

GLOBAL TAXI BENCHMARKING STUDY 2019

NOVEMBER | 2020

INTRODUCTION

Taxis are well-known to be used for an individual, mostly door-to-door, on-demand transport, offered to the public primarily at local level. By the very nature of their services, taxis are an integral element in the sustainable urban multimodal mobility chain, which relies upon efficient public transport and a range of complementary travel solutions.

This Statistics Brief highlights the differences between taxi markets in various cities around the world, with the objective for cities and operators to be able to benchmark their services.

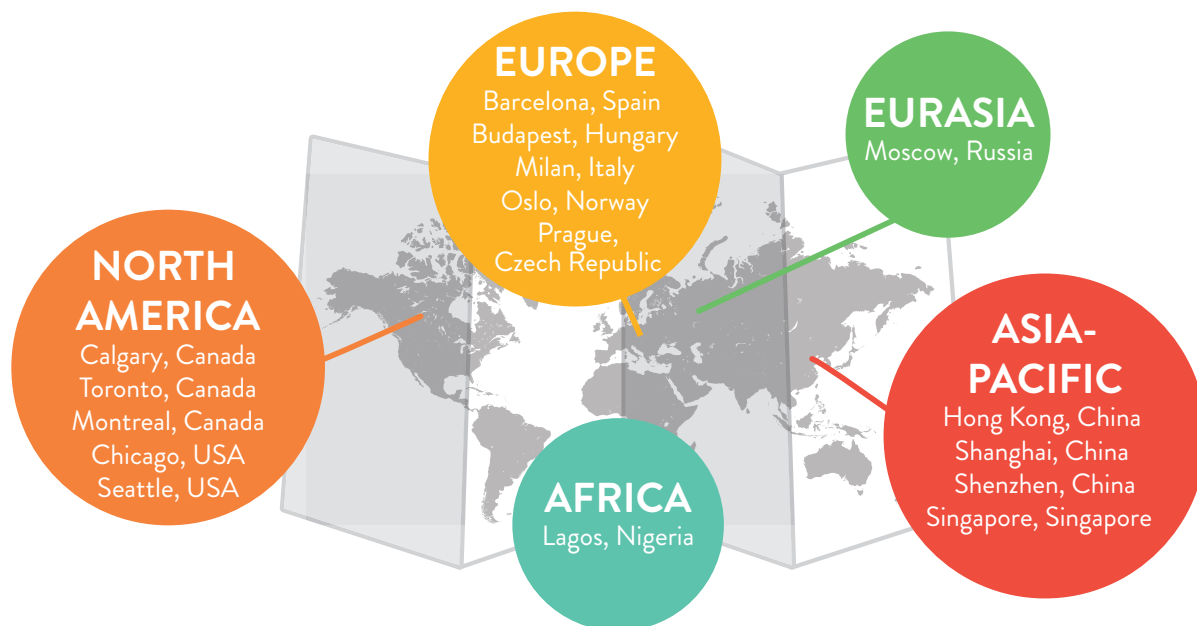


► New York

THE GLOBAL STUDY

Taxis are increasingly acknowledged as an extension of public transport systems. The flexibility of taxi services has only encouraged their rapid growth and popularity within the industry globally. However, the last few years have been particularly challenging for the taxi industry. As a result of new technologies and fierce competition, major cities from across the world have seen their taxi operators reforming their services to survive in the urban mobility sector. Similarly, regulators are required to develop new frameworks and adopt new players with both opportunities and challenges associated in this new environment.

UITP's global taxi benchmarking study aims to compare taxi performance metrics on different criteria to identify similarities and differences among cities. The study addresses several key parameters, providing an overview of the different regulatory regimes, economic efficiency, and performance of taxi services as well as fare regulation of transport network companies in respective cities. As a regular exercise, this 2019 version also provides a base to track changes in time and data prior to the significant impacts of the Covid-19 crisis expected now and in the years to come. Emphasising the diversity between various regulatory and operational approaches in different cities around the world, cities have different approaches which could be discovered in this statistics brief.



CITIES AROUND THE WORLD

Data is compiled for 16 cities and compared along key parameters including regulation, operation, vehicle technology, Transport Network Company (TNC) regulation, driver and fare.

