

The History of Fires and Firefighting in Japan and Six of its Major Cities [#2]

The History of Firefighting (Tokyo and Yokohama)

“The History of Fires and Firefighting in Japan and Six of its Major Cities” is a compilation of the history of fires and firefighting in Japan and six of its major cities and related data from 1950 to 2020 intended to introduce the state of fires and firefighting in Japan to the rest of the world. The second installment of this series of special chapters will focus on Tokyo and Yokohama.

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5. Fires and Fire Service Systems in Six Major Japanese Cities

5-1 Tokyo

1) The history of Tokyo

The history of Tokyo, the capital of Japan, begins in the early 17th century, when the shogun Tokugawa Ieyasu established the city of Edo. Prior to the city’s establishment, much of the area was coastal marshland and not well suited for habitation, but the Tokugawa shogunate used the latest technology available at the time to develop the entire region, moving merchants from all over the country to Edo to create a huge commercial district and thus a system to support the lives of the samurai class, from which the government bureaucracy was derived.

The Tokugawa shogunate lasted for about 270 years, during which time Edo flourished as a political and economic center and grew into a metropolis with a population of 1.5 million by the 19th century.

To feed 1.5 million people, a water supply system, a canal transportation network, and a household waste recycling system were built, and a market for food and household goods was established. Although there was no sewage system, a social system was developed in which waste was recycled back into the soil as fertilizer.

In addition, many citizens spontaneously established private schools, where children of the common people also studied. As a result, the literacy rate and cultural level of the common people were both extremely high, leading to the development of literature, painting, theater, and food culture, which are the roots of Japanese culture as we know it today.

In 1868, Edo was renamed Tokyo when Emperor Meiji established the modern state of Japan.

Many people came from all over Japan to work for the new government in Tokyo, with most of them living in the area centered around the Imperial Palace (inside what is now the Yamanote Line). The Meiji government promoted the modernization of the city by establishing a foreign settlement in Tsukiji and constructing a Western-style neighborhood with brick buildings in Ginza.

By the end of the 19th century, Tokyo had become Tokyo Prefecture, centered around the city and including surrounding towns and villages, the Izu Islands, and mountainous areas to the west, resulting in the present-day Tokyo Metropolis.

The 20th century saw a further influx of people into Tokyo, with the population reaching 3.7 million in 1920.

On September 1, 1923, a magnitude 8 earthquake struck Tokyo, causing extensive damage in what later became known as the Great Kanto Earthquake. Damage from the earthquake was most severe in Tokyo and Yokohama, where a total of 370,000 houses either collapsed or burned to the ground, and a combined total of approximately 105,000 people were killed or went missing. Of these, approximately 92,000 died in the ensuing fires, which accounted for 90% of all deaths.

The reconstruction of Tokyo after the earthquake was undertaken directly by the Japanese government, led by count Shinpei Gotō. Gotō attempted to create a safe and sanitary city by reallocating land, building wide highways, bridges, and gas conduit networks, and improving densely populated residential areas, but was forced to scale back the project due to a lack of funds. The reconstruction was completed in 1930, and September 1 was designated “Disaster Prevention Day” to commemorate the tragedy of the earthquake.

In 1941, the Pacific War began. Tokyo was subjected to intense air raids by the U.S. military from November 1944 until Japan’s defeat in August 1945. In particular, the air raid by 300 B-29 bombers on the night of March 10, 1945, caused extensive damage

as napalm bombs destroyed most of downtown Tokyo, an area which had been densely populated with wooden houses. As a result of the bombing, 1 million people lost their homes, and 100,000 people were killed.

After the war ended, Japan was occupied by the Allies and reborn as a democratic, peaceful nation. After regaining sovereignty in 1951, Japan experienced rapid economic growth, and Tokyo was rapidly rebuilt.

With the 1964 Tokyo Olympics, the city was transformed into a modern metropolis complete with skyscrapers and a network of highways and subways. Furthermore, Tokyo was connected to other major cities throughout Japan by a network of high-speed trains known as the Shinkansen, making it the political, economic, and cultural center of Japan.

Today, Tokyo has an area of 2,200 km² (including the Izu Islands and mountainous areas), a population of 14 million, and a GDP in nearly of USD 1 trillion.

On the other hand, Japan's population and economy are both overly concentrated in Tokyo, making the country highly susceptible to disasters. There are still significant areas of Tokyo that are vulnerable, such as those densely populated with wooden houses. As a result, the Japanese government estimates that a major earthquake hitting Tokyo could destroy up to 610,000 homes, kill 23,000 people, and cause nearly USD 1 trillion in economic damage.

(Reference materials: "The History of Firefighting", Museum of Fire and Disaster, Institute of Scientific Approaches for Fire & Disaster)

2) The history of firefighting in Tokyo

Edo (the predecessor of Tokyo) became the de facto capital of Japan in the early 17th century and developed as a political and economic center, becoming a metropolis with a population of over 1 million by the early 18th century.

During the Edo period (1603-1867), the city of Edo was populated by samurai from the ruling class, as well as ordinary citizens who supported the daily lives of the samurai, with a population ratio of approximately 50:50. The samurai lived in relatively large dwellings built in their own separate districts, which covered 70% of Edo, while ordinary citizens lived in small houses in densely packed residential areas, which covered about 15% of Edo.

At that time, all buildings were wooden, so when fires broke out, they spread widely. In particular, because the residential areas of ordinary citizens were densely populated with small wooden houses, when fires broke out during the dry and strong northwesterly winds of winter, they often developed into large-scale urban fires.

During the Edo period, there were two types of fire brigades: *jōbikeshi* and *machibikeshi*. *Jōbikeshi* were the samurai's own fire brigades who extinguished fires in the samurai districts, while *machibikeshi* were private, volunteer fire brigades consisting of ordinary citizens who extinguished fires in the residential areas.

