MAINTENANCE AND SERVICEABILITY

1 Introduction

While the effects of the COVID-19 pandemic continued to be felt in 2022, widespread vaccination and better measures to contain the disease set the stage for a return to normalcy in day-to-day life, society, and the economy. Since the pandemic did not eliminate the need for operators in the automotive servicing industry to remain in business, they continued operating while observing the guidelines on preventing the spread of the disease. Moreover, delays and long delivery times for new vehicles made it necessary to continue using the same vehicles, creating an increase in demand for *shaken* (vehicle inspections) and maintenance.

At the same time, the Ministry of Health, Labor and Welfare *Report on Employment Service* indicates that 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.

On January 13, 2022, Prime Minister Fumio Kishida took a tour of an automobile maintenance facility in Tokyo where he was briefed on cutting edge inspection equipment that uses scanning tools as well as on the electronic *shaken* certificates that will come into use in January 2023. Following the briefing, the Prime Minister conversed with men and women currently working as mechanics and listened to their opinions on immediate automotive maintenance sector issues, such as staff shortages and learning the new technologies that come with digitalization. The Minister of Land, Infrastructure Transport and Tourism, Tetsuo Saito, also took part in the tour. After the tour, Prime Minister Kishida stated that in addition to working on raising the productivity of maintenance tasks by addressing issues such as the introduction of equipment adapted to new technologies and skill acquisition, as well as staff shortage and training, the government must fully engage not only in building a supportive environment, but also consider matters such as raising the salary of each and every worker in conjunction with boosting wages and increasing profitability in the maintenance industry.

Similarly, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) issued partial revisions to the rules on the auto mechanic skill test, the *Enforcement Regulations for the Road Vehicles Act*, and the ordinance concerning the rules on designated automobile maintenance businesses on May 25, 2022, for the purpose of fostering auto mechanics training applicable to the maintenance, inspection, and servicing of automobiles equipped with new automotive technologies. The qualification system and training process for automobile mechanics was revised through measures such as establishing a qualification covering electronic control for, notably, Class 1 auto mechanics (general).

1. 1. Vehicle Market in 2022

In 2022, 4,201,320 new vehicles were sold in Japan. This was a decrease of 247,020 vehicles (5.6%) compared to the 4,448,340 new vehicles sold in the previous year. It also marked a fourth consecutive year of decreased sales.

A more detailed analysis of new vehicle sales reveals that the number of registered vehicles was 2,563,184, a

Fig. 1 Prime Minister Kishida Conversing with Auto Mechanics

decrease of 232,634 vehicles, or 8.3%, compared to the previous year. At the same time, sales of mini-vehicles reached 1,638,136 vehicles, a decrease of 14,386 vehicles, or 0.9%, compared to the previous year.

Mini-vehicle sales started rising again, and accounted for 39.0% of new car sales.

For used vehicle sales, the number of registered vehicles was 3,495,305, a decrease of 233,446 units (6.3%) from the previous year. The number for mini-vehicles was 2,806,346, a decrease of 195,928 units (6.5%) from the previous year, falling below 3 million units for the first time in six years.

Sales of Japanese hybrid vehicles (HVs) among registered vehicles in 2022 were 1,007,340 vehicles, an increase of 60,807 units (6.5%) from the previous year. The number of imported hybrid vehicles was 81,737, an increase of 166 units (0.2%) from the previous year.

The number of Japanese plug-in hybrid vehicles (PHVs) sold was 31,734 vehicles, an increase of 14,181 units (80.8%) from the previous year. The number of imported plug-in hybrids was 6,038, an increase of 814 units (15.6%) from the previous year.

The number of Japanese electric vehicles (EVs) sold was 17,244, an increase of 4,710 units (34.0%) from the previous year. The number of imported EVs was 4,348, continue to increase significantly at 5,743 units (66.7%) compared to the previous year.

The number of FCVs sold was 833, a decrease of 1,617 units (66.0%) compared to the previous year. The number of imported FCVs was 35, an increase of 1 unit (7.1%) from the previous year.

1. 2. Vehicle Ownership Trends in 2022

The number of vehicles owned at the end of December 2022 was 82,739,619, representing a thirteenth consecutive year of increase since 2010, and setting a record high again for the eleventh consecutive year. This represents an increase of 174,528 units (0.2%) from the previous year.

By model type, the number of 4-wheeled registered vehicles was 46,968,324, a decline of 176,288 (0.4%) 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 2022 it stood at 31,749,611 vehicles. This was 251,601 units (0.8%) more than the previous year.

