
MAINTENANCE AND SERVICEABILITY

1 Introduction

The COVID-19 pandemic continued to make its impact on day-to-day life, society, and the economy felt in 2021 as people were still called upon to refrain from going out and curtail business activities. The repercussions of repeated surges in cases of COVID-19 on the production and distribution of various products was felt worldwide, and automakers in Japan frequently had to halt production due to the shortage of automotive parts, and especially semiconductors.

The delay in delivering new vehicles resulted in users wanting to buy a new vehicle to continue using their current one. Although this situation ended up supporting demand for servicing in the form of an increase in the number of renewal inspections, it also conversely contributed to reducing the total amount of servicing sales as restrictions on economic activity and day-to-day life stemming from measures to prevent the spread of the disease, such as imposing semi- or full-states of emergency throughout the nation led to a reduction in the number of accidents and a significant drop in recalls and remodeling.

Since the pandemic did not eliminate the need for operators in the automotive servicing industry to remain in business, they continued their operation while observing the guidelines on preventing the spread of the disease.

In the area of establishing systems based on the amended Road Transport Vehicle Act, more operators acquired the certification to carry out electronic control device maintenance at certified maintenance operators under the special maintenance system introduced in April 2020. Steady progress is being made to prepare for the planned introduction of electronic vehicle *shaken* certificates planned for January 2023 and of OBD inspections in October 2024. Revised inspection standards that add the regular inspection of OBD results as a criterion have been in effect since October 2021, and a system to

pay the administrative fee for the management of information required for OBD inspections to the National Agency for Automobile and Land Transport Technology (NALTEC) has also been instituted.

The introduction of various new systems in the amended Act is intended to address advances made in automobiles, and consequently makes it essential for service personnel to have higher levels of skill and knowledge than ever before. The Ministry of Land, Infrastructure Transport and Tourism (MLIT) committee responsible for studying the adoption of more advanced automobile servicing technology has established a working group to revise the certification system for automobile mechanics. The group has begun discussions on the form such a system should take in the future.

1. 1. Vehicle Market in 2021

In 2021, 4,448,340 new vehicles were sold in Japan. This was a decrease of 150,275 vehicles or 3.3% compared to the 4,598,615 new vehicles sold in the previous year. It also marked a third consecutive year of decreased sales.

A more detailed analysis of new vehicle sales reveals that the number of registered vehicles was 2,795,818, a decrease of 84,709 vehicles, or 2.9%, compared to the previous year. Used mini-vehicle sales were 1,652,522, a decrease of 65,568 (3.8%) from the previous year. Mini-vehicles accounted for 37.2% of new car sales, decreasing for the first time in five years.

For used vehicle sales, the number of registered vehicles was 3,728,751, a decrease of 102,277 (2.7%) from the previous year. The number for mini-vehicles was 3,002,274, a decrease of 33,565 or 1.1% from the previous year.

Sales of Japanese hybrid vehicles (HVs) among registered vehicles in 2021 were 945,533 vehicles, an increase of 61,395 vehicles (6.9%) from the previous year. The number of imported vehicles was 81,571, a significant increase of 45,434 or 125.7% from the previous year.

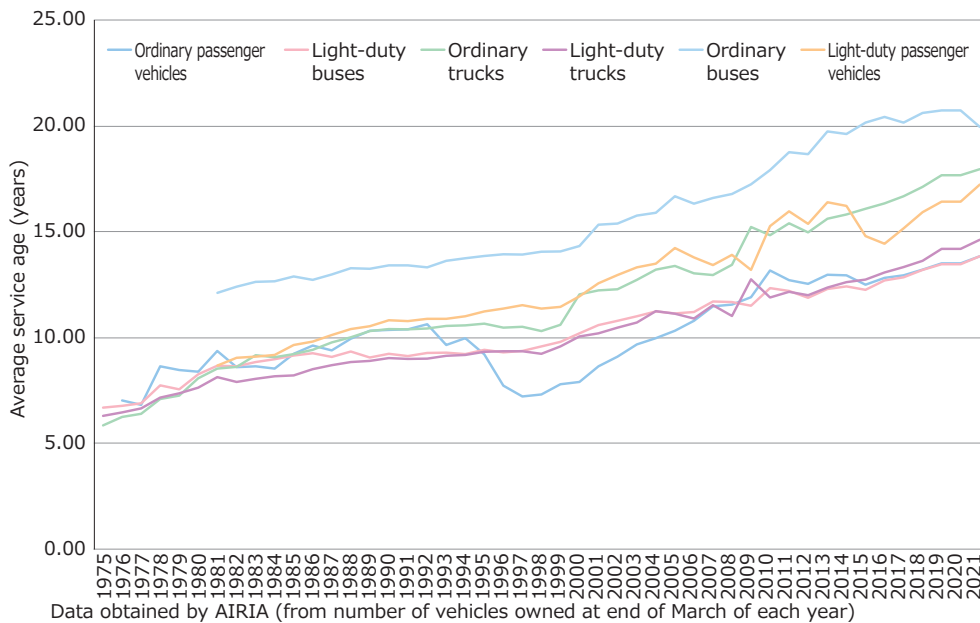


Fig. 1 Trends in average number of years of usage (average vehicle age) according to vehicle type.

The number of Japanese plug-in hybrid vehicles (PHVs) sold was 17,553 vehicles, an increase of 6,247 vehicles (55.3%) from the previous year. The number of imported PHVs was 5,224, an increase of 1,789 or 52.1% from the previous year.