At the time, fire pumps were manual and had poor firefighting capabilities, so a fire brigade's primary means of extinguishing fires was to destroy neighboring houses to prevent them from spreading. Therefore, the principal members of *machibikeshi* were carpenters and construction workers who were familiar with the structure of houses.

When Edo was renamed Tokyo during the Meiji period (1868-1912), *jōbikeshi* joined the police force as public firefighting teams, while *machibikeshi* became the (private) volunteer fire corps.

After the war ended in 1945, the fire defense organization became independent from the police force in 1948, and the municipalities assumed responsibility for firefighting. In Tokyo, the Tokyo Fire Department was established in 1948.

Since then, the Tokyo Fire Department has expanded its personnel and facilities in response to the concentration of the population in Tokyo, the expansion of the urban area, and changes in the urban structure.

(Reference materials: "One Hundred Years of Firefighting in Tokyo", Tokyo Fire Department)

3) Data on fires and fire service systems in Tokyo

The following data is for the Tokyo Metropolis as a whole, including islands and mountainous areas.

Table 2 Key firefighting-related data for Tokyo (2020)

Population	13,971,109
Total Area	2,194km ²
Tokyo Metropolitan Government Expenditures (based on the 2018 settlement of accounts)	JPY 7,379B (USD 67,082M)*
Firefighting expenses (based on the 2018 settlement of accounts)	JPY 231.8B (USD 2,107M)*
No. of public firefighters	18,624
No. of volunteer firefighters	22,077
No. of fire department (public)	82
No. of Volunteer fire corps	98
Fire pumpers (including volunteer fire corps vehicles)	1,010
Ladder trucks	87
Fire and disaster prevention helicopters	8
Fire boats	8
Ambulances	374

Prepared based on the 2020 White Paper on Fire Service and the FY2018 Prefectural Accounts Card.

*Converted at JPY 110 to USD 1 (exchange rate at the time of 2018)

Table 3 Major fires in Tokyo (1868-2020)

Date	Buildings or districts where the fire occurred	No. of burned houses	Fatalities	Injuries	Overview
12/12/1875	Yoshiwara	630			Urban fire
10/03/1876	Kanda	805			Urban fire (broke out in a bath house)
11/29/1876	Nihombashi	10,000	3		Urban fire
01/05/1877	Nihombashi	443			Urban fire
03/04/1877	Shitaya	300			Urban fire
03/12/1877	Ushigome	350			Urban fire (broke out in a bath house)
03/17/1878	Kanda	1,271			Urban fire
05/17/1878	Kanda	300			Urban fire
01/18/1880	Kanda	413			Urban fire
02/04/1880	Nihombashi	2,120			Urban fire (high winds)
04/28/1880	Koishikawa	409			Urban fire
05/08/1880	Kojimachi	392			Urban fire (broke out in a bath house)
01/26/1881	Kanda	15,221			Urban fire
02/11/1881	Kanda	7,307			Urban fire
02/21/1881	Yotsuya	1,291			Urban fire
03/31/1881	Kanda	330			Urban fire
05/09/1882	Kanda	428			Urban fire
01/09/1884	Shinagawa	507			Urban fire
03/04/1884	Nihombashi	360			Urban fire
03/13/1885	Nihombashi	1,320			Urban fire
03/31/1887	Shiba	545			Urban fire (broke out in a bath house)
12/18/1887	Asakusa	457			Urban fire (broke out in a bath house)
12/19/1887	Nihombashi	1,630			Urban fire
05/22/1888	Kanda	824			Urban fire (broke out in a baked potato shop)
02/27/1890	Asakusa	1,497			Urban fire
03/05/1890	Shiba	862			Urban fire
06/23/1890	Hongo	971			Urban fire (broke out in a tofu shop)
03/30/1892	Shiba	309			Urban fire
04/10/1892	Kanda	4,119	24		Urban fire
04/11/1892	Shiba	513			Urban fire (broke out in a vacant house)
11/11/1892	Asakusa	678			Urban fire
08/06/1893	Hachioji	736			Urban fire
01/28/1894	Shinagawa	331			Urban fire
12/12/1895	Shiba	823			Urban fire
04/22/1897	Hachioji	3,104	40	60	Urban fire
01/03/1898	Shitaya	593			Urban fire (broke out in a bath house)
03/23/1898	Hongo	111			Urban fire
04/20/1898	Shitaya	469			Urban fire
12/07/1904	Miyakejima	327			Urban fire (The entire village almost burned down.)
01/31/1906	Asakusa	447			Urban fire
02/17/1908	Iwabuchimachi	500			Urban fire
04/09/1911	Yoshiwara	6,555			Urban fire (The red-light district almost burned down.)
03/21/1912	Fukagawa	1,000			Urban fire (broke out in a brothel)
09/11/1912	Shitaya	343			Urban fire (high winds)
02/20/1913	Kanda	2,180			Urban fire
04/25/1919	Koishikawa	355			Urban fire
04/06/1921	Asakusa	1,287		116	Urban fire (high winds)
01/09/1923	Shibuya	361			Urban fire (broke out in a factory)

