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LEADING CITIES FOR NEW ENERGY COMMERCIAL VEHICLES IN CHINA: 2024

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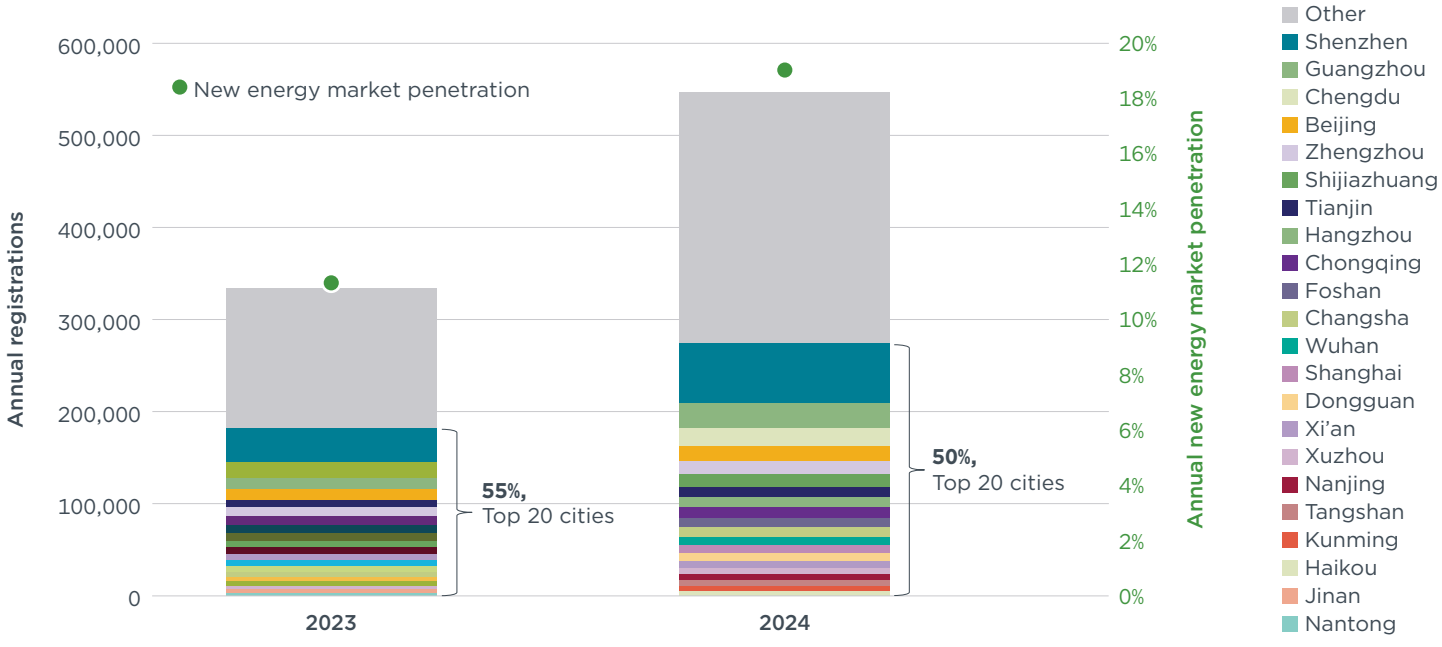
OVERALL TRENDS

This market spotlight evaluates the progress made on the deployment of new energy commercial vehicles (NECVs) in the top 20 city markets in China in 2024. Terminology and data sources are listed at the end of this piece.

NECV sales and market penetration continued to grow in China in 2024. Registrations of new NECVs in China increased by 64%, from about 333,000 in 2023 to 546,000 in 2024. NECV penetration also increased to 19% of the entire commercial vehicle market, up from 11.3% in 2023 (Figure 1). China's NECV sales continued to be concentrated in the top 20 leading cities. The cities of Shenzhen, Guangzhou, Chengdu, Beijing, Zhengzhou, and 15 others led the 2024 NECV market in China with the highest numbers of new registrations. These 20 leading cities together represented 50% of all NECV sales in 2024, down from 55% of the top 20 cities in 2023. This decrease in the share of NECV registrations implies that more cities in China are deploying NECVs.

Figure 1

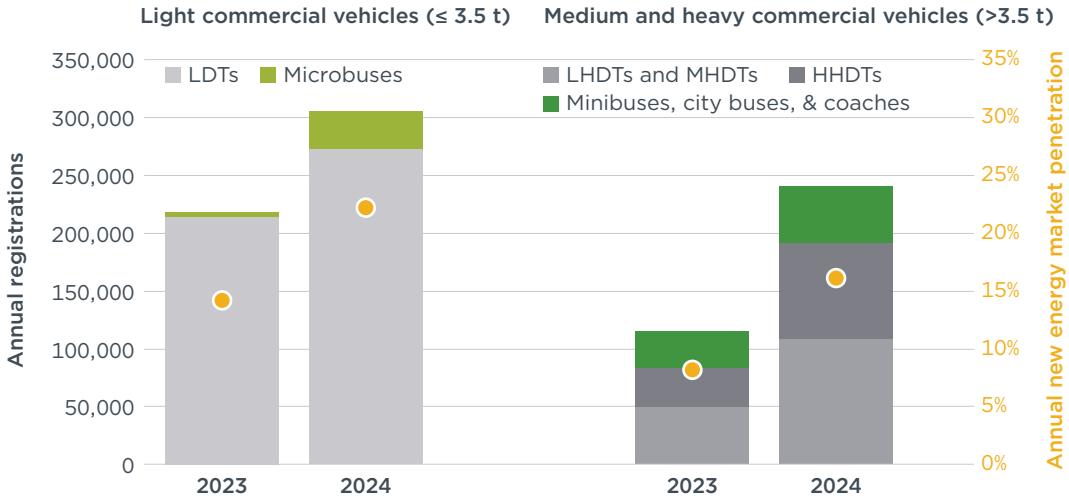
Top 20 cities for registrations and market penetration of new energy commercial vehicles in 2023 and 2024



