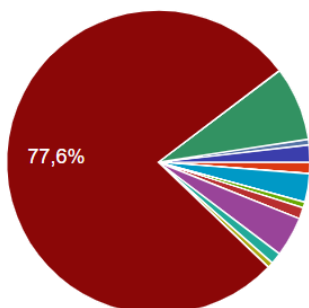


- Kymenlaakso
- Lappi/Lapland
- Pirkanmaa
- Pohjanmaa/Ostrobothnia
- Pohjois-Karjala/North Karelia
- Pohjois-Pohjanmaa/North Ostrobothnia
- Pohjois-Savo/Northern Savonia
- Päijät-Häme/Päijänne Tavastia

▲ 2/3 ▼

Missä Suomen maakunnassa asut? /Which region of Finland do you live?

165 vastausta



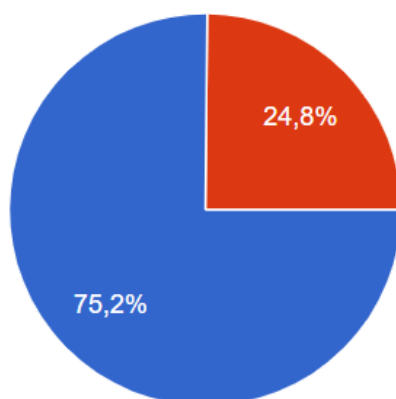
- Satakunta
- Uusimaa
- Varsinais-Suomi/Southwest Finland
- En halua vastata/I don't want to answer

▲ 3/3 ▼

Question 4

Omistatko auton? / Do you own a car?

165 vastausta

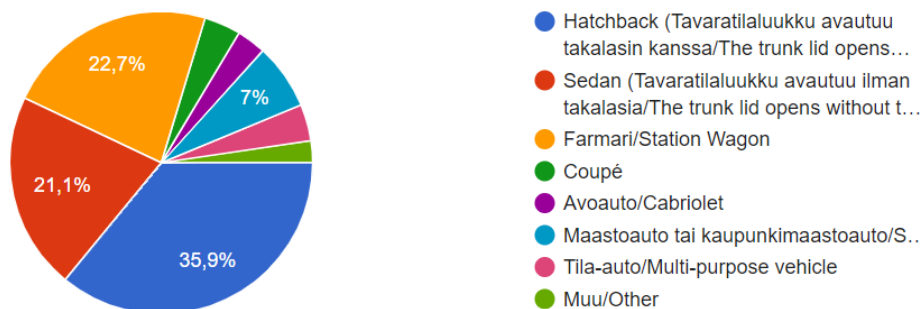


- Kyllä/Yes
- Ei/No

Question 5

Jos omistat auton, minkätyyppinen omistamasi auto on? / If you own a car, what type of car do you own?

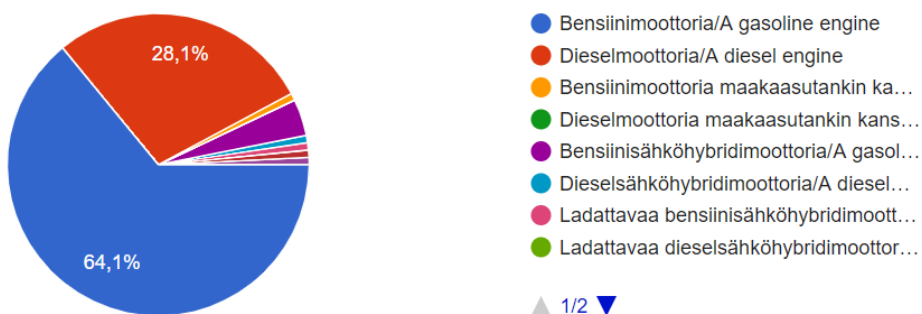
128 vastausta



### Question 6

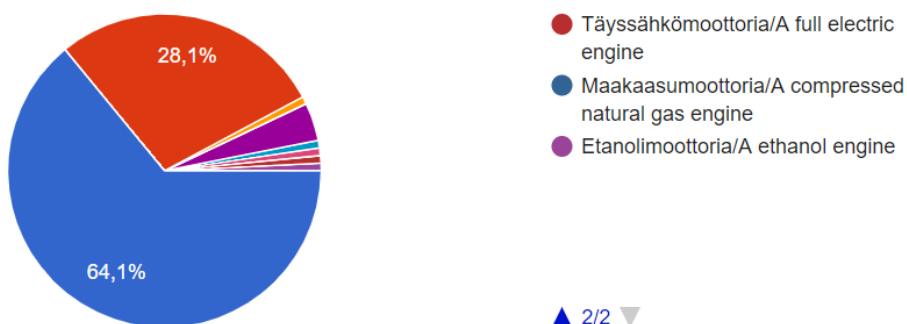
Mitä voimanlähdettä autosi käyttää? / Which power source does your car use?