The number of Japanese electric vehicles (EVs) sold was 12,534, a decrease of 742 (6.3%) from the previous year. The number of imported EVs was 8,605, a major increase of 5,793 vehicles (206.6%) compared to the previous year.

The number of fuel cell vehicles (FCVs) sold in Japan was 2,450, representing a massive increase of 1,724 vehicles (237.5%) compared to the previous year. The number of imported FCVs was 14, an increase of 21 or 60.0% from the previous year.

1. 2. Vehicle Ownership Trends in 2021

The number of vehicles owned at the end of December 2021 was 82,565,091, representing a twelfth consecutive year of increase since 2010, and setting a record high again for the tenth consecutive year. This represents an increase of 93,413 units (0.1%) from the previous year.

By model type, the number of 4-wheeled registered vehicles was 47,144,612, a decline of 129,547 (0.3%) from the previous year.

The number of 4-wheeled mini-vehicles owned in Japan broke through the 30-million-vehicle mark in 2015, and continues to increase. By the end of December 2021

it stood at 31,498,010 vehicles. It increased by 0.4% to 125,128 vehicles from the previous year, but the growth rate decreased.

The number of inspected 2-wheeled vehicles owned in Japan also increased to 1,821,946. It increased by 3.2% to 56,072 vehicles from the previous year. The rise in vehicle ownership has continued for 30 consecutive years, and the growth rate also increased for four consecutive years. The number of 2-wheeled mini-vehicles owned in Japan is 2,076,561. This was 40,396 units (2.0%) more than the previous year, and represented a second consecutive year of increase.

Mini-vehicles owned in Japan account for 78,642,622 of the total number of registered and 4-wheeled mini-vehicles rose by 0.2% from the previous year to 40.1%, reaching the 40% level.

According to a survey by the Automobile Inspection & Registration Information Association, the average age of registered passenger cars at the end of March 2021 was 8.84 years, which is 0.12 years longer than the previous year. The average vehicle age has continued to rise for 29 years in succession, breaking the oldest age record for the 27th consecutive year. The average vehicle age has increased by 1.10 years compared to 10 years earlier in 2011. The average service age of registered passenger cars was 13.87 years, which was 0.36 years longer than the previous year, setting a record high for six consecutive years. The average service vehicle age has increased

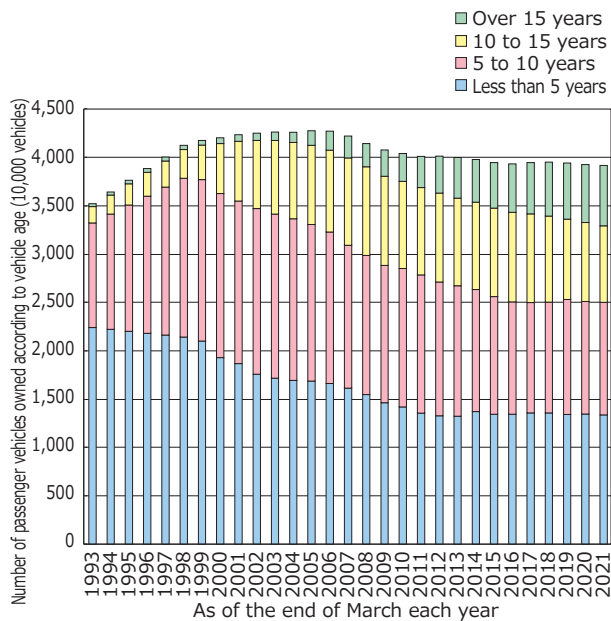


Fig. 2 Trends in vehicle age breakdown of the total number of passenger vehicles owned.

by 1.44 years compared to 10 years ago.

Similarly, the average age of registered trucks was 11.53 years at the end of March 2021, 0.09 years longer than the previous year, and the highest on record for the 29th year in a row. By vehicle model type, the average vehicle age of ordinary trucks was 12.30 years, 0.09 years longer than the previous year. The average vehicle age of light-duty trucks was 11.00 years, 0.08 years longer than the previous year. This sets a record for the 30th consecutive year.

The average vehicle age of buses was 12.07 years, 0.21 years longer than the previous year. In addition, the average vehicle age of special purpose vehicles was 11.21 years, 0.07 years longer than the previous year. The average vehicle age of large special purpose vehicles was 20.99 years, 0.12 years longer than the previous year, and that of light-duty 2-wheeled vehicles was 16.05 years, 0.23 years longer than the previous year.

Figure 1 shows the change in the average number of years of usage for different types of registered vehicle models.

Figure 2 shows the change in the breakdown of passenger car ownership by vehicle age. As of the end of March 2021, the number of vehicles aged 10 years or older was 14,152,254, a decrease of 12,254, or 0.1% from the previous year. This was nevertheless a 0.1% rise representing 36.1% of the total.

According to a survey by the Light Motor Vehicle In-

spection Organization, the average vehicle age of registered mini-vehicles at the end of December 2021 was 8.96 years, which was 0.19 years longer than the previous year. This is 2.83 years, or 46%, longer than the 6.13 years in 2005, the first year records for mini-vehicles were taken. The average vehicle age has risen for 16 consecutive years.

The average vehicle age of mini-vehicle trucks at the end of December 2021 was 13.22 years, which was 0.21 years longer than the previous year.