09/01/1923	All areas of Tokyo	312,328	70,497 (including 10,904 missing persons)	28,972	Great Kanto Earthquake
03/26/1924	Takadamachi	635			Urban fire (broke out in a buckwheat noodle shop)
10/30/1924	Shiba	594			Urban fire (Fire at emergency temporary housing for earthquake disaster)
03/18/1925	Nippori	2,106			Urban fire (broke out in a factory)
05/13/1925	Asakusa	299	1		Urban fire
03/19/1925	Nishi-Sugamo	597			Urban fire
12/16/1932	Department store		14	40	This was the first fire in a modern building in Japan in which a large number of people died. Celluloid toys stacked next to an electric heater in the toy department on the fourth floor of a crowded department store during the Christmas shopping season ignited and spread rapidly.
12/23/1932	Multifamily residential complex	12	20	16	A fire broke out in a store and spread to an adjacent apartment, killing and injuring many of the apartment's residents.
03/06/1937	Restaurant		10		
06/30/1937	Nursery		10		
08/24/1938	Residence and industrial factory		68		Fires in private houses and factories caused by airplane collisions, crashes, and explosions.
05/09/1939	Factory gunpowder magazine		19	194	A gunpowder magazine at the factory exploded, spreading the fire to neighboring factories.
02/14/1953	Factory and surrounding residences	284	20	35	Explosion of gunpowder at a factory. 14 buildings including the factory were completely destroyed or burned down, and 270 surrounding residences were damaged.
08/01/1955	Fireworks factory		18	27	Explosion at a fireworks factory
07/15/1958	Chemical plant		13	24	Explosion at a chemical plant
07/30/1958	Fireworks factory		11	2	Explosion at a fireworks factory
08/24/1960	Oil and fat factory		10	11	Gas explosion
07/14/1964	Warehouse		19	114	During firefighting operations at a warehouse, illegally stored organic peroxide exploded, killing and injuring numerous firefighters.
01/11/1965	Oshimamachi	585			Urban fire (broke out in a sushi restaurant)
02/18/1982	Hotel		33	34	A fire broke out at a well-known hotel that did not have a sprinkler system installed in violation of the Fire Service Act, resulting in numerous casualties.
06/06/1987	Nursing home		17	25	A fire broke out at night and many elderly people died because they could not evacuate. After the fire, regulations on the installation of sprinkler systems were tightened.
09/01/2001	Small multi-tenant building		44	3	A beer case placed on the only staircase of a small multi-tenant building was set on fire, killing many customers and employees who were unable to evacuate due to inadequate fire protection measures. After the fire, regulations on single-staircase buildings were tightened.

Urban fire: Fires that have destroyed approximately 300 or more houses, excluding wars.

Other fires: fires with 10 or more fatalities

(Prepared based on "The Encyclopedia of Environment, Disasters and Accidents (published by Maruzen)" and the White Papers on Fire Service)

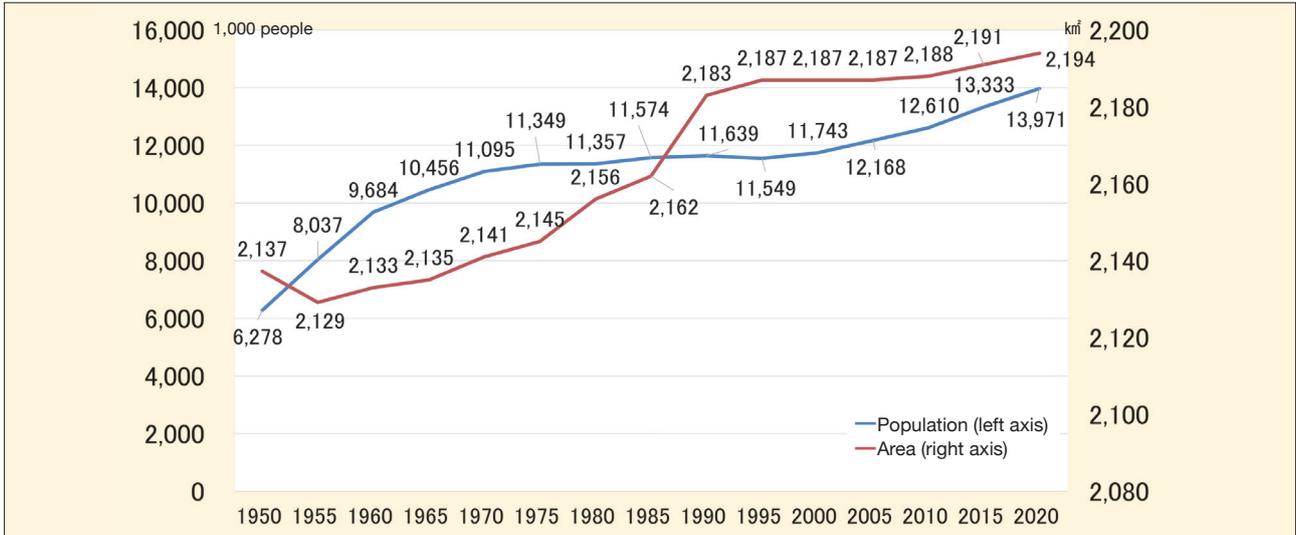


Figure 8 Population and area of Tokyo (1950-2020)