The light-duty segment accounted for the largest share of NECV registrations in 2024 at 56% (Figure 2). However, the registration growth rate in heavy-duty NECVs was much greater than the growth rate in the light-duty sector. Registrations of light-duty and heavy-duty NECVs were 306,000 and 240,000 in 2024, respectively, corresponding to 40% and 109% increases compared with 2023. The NECV market penetrations in both light-duty and heavy-duty segments also increased from 2023 to 2024, with the former increasing from 14.2% to 22.2%, and the latter from 8.2% to 16.1%.

Figure 2

Registrations and market penetration of new energy commercial vehicles by weight class in 2023 and 2024



Note: LDTs refer to light-duty trucks, LHDTs refer to light heavy-duty trucks (GVW: 3.5–4.5 t), MHDTs refer to medium heavy-duty trucks (GVW:4.5–12 t), and HHDTs refer to heavy heavy-duty trucks (GVW: above 12 t).

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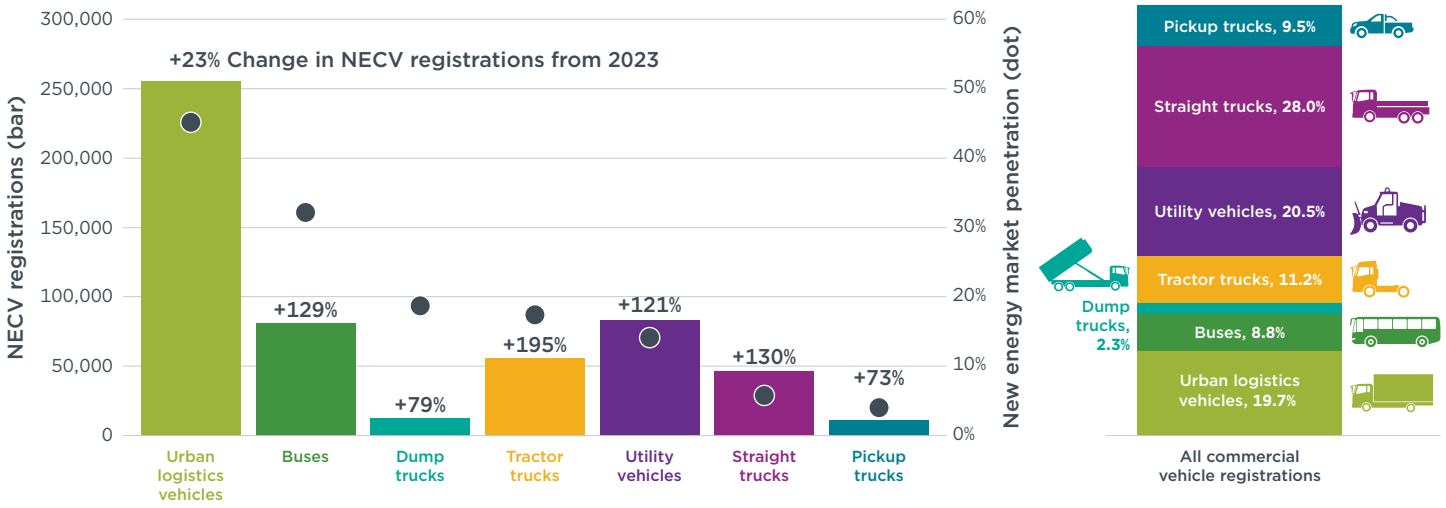
The pace of electrification varied among different commercial vehicle categories in 2024. The left panel of Figure 3 ranks the major commercial vehicle categories by their new energy market penetration rate in 2024 from left to right. Urban logistics vehicles, buses, dump trucks, and tractor trucks had the highest new energy market penetration among all major categories of commercial vehicles. From 2023 to 2024, NECV urban logistics vehicles went from 37.1% to 45.2% market penetration; buses from 17.1% to 32.2%; dump trucks from 11.2% to 18.7%; and tractor trucks from 5.9% to 17.4%. These four categories accounted for 42% of all commercial vehicle registrations in 2024 (right panel of Figure 3). Utility vehicles, straight trucks, and pickup trucks, which collectively constituted 58% of commercial vehicle registrations in 2024, all had lower paces of electrification, with a new energy market penetration of 14.2%, 5.8%, 4.1%, respectively.