The average years of usage of mini-vehicle trucks at the end of December 2021 was 15.57 years, which was 0.37 years longer than the previous year. Therefore, the average vehicle age has increased by 4.08 years compared the age of 11.49 years recorded in 2005, 16 years earlier. The average years of usage of mini-vehicle trucks at the end of December 2021 was 17.63 years, which was 0.53 years longer than the previous year. Therefore, the average vehicle age has increased by 4.85 years compared the age of 12.78 years recorded in 2005, 16 years earlier.

The total number of registered HVs and PHVs owned in Japan at the end of March 2021 was 10,072,529, an increase of 745,955 vehicles (8.0%) compared to the previous year. The number of EVs owned in Japan was 125,855, which is 6,696 vehicles (5.6%) more than the previous year. The number of FCVs owned in Japan was 5,278, representing an increase of 1,520 vehicles (40.4%) compared to the previous year.

The total number of HVs, PHVs, EVs, and FCVs (electric-powered vehicles) owned in Japan was 10,203,662 vehicles, an increase of 754,171 (8.0%) compared to the previous year. This accounted for 12.4% of the total number of vehicles owned in Japan (82,077,752) and represents an increase of 0.9% from the 11.5% recorded during the previous year.

The number of electric vehicles owned among mini-vehicles at the end of March 2022 was 21,161, an increase of 975 vehicles (4.8%) from the previous year. A breakdown of these owned vehicles reveals that 20,732 of them are type designation vehicles, 188 of them are customized type designation vehicles, and the remaining 241 are parallel imports or other types of vehicles.

Given the decrease in demand for mechanical servicing resulting from increased sales and ownership of electric-powered vehicles, as well as advances in electronic control of vehicles and devices and other structural

Table 1 Maintenance sales volume, composition ratio, and rate of change compared to previous year according to type of business and work content.

(Sales volume units: hundred million yen)

Contents		Vehicle inspection (shaken) maintenance			Regular inspection and maintenance				Collision repair	Other maintenance	Total	Number of shops Proportion	Number of mechanics Proportion
		2 years	1 year	Subtotal	1 year	6 months	3 months	Total					
Full-time	Amount of sales	5,842	3,586	9,428	403	101	383	887	3,827	6,002	20,144	56,075	160,640
	Proportion of work content	29.0%	17.8%	46.8%	2.0%	0.5%	1.9%	4.4%	19.0%	29.8%	100.0%	61.3%	48.0%
	Change in sales volume compared to previous year	64	72	136	46	-18	85	113	35	6	290	-81	-3,140
	Ratio of increase or decrease compared to previous year	101.1%	102.0%	101.5%	112.9%	84.9%	128.5%	114.6%	100.9%	100.1%	101.5%	99.9%	98.1%
Additional business	Amount of sales	2,447	661	3,108	173	40	40	253	1,124	2,128	6,613	15,510	48,741
	Proportion of work content	37.0%	10.0%	47.0%	2.6%	0.6%	0.6%	3.8%	17.0%	32.2%	100.0%	17.0%	14.6%
	Change in sales volume compared to previous year	28	9	37	3	6	-8	1	-45	-176	-183	12	-973
	Ratio of increase or decrease compared to previous year	101.2%	101.4%	101.2%	101.8%	117.6%	83.3%	100.4%	96.2%	92.4%	97.3%	100.1%	98.0%
Full-time + additional business	Amount of sales	8,289	4,247	12,536	576	141	423	1,140	4,951	8,130	26,757	71,585	209,381
	Proportion of work content	31.0%	15.9%	46.9%	2.2%	0.5%	1.6%	4.3%	18.5%	30.4%	100.0%	78.3%	62.6%
	Change in sales volume compared to previous year	92	81	173	49	-12	77	114	-10	-170	107	-69	-4,113
	Ratio of increase or decrease compared to previous year	101.1%	101.9%	101.4%	109.3%	92.2%	122.3%	111.1%	99.8%	98.0%	100.4%	99.9%	98.1%
Dealer	Amount of sales	7,556	1,770	9,326	2,272	370	238	2,880	4,253	9,960	26,419	16,305	110,106
	Proportion of work content	28.6%	6.7%	35.3%	8.6%	1.4%	0.9%	10.9%	16.1%	37.7%	100.0%	17.8%	32.9%
	Change in sales volume compared to previous year	397	-6	391	-31	37	-39	-33	-881	-807	-1,330	-10	-792
	Ratio of increase or decrease compared to previous year	105.5%	99.7%	104.4%	98.7%	111.1%	85.9%	98.9%	82.8%	92.5%	95.2%	99.9%	99.3%
Private owner-run	Amount of sales	642	367	1,009	39	44	61	144	455	726	2,334	3,564	14,832
	Proportion of work content	27.5%	15.7%	43.2%	1.7%	1.9%	2.6%	6.2%	19.5%	31.1%	100.0%	3.9%	4.4%
	Change in sales volume compared to previous year	48	-25	23	-15	21	5	11	86	52	172	0	-369
	Ratio of increase or decrease compared to previous year	108.1%	93.6%	102.3%	72.2%	191.3%	108.9%	108.3%	123.3%	107.7%	108.0%	100.0%	97.6%
Total	Amount of sales	16,487	6,384	22,871	2,887	555	722	4,164	9,659	18,816	55,510	91,454	334,319
	Proportion of work content	29.7%	11.5%	41.2%	5.2%	1.0%	1.3%	7.5%	17.4%	33.9%	100.0%	100.0%	100.0%
	Change in sales volume compared to previous year	537	50	587	3	46	43	92	-805	-925	-1,051	-79	-5,274
	Ratio of increase or decrease compared to previous year	103.4%	100.8%	102.6%	100.1%	109.0%	106.3%	102.3%	92.3%	95.3%	98.1%	99.9%	98.4%

changes, the government has decided to support business diversification and restructuration efforts for maintenance operators and dealerships expanding into the maintenance of electric-powered vehicles. The supplementary budget for fiscal 2021 contains a new “green growth” category for business restructuration subsidies aimed at supporting business reorganization efforts such as the introduction of equipment for EV maintenance and the training of mechanics.