The number of inspected 2-wheeled vehicles owned in Japan also increased to 1,889,282, rising 3.7% to 67,336 vehicles from the previous year. The rise in vehicle ownership has continued for 31 consecutive years, and the growth rate has also increased for five consecutive years. The number of 2-wheeled mini-vehicles owned in Japan is 2,107,466. This was 39,905 units (1.5%) more than the previous year, representing a third consecutive year of increase.

Mini-vehicles owned in Japan accounted for 78,717,935 of the total number of registered and 4-wheeled mini-vehicles, representing a 0.2% increase from the previous year to 40.3%, and exceeding the 40% level for a second consecutive year.

According to a survey by the Automobile Inspection & Registration Information Association, the average age of registered passenger cars at the end of March 2022 was 9.03 years. This is 0.19 years longer than the previous year, and the average vehicle age has continued to rise for 30 years in succession, breaking the oldest age record for the 28th consecutive year. The average vehicle age has increased by 1.08 years compared to 10 years earlier in 2012. The average service age of registered passenger cars was 13.84 years, or 0.03 years shorter than the previous year. Although this was the first decrease in 7 years, it remains 1.68 years longer than 10 year earlier.

Similarly, the average age of registered trucks was 11.67 years at the end of March 2022, 0.14 years longer than the previous year, and the highest on record for the 30th year in a row. By vehicle model type, the average vehicle age of ordinary trucks was 12.43 years, 0.13 years longer than the previous year. The average vehicle age of light-duty trucks was 11.13 years, 0.13 years longer than the previous year. This sets a record for the 31st consecutive year.

The average vehicle age of buses was 12.39 years, 0.32 years longer than the previous year. In addition, the average vehicle age of special purpose vehicles was 11.34 years, 0.13 years longer than the previous year. The average vehicle age of large special purpose vehicles was 21.06 years, 0.07 years longer than the previous year, and that of light-duty 2-wheeled vehicles was 16.13 years, 0.08 longer than the previous year.

Figure 2 shows the change in the average number of years of usage for different types of registered vehicle models.

Figure 3 shows the change in the breakdown of pas-

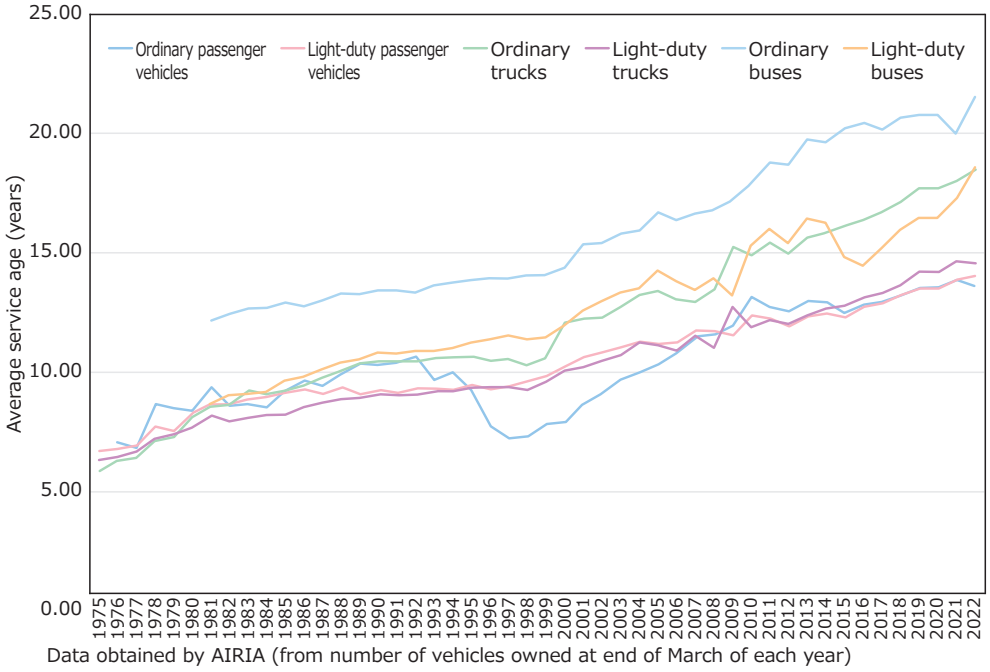

Fig. 2 Trends in average number of years of usage (average vehicle age) according to vehicle type.