Figure 3

Registrations by major vehicle categories in 2024 for new energy commercial vehicles (left) and commercial vehicles of all fuel types (right)



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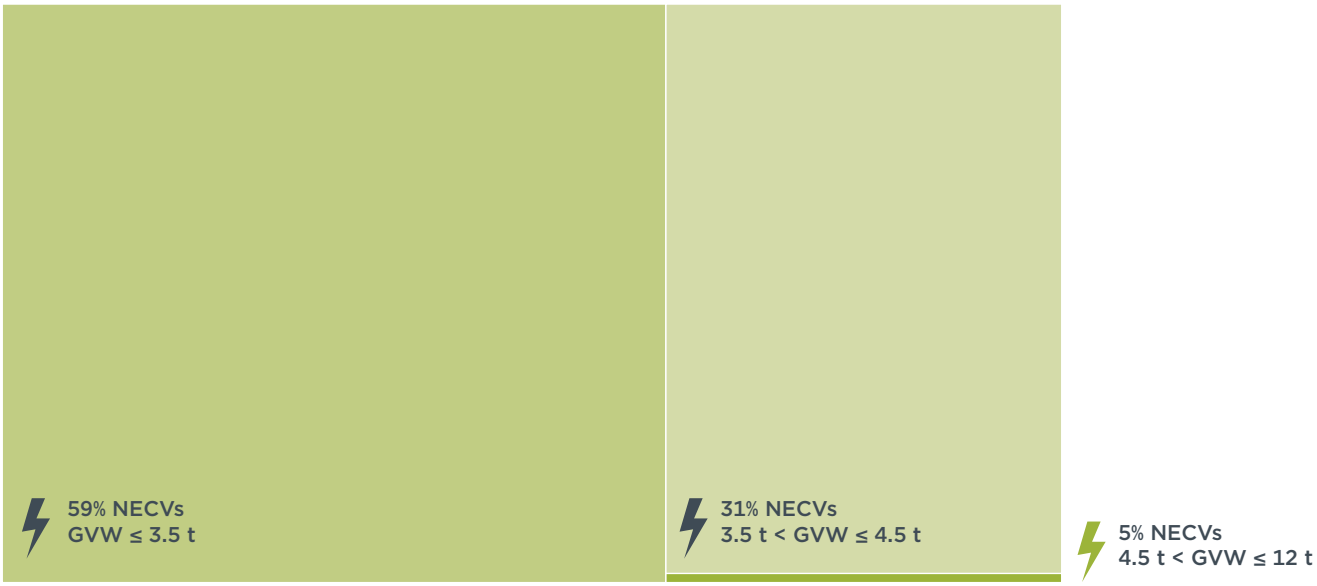
The largest share of urban logistics vehicles deployed in 2024 were in the light-duty segment. As Figure 4 shows, urban logistics vehicles with a gross vehicle weight (GVW) of 3.5 tonnes or below constituted 63% of the national total, and their new energy market penetration was 59%, the highest among all GVW groups, and even higher than that of passenger cars, which was 46% in China in 2024. However, the new energy market penetration of urban logistics vehicles with a GVW from 3.5–4.5 tonnes was 31%, lower than the vehicle group with a GVW of 3.5 tonnes or below.

Figure 4

Registrations for urban logistics vehicles of all fuel types by gross vehicle weight in 2024



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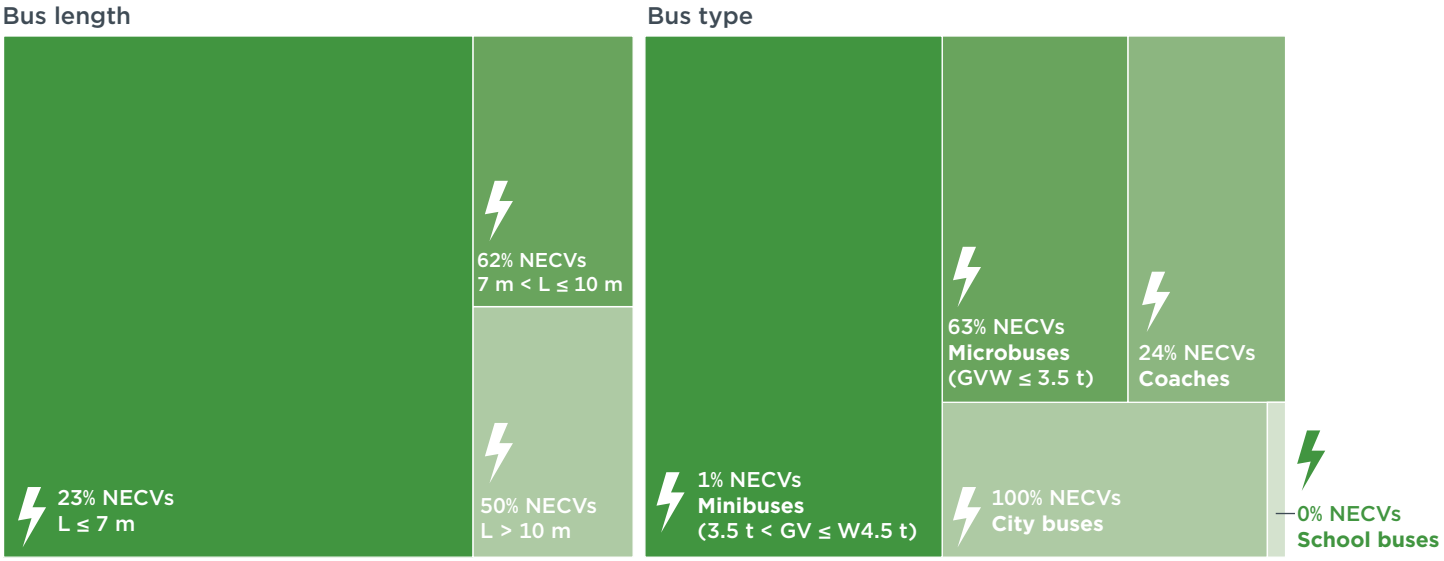
The new energy market penetration rates of different bus subcategories varied greatly in 2024. As shown in Figure 5, buses with a length of 7 meters or less accounted for 72% of all buses registered in 2024 but had the lowest new energy penetration rate at 23%. Moreover, while city buses achieved 100% electrification in 2024, the pace of electrification of minibuses and coaches still lagged; however, these two bus subcategories constituted 64% all buses registered in 2024 in China, while city buses only represented 15%.

