

Railway Operators in Japan 14

Kyushu Region

Shuichi Takashima

Region Overview

The island of Kyushu in south-western Japan has an area of about 40,000 km² and a population of about 13.45 million.

It has seven prefectures: Fukuoka, Saga, Nagasaki, Kumamoto, Oita, Miyazaki, and Kagoshima. Fukuoka, the northernmost prefecture, has a population of about 5 million or 37% of the island's total. In the late 19th century, Fukuoka

Prefecture was one of Japan's leading coalmining regions and construction of large government-owned foundries in the early 20th century led to the regional growth of iron and steel making and other heavy industries. However, the importance of coalmining had declined by the late 1970s and the last mine closed in 1997. Heavy industry has also declined but Fukuoka Prefecture is still Kyushu's economic centre.

The surrounding sea supports an active fishing industry and the interior is noted for its steep mountains, where forestry is important. Agriculture also plays a large role in the economy. The region's rich natural environment is being promoted for tourism and the many popular spots include numerous hot springs.

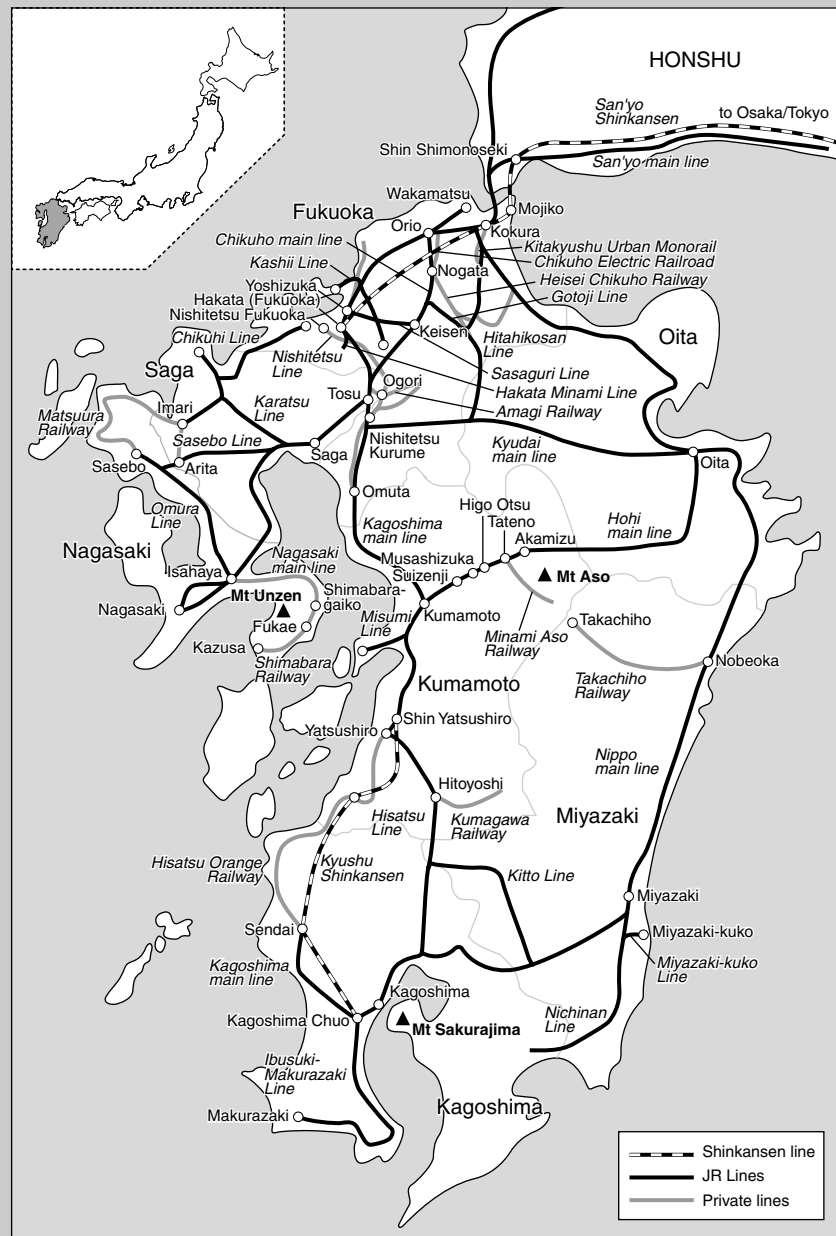
Outline of Rail Network

Kyushu's first railway tracks were built at the end of the 19th century as colliery lines and all railways were privately built and run until they were purchased by the government in 1906 and 1907 as part of a government buy-out of major lines in different parts of the country.

The island's major products, such as coals and heavy industrial goods, were carried by rail to ports in the north like Moji or Wakamatsu in Fukuoka Prefecture, and then transferred to ships destined for markets elsewhere in Japan. However, the 1942 opening of the undersea Kammon Tunnel (3614 m) linking Kyushu directly with Honshu pushed the transshipment ports into decline. Moji Station at Moji Port is now preserved as an important cultural property, reminding visitors of the early days of Japan's modernization.