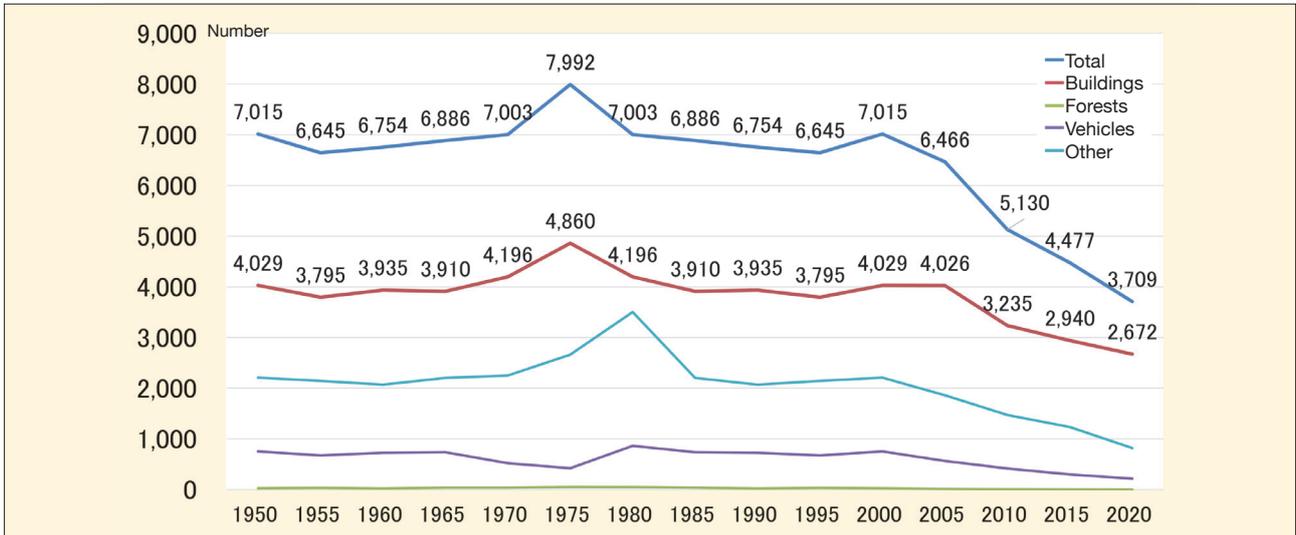


Figure 9 Number of fires in Tokyo (1950-2020)
(Prepared based on "The Fire Annual Report", FDMA)

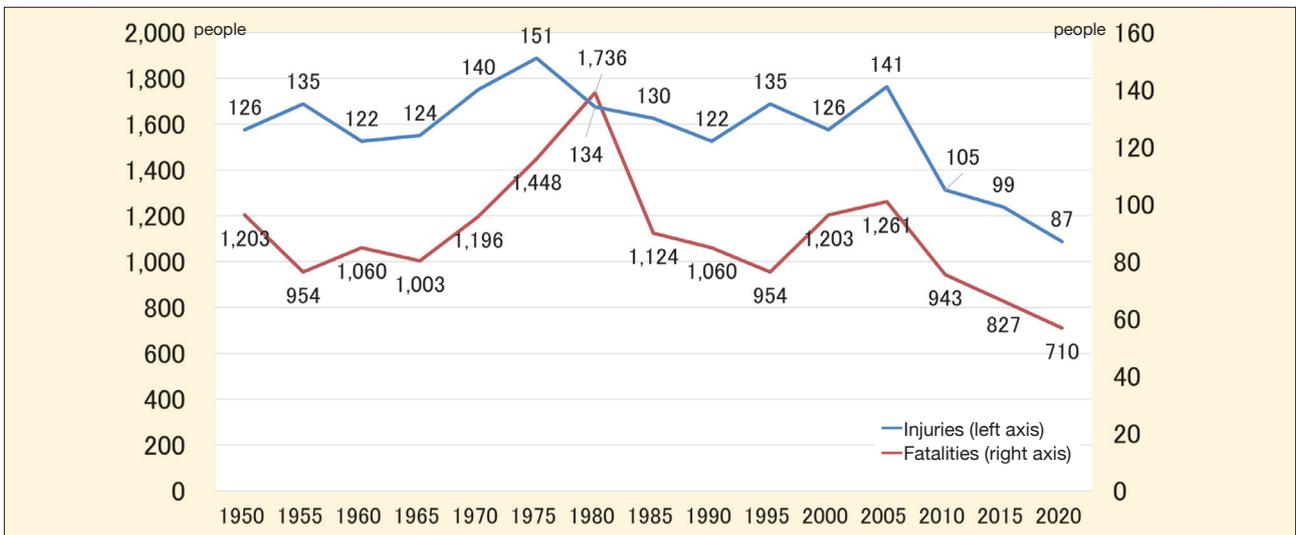


Figure 10 Fatalities and injuries from fires in Tokyo (1950-2020)
(Prepared based on "The Fire Annual Report", FDMA)

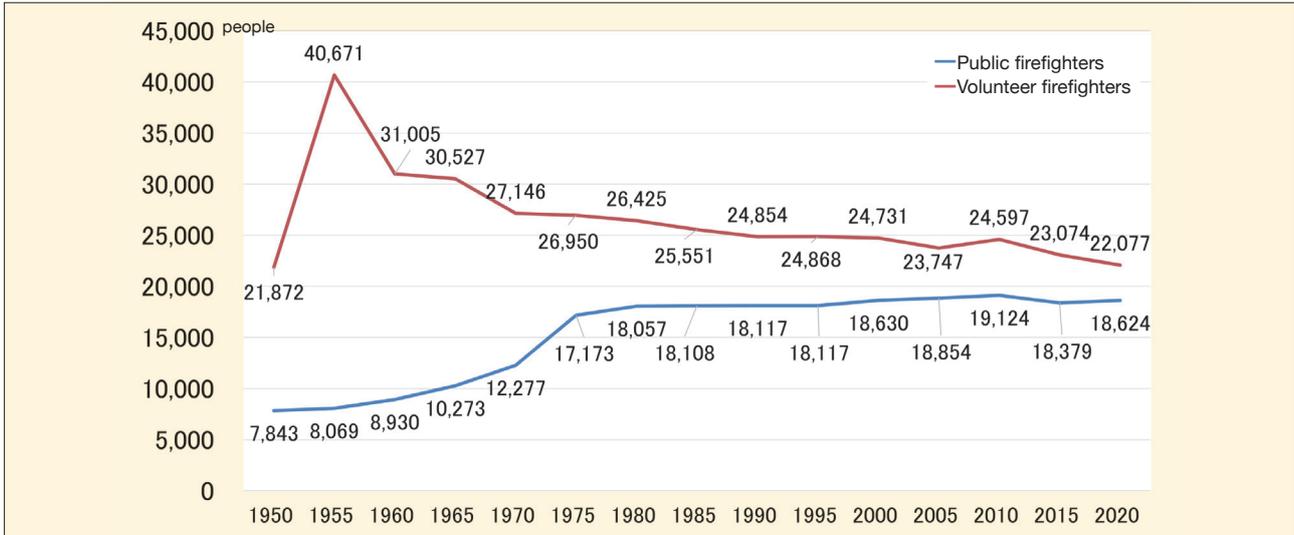


Figure 11 Number of firefighters and volunteer firefighters in Tokyo (1950-2020)
(Prepared based on “The Fire Service Annual Report”, FDMA)