Figure 5

Registrations for buses of all fuel types by vehicle length and major application type in 2024



Note: Coaches refer to buses with GVW above 4.5 t that are used for highway passenger transportation.

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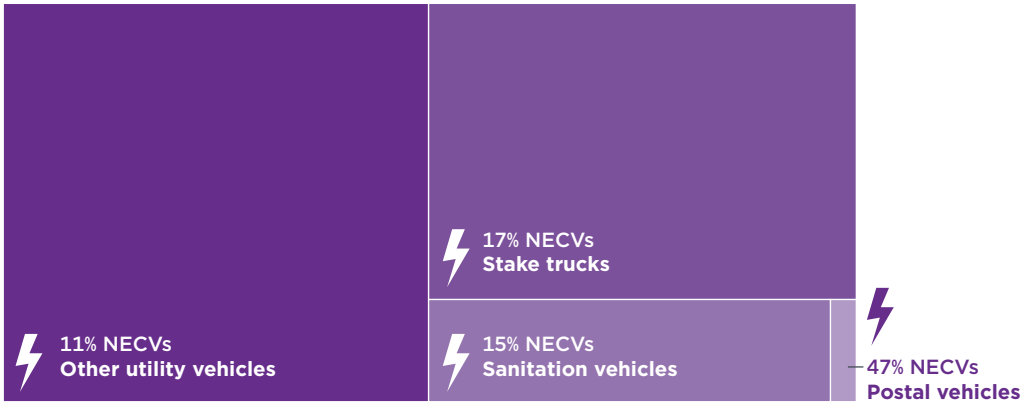
Among all commercial vehicle categories, utility vehicles had the highest number of applications. These vehicles can be grouped into four major types: sanitation vehicles, postal vehicles, stake trucks (flatbed trucks with removable stakes around the perimeter for enclosing cargo), and other (Figure 6). Among these types, postal vehicles and stake trucks had the highest new energy penetration rates at 47% and 17%, respectively. However, these two types accounted for only 38% of all utility vehicles registered in 2024. The other two types—sanitation vehicles, which include road-sweeping and snow-removal vehicles, and other utility vehicles—made up the majority of utility vehicles and had the lowest new energy penetration rates at 15% and 11%, respectively. Other utility vehicles include hundreds of specific application types, such as refrigerated trucks, concrete mixers, ambulances, and firefighting vehicles.

Figure 6

Registrations of utility vehicles of all fuel types by major application type in 2024



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LEADING CITIES

Figure 7 presents the top 20 cities in terms of light-duty and heavy-duty NECV registrations in 2024. In the light-duty segment, the top 20 cities collectively made up 49% of total national registrations and varied from 36,000 in Shenzhen to 3,300 in Ningbo; market penetrations varied from 89% in Shenzhen to 25% in Chongqing. In the heavy-duty segment, the top 20 cities collectively made up 54% of total national registrations. Among them, Shenzhen had the highest registrations at 28,800 and the highest market penetration at 48%, while Handan had the lowest registrations at 2,200 and the lowest market penetration at 15%.

Figure 7

Leading cities of light-duty and heavy-duty new energy commercial vehicles in 2024