The decline of coalmining and heavy industry since the 1960s saw a corresponding decline in rail traffic. The fairly dense network of lines and spurs in coalmining districts lost their freight

Railway Lines in Kyushu



Size and Financial Status of Railways in Kyushu

	Headquarters	Route-km	No. of Employees	Capital (¥million)	Operating Revenues (¥million)		Operating Expenses (¥million)		Operating Profits/Losses (¥million)		Ordinary Profits/ Losses (¥million)
					Railway	Non-railway	Railway	Non-railway	Railway	Non-railway	
JR Kyushu	Fukuoka	2101.1	7,738	16,000	130,892	18,821	139,850	13,299	-8,958	5,521	5,739
Nishitetsu	Fukuoka	115.9	966	26,157	24,333	113,784	20,763	108,611	3,570	5,174	6,194
Kitakyushu Urban Monorail	Fukuoka	8.8	140	8,150	2,254	62	1,945	62	309	0	380
Nagasaki Electric Tramway	Nagasaki	11.5	195	210	1,817	508	1,787	491	30	17	44
Amagi Railway	Fukuoka	13.7	29	156	231	11	240	11	-8	1	-3
Chikuho Electric Railroad	Fukuoka	16.0	84	490	1,283	188	1,304	138	-21	51	40
Shimabara Railway	Nagasaki	78.5	134	800	815	1,713	928	1,682	-114	31	-131
Kumamoto Electric Railway	Kumamoto	13.1	27	156	240	3,470	251	3,308	-11	163	18
Minami Aso Railway	Kumamoto	17.7	14	100	93	1	97	0	-5	1	-3
Matsuura Railway	Nagasaki	93.8	97	300	842	51	915	-50	-73	1	-72
Takachiho Railway	Miyazaki	50.0	34	230	176	6	241	12	-66	-6	-70
Heisei Chikuho Railway	Fukuoka	49.2	68	273	441	-	453	-	-12	-	22
Kumagawa Railway	Kumamoto	24.8	31	136	174	12	241	2	-66	10	-16
Hisatsu Orange Railway*	Kumamoto	116.9	94	530	-	-	-	-	-	-	-
Fukuoka Municipal Transportation Bureau	Fukuoka	17.8	646	-	20,521	-	17,712	-	2,809	-	-7,079
Kumamoto City Transportation Bureau	Kumamoto	12.1	127	-	1,341	-	1,766	-	-426	-	-343
Kagoshima City Transport Bureau	Kagoshima	13.1	132	-	1,628	-	1,440	-	187	-	-564

Source: *Tetsudo tokei nempo* (Railway Annual Statistics), MLIT, 2002 and *Tetsudo yoran* (Railway Directory), MLIT 2003

Note: Final accounts of expense and revenue not available due to March 2004 opening

Passenger Volume and Density by Railway Company

		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		JR Kyushu	No. of Passengers (1000)	304,461	311,213	316,187	321,177	323,586	314,808	312,649	308,780	306,022
	Passenger Density ¹⁾	11,164	11,155	11,175	11,228	11,322	10,998	10,792	10,538	10,453	10,424	10,393
Nishitetsu	Volume	155,251	148,501	142,947	139,639	138,949	136,424	131,026	126,212	119,118	111,370	108,425
	Density	46,759	48,876	47,627	46,229	46,352	45,969	44,769	43,586	42,838	42,729	41,513
Kitakyushu Urban Monorail	Volume	11,143	11,691	11,846	11,424	11,181	11,047	12,346	12,485	12,148	11,587	11,497
	Density	17,232	17,996	18,361	17,883	17,757	17,733	19,192	19,211	18,172	17,350	17,303
Nagasaki Electric Tramway	Volume	21,187	21,462	21,792	21,665	21,494	21,092	21,026	20,517	21,523	21,150	20,618
	Density	16,312	16,513	16,805	16,605	16,585	16,217	16,142	15,679	16,481	16,171	15,810
Amagi Railway	Volume	1,445	1,439	1,468	1,438	1,390	1,387	1,330	1,295	1,217	1,282	1,274
	Density	2,222	2,219	2,293	2,204	2,143	2,074	1,950	1,947	1,796	1,909	1,840
Chikuho Electric Railroad	Volume	11,381	11,093	10,341	9,827	9,470	9,150	8,782	8,429	7,733	7,212	6,793
	Density	11,923	11,559	10,797	10,229	9,891	9,563	9,116	8,711	8,217	8,147	7,654
Shimabara Railway	Volume	2,625	2,235	2,169	2,210	2,199	2,331	2,247	2,151	2,300	2,314	2,311
	Density	1,363	1,085	1,066	1,074	1,087	1,205	1,162	1,108	1,175	1,205	1,213
Kumamoto Electric Railway	Volume	1,723	1,667	1,685	1,711	1,723	1,740	1,747	1,722	1,641	1,596	1,536
	Density	1,771	1,733	1,734	1,726	1,762	1,798	1,814	1,768	1,691	1,590	1,590
Minami Aso Railway	Volume	469	472	489	416	411	386	374	348	349	342	330
	Density	690	748	765	764	767	703	682	631	633	633	598
Matsuura Railway	Volume	3,989	4,089	4,184	4,202	4,424	4,004	3,863	3,911	3,821	3,749	3,617
	Density	1,358	1,381	1,405	1,328	1,347	1,245	1,188	1,189	1,137	1,096	1,047
Takachiho Railway	Volume	608	544	603	562	544	518	481	459	434	411	381
	Density	848	798	820	763	738	692	644	622	583	557	522
Heisei Chikuho Railway	Volume	3,424	3,424	3,416	3,390	3,333	3,073	2,950	2,872	2,732	2,553	2,404
	Density	1,632	1,601	1,585	1,570	154 ²⁾	1,454	1,389	1,280	1,251	1,179	1,114
Kumagawa Railway	Volume	1,387	1,335	1,278	1,235	1,165	1,153	1,066	1,074	1,038	1,032	982
	Density	2,152	2,074	1,984	1,912	1,845	1,791	1,655	1,664	1,612	1,605	1,527
Fukuoka Municipal Transportation Bureau	Volume	100,474	111,210	113,026	115,646	116,976	116,054	114,301	113,389	108,194	108,325	106,220
	Density	100,131	92,698	94,708	87,509	88,656	88,168	87,167	87,502	85,540	85,894	83,884
Kumamoto City Transportation Bureau	Volume	10,189	10,497	10,083	10,163	10,688	10,847	10,894	10,963	10,509	10,471	10,266
	Density	7,503	7,714	7,371	7,884	7,975	8,469	8,225	8,227	8,736	8,700	7,983
Kagoshima City Transport Bureau	Volume	11,061	10,914	10,722	10,887	11,081	10,683	10,464	10,356	10,149	10,062	9,959
	Density	7,864	7,760	7,623	7,720	7,879	7,596	7,440	7,343	7,598	7,575	7,497