2 Recent Trends in the Vehicle Maintenance Industry

The Japan Automobile Service Promotion Association conducted its 2021 survey of the vehicle repair and maintenance industry. The targets of the survey were vehicle repair and maintenance businesses defined by the Road Transport Vehicle Act. The survey was sent to approximately 20% of the 91,454 businesses in operation as of the end of June 2021 according to category and size, and responses were received from 8,249 of these workplaces.

The sales volume and other values reported were those from the accounting period closest to the time of the survey at the end of June 2021 (e.g., from the 2020

fiscal year). According to this survey, the total maintenance sales were 5 trillion 551 billion yen, a decline of 105.1 billion yen (1.9%) compared to the results in the survey from the previous year.

For the purpose of the vehicle repair and maintenance industry survey, the target vehicle repair and maintenance businesses were classified as follows: full-time vehicle maintenance shops (workplaces other than vehicle dealers where maintenance sales account for over 50% of total sales), maintenance shops run as an additional business (workplaces where sales from other businesses, such as vehicle sales, parts and accessory sales, insurance sales, or gasoline sales, account for over 50% of total sales), maintenance shops at vehicle dealers (workplaces at companies that have signed an exclusive distributor agreement with an automaker or a domestic exclusive retailer), and private owner-run maintenance shops (mainly workplaces that perform maintenance work on vehicles that are privately owned).

2.1. Maintenance Facilities and Maintenance Personnel

(1) Outline of Maintenance Facilities

The number of businesses in the vehicle repair and

Table 2 Number of vehicle maintenance-related personnel.

Scale of business	A1 (2 to 3 people)	A2 (4 to 10 people)	B (11 to 20 people)	C (21 to 30 people)	D (31 people or more)	Total	Change from previous year	Rate compared to previous year
Number of shops	50,175	37,017	3,631	476	155	91,454	-79	99.9%
Number of shops that obtained designation		26,976	2,646	347	114	30,083	-2	100.0%
Acquisition ratio		72.9%	72.9%	72.9%	73.5%	32.9%		
Total number of personnel	153,737	296,276	70,037	16,584	8,036	544,670	5,584	101.0%
Number of female personnel within that total	32,629	42,341	7,396	1,382	474	84,222	2,331	102.8%
Total number of maintenance personnel	117,859	213,526	49,733	11,487	6,347	398,952	-266	99.9%
Number of female maintenance personnel within that total	10,117	7,323	907	164	94	18,605	-467	97.6%
Number of Class 1 auto mechanics	2,193	7,960	2,349	244	263	13,009	925	107.7%
Number of female mechanics within that total	28	56	19	0	1	104	-30	77.6%
Number of Class 2 auto mechanics	75,634	151,510	34,211	7,125	3,482	271,962	-3,442	98.8%
Number of female mechanics within that total	2,321	2,037	343	27	16	4,744	369	108.4%
Number of Class 3 auto mechanics	17,672	24,753	4,687	1,453	783	49,348	-2,757	94.7%
Number of female mechanics within that total	3,966	1,986	88	35	7	6,082	-537	91.9%
Total number of mechanics	95,499	184,223	41,247	8,822	4,528	334,319	-5,274	98.4%
Number of female mechanics within that total	6,315	4,079	450	62	24	10,930	-198	98.2%

The number of women was also surveyed starting in June 2014.

Table 3 Number of businesses according to number of employees

	2 to 5 people	6 to 10 people	11 to 15 people	16 to 20 people	21 to 30 people	31 to 50 people	51 to 100 people	101 to 300 people	More than 300 people	Private company total	Public offices	Overall total
June 2011	37,912	14,057	4,130	2,312	2,039	3,119	5,243	2,714	1,728	73,254	436	73,690
June 2021	41,168	15,515	4,938	2,439	1,911	1,807	1,507	1,753	804	71,842	372	72,214
Change	3,256	1,458	808	127	-128	-1,312	-3,736	-961	-924	-1,412	-64	-1,476

maintenance industry was 72,214 at the time of the survey on June 30, 2021, a decrease of 309 businesses (0.4%) compared to the previous year. This was the seventh consecutive year that the number of companies decreased. The total number of workplaces (number of certified maintenance shops) was 91,454. This was a decrease of 79 such workplaces (0.1%) compared to the previous year. This is the sixth consecutive year that this value has decreased.

By business type, the number of full-time vehicle maintenance shops was 56,075, accounting for 61.3% of the total number of workplaces by type of business, a decrease of 81 plants or 0.1% from the previous year. Maintenance shops run as an additional business accounted for 15,510 workplaces (17.0% of the total), an increase of 12 shops (0.1%) from the previous year. The number of maintenance shops at dealerships accounted for 16,305 (17.8% of the total), a decrease of 10 shops from the previous year. The number of private owner-run maintenance shops was 3,564 (3.9% of the total), remaining unchanged from

the previous year (Table 1).