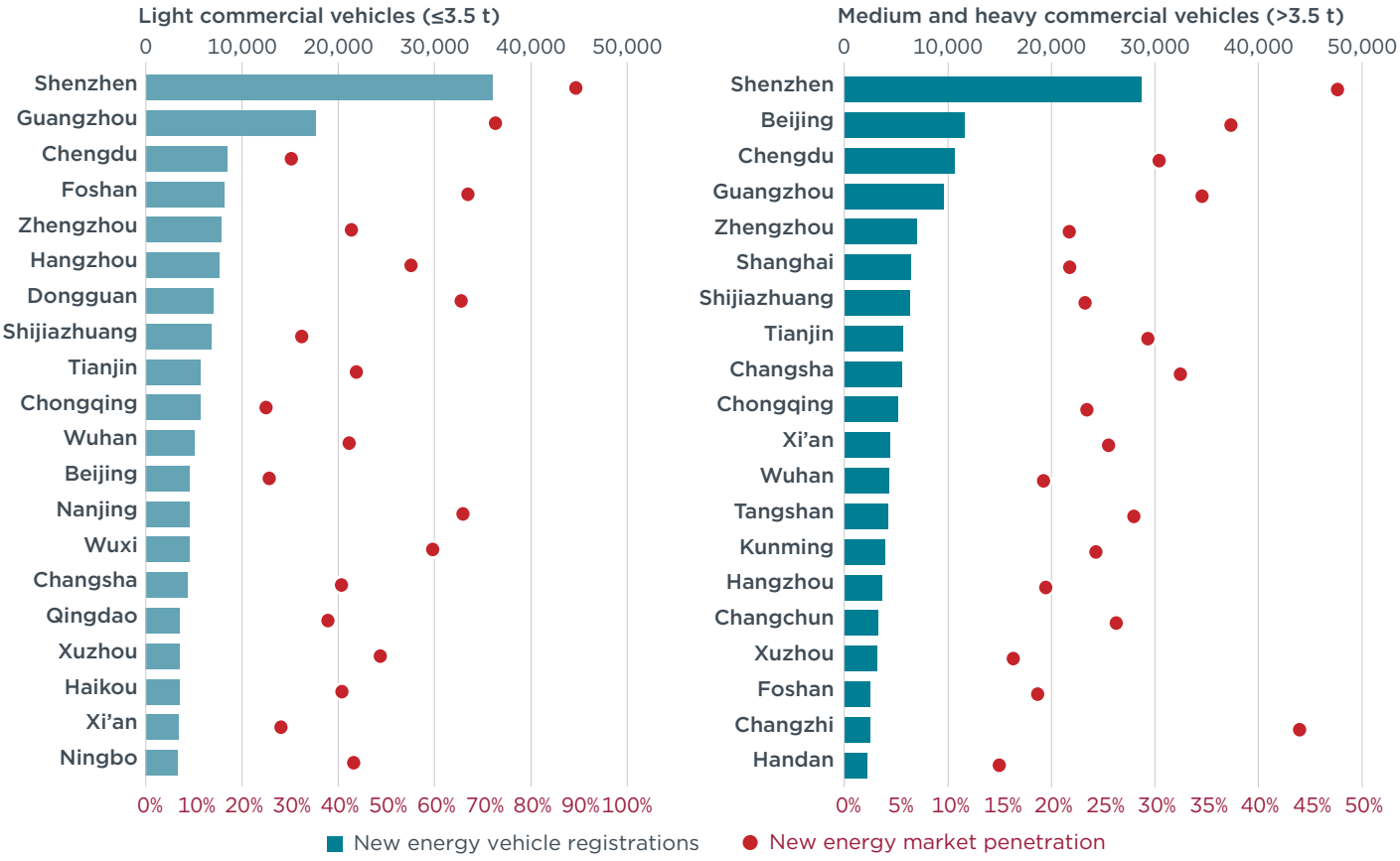

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Figure 8 presents the types of NECVs deployed in the top 20 cities in the light-duty and heavy-duty segments. In the light-duty segment, new energy urban logistics vehicles, straight trucks, and microbuses were the most popular vehicle categories in the top 20 cities. In the heavy-duty segment, urban logistics vehicles, utility vehicles, and tractor trucks were the most popular categories.

Figure 8

Leading cities of light-duty and heavy-duty new energy commercial vehicles by major vehicle categories in 2024