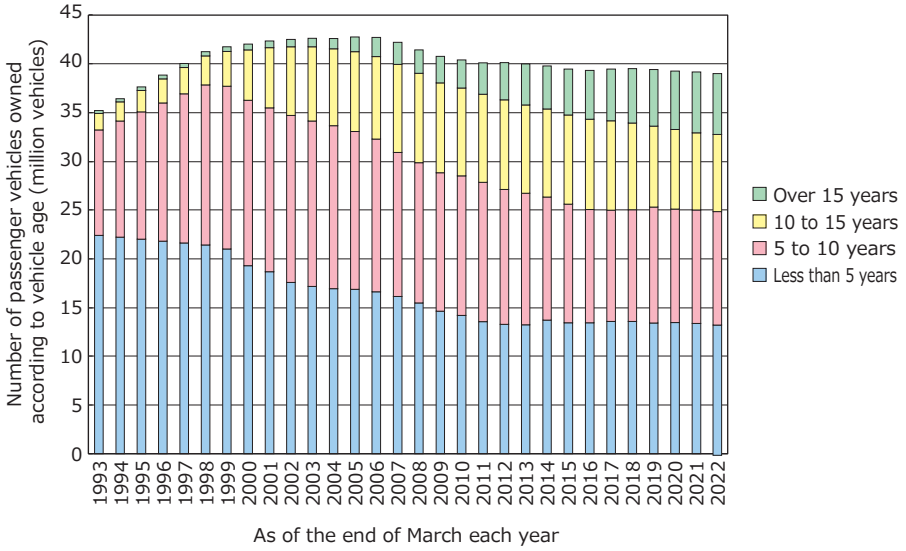

Fig. 3 Trends in vehicle age breakdown of the total number of passenger vehicles owned.

senger car ownership by vehicle age. As of the end of March 2022, the number of vehicles aged 10 years or older was 14,368,623, an increase of 216,613 units (1.5%) from the previous year, amounting to a 0.7% rise, to 36.8% of the total.

According to a survey by the Light Motor Vehicle Inspection Organization, the average vehicle age of registered mini-vehicles at the end of December 2022 was 9.20 years, which was 0.24 years longer than the previous year. This is 3.07 years, or 50%, longer than the 6.13 years in 2005, the first year records for mini-vehicles were taken. The average vehicle age has risen for 17 consecutive years.

The average vehicle age of mini-vehicle trucks at the end of December 2022 was 13.39 years, which was 0.17 years longer than the previous year.

The average years of usage of mini-vehicle passenger cars at the end of December 2022 was 15.83 years, which was 0.26 years longer than the previous year. Therefore, the average vehicle age has increased by 4.34 years com-

pared 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 2022 was 17.59 years, which was 0.04 years longer than the previous year. Therefore, the average vehicle age has increased by 4.81 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 2022 was 10,878,410, an increase of 805,881 vehicles (8.0%) compared to the previous year. The number of EVs owned in Japan was 140,490, which is 14,635 units (11.6%) more than the previous year. The number of FCVs owned in Japan was 7,113, representing an increase of 1,835 units (34.8%) compared to the previous year.

The total number of HV, PHEV, EV, and FCV electric-powered vehicles (excluding mini-vehicles) owned in Japan was 11,026,013 vehicles, an increase of 822,351 units (8.1%) compared to the previous year. This accounted for 13.4% of the total number of vehicles owned in Japan (82,174,944) and represents an increase of 1.0% from the 12.4% recorded during the previous year.

The number of electric vehicles owned among mini-vehicles at the end of March 2023 was 64,187, an increase of 43,026 units (203.3%) from the previous year. A breakdown of these owned vehicles reveals that 63,714 of them are type designation vehicles, 179 of them are customized type designation vehicles, and the remaining 294 are parallel imports or other types of vehicles.

2 Recent Trends in the Vehicle Maintenance Industry

The Japan Automobile Service Promotion Association conducted its 2022 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 91,711 businesses in operation as of the end of June 2022 according to category and size, and responses were received from 8,356 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 2022 (e.g., from the 2021 fiscal year). According to this survey, the total maintenance sales were 5,738.8 billion yen, which is 18.78 billion yen (3.4%) higher than the previous year and marks the first increase in two years.

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 maintenance industry was 72,370 at the time of the survey on June 30, 2022, an increase of 156 businesses (0.2%) compared to the previous year. This was the first time in eight years that the number of these businesses had increased. In contrast, the total number of workplaces (certified plants) was 91,711 plants, an increase of 257 workplaces, or 0.3%, from the previous year. This was the first increase in 7 years.

By type of business, full-time vehicle maintenance shops accounted for the majority of workplaces at 56,483 (61.6% of the total), representing an increase of 408 such workplaces (0.7%) compared to the previous year. Maintenance shops that were run as an additional business accounted for 15,456 workplaces (16.9% of the total), a decrease of 54 shops (0.3%) from the previous year. The number of maintenance shops at vehicle dealers was 16,269 (17.7% of the total), a decrease of 36 shops from the previous year. The number of private owner-run maintenance shops was 3,503 (3.8% of the total), a decrease of 61 shops from the previous year (Table 1).