PERFORMANCE OF TAXI SERVICES

There are several ways to measure performance of taxi vehicles. One measure is distance driven with passengers on board. Ride-hailing companies are looking to reduce the idle run or deadheading (running without passengers) percentage by increasing vehicle utilisation. The cities with good taxi systems have high utilisation.

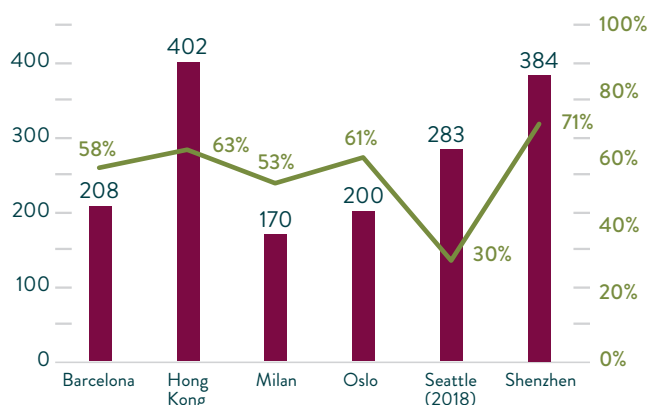
As a reference, deadheading refers to empty vehicle travel which is necessary to provide passenger transport services, as it is composed of subitems such as overhauling (travel that follows the receipt of a ride request and precedes the passenger pick-up), cruising (travel needed to reach an area where a driver expects ride requests) and commuting travel to and from the driver residence.

Average daily distance driven per taxi and the percentage of km driven with passengers

This indicator is calculated as the ratio between the distance driven daily while transporting passengers and the total distance driven daily.

We added the average daily km driven per taxi to measure the performance of taxis. For example, in Shenzhen, a taxi drives an average of 384km per day with a client present 71% of the time. In contrast, in 2018 Seattle's average daily km driven per taxi was 283km, of which only 30% of the distance was with passengers.

Average daily km driven per taxi and the percentage of km driven with passengers



However, this might be an incomplete picture as deadheading is a more complicated aspect to calculate for taxis and ride-hailing. First studies with quantitative estimates of deadheading in the United States reported by Henao, Marshall and Janson (2019)¹ indicate a range of 42% to 81% of deadheading travel. In other words, travel without passengers on board – cruising and overhauling – divided by travel with passengers on board. Cramer and Krueger (2016)² estimate that deadheading travel for taxi services is, on average, 1.35 times the amount of travel with passengers on board in four major cities of the United States.

Drivers to taxi ratio

Drivers are an integral part of the taxi system around the world. Drivers to taxi vehicles ratio is used to find out adequacy of drivers but conclusions must be evaluated with the number of taxis in double (or more) shifts.

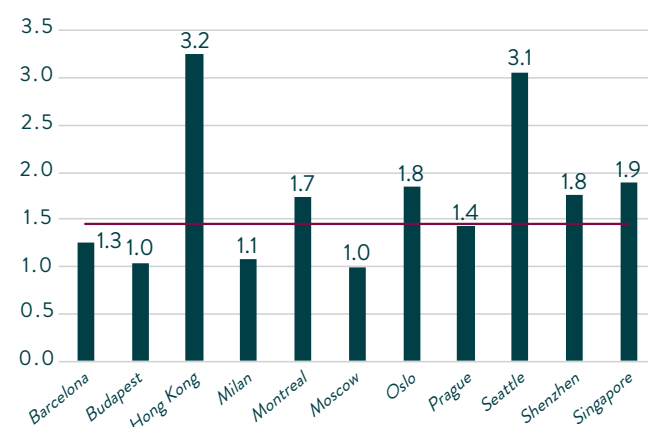
¹ Marshall & Janson, 2019. Impacts of Ridesourcing on VMT, Parking Demand, Transportation Equity, and Travel Behavior.

² Cramer & Krueger, 2016. Disruptive change in the taxi business: The case of Uber.

Also, we need to consider that with the introduction of ride-hailing offers, there may have been an increase in the number of drivers, which has not always been measured, regulated, or regulated differently.