128 vastausta



Mitä voimanlähdettä autosi käyttää? / Which power source does your car use?

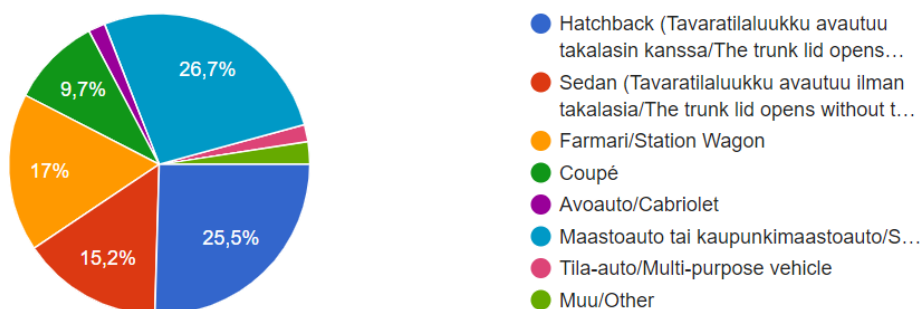
128 vastausta



### Question 7

Jos ostaisit uuden tai käytetyn auton, minkätyyppinen valitsemasi auto olisi? / If you would buy a new or a used car, what type of car would you buy?

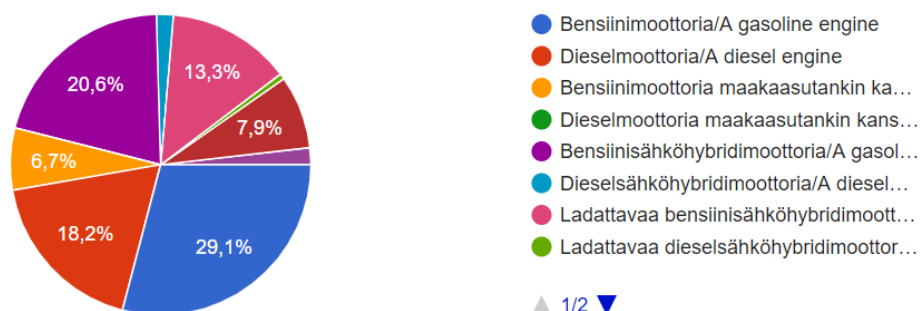
165 vastausta



### Question 8

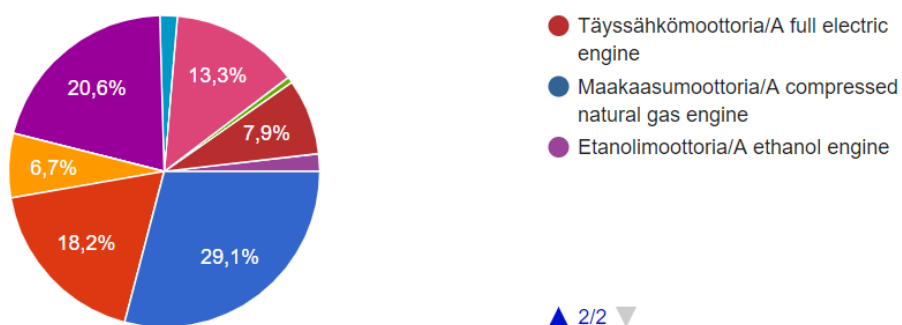
Jos ostaisit uuden tai käytetyn auton, mitä voimanlähdettä suosisit? / If you would buy a new or a used car, which power source whould you prefer?

165 vastausta



Jos ostaisit uuden tai käytetyn auton, mitä voimanlähdettä suosisit? / If you would buy a new or a used car, which power source whould you prefer?