The number of private workshops reached 30,104 in the 2022 survey, an increase of 21 shops over the previous year.

The number of designated workshops, which had increased consistently since the system was established in 1962, had decreased for two consecutive years. The increase in this survey was the first in three years. The number of workplaces that have obtained this designa-

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: billion yen)

Business type \ Contents		Vehicle inspection (*shaken*) maintenance			Regular inspection and maintenance				Collision repair	Other maintenance	Total	Number of shops and composition ratio	Number of mechanics and composition ratio
		2 years	1 year	Subtotal	1 year	6 months	3 months	Total					
Full-time	Amount of sales	611.1	380.6	991.7	42.3	12.7	35.9	90.9	389.1	642.9	2.1146 T	5.6483 T	16.0972 T
	Proportion of work content	28.9%	18.0%	46.9%	2.0%	0.6%	1.7%	4.3%	18.4%	30.4%	100.0%	61.6%	48.5%
	Change in sales volume compared to previous year	26.9	22.0	48.9	2.0	2.6	− 2.4	2.2	6.4	42.7	100.2	40.8	33.2
	Ratio of increase or decrease compared to previous year	104.6%	106.1%	105.2%	105.0%	125.7%	93.7%	102.5%	101.7%	107.1%	105.0%	100.7%	100.2%
Additional business	Amount of sales	241.6	66.0	307.6	17.6	3.3	4.6	25.5	108.4	211.6	653.1	1.5456 T	4.7849 T
	Proportion of work content	37.0%	10.1%	47.1%	2.7%	0.5%	0.7%	3.9%	16.6%	32.4%	100.0%	16.9%	14.4%
	Change in sales volume compared to previous year	−3.1	− 0.1	− 3.2	0.3	− 0.7	0.6	0.2	− 4.0	−1.2	−8.2	−5.4	−89.2
	Ratio of increase or decrease compared to previous year	98.7%	99.8%	99.0%	101.7%	82.5%	115.0%	100.8%	96.4%	99.4%	98.8%	99.7%	98.2%
Full-time + additional business	Amount of sales	852.7	446.6	1.2993 T	59.9	16.0	40.5	116.4	497.5	854.5	2.7677 T	7.1939 T	20.8821 T
	Proportion of work content	30.8%	16.1%	46.9%	2.2%	0.6%	1.5%	4.2%	18.0%	30.9%	100.0%	78.4%	63.0%
	Change in sales volume compared to previous year	23.8	21.9	45.7	2.3	1.9	− 1.8	2.4	2.4	41.5	92.0	35.4	−56.0
	Ratio of increase or decrease compared to previous year	102.9%	105.2%	103.6%	104.0%	113.5%	95.7%	102.1%	100.5%	105.1%	103.4%	100.5%	99.7%
Dealer	Amount of sales	784.7	158.6	943.3	237.9	41.0	24.6	303.5	467.5	1.0197 T	2.7340 T	1.6269 T	10.8730 T
	Proportion of work content	28.7%	5.8%	34.5%	8.7%	1.5%	0.9%	11.1%	17.1%	37.3%	100.0%	17.7%	32.8%
	Change in sales volume compared to previous year	29.1	− 18.4	10.7	10.7	4.0	0.8	15.5	42.2	23.7	92.1	−3.6	−137.6
	Ratio of increase or decrease compared to previous year	103.9%	89.6%	101.1%	104.7%	110.8%	103.4%	105.4%	109.9%	102.4%	103.5%	99.8%	98.8%
Private owner-run	Amount of sales	72.8	31.8	104.6	6.4	0.4	3.8	10.6	39.3	82.6	237.1	350.3	1.4130 T
	Proportion of work content	30.7%	13.4%	44.1%	2.7%	0.2%	1.6%	4.5%	16.6%	34.8%	100.0%	3.8%	4.3%
	Change in sales volume compared to previous year	8.6	− 4.9	3.7	2.5	− 4.0	− 2.3	− 3.8	− 6.2	10.0	3.7	−6.1	−70.2
	Ratio of increase or decrease compared to previous year	113.4%	86.6%	103.7%	164.1%	9.1%	62.3%	73.6%	86.4%	113.8%	101.6%	98.3%	95.3%
Total	Amount of sales	1.7102 T	637.0	2.3472 T	304.2	57.4	68.9	430.5	1.0043 T	1.9568 T	5.7388 T	9.1711 T	33.1681 T
	Proportion of work content	29.8%	11.1%	40.9%	5.3%	1.0%	1.2%	7.5%	17.5%	34.1%	100.0%	100.0%	100.0%
	Change in sales volume compared to previous year	61.5	− 1.4	60.1	15.5	1.9	− 3.3	14.1	38.4	75.2	187.8	25.7	−263.8
	Ratio of increase or decrease compared to previous year	103.7%	99.8%	102.6%	105.4%	103.4%	95.4%	103.4%	104.0%	104.0%	103.4%	100.3%	99.2%

tion (i.e., the designation acquisition ratio) is 32.8% of the total number of workplaces (Table 2).