Source: *Tetsudo tokei nempo* (Railway Annual Statistics), MLIT (former Ministry of Transport)

1) Passenger Density = Daily passenger-km/route-km

2) Figure error

business as the mines closed, leaving only passenger trains that were mostly empty. Many of these lines were abandoned in

the 1980s when Japanese National Railways (JNR) was attempting to restructure its finances, but passenger

levels continued to fall, reflecting JNR's vicious circle of mushrooming debt and deteriorating services.



Kyushu Shinkansen's *Tsubame* (right) connects with a conventional train (left) at same platform in Shin Yatsushiro Station. (Author)

Following the 1987 JNR division and privatization, JR Kyushu took over operations on the entire island. The island market is relatively small, making JR Kyushu similar in business scale to JR Hokkaido and JR Shikoku. There was concern that the new company would not prosper but JR Kyushu's birth luckily coincided with a general economic boom in Japan that brought satisfactory revenues in the first crucial years. Although the boom has been followed by a prolonged slump through the latter 1990s that still continues to this day, JR Kyushu pushed ahead with developing new markets through strong investments in inter-urban transport and improved transit services in the Fukuoka area. The results have been so positive that the company plans to become the first of the 'three island JRs' to be listed on the Tokyo Stock Exchange. Kyushu has a number of other rail operators, including Nishi Nippon Railroad (Nishitetsu) that operates in Fukuoka and its environs. It is listed among the 15 major private railway companies in Japan. Fukuoka is the only city in Kyushu with a sufficiently large passenger base to encourage a company other than JR Kyushu to maintain urban rail services.

There are transit systems in four cities: a subway operated by Fukuoka Municipal

Transportation Bureau, tramways operated by Kumamoto City Transportation Bureau, Kagoshima City Transport Bureau, and Nagasaki Electric Tramway.

Kyushu also has various small private or public-private operators providing local railway services. Many were established by local governments, and enterprises to take over lines abandoned by JNR or JR Kyushu. Most without a public component folded in the 1970s or 1980s, leaving very few still active. Some manage to maintain profitable operations, but many are struggling to stay afloat in a shrinking market.

Interurban Transport

Hakata Station in Fukuoka is Kyushu's interurban rail hub. The San'yo Shinkansen was extended to Hakata in 1975, making it the shinkansen gateway to Osaka and Tokyo. Somewhat unusually, the Kyushu section of the San'yo Shinkansen from Hakata to Shin Shimonoseki (86.2 km) in western Honshu (the main island) is operated by JR West instead of JR Kyushu. It could be argued that JR Kyushu should have been given operation of this section, because its mandate is to serve all of Kyushu, but exceptions were made when allotting

shinkansen operations to the new JRs (see *JRTR* 34, pp. 52–63).

JR Kyushu operates interurban limited express services in three directions from Hakata: (1) south through Kumamoto (Kyushu's second largest city) to Kagoshima (third largest city). (The recent March 2004 opening of the southern section of the Kyushu Shinkansen between Shin Yatsushiro and Kagoshima Chuo has greatly changed the timetable.); (2) west to Nagasaki on the Kagoshima main line via Tosu (in Saga Prefecture) and then on the Nagasaki main line; and (3) east to Kokura and then south on the Nippo main line to Oita and Miyazaki.

Connections to Kumamoto and Kagoshima

Ariake (name of local bay) limited expresses link Hakata with Kumamoto. The *Ariake* services used to terminate at Kumamoto Station, but many trains now provide through services to Suizenji Station on the Hohi main line, closer to the city centre. (Some services extend to Musashizuka and Higo Otsu.) When the through services began in 1987, the Hohi main line section was not electrified, so a diesel locomotive had to be coupled to the electric train for the short haul to Suizenji Station. Through services were later suspended, then reintroduced in 1999 as a fully electrified run after the Kumamoto–Higo Otsu section was electrified.