The number of private workshops reached 30,083 in the 2021 survey, a decrease of two shops over the previous year.

The number of designated workshops had increased consistently since the system was established in 1962, but decreased by two workshops each for two consecutive years. The number of workplaces that have obtained this designation (i.e., the designation acquisition ratio) remained unchanged at 32.9% of the total number of workplaces (Table 2).

Examining the designation acquisition ratio according to the different types of businesses shows that 13,522 of the total number of full-time vehicle maintenance shops (56,075) have obtained the designation, an increase of 23 shops (0.2%) compared to the previous year. This represents a designation acquisition ratio of 24.1%, as well as an increase of 330 shops (2.5%) compared to 10 years earlier in 2011.

Among maintenance shops run as an additional busi-

ness, 4,731 of the total of 15,510 have obtained the designation, a decrease of 23 plants (0.5%) from the previous year. This represents a designation acquisition ratio of 30.5%, which is an increase of 211 shops (4.7%) compared to the number in 2011.

Among the 16,305 maintenance shops at vehicle dealers, 10,644 plants have obtained the designation, a decrease of 6 shops (0.1%) from the previous year. This represents a designation acquisition ratio of 65.3%. It also is an increase of 348 shops (3.4%) compared to the number in 2011.

Of the 3,564 private owner-run maintenance shops, 1,186 have obtained the designation. This is an increase of 4 shops (0.3%) from the previous year, representing a designation acquisition ratio of 33.3%. It also represents a decrease of 58 shops (4.7%) from 2011.

Table 2 compares the scale of the maintenance shops based on the number of vehicle maintenance personnel employed there and other factors.

At the time of this survey at the end of June 2021, there were 71,842 private companies after subtracting the number of public offices. However, at the time of the June 2011 survey 10 years earlier, there were 73,254 private companies after subtracting the number of public offices. Table 3 compares them based on the number of employees.

(2) Outline of Mechanics and Maintenance Personnel

As of the end of June 2021, the total number of maintenance-related personnel was 544,670, an increase of 5,584 or 1.0% from the previous year.

Breaking down the numbers of maintenance-related personnel by business type shows that full-time vehicle maintenance businesses employed 255,692 people, a decrease of 2,962 (1.1%) from the previous year. Vehicle maintenance businesses run as an additional business employed 91,269 people, 2,667 (3.0%) more than the previous year. The number of mechanics for the dealers was 175,178 people, an increase of 4,400 people or 2.6% from the previous year. The number of mechanics at private owner-run businesses was 22,531 people, an increase of 1,479 people or 7.0% from the previous year.

The number of maintenance personnel (shop workers) was 398,952, a decrease of 266 people from the previous year. The number of mechanics was 334,319 people, a decrease of 5,274 (1.6%) from the previous year.

The number of female mechanics within this total has

been recorded since the June 2014 survey, when there were 9,527. That number increased successively in 2015 and 2016, but started to decline after that. It attained its highest level in 2020, reaching 11,128, but dropped to 10,930 in 2021. Tables 2 and 3 show the current situation of maintenance-related personnel in Japan.

The average age of maintenance personnel continues to rise, and the average age in 2021 was 46.4 years, which is 0.7 years older than the previous year. By type of business, full-time vehicle maintenance shops personnel showed the most significant increase with an average age of 51.8 years old, 0.6 years older compared to the previous year. The youngest were the maintenance personnel at dealers, who were nevertheless also 0.7 years older, reaching 36.4 years old.

According to the Ministry of Health, Labor and Welfare *Report on Employment Service*, the active job opening rate for automobile maintenance personnel in fiscal 2020 was 4.50. This is significantly higher than the average of 1.10 for all industries, indicating that the shortage of personnel in the maintenance and servicing industry has become even more pronounced.

2. 2. Demand for Vehicle Maintenance

(1) Trends in Total Maintenance Sales Volume

The total maintenance sales volume in the 2021 survey of the situation in the vehicle maintenance industry (results from the 2020 fiscal year) was 5,551 billion yen. Table 1 compares the maintenance sales volume generated by full-time vehicle maintenance businesses, those run as an additional business, those at dealers, and those at private owner-run businesses. It also compares the sales volume according to the content of the work performed, such as *shaken* vehicle inspection and maintenance, regular inspection and maintenance, collision repairs, and other maintenance (e.g., extraordinary maintenance due to a breakdown or malfunction, simple maintenance such as oil changes, voluntary inspection and maintenance requested by the owner, re-inspection of a vehicle issued a limited vehicle inspection certificate, or customization services).

When the total vehicle maintenance sales are examined by business type, the maintenance sales at full-time vehicle maintenance businesses accounted for 2 trillion 14.4 billion yen, an increase of 29 billion yen (1.5%) compared to the previous year. Sales at full-time maintenance businesses have increased for three years in a row. A breakdown of the full-time maintenance business

total by type of maintenance work shows that *shaken* vehicle inspection and maintenance sales amounted to 942.8 billion yen, an increase of 13.6 billion yen (1.5%) compared to the previous year. This accounted for 46.8% of the total maintenance sales. Regular inspection and maintenance sales amounted to 88.7 billion yen, an increase of 11.3 billion yen (14.6%) compared to the previous year, accounting for 4.4% of the total. Collision repairs amounted to 382.7 billion yen, an increase of 3.5 billion yen (0.9%) compared to the previous year, accounting for 19.0% of the total. Finally, other maintenance sales amounted to 600.2 billion yen, an increase of 0.6 billion yen (0.1%) compared to the previous year, accounting for 29.8% of the total.