Examining the designation acquisition ratio according to the different types of businesses shows that 13,593 of the total number of full-time vehicle maintenance shops (56,483) have obtained the designation, an increase of 71 shops (0.5%) compared to the previous year. This represents a designation acquisition ratio of 24.1%, as well as an increase of 327 shops (2.5%) compared to 10 years earlier in 2012.

Among maintenance shops run as an additional business, 4,737 of the total of 15,456 have obtained the designation, an increase of 6 workplaces (0.1%) from the previous year. That represents a designation acquisition ratio of 30.6%, which is an increase of 191 shops (4.2%) compared to the number in 2012.

Among the 16,269 maintenance shops at vehicle dealers, 10,611 plants have obtained the designation, a decrease of 33 shops (0.3%) from the previous year. That represents a designation acquisition ratio of 65.2%, an increase of 295 shops (2.9%) compared to the number in 2012.

Of the 3,503 private owner-run maintenance shops, 1,163 have obtained the designation. This is a decrease of 23 shops (1.9%) from the previous year, for a designation acquisition ratio of 33.2%. It also represents a decrease of 69 shops (5.6%) from 2012.

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 2022, there were 72,028 private companies after subtracting the number of public offices. However, at the time of the June 2012 survey 10 years earlier, there were 73,121 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 2022, the total number of maintenance-related personnel was 547,332, an increase of 2,662 (0.5%) from the previous year.

According to the type of business, the number of mechanics was 258,410, an increase of 2,718 people (1.1%)

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	50,210	37,219	3,659	464	159	91,711	257	100.3%
Number of shops that obtained designation		27,001	2,653	336	114	30,104	21	100.1%
Acquisition ratio		72.5%	72.5%	72.4%	71.7%	32.8%		
Total number of personnel	155,032	297,814	70,458	15,413	8,615	547,332	2,662	100.5%
Number of female personnel within that total	33,478	42,402	7,434	1,172	667	85,153	931	101.1%
Total number of maintenance personnel	117,481	214,482	50,122	11,195	6,339	399,619	667	100.2%
Number of female maintenance personnel within that total	10,725	7,358	871	128	155	19,237	632	103.4%
Number of Class 1 auto mechanics	2,243	8,549	2,446	299	159	13,696	687	105.3%
Number of female mechanics within that total	13	75	23	0	0	111	7	106.7%
Number of Class 2 auto mechanics	75,476	150,129	33,946	6,704	2,858	269,113	−2,849	99.0%
Number of female mechanics within that total	2,019	2,020	331	21	10	4,401	−343	92.8%
Number of Class 3 auto mechanics	16,893	25,039	4,850	1,392	698	48,872	−476	99.0%
Number of female mechanics within that total	4,039	1,819	90	22	7	5,977	−105	98.3%
Total number of mechanics	94,612	183,717	41,242	8,395	3,715	331,681	−2,638	99.2%
Number of female mechanics within that total	6,071	3,914	444	43	17	10,489	−441	96.0%

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 2012	40,915	15,657	4,954	2,387	2,271	1,659	1,884	2,121	1,273	73,121	451	73,572
June 2022	40,705	15,654	4,837	2,425	2,377	1,858	1,655	1,722	795	72,028	342	72,370
Change	−210	−3	−117	38	106	199	−229	−399	−478	−1,093	−109	−1,202

from the previous year. Vehicle maintenance businesses that are run as an additional business employed 90,462 people, 857 (0.9%) less than the previous year. The number of mechanics at dealers was 176,579 people, an increase of 1,401 people or 0.8% from the previous year. The number of mechanics in private owner-run businesses was 21,931 people, a decrease of 600 people (2.7%) from the previous year.

The number of maintenance personnel (shop workers) was 399,619, which is 667 more than the previous year, The number of mechanics was 331,681 people, a decrease of 2,638 (4.7%) from the previous year, marking a second consecutive year of decrease in that number.

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 women, but has dropped for two consecutive years since 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 2022 was 46.7 years, which is 0.3 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 52.1 years old, 0.4 years older compared to the previous year. The youngest were the maintenance personnel at dealers, who were nevertheless also 0.4 years older, reaching 36.8 years old.

2. 2. Demand for Vehicle Maintenance

(1) Trends in Total Maintenance Sales Volume

The total maintenance sales volume in the 2022 survey of the situation in the vehicle maintenance industry (results from the 2021 fiscal year) was 5,738.8 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* and maintenance, regular inspection and maintenance, collision repairs, and other mainte-

nance (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).