The Hakata to Kagoshima route through Kumamoto underwent a major change when the 137.6-km southern section of the Kyushu Shinkansen opened in March 2004 from Shin Yatsushiro (Kumamoto Prefecture) to Kagoshima Chuo (Kagoshima Prefecture). The *Tsubame* (Swallow) trains are named after the former narrow-gauge limited express service linking Hakata and Kagoshima. The northern section of the Kyushu Shinkansen between Hakata and Shin Yatsushiro is scheduled to open in

FY2010. It is currently served by *Relay Tsubame* limited expresses operating on the narrow-gauge Kagoshima main line, meaning that passengers cannot travel the entire distance between Fukuoka and Kagoshima on one train—they must now change at Shin Yatsushiro. JR Kyushu made this change relatively easy by configuring the tracks so that the *Tsubame* shinkansen trains and *Relay Tsubame* limited expresses arrive on opposite sides of the same platform. This is very unusual in Japan where the general rule is to keep the shinkansen and narrow-gauge networks entirely separate.

Although passengers are presently forced to change trains, the shinkansen has greatly reduced the journey time. The old narrow-gauge track between Yatsushiro and Kagoshima has many curves because it follows the coast, making it unsuitable for high-speed operations and lengthening the journey. By contrast, the shinkansen follows an inland route on elevated track through many tunnels at speeds up to 285 km/h, slashing both distance and travel time to 1 hour—much less than the previous 2.5-hour trip. The opening of the new shinkansen has seen a substantial increase in ridership between the two cities, fuelling hopes of economic benefits both for JR Kyushu and the region. The shinkansen marks a new and welcome era for train travel for Kagoshima, indicated by the change of the terminal station name from Nishi Kagoshima (West Kagoshima) to Kagoshima Chuo (Kagoshima Central). Despite the advantages, there are problems. Some are inevitable—the high construction debt must be repaid; the high-speed trains are noisier; and the trackside environment has been altered. Another effect has been the transfer of one section of the Kagoshima main line by JR Kyushu to Hisatsu Orange Railway, a third-sector operator financed mainly by the Kumamoto and Kagoshima prefectural governments. Such transfers are not

uncommon because, when a new shinkansen line opens, the JR operator tends to downgrade the importance of local parallel-line operations due to a semi-official agreement with the government that unprofitable operations on parallel narrow-gauge track can be abandoned based on the commitment to shinkansen operations in the same corridor. Similar arrangements were made on Honshu when JR East opened the Nagano Shinkansen (Takasaki–Nagano) and the new northern extension of the Tohoku Shinkansen (Morioka–Hachinohe).

The financial stability of such third-sector operators is insecure, and they have to be heavily supported by prefectural governments for many years. In addition, commuters are forced to pay higher fares to improve the struggling operator's bottom line. In the case of Hisatsu Orange Railway, the problem is compounded by the decision that it could only takeover the least-travelled section of the line. JR Kyushu has kept the southern section (Sendai–Kagoshima Chuo) serving the Kagoshima market and appears able to operate just above the break-even point.

A similar decision was made when Shinano Railway was handed operation of a section running parallel to the Nagano Shinkansen. This type of problem still has no solution.

Rail connections to Nagasaki and Sasebo

For most of the long isolationist period before the United States–Japan Treaty of Peace and Amity (1854), Dejima (a small artificial island in Nagasaki Harbour) was the sole conduit for commercial and cultural exchange between Japan and the West, giving Nagasaki a certain 'exotic' atmosphere that still attracts many tourists. The city also prospered from shipbuilding since the late 19th century.

Although there are plans to build a shinkansen from Hakata to Nagasaki, construction has still not begun, because efforts are focused on raising the speed of *Kamome* (Seagull) limited expresses by upgrading existing infrastructure and introducing new rolling stock. Track upgrading has mainly involved strengthening the bed, reducing the radius of curves, and improving passing tracks



JR Kyushu's Series 885 EMU *Kamome* limited express. The train links Fukuoka and Nagasaki in about 2 hours with a maximum speed of 130 km/h. There is a plan to construct a shinkansen on this route, but the opening date has not been set. (JR Kyushu)

on single-track sections. New rolling stock has raised maximum speeds and the new tilting Series 885 carriages permit faster speeds through curves.

Sasebo City in Nagasaki Prefecture was developed as a naval base around in the late 19th century and is still a strategic naval and maritime centre. *Midori* (Green) and *Huis Ten Bosch* (named after a Dutch theme park near Sasebo) limited expresses link the area with Hakata.

Connections to Oita and Miyazaki

There are no plans to extend shinkansen services to the Oita area but JR Kyushu has raised speeds over existing tracks by upgrading infrastructure and introducing tilting Series 883 and 885 rolling stock on *Sonic* limited expresses. These efforts aim to ensure that the railway remains competitive with express buses. The national and local governments funded some infrastructure improvements, reflecting a recent trend for JRs to receive local support for such upgrades.

The *Nichirin* (Sunflower) limited express from Hakata to Miyazaki still takes more than 5 hours, greatly reducing the appeal of rail travel. So many Fukuoka–Miyazaki travellers choose to fly and JR Kyushu has built an air–rail link (Miyazaki-kuko Line) to permit through operations to Miyazaki Airport.

JR Kyushu design initiatives

JR Kyushu trains are famous for their unusual design and looks. Some cars are decorated in primary colours, giving them an unusual appearance for Japan. Others have wood-accented interiors and leather seats, creating a high-class atmosphere but making cleaning and maintenance more difficult. The JR Kyushu stations have also been made more attractive through unique and appealing styles. Most designs have been developed by a designer famed for work in furniture and buildings and they have succeeded in overturning

commonly accepted views of mundane railway design.