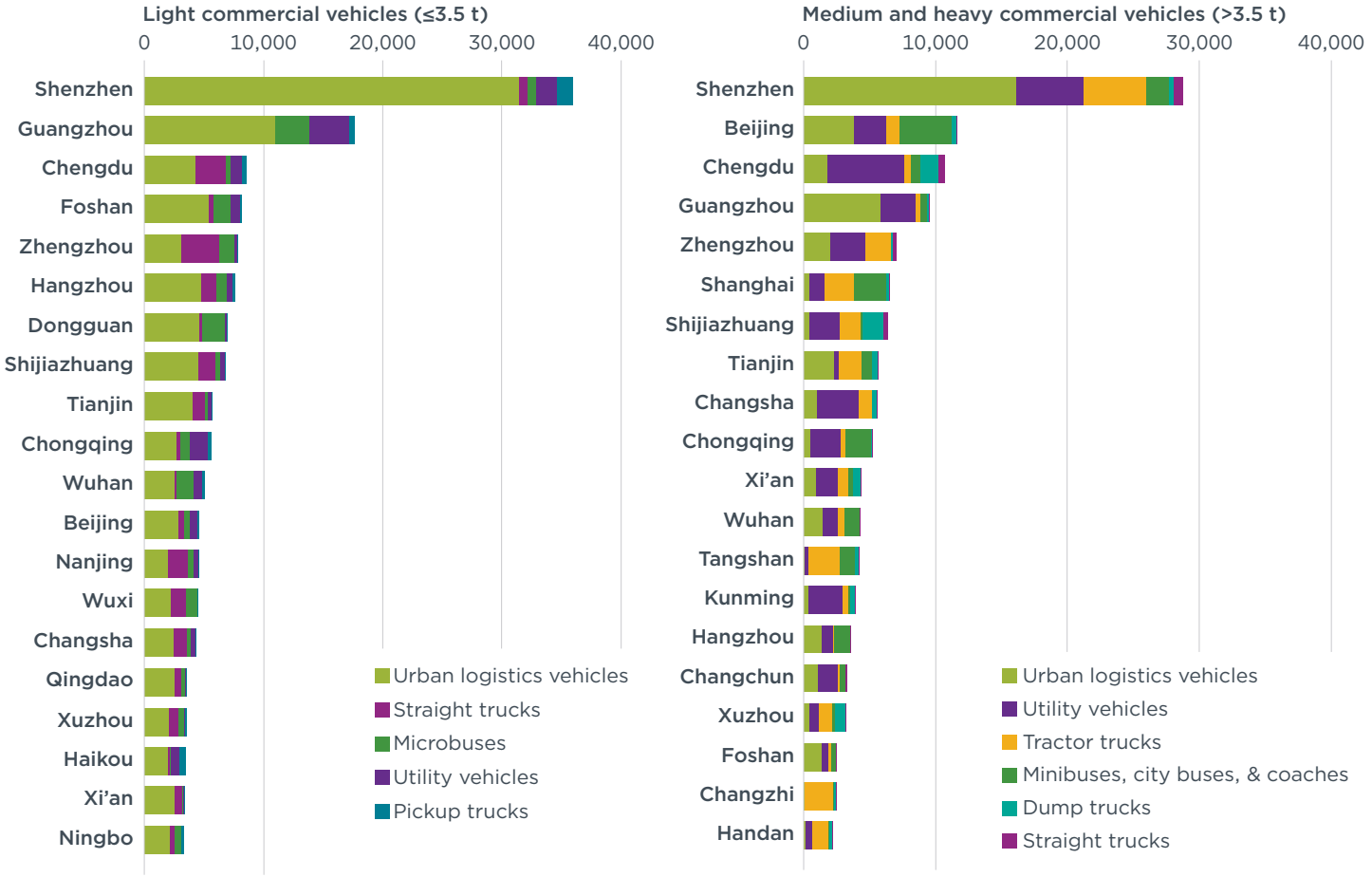

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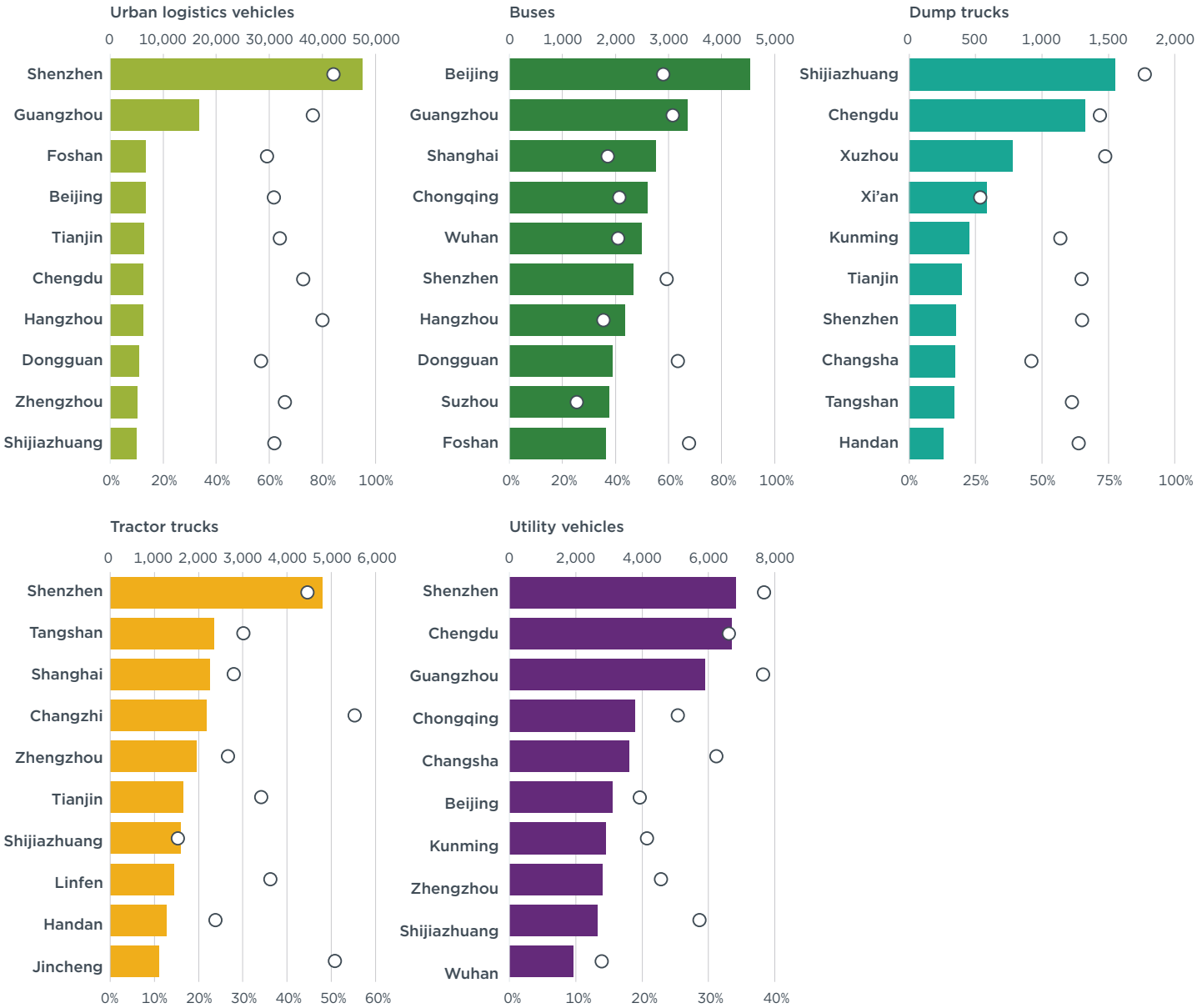
Figure 9 shows the top 10 cities for five major NECV categories based on absolute NECV registrations in 2024. The respective top-performing cities in each of the categories collectively deployed 44% (new energy urban logistics vehicles), 32% (new energy buses), 51% (new energy dump trucks), 37% (new energy tractor trucks), and 48% (new energy utility vehicles) of 2024 national totals. The average new energy market penetration rates of the top 10 cities for each of these vehicle categories were 74% (urban logistics vehicles), 46% (buses), 61% (dump trucks), 32% (tractor trucks), and 28% (utility vehicles).