In the graph below you can see the ratio in different cities with an average of around 1.5 drivers per taxi.

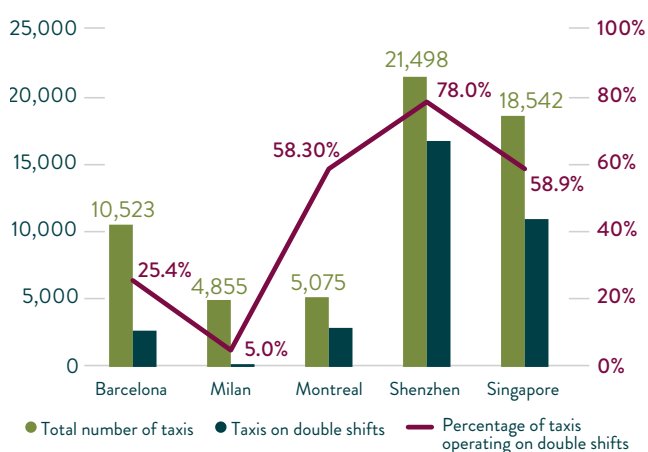
Drivers to taxi ratio



Comparison of taxis on double shifts

In most cities, taxis operate 24 hours a day, seven days a week. The graph below shows the number of taxis that are operating double shifts (day and night) by different drivers.

Taxis on double shifts



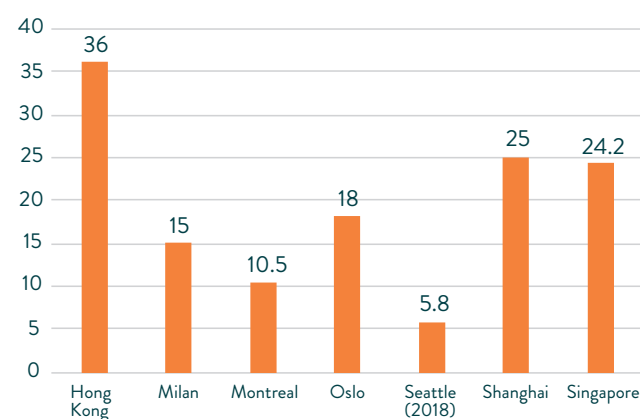
As we can see, the relatively low number of drivers in Milan is explained also by the fact that only 5% of the total number of taxis is operating in double shift. On the contrary, the city of Montreal has a comparable number of taxis (around 5,000 taxis) but since more than half of the permits are operating in double (or more) shifts, the ratio of drivers to taxis is higher with 1.7. This ratio is similar to Shenzhen (1.8) that has a far greater fleet (21,500 vehicles) and a higher percentage of double shifts (78%).

Number of trips

The graph below states the average number of trips performed by the taxi in a day.

In line with graph showing the low percentage of km driven with passengers on-board, in this graph we can see that Seattle has a low number of daily trips per vehicle. On the contrary, vehicles in Hong Kong score a high number of daily trips.

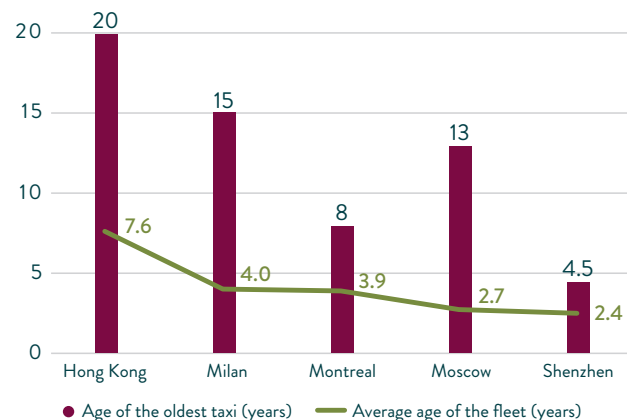
Average number of trips / vehicle / day



Age of the vehicles

The age of the fleet is an important parameter to find out the quality of taxi services in the city as well as their impact to environment. This is important as taxi vehicles are used very intensely. The cities with good taxi systems have lower average age of the fleet. In some of the cities, like Montreal, there is mandatory requirement to replace the vehicle after certain age. But in many others, the age limit is set by the oldest car in the city.

