The Two Faces of Japan's Transportation

Tokyo's Speed and the Reality of Rural Japan

— An Interview with Professor Fumihiko Nakamura

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Japan's public transportation displays a striking dichotomy. On one hand, Tokyo boasts a highly developed and lightning-fast rail network, precise down to the minute,[1] renowned throughout the world.[2] On the other hand, rural areas[3] increasingly face a transportation crisis, caused in large part by low national birth rates, migration to urban areas, and an aging population. How can we understand and address these competing needs in Japan—the urban and the rural? We spoke with the Open University of Japan Professor Fumihiko Nakamura, an expert in Japanese public transportation.

Tokyo

A Railway Ecosystem at the Intersection of Technology and Culture

Professor Nakamura began by discussing the railways in the Tokyo metropolitan area and their "extraordinary efficiency." Tokyo's railways boast a staggering capacity, with more than 10 million people commuting daily on the metropolitan rail network. Shinjuku Station is recognized by Guinness World Records as the world's busiest railway station.[4] Recent data indicates that approximately 3.55 million passengers use the station daily.[5] To put this in perspective, New York's Times Square district recorded approximately 79.6 million riders in 2024 (roughly 218,000 per day)[6]—an order of magnitude smaller.

Tokyo is home to over a dozen private railway companies, all of which operate independently, each with its own fare system and management policies. Despite this, tap-to-pay transit cards like Suica and PASMO are universally accepted across companies, and passengers can seamlessly make long trips spanning different railways. This "sense of unity, as if operated by a single company," is rare—instead, it is the product of Japan's unique coordination and technology.


Ultra-high-speed ticket gate system

The speed of ticket gate systems during morning rush hour is just one example of a uniquely Japanese ingenuity: both Suica and PASMO use the so-called FeliCa processing method, a contactless chip technology that processes each tap in approximately 0.1 to 0.2 seconds,[7] a speed that is globally unmatched. This technology prevents ticket gate congestion even in the busiest parts of Tokyo. Beyond transit, these cards also function as electronic money, usable at convenience stores, vending machines, and station lockers nationwide. Monthly transactions for transit-linked electronic money have surpassed 300 million,[8] underscoring their role as an essential part of daily life in Japan.

For international visitors, a deposit-free "Welcome Suica Mobile" card, valid for 180 days, was launched in 2025, enabling travelers to set up their transit cards before arriving in Japan.[9]

Other critical factors enabling high-density operations are Tokyo's sophisticated train signaling systems that minimize intervals between trains, and the disciplined nature of passengers. Institutional policies have also made significant contributions to Tokyo's development as a rail-centric society. The long-standing practice of companies covering commuting expenses has allowed rail travel to be economical. On the other hand, the garage certificate system, requiring proof of garage space for car ownership, has historically raised the cost of commuting by car. Thus, policy has encouraged rail use resulting in a positive feedback loop where commuting by rail supports railway companies' investments, leading to service improvements which in turn have fueled increased demand.

Population Decline and Transportation Challenges in Rural Areas

Just a few hours outside of Tokyo in rural Japan a starkly different picture exists. In regions facing severe population decline and aging, full-sized buses no longer attract enough passengers, leading to route closures and driver shortages. This has made maintaining buses as a viable form of public transportation difficult.

Amidst this crisis, residents have acted. They are mobilizing their private vehicles to allow ridesharing. This informal solution by those who are able to drive supporting neighbors who have lost access to public transport, is beginning to function as an alternative to public transportation and is being supported by municipal subsidies. Initially, this method was opposed by the taxi industry, but due to a revised legal framework and labor shortages in the taxi industry, private ridesharing is expanding as a rural transportation method based on mutual support between neighbors.

On-Demand Transportation and Autonomous Vehicles

Expectations vs. the Reality of High Costs

On-demand transportation, where services run only at passengers' requests, and autonomous vehicles are increasingly being seen as promising new solutions for rural transportation challenges; but while recognizing their potential, Professor Nakamura expresses skepticism regarding their feasibility in practice. On-demand transportation requires sophisticated systems to efficiently prioritize user requests, the cost of which places a heavy burden on local governments. For this reason, even if the system is convenient, high costs make widespread adoption difficult.