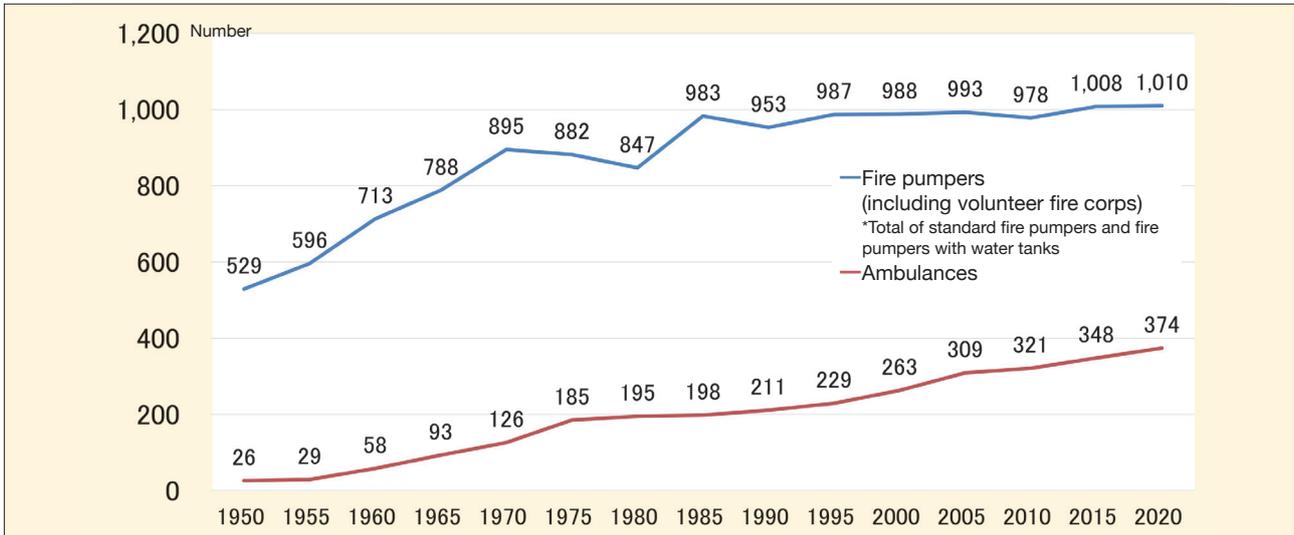


Figure 12 Number of fire pumpers and ambulances in Tokyo (1950-2020)
(Prepared based on “The Fire Service Annual Report”, FDMA)

5-2 Yokohama

1) The history of Yokohama

Yokohama is a port city located 30 to 40 km southwest of central Tokyo, facing Tokyo Bay.

Yokohama was little more than a small fishing village until the mid-19th century, but things changed when U.S. Navy warships came to Japan in 1853 to negotiate the opening of the country for trade.

Since the early 17th century, the Japanese government had, in principle, prohibited exchange and trade with foreign countries. Nagasaki, a city 1,000 km away from the de facto capital of Edo (the predecessor of today’s Tokyo), was the only window for exchange and trade with foreign countries (with western countries limited to the Netherlands).

In 1858, the Tokugawa shogunate, then the government of Japan, was forced to accept trade with the United States after the latter backed its demands with military force. However, the Japanese government declined to allow foreign ships to enter the port of Edo directly, so instead they built a port in Yokohama to receive foreign ships. Subsequently, the construction of foreign settlements and trade facilities in Yokohama led to the city’s development as an international trading hub.

In 1872, Japan’s first railroad line opened between Yokohama and Tokyo, which contributed greatly to Yokohama’s economic development, and by the early 20th century its population had grown to nearly 500,000.

In 1923, Yokohama was hit by a massive magnitude 8 earthquake. This earthquake later became known as the Great Kanto Earthquake, and although Tokyo suffered extensive damage as described in section 5-1, Yokohama was struck by an even fiercer tremor that caused tremendous damage. The earthquake destroyed all modern buildings (including the consulates of many countries) and nearly wiped out the entire city, with 100,798 houses destroyed, 22,355 people killed, and 10,208 injured. The Japanese government then implemented an earthquake reconstruction project, and Yokohama, which had been devastated by the earthquake, was almost completely restored by 1929.

Subsequently, the urban area of Yokohama was expanded through a series of mergers with neighboring areas and land reclamation along the Tokyo Bay shore. Yokohama also served as a port of embarkation for Pacific Ocean routes during the golden age of cruise ships. At the same time, the port changed from an export port for raw silk to a trading port for industrial products, and the proportion of machinery, metal products, and steel in both exports and imports increased significantly, a trend that continues to this day.

During World War II, 46% of Yokohama's urban area was destroyed in a series of napalm attacks by the U.S. Air Force that damaged 100,000 homes, killing 6,000 people and injuring 14,000. In particular, the air raid on May 29, 1945, burned the coastal area and completely destroyed the city center.

After the war ended in 1945, the Allies demanded the right to use the city center and the port of Yokohama as a military base, which greatly delayed Yokohama's reconstruction.