Compared by type of business, total maintenance sales for full-time vehicle maintenance businesses as a whole were 2,114.6 billion yen, an increase of 100.2 billion yen (5.0%) from the previous year. Sales at full-time maintenance businesses have increased for four years in a row. A breakdown of the full-time maintenance business total by type of maintenance work shows that *shaken* and maintenance sales amounted to 991.7 billion yen, an increase of 48.9 billion yen (5.2%) compared to the previous year, accounting for 46.9% of the total. Regular inspection and maintenance sales amounted to 90.9 billion yen, an increase of 2.2 billion yen (2.5%) compared to the previous year, accounting for 4.3% of the total. Collision repairs amounted to 389.1 billion yen, an increase of 6.4 billion yen (1.7%) compared to the previous year, and representing 18.4% of the total. Finally, other maintenance sales amounted to 642.9 billion yen, an increase of 42.7 billion yen (7.1%) compared to the previous year, and representing 30.4% of the total.

Maintenance sales at vehicle maintenance businesses run as an additional business amounted to a total of 653.1 billion yen, a decrease of 8.2 billion yen (1.2%) compared to the previous year. Breaking that total down according to the different kinds of maintenance work shows that *shaken* and maintenance sales amounted to 307.6 billion yen, a decrease of 3.2 billion yen (1.0%) compared to the previous year. This represents 47.1% of the overall sales of vehicle maintenance businesses run as an additional business. Regular inspection and maintenance sales amounted to 25.5 billion yen, an increase of 200 million yen (0.8%) compared to the previous year, accounting for 3.9% of the total. Collision repairs amounted to 108.4 billion yen, a decrease of 4.0 billion yen (3.6%) compared to the previous year. That represents 16.6% of the total. Other maintenance sales were 211.6 billion yen, a decrease of 1.2 billion yen (0.6%) from the previous year, and representing 32.4% of the total.

In contrast, overall sales at dealers were 2 trillion 734.0 billion yen, an increase of 92.1 billion yen (3.5%) from the previous year. Breaking down the overall sales at dealers by work category, sales of *shaken* maintenance were 943.3 billion yen, an increase of 10.7 billion yen (1.1%) from the previous year. This accounted for 34.5% of all their maintenance sales. Regular inspection and maintenance sales amounted to 303.5 billion yen, an increase of 15.5 billion yen (5.4%) compared to the previous year, accounting for 11.1% of total dealer inspection and maintenance sales. Collision repairs amounted to 467.5 billion yen, an increase of 42.2 billion yen (9.9%) compared to the previous year, and representing 17.1% of total dealer maintenance sales. Finally, other maintenance sales amounted to 1 trillion 767 billion yen, an increase of 23.7 billion yen (2.4%) compared to the previous year, accounting for 37.3% of total dealer maintenance sales.

Overall sales at private owner-run businesses were 237.1 billion yen, an increase of 3.7 billion yen (1.6%) from the previous year. Breaking down the overall sales of private owner business by work category, sales of *shaken* maintenance were 104.6 billion yen, an increase of 3.7 billion yen or 3.7% from the previous year. This accounted for 44.1% of all their maintenance sales. The sales for regular inspection and maintenance were 10.6 billion yen, a decrease of 3.8 billion yen (26.4%) from the previous year, representing 4.5% of the total sales for private owner-run shops. Collision repairs amounted to 39.3 billion yen, a decrease of 6.2 billion yen (13.6%) compared to the previous year. This accounted for 16.6% of the total vehicle maintenance sales at private owner-run shops. Finally, other maintenance sales amounted to 82.6 billion yen, an increase of 10.0 billion yen (13.8%) compared to the previous year, accounting for 34.8% of total vehicle maintenance sales at private owner-run shops.

Breaking down the overall maintenance sales total of 5,738.8 billion yen by work category, sales for *shaken* maintenance were 2,347.2 billion yen, an increase of 60.1 billion yen or 2.6% from the previous year. This accounted for 40.9% of the total maintenance sales. The sales for regular inspection and maintenance were 430.5 billion yen, an increase of 14.1 billion yen (3.4%) from the previous year. accounting for 7.5% of total maintenance sales. Collision repair sales were 1 trillion 43 billion yen, an increase of 384.4 billion yen (4.0%) over the previous year. This accounted for 17.5% of the total maintenance sales volume. Finally, other maintenance sales amounted to 1 trillion 956.8 billion yen, an increase of 75.2 billion yen (4.0%) compared to the previous year, and making up 34.1% of the overall 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 1,593. This was a decrease of 34 vehicles (2.1%) from the previous year. Broken down according to the content of the work performed, the average number of vehicles brought in for *shaken* and maintenance service per shop was 368, or 4 fewer vehicles (1.1%) than in the previous year. The number of vehicles brought in for *shaken* and maintenance service was 1,593, representing 23.1% of the total number of serviced vehicles. The number of vehicles serviced for regular inspection and maintenance was 271, a decrease of 9 vehicles (3.2%) from the previous year, and accounted for 17.0% of the total. The average number of vehicles brought in for collision repairs per shop was 74. This was a decrease of 1 vehicle (1.3%) from the previous year and accounted for 4.6% of the total number of vehicles brought in. There were 879 vehicles serviced for other maintenance, a decrease of 20 vehicles (2.2%) from the previous year, accounting for 55.2% of all the vehicles brought into those shops for maintenance.