The maintenance sales at vehicle maintenance businesses run as an additional business amounted to a total of 661.3 billion yen, a decrease of 1.83 billion yen (2.7%) compared to the previous year. Breaking the overall sales of vehicle maintenance businesses run as an additional business down by work category, the sales of vehicle inspection (*shaken*) maintenance were 310.8 billion yen, an increase of 3.7 billion yen or 1.2% from the previous year. This represents 47.0% of the overall sales of vehicle maintenance businesses run as an additional business. Regular inspection and maintenance sales amounted to 25.3 billion yen, an increase of 100 million yen (0.4%) compared to the previous year, accounting for 3.8% of the regular inspection and maintenance to the total sales. Collision repairs amounted to 112.4 billion yen, a decrease of 4.5 billion yen (3.8%) compared to the previous year. This accounted for 17.0% of the total. Other maintenance sales were 212.8 billion yen, a decrease of 17.6 billion yen or 7.6% from the previous year, accounting for 32.2% of the total.

In contrast, the overall sales of dealers were 2,641.9 billion yen, a decrease of 133.0 billion yen (4.8%) from the previous year. Breaking down the overall sales of the dealers by work category, sales of vehicle inspection (*shaken*) maintenance were 932.6 billion yen, an increase of 39.1 billion yen or 4.4% from the previous year. This accounted for 35.3% of the total sales. The sales of regular inspection and maintenance were 288.0 billion yen, a decrease of 3.3 billion yen (1.1%) from the previous year, representing 10.9% of total dealer sales. Collision repairs amounted to 425.3 billion yen, a decrease of 88.1 billion yen (7.2%) compared to the previous year, representing 16.1% of total dealer sales. Finally, other maintenance

sales amounted to 996.0 billion yen, a decrease of 80.7 billion yen (7.5%) compared to the previous year, making up 37.7% of total dealer sales.

The overall sales of private owner-run businesses were 233.4 billion yen, an increase of 17.2 billion yen (8.0%) from the previous year. Breaking down the overall sales of private owner business by work category, sales of vehicle inspection (*shaken*) maintenance were 100.9 billion yen, an increase of 2.3 billion yen or 2.3% from the previous year. This accounted for 43.2% of the total sales for private owner-run shops. Regular inspection and maintenance sales amounted to 14.4 billion yen, an increase of 1.1 billion yen (8.3%) compared to the previous year, accounting for 6.2% of the total sales for private owner-run shops. Collision repairs amounted to 45.5 billion yen, an increase of 8.6 billion yen (23.3%) compared to the previous year, accounting for 19.5% of the total. Finally, other maintenance sales amounted to 72.6 billion yen, an increase of 5.2 billion yen (7.7%) compared to the previous year, accounting for 31.1% of the total.

Breaking down the overall maintenance sales total of 5,551.0 billion yen by work category, sales of vehicle inspection (*shaken*) maintenance were 2,287.1 billion yen, an increase of 58.7 billion yen or 2.6% from the previous year. This accounted for 41.2% of the total maintenance sales. Regular inspection and maintenance sales amounted to 416.4 billion yen, an increase of 9.2 billion yen (2.3%) compared to the previous year and accounting for 7.5% of the total maintenance sales. Collision repairs amounted to 965.9 billion yen, a decrease of 80.5 billion yen (7.7%) compared to the previous year, accounting for 17.4% of the total maintenance sales volume. Finally, other maintenance sales amounted to 1 trillion 881.6 billion yen, a decrease of 92.5 billion yen (4.7%) compared to the previous year, and made up 33.9% of the overall maintenance sales total.

(2) Average Number of Vehicles Serviced According to Type of Business and Work Content

The average number of vehicles brought in for maintenance service per shop during the year was 1,627. This was a decrease of 44 vehicles (2.6%) from the previous year. Broken down according to the content of work performed, the average number of vehicles brought in for *shaken* vehicle inspection and maintenance service per shop was 372, an increase of 5 vehicles (1.4%) over the previous year. The number of vehicles brought in for

shaken vehicle inspection and maintenance service was 22.9% of the total number of serviced vehicles. The number of vehicles serviced for regular inspection and maintenance was 280, an increase of 10 vehicles (3.7%) from the previous year, accounting for 17.2% of the total. The average number of vehicles brought in for collision repairs per shop was 75. This was a decrease of 8 vehicles (9.6%) from the previous year and accounted for 4.6% of the total number of vehicles brought in. There were 899 vehicles serviced for other maintenance, a decrease of 52 vehicles (5.5%) from the previous year, accounting for 55.3% of the total.

By work category, the number of vehicles serviced at full-time vehicle maintenance shops was 876 vehicles, an increase of 56 vehicles (6.8%) from the previous year. For maintenance shops run as an additional business, the average number of vehicles brought in was 1,271 per shop, a decrease of 51 vehicles (3.9%) from the previous year. The number of vehicles serviced at the dealer shops was 4,525 vehicles, a decrease of 410 vehicles (8.3%) from the previous year.