After Japan regained its sovereignty in 1951, key areas that had been confiscated by the Allies were gradually returned to Japanese control, allowing the reconstruction of Yokohama to proceed. In 1957, the Japanese government decided to develop the port of Yokohama as an international port, and the city has since experienced rapid growth.

Today, Yokohama is an international port city and the political and economic center of Kanagawa Prefecture. Yokohama is also a popular tourist destination, an industrial city with a vast industrial area along the coast, and a bedroom community for Tokyo. Currently, Yokohama is the second largest city in Japan, with an area of 436 km² and a population of 3.8 million.

(Reference materials: "The History of Yokohama", City of Yokohama)

2) The history of firefighting in Yokohama

In 1859, the Japanese government built a port to receive foreign ships in Yokohama, then a small fishing village. At the same time, a small fire brigade to protect not only the homes of ordinary citizens but also foreign settlements and trading facilities from fire. This is the origin of the Yokohama City Fire Bureau.

In 1871, a British steam fire pump was imported and deployed in this fire brigade, the second of its kind in Japan.

In 1882, Yokohama's fire brigade became part of the police force. The population at that time was 94,000.

In 1919, Yokohama's fire brigade was separated from the police force and placed under the jurisdiction of the governor of Kanagawa Prefecture. By that time, the fire brigade consisted of 2 fire stations, 2 fire engines, and 20 human-powered pumps, and employed 92 firefighters and 800 assistants.

On September 1, 1923, a massive earthquake known as the Great Kanto Earthquake struck Yokohama, causing catastrophic damage as described in 1) above. The fire department also suffered extensive damage.

Toward the end of World War II, from 1944 to 1945, the U.S. Military carried out repeated air raids on Yokohama. Most houses back then were made of wood, and despite the painstaking efforts of the fire brigade, 46% of the city was destroyed by fire.

After the end of the war, each municipality became responsible for firefighting services. The Yokohama City Fire Bureau was created in 1948, and initially consisted of 8 fire stations, 854 public firefighters, 82 fire engines, 2 ambulances, 4 fire boats, and 7,801 volunteer firefighters.

Since then, the Yokohama City Fire Bureau has been strengthened as the city's size, population, and economy have grown. Currently, the situation is as follows.

(Reference materials: "The History of Firefighting". City of Yokohama)

3) Data on fires and fire service systems in Yokohama

Table 4 Key firefighting-related data for Yokohama (2020)

Population	3,778,718
Total Area	436km ²
Yokohama City Expenditures (based on the 2018 settlement of accounts)	JPY 1,730.9B (USD 15,735M)*
Firefighting expenses (based on the 2018 settlement of accounts)	JPY 41.2B (USD 375M)*
No. of public firefighters	3,652
No. of volunteer firefighters	7,739
No. of fire department (public)	18
No. of Volunteer fire corps	20
Fire pumpers (including volunteer fire corps vehicles)	548
Ladder trucks	21
Fire and disaster prevention helicopters	2
Fire boats	3 (including 1 rescue boat)
Ambulances	103

Prepared based on the 2020 White Paper on Fire Service and the FY2018 Municipal Accounts Card.

*Converted at JPY 110 to USD 1 (exchange rate at the time of 2018)

Table 5 Major fires in Yokohama (1868-2020)

Date	Buildings or districts where the fire occurred	No. of burned houses	Fatalities	Injuries	Overview
01/12/1879	Motomachi	300			Urban fire
11/09/1883	Motomachi 1-chome	445			Urban fire
11/04/1884	Isezakicho 1-chome	780			Urban fire
09/20/1886	Fukutomicho 3-chome	640			Urban fire
06/17/1894	Motomachi 5-chome	1,092			Urban fire (broke out in a bath house)
08/12/1899	Kumoicho 1-chome	3,207	14	10	Urban fire (broke out in a bath house)
02/23/1900	Nigiwaicho 2-chome	324			Urban fire (broke out in a bath house)
07/18/1906	Negishicho Aizawa	595			Urban fire
03/19/1910	Nogecho 3-chome	542			Urban fire
04/28/1919	Chitosecho 1-chome	3,127	2	17	Urban fire
09/01/1923	Entire Yokohama City	25,324	24,646		Great Kanto Earthquake
09/13/1926	Vessel		10	8	Fire on a vessel docked at Yokohama Dock
04/24/1951	Train		107	90	A train caught fire due to a problem with overhead line construction at a station, and because the doors did not open and there was no other means of evacuation, many passengers became trapped inside the train and were killed or injured.
02/17/1955	Nursing home		99	9	A fire broke out on the first floor due to a tenant's negligence. The two-story wooden building with a total floor space of 3,000 m ² was completely destroyed by the fire, resulting in numerous casualties.
02/16/1989	Vessel		10	13	Fire on a vessel docked at Yokohama Dock

Urban fire: Fires that have destroyed approximately 300 or more houses, excluding wars.

Other fires: fires with 10 or more fatalities

(Prepared based on "The Encyclopedia of Environment, Disasters and Accidents (published by Maruzen)")