In terms of the annual average number of vehicles brought in for maintenance per shop during the year according to the type of business, 860 vehicles were brought into full-time vehicle maintenance businesses, a decrease of 16 vehicles (1.8%) from the previous year. At maintenance shops run as an additional business, the average number of vehicles brought in for other maintenance was 1,273 per shop, an increase of 2 vehicles (0.2%) from the previous year. The number of vehicles serviced at the dealer shops was 4,441 vehicles, a decrease of 83 vehicles (1.8%) 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* and maintenance during the year was 289 per shop, an increase of 2 vehicles (0.7%) from the previous year. This accounted for 33.6% of all the vehicles brought into those shops for maintenance. For maintenance shops run as an additional business, the average number of vehicles brought in was 342 per shop, a decrease of 3 vehicles (0.9%) from the previous year representing 26.8% of the total. At the same time, the average number of vehicles brought into maintenance shops at dealers for *shaken* and maintenance was 668, a decrease of 19 vehicles (2.8%) from the previous year and making up 15.0% 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 95 vehicles per shop, a decrease of 5 vehicles (5.0%) from the previous year. That accounted for 11.0% of all the vehicles brought into those shops for maintenance. At maintenance shops run as an additional business, the average number of vehicles brought in for other maintenance was 112 per shop, an increase of 3 vehicles (2.8%) from the previous year. That accounted for 8.8% of the vehicles brought into those shops for maintenance. The number of vehicles serviced at the dealer shops was 1,034 vehicles, a decrease of 26 vehicles (2.5%) from the previous year, accounting for 23.3% of the total.

The average number of vehicles brought in for collision repairs during the year was 58 vehicles per shop at full-time vehicle maintenance businesses, a decrease of 3 vehicles (4.9%) from the previous year. That accounted for 6.7% of the total. For maintenance shops run as an additional business, the average number of vehicles brought in was 61 per shop, a decrease of 3 vehicles (4.7%) from the previous year, representing 4.8% of all the vehicles brought in for maintenance service. The average number of vehicles brought into maintenance shops at dealers was 144 vehicles per shop, an increase of 12 vehicles (9.1%), This accounted for 3.2% of all the vehicles brought in for maintenance service at those shops.

The category of "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 for other maintenance was 418 per shop, a decrease of 10 vehicles (2.3%) from the previous year. This accounted for 48.6% of all the vehicles brought into those shops for maintenance during the year. For maintenance shops run as an additional business, the average number of vehicles brought in was 759 per shop, a decrease of 7 vehicles (0.9%) from the previous year, representing 58.4% of the total. Finally, the average number of vehicles brought into maintenance shops at dealers for other maintenance was 2,594 per shop, a decrease of 52 vehicles (2.0%) from the previous year, representing 58.4% of the total.

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

Two-year vehicle inspections account for over three-quarters of the *shaken* 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 49,092 yen, which was an increase of 719 yen (1.5%) over the unit price of the previous year. For maintenance shops run as an additional business, the unit price was 53,461 yen, an increase of 418 yen (0.8%) compared to the previous year. However, in the case of the maintenance shops at dealers, the unit price was 79,620 yen, an increase of 4,294 yen (5.7%) compared to the previous year. The price difference between the 2-year *shaken* fees at full-time vehicle maintenance businesses and maintenance shops at dealers was 30,528 yen, expanding by 10,000 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 21,248 yen at full-time vehicle maintenance businesses. This was a decrease of 2,013 yen (10.5%) compared to the previous year. For maintenance shops run as an additional business, the unit price was 17,163 yen, an increase of 703 yen (4.3%) compared to the previous year. However, for maintenance shops at dealers, the unit price was 21,399 yen, an increase of 1,143 yen (5.6%) compared to the previous year.