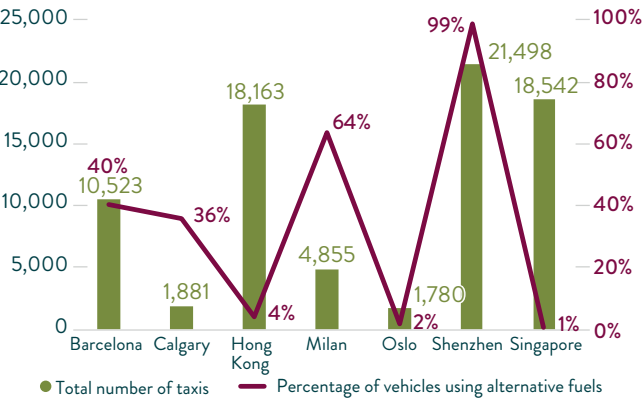
Age of the vehicles



Number of vehicles using alternative fuels

Considering the high number of kilometres driven by taxis in the urban environment every day, it is critical to look for clean vehicle technology. Some of the cities have already introduced Hybrid and Electric vehicles.

Percentage of vehicles using alternative fuels

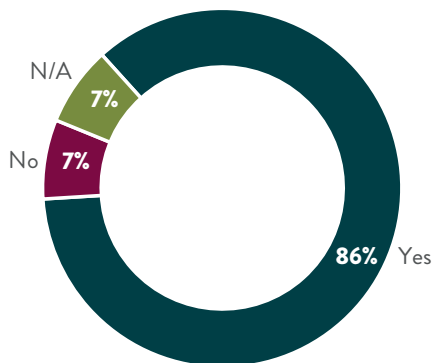


Shenzhen is definitively the capital of electric taxis with the electrification of 99% of its total fleet of 21.5K taxis. In Barcelona 40% of the fleet is using alternative fuels, including hybrids (3221 vehicles), GLP (797) and natural gas (240). In Hong Kong, 762 vehicles are also using hybrid fuel (LPG and electric) but only for 4% of the fleet, while in Milan hybrid are around 3,000 and a hundred vehicles are using GLP and natural oil, which sum up to 64% of the total fleet. In Oslo and Singapore there is a limited experience with electric vehicles (2% and 1% of the fleet).

Electronic payments

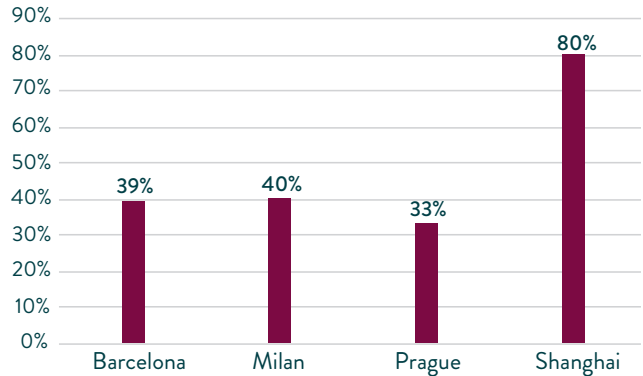
Electronic payments are mainstream in the sample of cities surveyed with many cities insisting on its mandatory nature.

Are electronic payments supported?



However, in many cases data is not available to monitor the penetration of this payment channel. We can see that in the four cities that offer an estimation, the percentage of trips paid through electronic payment can vary from a third to more than 80%.