Furthermore, looking at the content of maintenance work according to the type of business, the average number of vehicles brought into full-time vehicle maintenance businesses for *shaken* vehicle inspection and maintenance during the year was 287 per shop, an increase of 3 vehicles (1.1%) from the previous year. This accounted for 32.8% of all the vehicles brought into those shops for maintenance. For maintenance shops run as an additional business, the average number of vehicles brought into was 345 per shop, an increase of 2 vehicles (0.6%) from the previous year representing 26.2% of the total. At the same time, the average number of vehicles brought into maintenance shops at dealers for *shaken* vehicle inspection and maintenance was 687, an increase of 12 vehicles (1.8%) making up 15.2% of the total.

Next, the average number of vehicles brought into full-time vehicle maintenance businesses for regular inspection and maintenance during the year was 100 vehicles per shop, an increase of 19 vehicles (23.5%) from the previous year. This accounted for 11.4% of all the vehicles brought in over the year. In the case of maintenance shops run as an additional business, the average number of vehicles brought in was 109 per shop, a decrease of 4 vehicles (3.5%) from the previous year, accounting for 8.6% of the total. The number of vehicles serviced at the dealer shops was 1,060 vehicles, a decrease of 7 vehicles

(0.7%) from the previous year, accounting for 23.4% of the total.

The average number of vehicles brought in for collision repairs during the year was 61 vehicles per shop at full-time vehicle maintenance businesses, a decrease of 2 vehicles (3.2%) from the previous year. This accounted for 7.0% of the total. For maintenance shops run as an additional business, the average number of vehicles brought in was 64 per shop, a decrease of 1 vehicle (1.5%) from the previous year, accounting for 5.0% of all vehicles brought in for maintenance service. The average number of vehicles brought into maintenance shops at dealers for collision repairs was 132 vehicles per shop, a decrease of 36 vehicles (21.4%) from the previous year, accounting for 2.9% of the total.

Other maintenance accounted for the largest portion of vehicles brought in for maintenance or service. The average number of vehicles brought into full-time vehicle maintenance businesses during the year was 428 per shop, an increase of 37 vehicles (9.5%) from the previous year. This accounted for 48.9% of all the vehicles brought into those shops for maintenance during the year. In the case of maintenance shops run as an additional business, the average number of vehicles brought in was 752 per shop, a decrease of 48 vehicles (6.0%) from the previous year, accounting for 59.2% of the total. Finally, the average number of vehicles brought into maintenance shops at dealers for other maintenance was 2,646 per shop, a decrease of 379 vehicles (12.5%) from the previous year, accounting for 58.5% of the total.

(3) Trends in Shaken Vehicle Inspection and Regular Inspection Maintenance Fees According to Type of Business

Two-year vehicle inspections account for over three-quarters of the *shaken* vehicle inspection sales volume. Comparing the unit prices of the 2-year vehicle inspection fees at the different types of businesses, the unit price at the full-time vehicle maintenance businesses was 48,373 yen, which was an increase of 417 yen (0.9%) over the unit price of the previous year. For maintenance shops run as an additional business, the unit price was 53,043 yen, an increase of 105 yen (0.2%) compared to the previous year. However, in the case of the maintenance shops at dealers, the unit price was 75,326 yen, an increase of 2,320 yen (3.2%) compared to the previous year. The price difference between the 2-year shaken vehicle inspection fees at full-time vehicle maintenance business-

es and maintenance shops at dealers was 26,953 yen, expanding by 1,903 yen compared to the survey results from the previous year.

One-year vehicle inspections account for approximately three-quarters of the regular inspection and maintenance sales volume. A comparison of the average unit price for such inspections at the different types of businesses reveals that it cost 19,235 yen at full-time vehicle maintenance businesses. This was a decrease of 1,123 yen (5.5%) compared to the previous year. Similarly, the unit price at maintenance shops run as an additional business was 16,460 yen, a decrease of 126 yen (0.8%) compared to the previous year. However, for maintenance shops at dealers, the unit price was 20,256 yen, an increase of 423 yen (2.1%) compared to the previous year.

3 Inspection and Maintenance System Trends

3. 1. Vehicle Inspections

In 2021 the total number of *shaken* renewal inspections (sum of data from MLIT, the National Agency for Automobile and Land Transport Technology (NALTEC), and the Light Motor Vehicle Inspection Organization (LMVIO)) was 33,558,782 cases, an increase of 48,185 cases (0.1%) compared to the previous year.

The total number of registered vehicles and mini-vehicles specified to receive maintenance was 24,708,596 an increase of 91,183 vehicles (0.4%) compared to the previous year. The specified maintenance rate rose by 0.1% from the previous year to 73.6%. Closer analysis of the data for registered vehicles collected by MLIT shows that the number of registered vehicles subjected to a *shaken* renewal inspection was 21,239,742, a decrease of 191,343 vehicles (0.9%) compared to the previous year. The number of vehicles subject to specified maintenance was 16,186,409, a decrease of 120,562 vehicles (0.7%). The specified maintenance rate rose by 0.1% from the previous year to 76.2%.

In 2021, the number of inspections conducted by NALTEC at inspection centers throughout Japan to assess compliance with the Japanese Safety Regulations for Road Vehicles (total number of new inspections, *shaken* renewal inspections, structural change inspections, and re-inspections) was 6,869,332. This was a decrease of 87,317 inspections (1.3%) compared to the previous year. The number of on-street inspections was 125,470, an increase of 4,083 (3.4%) compared to the previous year.