Poorly used sleeper services to Osaka and Tokyo

Sleeper trains from Tokyo and Osaka offer through services to a number of cities in Kyushu. These so-called 'Blue Trains' (from the livery) were popular in the 1980s with business travellers, but ridership plummeted when domestic airlines began slashing fares in the 1990s. JR Kyushu gradually eliminated or combined sleeper train operations, and today there are only four daily return trips to Kyushu—two from Tokyo and two from Osaka.

The slump in the popularity of sleeper trains had three causes:

- Slow trains
For example, the *Hayabusa* (Falcon) leaves Tokyo at 18:03 and arrives at Hakata at 09:53 the next morning. A traveller flying or taking the shinkansen, can leave Tokyo Station 1 hour after the *Hayabusa* departure and still arrive in Kyushu before bedtime. And if they take an early plane the next morning, they can arrive in Fukuoka before the *Hayabusa*. Travellers from Osaka face a similar situation.
- High fares
Travellers might be inclined to ignore long travel times if the fares are lower but the 'Blue Train' actually costs more than the shinkansen or plane due to the sleeping berth surcharge.
- Poor accommodation
The only privacy is a single curtain—not much comfort when sleeping in the vicinity of a complete stranger. Only a very few private compartments are available.

'Blue Train' rolling stock was constructed before the 1987 JNR division and privatization, making it unsuitable for today's passenger demands for higher speeds and more value-added services. However, low ridership levels prevent JR

Kyushu investing heavily in new sleeper rolling stock. In any event, few tourists and business travellers today are willing to spend so many hours travelling by sleeper.

Urban Transit in Fukuoka

Most urban transit services in Fukuoka and surrounding areas are provided by JR Kyushu and Nishitetsu. Fukuoka City has two major centres—Hakata with many government offices, and the Tenjin commercial district. Hakata is close to JR Kyushu's Hakata Station while Tenjin is close to Nishitetsu Fukuoka Station. The two stations are linked by subway (described later) in about 6 minutes.

Rapid services on Kagoshima main line

Some people argue that the Kagoshima main line could serve Fukuoka's urban transit needs as far as Kokura in Kita Kyushu to the north-east, and Omuta to the south, extending the commuting range from Hakata Station by 60 or 70 km in both directions. This assumes that rapid services linking these three destinations are suitable for urban transit, but most commuters live within 30 km of Hakata Station.

Prior to the 1987 division and privatization, JNR saw its main objective as providing long-distance rail services, so it did little to promote urban transit in smaller cities—although Fukuoka City has a population of some 1 million. JR Kyushu felt otherwise and soon began increasing the frequency of rapid services. Since then, it has introduced Series 811 and 813 rolling stock for rapid urban transit and rapid trains now run at intervals of three per hour during most of the day.

The Hakata–Kokura section should perhaps be considered more an intercity route than an urban transit line. The rail corridor is actually occupied by two competing JRs: JR Kyushu's Kagoshima main line and JR West's San'yō Shinkansen.

JR West understands the market potential of the approximately 60-km shinkansen run between Hakata and Kokura and is aggressively advertising to attract more passengers. It has also introduced morning and evening services over the Kyushu section of the line. JR Kyushu has responded by reducing fares for limited expresses.

Development of JR Kyushu's transit market

JR Kyushu has also upgraded other lines for urban transit. One recent change involves the Sasaguri Line running east from Yoshizuka (trains depart from Hakata, one station away) to Keisen where it connects with the Chikuho main line to permit travel north from Keisen to Orio. The area was once a coalmining district, but is now a Fukuoka suburb. The lines remained non-electrified for many years and JR Kyushu kept using high-performance Series *Kiha* 200 DMUs even after it introduced rapid through services in 1991. When electrified services finally began in 2001, operations were harmonized and the two lines are now nicknamed the Fukuhoku Yutaka Line. Commuter rapid trains have completed the transformation from old-fashioned local colliery lines to integration within the urban network.

The Hakata Minami Line is very unusual—it is an 8.5-km section of shinkansen track from Hakata Station to the San'yo Shinkansen rolling stock depot. The idea of using this section came from the need to reduce local road congestion and a desire to make better use of shinkansen cars shunting empty between the station and depot. A new small station called Hakata Minami was built next to the depot and the shinkansen trains were made available for transit to Hakata Station. Operations began in 1990. JR West owns the shinkansen rolling stock and line and operates the service like a conventional line while JR Kyushu handles station operations. The line's

future is unclear because the track will be used by the Kyushu Shinkansen when it begins running from Hakata.

Nishi Nippon Railroad (Nishitetsu)

Nishitetsu mentioned earlier is Japan's most westerly major private railway operator. Its main Omuta Line runs from Nishitetsu Fukuoka in the central Tenjin district to Omuta. The total length (including two branches) is 95.3 km. The company also operates the 20.8-km Miyajidake Line in Fukuoka's northern suburbs.