Figure 9

Registrations and market penetration rates of various types of new energy commercial vehicles in the top 10 cities for each category in 2024



Note: The bars (top axis) denote the market size, and the dots (bottom axis) represent the corresponding market penetration.

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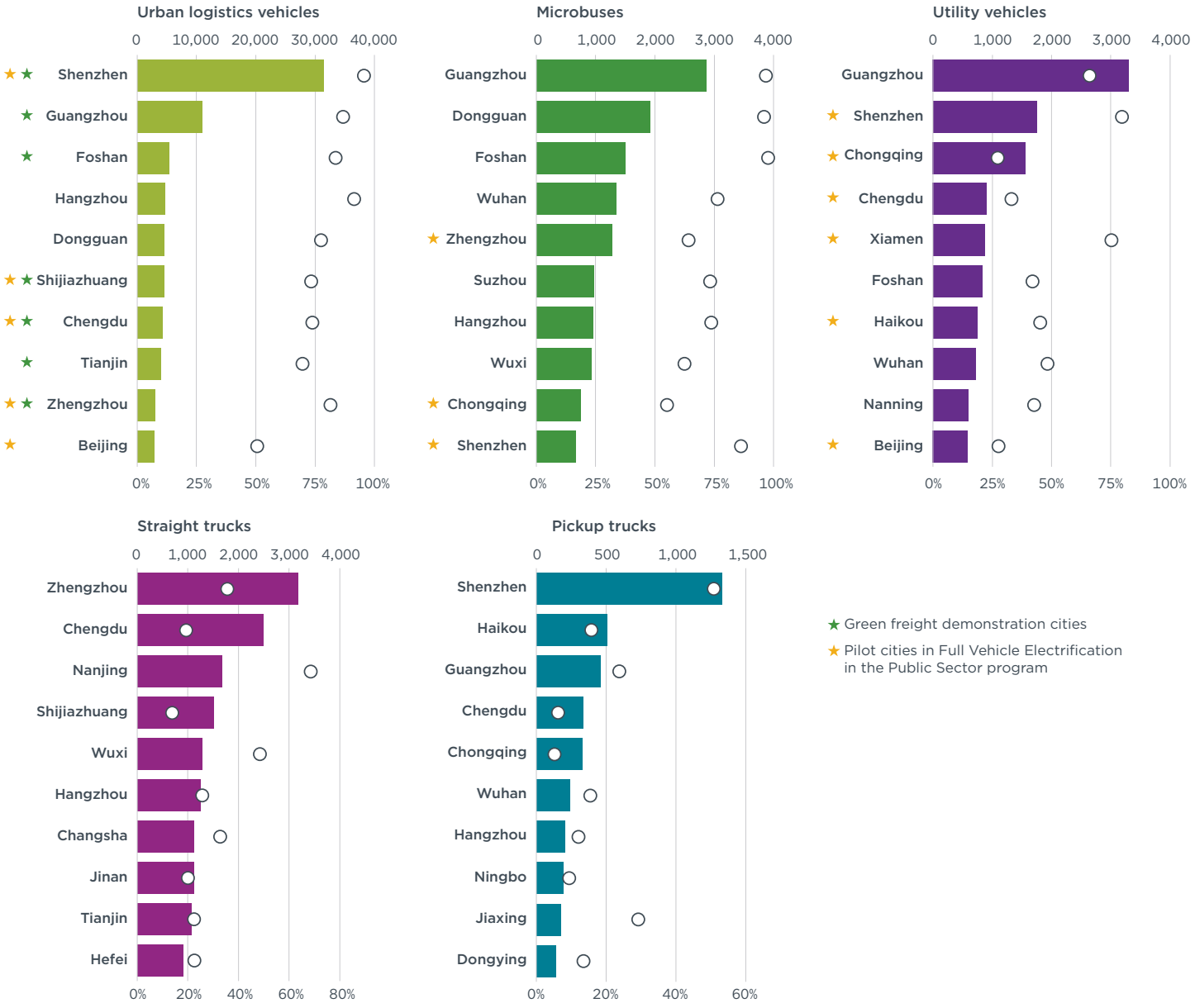
Figure 10 and Figure 11 display the top 10 cities for major NECV categories in the light-duty and heavy-duty segments, respectively, based on absolute registrations in 2024. The stars with different colors in these two figures indicate corresponding national programs or campaigns, such as pilot cities programs, that are most relevant to increasing the pace of electrification in each vehicle category. As shown, most of these leading cities joined one or more of China's national programs or campaigns that have measures or elements to promote the deployment of certain new energy vehicle fleets as of 2024. Among these major light-duty NECVs, leading cities in urban logistics vehicles, buses, and utility vehicles had the highest average new energy vehicle market penetration, which were 84%, 80%, 47%, respectively, while the average values in general purpose vehicles and pickup trucks were the lowest. Among major heavy-duty NECVs, leading cities in the city bus category all achieved 100% electrification in 2024; the top 10 leading cities' average new energy vehicle market penetration in other vehicle categories ranged from 28% for utility vehicles to 61% for urban logistics vehicles.

Figure 10

Registrations and market penetration rates of various types of new energy light-duty commercial vehicles in the top 10 cities for each category in 2024



Note: The bars (top axis) denote the market size, and the dots (bottom axis) represent the corresponding market penetration.