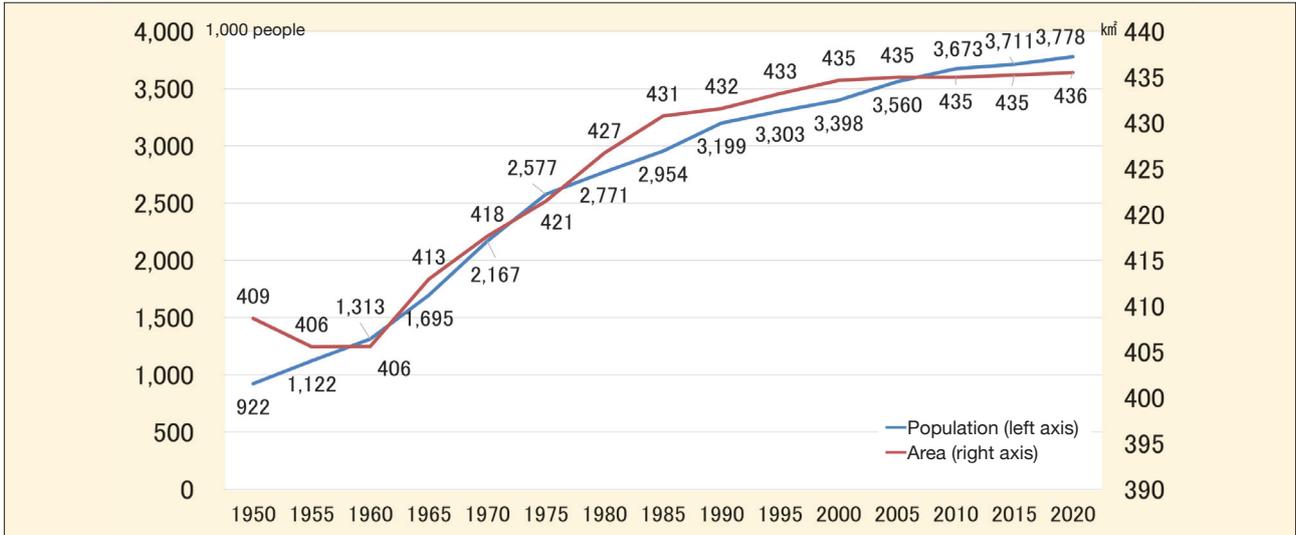


Figure 13 Population and area of Yokohama (1950-2020)

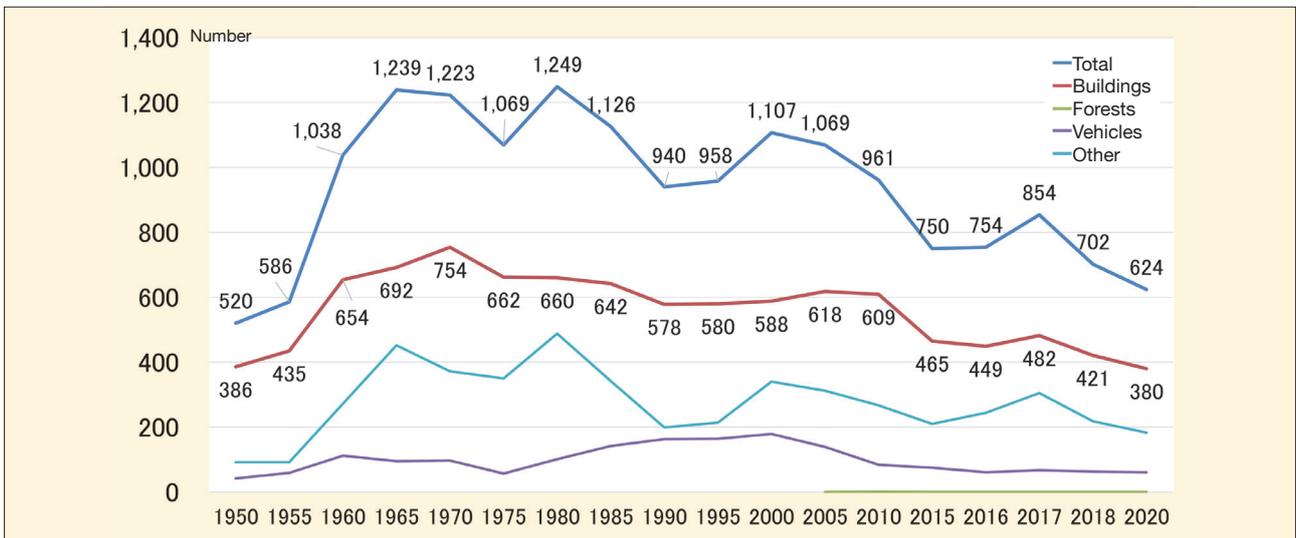


Figure 14 Number of fires in Yokohama (1950-2020)
(Prepared based on "The Fire Annual Report", FDMA)

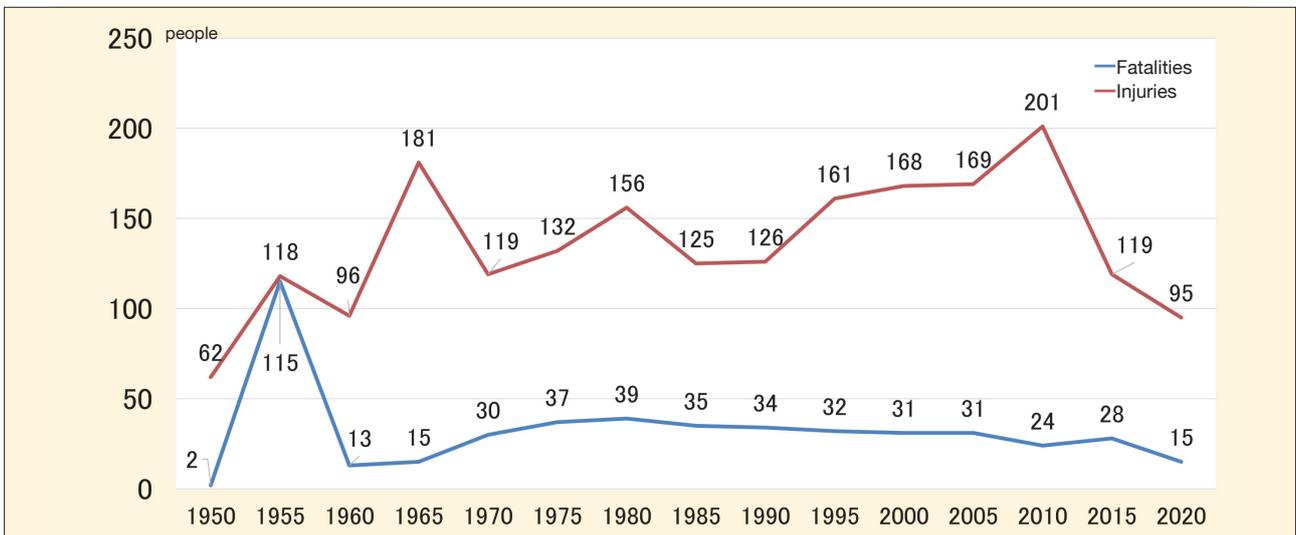


Figure 15 Fatalities and injuries from fires in Yokohama (1950-2020)
(Prepared based on "The Fire Annual Report", FDMA)