The Omuta Line runs mostly parallel to JR Kyushu's Kagoshima main line, so Nishitetsu operates frequent high-speed services to remain competitive. Its limited expresses link Fukuoka with Omuta in about 1 hour, faster than JR Kyushu's rapid services between the same cities. Most passengers ride the 38.6-km section between Fukuoka and Nishitetsu Kurume, reflecting a similar situation to JR Kyushu. The Miyajidake Line from Fukuoka to the northern suburbs is quite different. The winding mostly single-line track is hemmed between the coast and JR

Kyushu's Kagoshima main line. These factors prohibit high speeds, and two- or three-car train sets are the norm. Housing has sprung up along the line but there is little commercial activity, making for a small passenger base. In addition, the south terminus is not in central Fukuoka, having been constructed originally to connect with the tram system that Nishitetsu once operated in the city. The line became more convenient in 1986 when it was connected to the municipal subway.

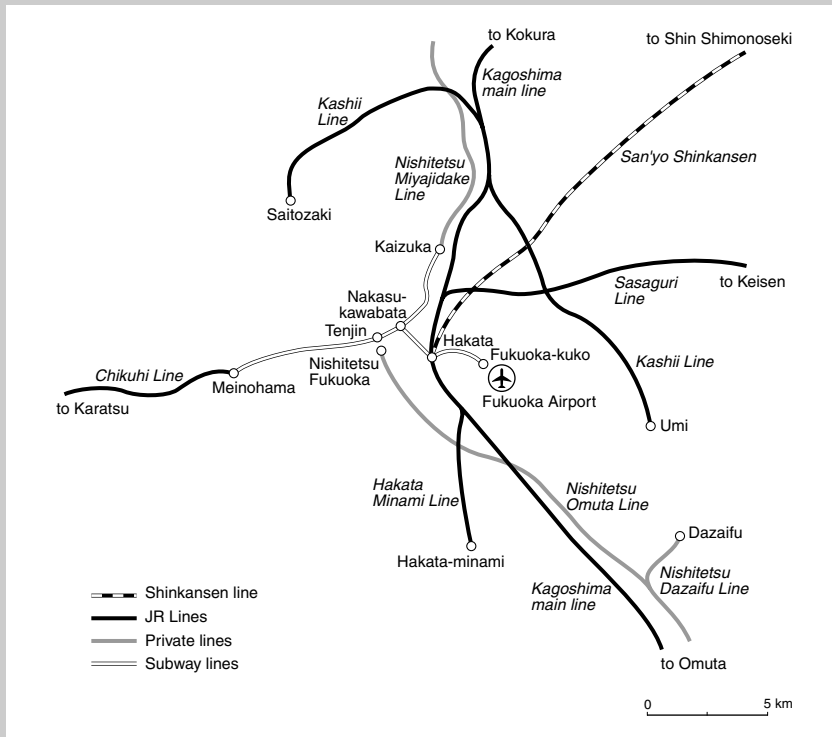
The company's history explains why the lines are so different. Nishitetsu began in 1908 as Kyushu Electric Tramway, operating a tram system in what is now Kita Kyushu. In 1942, it was forced by the government to merge with a number of railway, tram and bus companies and its present name dates from that time. This explains why it became a company with infrastructure and rolling stock of different standards.

Nishitetsu used to operate tramway systems in Fukuoka and the cities that subsequently amalgamated to become Kita Kyushu. The Fukuoka trams were taken off the streets in the 1970s; most



Nishitetsu's Series 6000. Its Omuta Line carries commuters in the Fukuoka metropolitan area, competing with JR Kyushu's parallel Kagoshima main line. (Nishitetsu)

Rail ways in Fukuoka City



Shinkansen. Tenjin is a large commercial and shopping centre near Nishitetsu's rail terminal. Meinohama is the eastern terminal of JR Kyushu's Chikuhi Line and the subway connection permits through operations by both operators on each other's lines, thereby integrating the Chikuhi Line into the urban transit system. Line No. 2 branches from Line No. 1 at Nakasu Kawabata, then runs north to Kaizuka where it connects with Nishitetsu's Miyajidake Line. The two lines do not permit through services, but the 1986 completion of Line No. 2 linked the Miyajidake Line to the urban transit network, attracting more passengers. Consequently, the subway links major centres in the city and enhances the transit network via connections with JR Kyushu and Nishitetsu. The tramways in Kumamoto and Kagoshima are operated by their municipal governments. During the 1960s and 1970s, trams in Japan were viewed as an anachronism and were cut back. However, opinions changed in the 1980s and they are now seen as an environment friendly form of transportation, allowing many to remain in operation. In 1997, Kumamoto

trams in Kita Kyushu were abandoned in the 1980s and 1990s with the last disappearing in 2002. However, their memory lives on in the Nishitetsu subsidiary, Chikuho Electric Railroad Co., Ltd., which operates carriages resembling trams. Chikuho Electric is a suburban railway with a line from Kurosaki (a Kita Kyushu transit hub) to Nogata (formerly a colliery town and now a bed town for Fukuoka). Although the Nishitetsu name means 'Western Japan Railway,' the company actually earns more from its buses than from rail services. Its large bus network originates from the above-mentioned wartime merger with bus companies.