The breakdown of the number of the different types of inspections indicates that there were 991,267 new inspections (including preliminary inspections), a decrease of 85,952 (8.0%) compared to the previous year. The number of *shaken* renewal inspections was 5,048,115, a decrease of 71,283 (1.4%) compared to the previous year. The number of inspections for structural or other changes was 73,165, an increase of 4,141 (6.0%) compared to the previous year. There were 756,785 re-inspections, a decrease of 65,777 (9.5%) compared to the previous year.

Examining the data for mini-vehicle inspections reveals that there were 12,319,040 *shaken* renewal inspections, an increase of 239,528 (2.0%) compared to the previous year. The number of *shaken* renewal inspections for mini-vehicles first exceeded 10 million in 2010, passed 11 million in 2015, went over 12 million in 2020, and continued to rise in 2021.

The number of mini-vehicles subject to specified maintenance was 8,522,187 and the specified maintenance rate was 69.2%, an increase of 0.4% from the previous year. Since fiscal 2019, online renewal inspection submissions (one stop service (OSS)) were introduced for mini-vehicle specified maintenance. The use of that service in the same year accounted for 1,256,502 (15.4%) of all specified maintenance. In 2020, there were 2,829,905 submissions, an increase of 1,573,203 (125.2%) over the previous year, rising to 3,615,174 in 2021, 785,269 (27.7%) more than in the previous year. The use of OSS accounted for 42.4% of all specified maintenance.

The number of vehicles brought into LMVIO for a *shaken* renewal inspection was 3,796,863. This total consisted of 2,710,177 vehicles brought in by maintenance personnel, and 1,086,676 vehicles brought in by the owner.

3. 2. Digitalization of *Shaken* Certificates and Introduction of OBD Inspections

The May 2019 amendment to the Road Transport Vehicle Act stipulated the digitalization of vehicle inspection certificates. Administrative tasks such as electronically recording the new expiration date after renewal inspections in the vehicle inspection certificates will be entrusted to designated maintenance operators who meet certain criteria. The digitalization of *shaken* certificates will begin in January 2023.

Although it was already possible to submit applications for a renewal inspection to update the vehicle inspection certificate through the one stop service (OSS), it

was necessary to go to a local transportation bureau branch office in person to receive the new certificate. The digital *shaken* certificate records the updated information on an IC chip, enabling the procedure to be carried out at the office of the designated maintenance operators. This eliminates the need to go to a transportation bureau branch office and is expected to significantly raise the efficiency of *shaken*-related administrative tasks at designated maintenance shops.

Electronic control is being introduced in various automobile devices. OBD inspections involve using scanning tools to read the data (failure code: specific diagnostic trouble code (DTC)) recorded by the on-board diagnostics (OBD) device that monitors the state of on-board electronic devices. The vehicle fails the *shaken* inspection if a failure code that does not comply with the safety regulations is found.

The National Agency for Automobile and Land Transport Technology is using information provided by automobile manufacturers to build a database of failure codes and other information. At inspection workshops, that data is compared to the information retrieved from the OBD of the examined vehicle using scanning tools to determine if there is any issue such as a failure to comply with the safety regulations.

The OBD inspections will start in October 2024 for new models introduced in or after October 2021. Inspections for imported vehicles will apply to new models introduced in or after October 2022 and start in October 2025.

The inspections apply to (a) systems such as driver support systems, collision mitigation braking systems (automatic brakes), automatically commanded steering functions (lane keeping), (b) automated driving systems, and (c) devices related to exhaust emissions.

4 Machine Tools

Every year at the end of July, the Japan Automotive Service Equipment Association (JASEA) collects and then announces the automotive machine tool sales fig-

ures from its member companies from the previous fiscal year. The latest announced machine tool sales figures are those from fiscal 2020 (from April 2020 to March 2021). The machine tools handled by each member company are broadly classified into 19 item categories and then added up.

In 2020, total automotive machine tool sales amounted to 106 billion 325.48 million yen, a decrease of 4 billion 845.58 million yen (4.4%) compared to the previous fiscal year. Although sales have exceeded 100 billion yen for eight consecutive years, the overall decrease is attributed to a slowdown in the number of cases due to lockdowns and other repercussions of the COVID-19 pandemic.

In the 2020 survey, sales in the fourth category of the 19th item (vehicle washing equipment, lifts, jacks, presses, equipment for batteries and coolers, and servicing equipment for engine) exceeded the figures of the previous year to reach the highest total in the last 15 years.

In terms of proportion of total sales, the largest contributors were lifts, jacks, and presses (19.5 billion yen, 18.4% of the total and a 0.6% increase over the previous year), inspection equipment (10.1 billion yen, 9.5% of the total, a 7.3% decrease), vehicle washing equipment (9.6 billion yen, 9.0% of the total, an increase of 6.5%), manual tools (7.0 billion yen, 6.6% of the total, a 13.0% increase), servicing equipment for brakes and wheels (6.1 billion yen, 5.7% of the total, a 3.1% decrease), and integrated vehicle diagnostic equipment (6.0 billion yen, 5.6% a 17.5% increase).

Sales of scanning tools, which are essential to diagnostics, inspections, and servicing were 22,729 units (a 23.7% increase from the previous year) amounting to a total of 3 billion 24.55 million yen and an average unit price of 133,070 yen (compared to 142,978 yen the year before).

Sales of the diagnostic software installed in scanning tools was 44,094 units (a 31.8% increase from the previous year), amounting to a total of 511.16 million yen and an average unit price of 11,593 yen (compared to 12,898 yen the year before).