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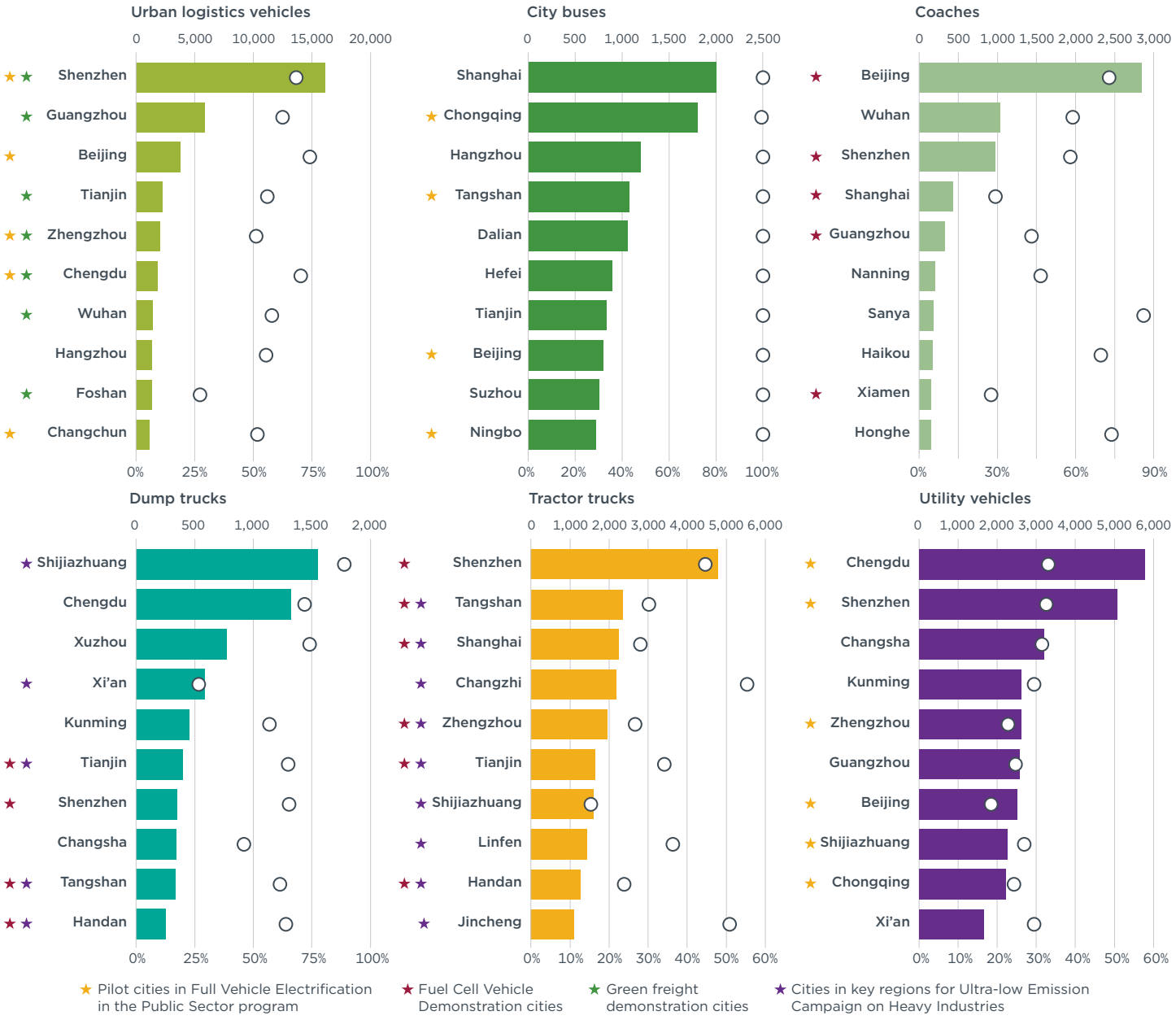
Figure 11

Registrations and market penetration rates of various types of new energy heavy-duty commercial vehicles in the top 10 cities for each category in 2024



Note: The bars (top axis) denote the market size, and the dots (bottom axis) represent the corresponding market penetration.

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TERMINOLOGY AND DATA SOURCES

New energy commercial vehicles include battery electric, plug-in hybrid electric, and hydrogen fuel-cell electric commercial vehicles.

Commercial vehicles refer to all motor vehicles with four wheels or more that are not passenger cars. Commercial vehicles include buses and goods vehicles, such as trucks, that are mostly used for business purposes. **Passenger cars** are defined as motor vehicles with four wheels that carry people, have no more than nine seats, and have a maximum designed GVW of less than or equal to 3,500 kg.

Buses refer to commercial vehicles of various weights that carry passengers, including city buses, coaches, minibuses, and microbuses.

The **light-duty segment** refers to commercial vehicles with a GVW of 3.5 tonnes or below, while the **heavy-duty segment** refers to commercial vehicles with a GVW above 3.5 tonnes.

Utility vehicles, also called special purpose vehicles in China, are functional vehicles (e.g., refrigerated trucks, post office vehicles, engineering trucks, sanitation vehicles, and stake trucks, etc.). **Straight trucks,** officially called general purpose goods vehicles (普通货车) in Chinese, are open-structure vehicles used to transport cargo.

All data are provided by Gasgoo Auto (https://auto.gasgoo.com/), an auto data aggregator in China.

Acknowledgments: Thanks to Yuwei Pei for her generous support of this research, and Liuhanzi Yang, Hongyang Cui, Hui He, and Felipe Rodríguez for their constructive comments on an earlier version of this piece.

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