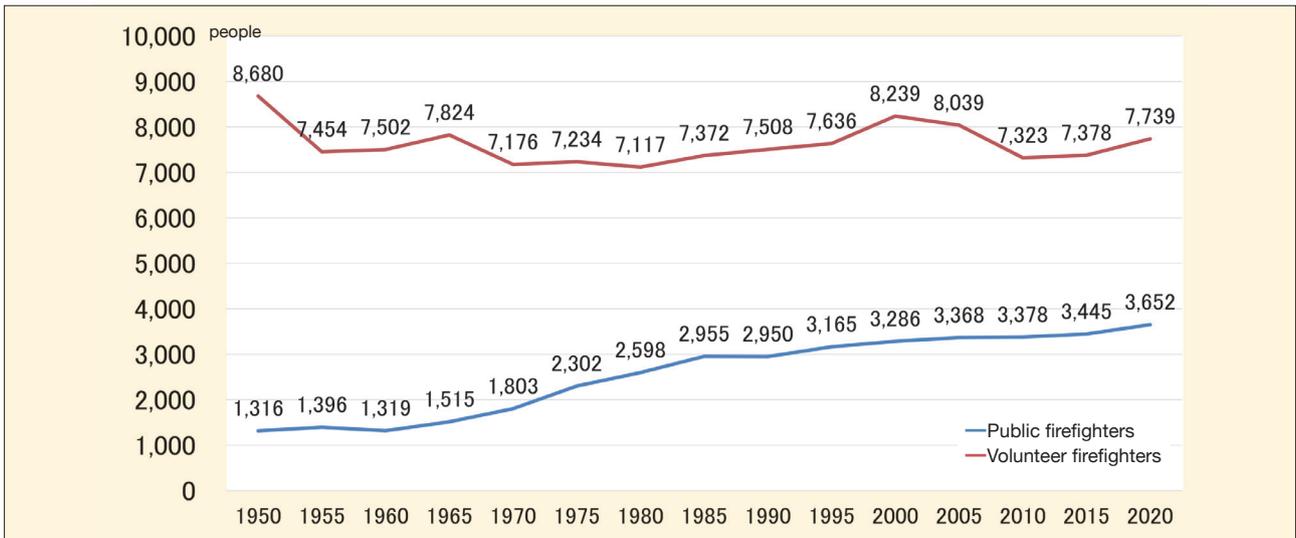


Figure 16 Number of firefighters and volunteer firefighters in Yokohama (1950-2020)
 (Prepared based on “The Fire Service Annual Report”, FDMA)

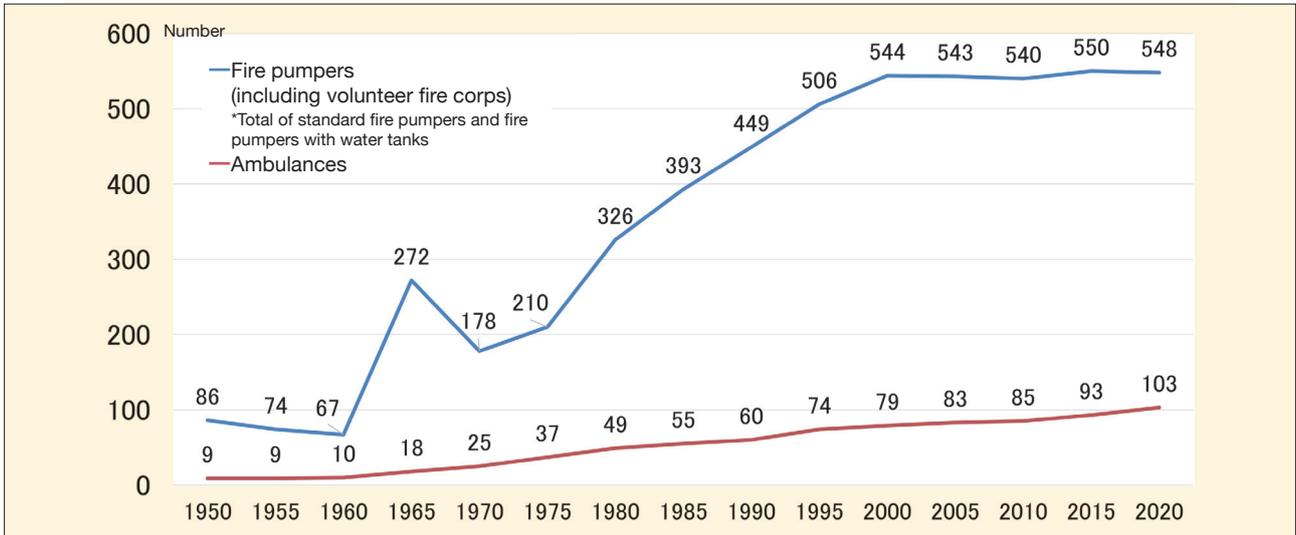


Figure 17 Number of fire pumpers and ambulances in Yokohama (1950-2020)
 (Prepared based on “The Fire Service Annual Report”, FDMA)