Fukuoka City Transportation Bureau. Line No. 1 runs from Fukuoka Airport via Hakata and Tenjin to Meinohama. The airport is quite heavily used and Hakata is a hub for many JR Kyushu trains, including limited expresses and JR West's San'yo

Urban Transit

Kyushu has a number of urban transit rail systems in the prefectural capitals; there is a subway in Fukuoka City, tramways in the cities of Kumamoto, Kagoshima and Nagasaki, and a monorail in Kita Kyushu. The Fukuoka subway is operated by the



Kumamoto City's Series 9700 tram, the first low-floor car introduced in Japan in 1997. It is manufactured by Niigata Engineering, under licence from Adtranz in Germany. (Author)



Kagoshima City's Series 1000 tram. Its rolling stock was designed by the Japanese manufacturer, Alna Koki, and was introduced in 2002. (Author)

introduced Japan's first low-floor trams built by Niigata Engineering under licence from Adtranz. In 2001, Kagoshima began operating low-floor models built by Alna Koki, a Japanese company. The Nagasaki tram system is operated by the private Nagasaki Electric Tramway. The low ¥100 (US\$0.95) citywide flat fare has ensured the tram's popularity and kept the company in good financial health. It introduced low-floor vehicles in March 2004.

Kita Kyushu City government joined with Nishitetsu and other major companies in establishing Kitakyushu Urban Monorail Co., Ltd., opening a monorail in 1985 as a modern urban transit system to replace Nishitetsu's trams.

JR Kyushu Breathes New Life into Little-used Local Lines

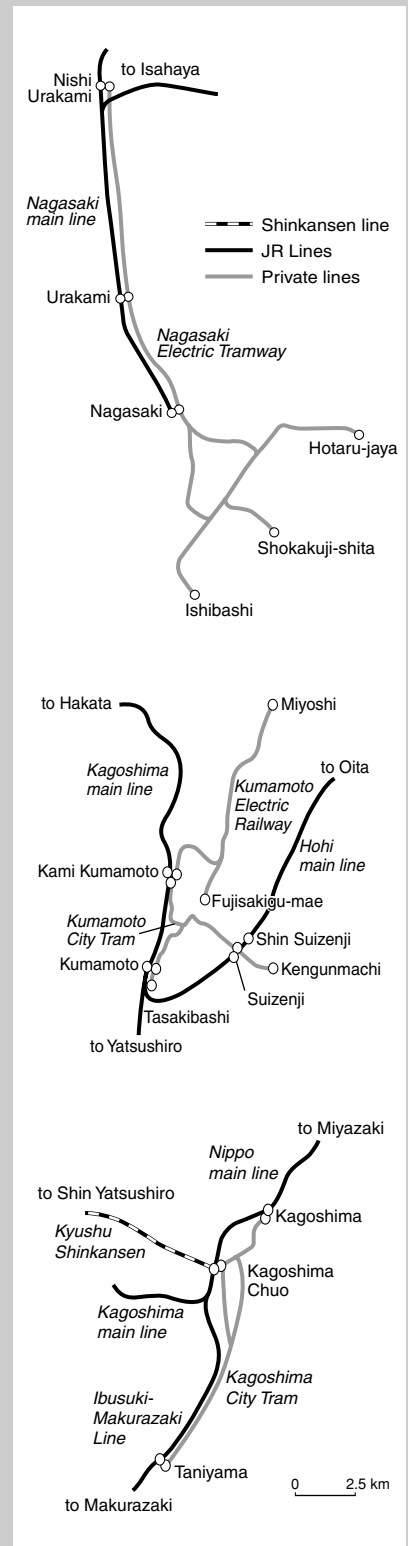
Kyushu's rugged interior forces local tracks to have many sharp curves and high grades, making high-speed operations impossible. However, the topography offers a rich natural environment with good tourism potential and JR Kyushu has introduced tourist trains on lines that would otherwise have few passengers. One of the most noteworthy is the *Yufuin no Mori* (Yufuin Forest) limited express from Hakata to Oita. For much of the distance, the trains run on the Kyudai main

line passing Yufuin hot spring. The hot springs have become popular in recent years and JR Kyushu began operating the trains in 1989 to tap their appeal. The cars' unique livery and interior are popular and JR Kyushu increased the service frequency to three daily returns. Other limited expresses on the line use normal rolling stock.

The Hohi main line linking Kumamoto and Oita runs through the extinct caldera of Mt Aso, one of the world's largest volcanoes (80-km diameter). The *Aso Boy* train hauled by a 4-6-0 Class 8620 steam locomotive built in 1922 has taken this route mainly on weekends since 1989. The line was built with a switchback to overcome the 190-m difference in elevation on the 8-km section between the stations at Tateno and Akamizu.

To coincide with the opening of the Kyushu Shinkansen, new services were introduced to attract tourists to the nearby Hisatsu Line built in the early 20th century and following an inland route as the first rail link between Yatsushiro and Kagoshima. A loop, switchback and many tunnels indicate the challenges faced by the engineers who somehow found a way to overcome the rugged topography using the limited construction techniques of those days.

Railways in Nagasaki (top), Kumamoto (middle), and Kagoshima (bottom)



Another Yatsushiro–Kagoshima route was opened in the 1920s following the coast to the west. Major trains took this route until the Kyushu Shinkansen opened this year. Passenger levels on the Hisatsu Line have fallen over the last few years and the line remains in difficult financial circumstances. JR Kyushu's tourist-oriented services on this line take advantage of the magnificent scenery and heritage value of the railway infrastructure. The new services are provided by *Hayato no Kaze* (Brisk Breeze) limited expresses, using refurbished rolling stock. The trains are very short—only two cars—but the introduction of limited-express services on this line would have been inconceivable a few years ago and indicates JR Kyushu's enterprising spirit. Tourists travelling between Yatsushiro and Kagoshima have a varied choice of routes and can even ride the Hisatsu Line one way and the shinkansen the other.