3 Inspection and Maintenance System Trends

3. 1. Vehicle Inspections

In 2022 the total number of *shaken* renewals (sum of data from MLIT, the National Agency for Automobile and Land Transport Technology (NALTEC), and the Light Motor Vehicle Inspection Organization (LMVIO)) was 34,459,861 cases, an increase of 901,079 cases (2.7%) compared to the previous year.

The total number of registered vehicles and mini-vehicles specified to receive maintenance was 25,402,773 an increase of 694,177 vehicles (2.8%) compared to the previous year. The specified maintenance rate rose by 0.1% from the previous year to 73.7%. Closer analysis of the data for registered vehicles collected by MLIT shows that the number of registered vehicles subjected to a *shaken* renewal was 21,945,206, an increase of 705,464 vehicles (3.3%) compared to the previous year. The number of vehicles subject to specified maintenance was 16,703,470, an increase of 517,061 vehicles (3.2%). The specified maintenance rate dropped by 0.1% from the previous year to 76.1%.

In 2022, 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* renewals, structural change inspections, and re-inspections) was 6,997,627. This was an increase of 128,295 inspections (1.9%) compared to the previous year. The number of on-street inspections was 129,659, an increase of 4,189 (3.3%) compared to the previous year.

The breakdown of the number of the different types of inspections indicates that there were 892,214 new inspections (including preliminary inspections), a decrease of 99,053 (10.0%) compared to the previous year. The number of *shaken* renewals was 5,236,520, an increase of 188,405 (3.7%) compared to the previous year. The number of structural change inspections was 77,053, an increase of 3,888 (5.3%) compared to the previous year. There were 791,840 re-inspections, a decrease of 35,055 (4.6%) compared to the previous year.

Examining the data for mini-vehicle inspections reveals that there were 12,514,655 *shaken* renewals, an increase of 195,615 (1.6%) compared to the previous year. The number of *shaken* renewals for mini-vehicles first exceeded 10 million in 2010, passed 11 million in 2015, went over 12 million in 2020, and has continued to rise since then.

The number of mini-vehicles specified to receive maintenance was 8,699,303 and the specified maintenance rate was 69.5%, an increase of 0.3% from the previous year. Online renewal submissions (one stop service (OSS)) for mini-vehicle specified maintenance were introduced in 2019.

The number of vehicles brought into LMVIO for a *shaken* renewal inspection was 3,815,352. This total consisted of 2,714,059 vehicles brought in by maintenance personnel, and 1,101,293 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 Ve-

hicle Act stipulated the digitalization of vehicle inspection certificates. Administrative tasks such as electronically recording the new expiration date after renewals in the vehicle inspection certificates will be entrusted to designated maintenance operators who meet certain criteria. The digitalization of *shaken* certificates began in January 2023.

It is currently possible to submit applications for a renewal inspection to update the vehicle inspection certificate through the one stop service (OSS), and the introduction of digital certificates is expected to significantly raise the efficiency of *shaken* administrative tasks at designated workshops.

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* 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. Pre-operation starts in October 2023 in preparation for the introduction of OBD inspections.

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 announces the automotive machine tool sales figures from its member companies from the previous fiscal year. The latest announced machine tool sales figures are those from fiscal 2021 (from April 2021 to March 2022). The machine tools handled by each member company are broadly classified into 19 item categories and then added up.

In 2021, total automotive machine tool sales amounted to 116 billion 425.2 million yen, an increase of 10 billion 127.2 million yen (9.5%) compared to the previous fiscal year, exceeding 100 billion yen for a ninth consecutive year.

In the 2021 survey, sales in 17 of the 19 item categories, notably those of vehicle washing equipment, lifts, jacks & presses, as well as servicing equipment for batteries and coolers, reached their highest total in 15 years.

In terms of proportion of total sales, the largest contributors were lifts, jacks & presses (21.3 billion yen, 18.3% of the total and an 8.9% increase over the previous year), inspection equipment (12.1 billion yen, 10.4% of the total, a 19.6% increase), vehicle washing equipment (9.8 billion yen, 8.4% of the total, a 2.4% increase), manual tools (7.7 billion yen, 6.6% of the total, a 10.6% increase), integrated vehicle diagnostic equipment (7.4 billion yen, 6.3% of the total a 22.7% increase), and servicing equipment for brakes and wheels (7.3 billion yen, 6.2% of the total, a 19.5% increase).

Sales of scanning tools, which are essential to diagnostics, inspections, and servicing, were 14,745 units (a 35.1% decrease from the previous year) amounting to a total of 3 billion 417.8 million yen and an average unit price of 206,292 yen (compared to 133,070 yen the year before).

Sales of the diagnostic software installed in scanning tools was 31,265 units (a 29.1% decrease from the previous year), amounting to a total of 465.54 million yen and an average unit price of 14,890 yen (compared to 11,593 yen the year before).