Autonomous vehicles, while technically easier to implement due to fewer pedestrians and traffic in rural areas, suffer from the same implementation costs because the infrastructure and systems necessary for their operation would require heavy investment. Professor Nakamura emphasizes that "Even if a technology is technically suited for rural areas, the barrier to its adoption is cost." Therefore, he believes that for the foreseeable future, relatively low-cost, sustainable options like public ridesharing will remain the best option until more formal solutions become affordable.

How Technology Eases Local Burden

Drones and Cost-Efficiency

Professor Nakamura highlights the importance of having a broad perspective on rural transportation issues, what he calls "the fiscal burden of mobility." Local governments already invest heavily, not only in transportation but also in essential infrastructure like healthcare, emergency services, and nursing care; but amidst declining populations and aging demographics, this burden is nearing its limit.

As a prime example, Professor Nakamura cites the use of drones for mountain rescue operations,

"Sakura" Taxi service in the Niyodo River area, Kochi Prefecture

Source: POLIS[10]

Drone-assisted mountain rescue training in Hokkaido

Source: Hokkaido News UHB[11]

now underway in Hokkaido's mountainous regions. Drones can instantly detect a stranded person's location, meaning helicopters no longer need to search vast mountain areas—instead they can fly directly to the identified spot. Since helicopter deployments incur enormous costs, drones not only save time when every moment counts, but also significantly reduce the financial burden on local governments.

Highlighting the seriousness of rural financial strain, Professor Nakamura notes that "even saving lives involves cost-benefit analyses." New technologies must therefore be seen in the context of shrinking rural communities with limited budgets—in every area of mobility, cutting costs is directly tied to keeping these regions alive. In this sense, drones are not just an innovation, but a symbol of the difficult choices facing rural policymakers.

Transportation Policy as Health Policy

The Medical Implications of Mobility

While the essence of transportation policy is establishing a system where people can move freely, Professor Nakamura emphasizes that in rural communities, "mobility equals health." Active elderly residents are less prone to illness, meaning that increasing elderly activity can reduce medical and nursing care costs. Estimates suggest that elderly individuals with serious medical conditions incur tens of millions of yen in social costs annually.[12] Providing adequate transportation options therefore can be directly linked to the financial health of local communities. Mobility also contributes to dementia prevention and physical and mental stimulation, meaning that transportation policy can also be considered a form of health policy.

Diverse Transportation Options and Aiding Future Well-being

Japan's transportation system faces entirely different challenges in rural versus urban areas. However, Professor Nakamura succinctly stated the goal for all of Japan's future transportation policies: "To increase the range of options available while taking residents' well-being into consideration." In cities, networks expand and technology advances, while rural areas require community-driven mobility support and technology-enabled efficiency. Both share the idea that freedom of travel empowers residents and keeps local communities alive and vibrant.

Professor Nakamura concluded, "Fundamentally, Japan is a society built on social support systems. With just a little added structure, it has enormous potential." With collaboration between Tokyo's speedy development and rural areas' ingenuity, Japan can build a transportation system that is both resilient and accessible to all.

Affordable taxi service in Nishio City, Aichi Prefecture

Source : POLIS[10]

Endnotes

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Fumihiko Nakamura is a Professor at the Open University of Japan. Recently, he was appointed as Vice President of the International Association of Traffic and Safety Sciences. He holds a Doctor of Engineering from the University of Tokyo (1991) and previously served as Professor and Vice President at Yokohama National University. His research spans urban and regional public transportation policy, Bus Rapid Transit (BRT) systems—including landmark studies on Curitiba, Bogotá, and Jakarta—elderly mobility, and smart mobility solutions for developing cities across Global South Regions. He has served on numerous national transportation advisory committees under The Japanese Ministry of Land, Infrastructure, Transport and Tourism.

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