However, JR Kyushu feels compelled to offer these high-end tourist-oriented services on such lines because there would be very little demand otherwise since few local residents use trains for short-distance travel.

Small Local Railways

Some lines abandoned by JNR in the 1980s were taken over by public-private joint ventures. Except Shimabara Railway in Nagasaki Prefecture and Kumamoto Electric Railway in Kumamoto Prefecture, which are financed solely by private capital, all the smaller railways still operating in Kyushu are of this type.

Heisei Chikuho Railway took over the Tagawa, Ita and Itoda lines from JR Kyushu in 1989. Each had been a heavily used colliery line for years, but those days ended long before Heisei Chikuho was created. The new company did have a stable source of income carrying cement manufactured in Tagawa on one of the lines, until Mitsui Cement went bankrupt and bulk freight trains stopped running in March 2004. The local passenger base is so small that demand can be satisfied with the existing one- or two-car rail cars. The company is expected to continue facing difficult finances.

On the other hand, Amagi Railway is one of the few public-private railways to turn things to its advantage after taking over the Amagi Line from JNR in 1985. The line is located in Amagi City and several

neighbouring municipalities in the interior of Fukuoka Prefecture where the population density has long been quite high. Since JNR only operated seven daily return runs, the low ridership actually reflected the inconvenient schedule. After taking over the line, Amagi Railway increased service frequencies, built more stations, and moved Ogori Station—where the line connects with Nishitetsu's main line—to a more convenient location. These efforts have been successful and now the line supports 35 daily return runs. The local municipalities with capital invested in the company have constructed free parking lots next to stations to promote park-and-ride, which is another reason for the railway's success.

Matsuura Railway took over the Matsuura Line from JR Kyushu in 1988. The 93.8-km line runs from Sasebo almost completely around the peninsula to Imari and Arita, the famous centres for ceramics in Saga Prefecture. The trackside population is small, but the company has set out to attract more passengers by increasing frequencies and building more stations, much like Amagi Railway has done. The number of stations has been increased from 32 at the takeover to 57 today; two stations in Sasebo, (Sasebo Chuo and Kita Sasebo) are only about 200 m apart.



JR Kyushu's Series *Kiha 72 Yufuin no Mori* limited express on Kyudai main line. The train is not popular for high-speed operations but for its gorgeous interior and is a good example of a attempts to revitalize local lines. (JR Kyushu)



Shimabara Railway's Series 2500. The railway continued service after suffering severe damage in a volcanic eruption, but decreasing passenger numbers are forcing the company to consider closing some sections. (Author)



Kumamoto Electric Railway's Series 5000. To overcome decreasing passenger numbers, the company announced plans to renovate rolling stock and facilities and to start through operations with Kumamoto City trams if local government financial support is available. (Author)

Minami Aso Railway and Takachiho Railway in Kumamoto and Miyazaki prefectures, respectively, run toward each other, but are separated by steep mountains at the prefectural border. The former company took over the JNR Takamori Line, and the latter took over the JNR Takachiho Line. During the original construction, the goal was to join the two lines to create a line traversing the island, but this never happened and now a bus links the two railheads in the mountains. Few people travel this part of the route and connecting track will probably never be built. The mountain scenery from the train windows is spectacular and both companies run special observation trains during the tourist season.

Kumagawa Railway in Kumamoto Prefecture took over the Yunomae Line branching from the Hisatsu Line. The population density is low and there are few passengers.

Kyushu also has two small railways established without public investment. Shimabara Railway in Nagasaki Prefecture operates a 78.5-km line from Isahaya on JR Kyushu's Nagasaki main line to Kazusa. The line loops around more than half of the Shimabara



Matsuura Railway's Series MTR200 light DMU. Many railways taking over JNR's closed lines use this type of rolling stock. (Author)

Peninsula, running close to the coast and passing through Shimabara, the largest city in the area. After remaining dormant for 200 years, a volcanic peak on Mt Unzen called Fugen Dake erupted with tremendous force between 1990 and 1995, killing over 40 people, causing much damage, and cutting the line between Shimabara-gaiko and Fukae stations. The company repaired and reopened the damaged section only to see the line cut by lava again. After several repeats, the infrastructure was upgraded over 4 years between 1993 and 1997 but the company was forced to operate the two undamaged sections of track independently. Today, the damaged section has been repaired but the local economy is doing poorly, which continues to negatively impact the company's finances.

Kumamoto Electric Railway operates a 13.1-km line from central Kumamoto to Miyoshi in the suburbs. The line used to

extend further to Kikuchi hot spring carrying people holidaying at the springs. Financial difficulties forced the section to close in 1986 and the company has since concentrated on providing transit services to Kumamoto. Most passengers are people unable to drive—mainly junior and senior high-school students, and the elderly. In this sense, the line is like many other local lines serving regional cities. It is also similar in that the faltering economy and low birthrate keep pushing down ridership levels. ■



Shuichi Takashima

Mr Takashima is a Research Associate at the Center for International Research on the Japanese Economy (CIRJE) in the Faculty of Economics at the University of Tokyo. He was a doctoral student in economic history at the University of Tokyo before joining CIRJE. He is researching modern city formation and transport with special interest in the development of railways.