165 vastausta



## Appendix 2. An interview with the company sales manager of Vesijärven Auto, Mika Myllypakka

### Questions

1. Nimi, yritys, yrityksen sijainti ja työrooli. / Name, company, company location and work role.
2. Kuinka kauan olet tehnyt nykyisen alasi töitä? / How long have you been working in your current field?
3. Mihin suuntaan uskot uusien autojen myynnin menevän Suomessa seuraavan viiden vuoden aikana? / In which direction do you think the new car sales will go in Finland in the next five years?
4. Uskotko hybridi -ja sähköautojen myyntilukujen saavuttavan bensiini -ja dieselautojen myyntiluvut seuraavan 10 vuoden aikana? Mikä motivoi mielestäsi kuluttajaa ostamaan hybridauton tai sähköauton? / Do you believe that the sales numbers of hybrid and electric cars will reach the sales numbers of gasoline and diesel cars in the next 10 years? What in your opinion motivates a consumer to buy a hybrid car or an electric car?
5. Uskotko että bensiini -ja dieselautojen myynti tullaan kieltämään 20-30 vuoden päästä? Mitkä uskoisit kiellon vaikutukset olevan? / Do you believe that the sales of gasoline and diesel cars will be prohibited in 20-30 years?
6. Minkätyylisiä uusia autoja uskot suomalaisten kuluttajien ostavan 5-10 vuoden sisällä ja miksi? (Esim. katumaasturi, sedan, hatchback) / What type of new cars do you think Finnish consumers will buy in the next 5-10 years and why?
7. Uskotko automaattivaihteisten uusien autojen syrjäyttävän lähes kokonaan manuaalivaihteiset uudet autot 5-10 vuoden sisällä ja miksi? / Do you believe that new cars with automatic transmissions will almost fully replace manual transmission cars in the next 5-10 years and why?
8. Uskotko kiinalaisten automerkkien tuloon Suomen automarkkinoille 5-10 vuoden sisällä? / Do you believe that Chinese car brands will debut in the Finnish car market in the next 5-10 years?
9. Mihin suuntaan uskot käytettyjen autojen myynnin menevän Suomessa seuraavan viiden vuoden aikana? / In which direction do you believe the sales of used cars will go in Finland in the next five years?

10. Uskotko käytettyjen autojen tuonnin ulkomailta kasvavan vai laskevan seuraavan viiden vuoden aikana ja miksi? / Do you believe that the importing of used cars from abroad will rise or fall in the next five years and why?

#### Answers

- 1) Mika Myllypakka , Vesijärven Auto Oy Lahti
  
- 2) 34 vuotta / 34 years
  
- 3) uusien autojen myynti tulee nousemaan, koska nykyinen autokanta on Euroopan toiseksi vanhin.(2021 tulossa Valtion romutuspalkkio) / New car sales will rise because the current car fleet is the second oldest of Europe (2021 national Scrapping Reward)
  
- 4) Olen itse ollut hybridi autojen kanssa tekemisissä jo 23v ja nähnyt niiden huikea nousun vuosi vuodelta ja on vain muutaman vuoden siirtymä, kun hybridi ja lataus autot hallitsee. Kuluttajaa motivoi Valtion tuki/verotus sekä hiilijalanjälki sitä kautta tuleva jälki-kasvu. / I have worked with hybrid cars already 23 years and seen their amazing rise year after year and it takes only a few years for hybrid and plug-in cars to dominate. The consumer is being motivated by government grants/taxation and carbon footprint and the after growth connected to it.
  
- 5) Diesel tullaan mielestäni kieltämään viimeistään 10v aikana ja sitten bensiini seuraa siitä varmaankin samat 10v. Vaikutukset ovat pelkästään positiiviset. / In my opinion, diesel will be prohibited the latest in 10 years and the prohibition of gasoline follows probably in the next 10 years. Influences will be only positive.
  
- 6) Uskon , että Suomalaisten suosikiksi nousee Hybridi/ ladattavat city cross tyyppiset B-C segmentin autot eli ns. katumaasturit. Itselataavat hybridit ovat jo ottaneet markkina johtajuuden ja ladattavat sähkö autot tulevat lisääntymään huikeasti, kunhan akkujärjestelmät ja latausasemat hiukan kehittyvät. / I believe that hybrid/plug-in city-cross style B-C-Segment cars or the so called city crossovers will become the favorites of Finns.

7) Aivan varmasti ja oma arvion on , että max 5 vuotta. / Surely and my own estimate is maximum 5 years.

8) Tällä hetkellä en usko Kiinalaisten tulemiseen , koska niissä on vakavia turvallisuus puutteita ja ne on lähinnä kopioita. / At the moment I don't believe to the coming of Chinese cars because they seriously lack in terms of safety and are mostly copies.

9) – 10) Corana tilanteesta johtuen on useita autotehtaita suljettu ympäri maailmaa, joten se vaikuttaa uuden auton saantiin, niinpä luontainen vaihtoauto kierto hiljenee, mikä lisää tuontia ulkomailta, jotta liikkeissä olisi tarjontaa käytetyistä. / Many automotive factories have been closed around the world because of the COVID-situation. That affects to the availability of getting a new car so the natural used car cycle slows down which boosts imports from abroad so that the dealerships would have supply for used cars.

Vaihtoautojen kysyntä tulee kasvamaan kovasti seuraavien vuosien aikana. / The demand for used cars will grow rapidly in the next following years.