Percentage of trips paid through electronic payments

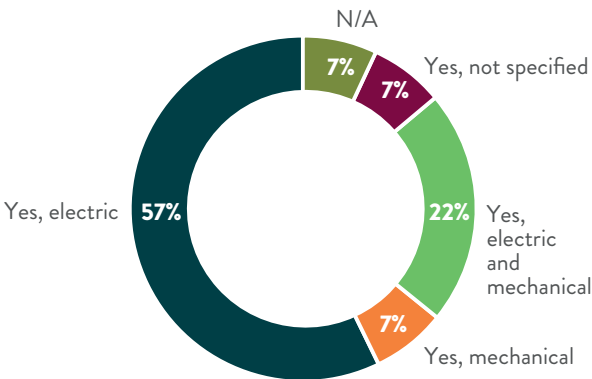


Fare meters

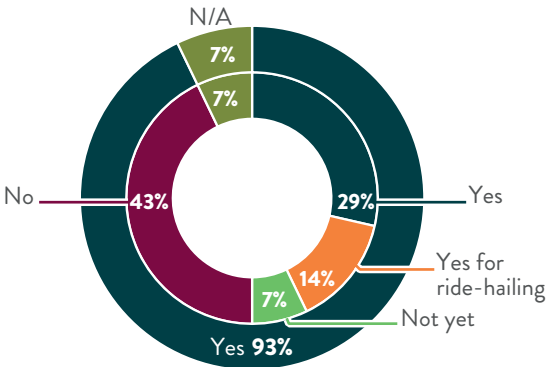
In the cities surveyed fare meters are widely used, either or both electric and mechanical. Electric meters are used in 11 cities out of the 14 displayed in the graph below.

However, smartphones are not widely allowed to be used as fare meters with the exception of four cities out of 14 (Calgary, Chicago, Moscow and Shenzhen) clearly declaring to allow them. The city of Oslo is moving towards this direction.

Do taxis use a meter?



Are meters used? (external ring)
VS
Are smartphones allowed to be used as fare meters (internal ring)



TRANSPORT NETWORK COMPANIES (TNC)

A transport network company (TNC) provides pre-arranged transportation services using an online-enabled application or platform to connect passengers with drivers using a vehicle. Also known as E-hailing or Ride-hailing apps.

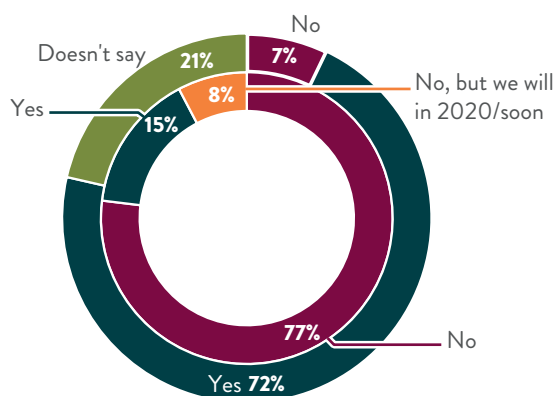
The taxi sector is currently drawing a lot of attention after the development of ride-selling apps like Uber, Didi, Lyft, Ola and Grab etc., which are undeniably challenging traditional taxi operators and taxi authorities in cities across the world.

TNC performance measurement

Are TNCs operating in your city? (external ring)

VS

Do you have quality parameters to measure performance of TNCs? (internal ring)



Despite the fact that almost all the cities surveyed (selection of 14 cities in the graph above) recognise the presence of TNCs operating in their city, three quarters of the cities do not yet dispose of statistics nor quality parameters on those services. The city of Chicago as a regulatory agency displays a rich data portal where “not all trips are reported but the City believes that most are”, due to the data reporting process. Singapore specifies that they will soon dispose of quality parameters to measure TNCs’ performance.

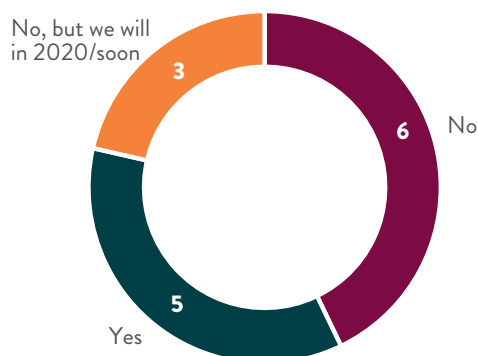
On a side note, we mention the California Air Resources Board (CARB, or the California environmental protection agency) established a baseline in late 2019 for

GHG emissions of ride-hailing vehicles with mandatory reporting that can also be integrated with the local licensing framework.

TNC regulation

Some cities, especially from Asia and North America dispose of regulation covering taxis and TNCs: Shanghai; Shenzhen; Toronto; Calgary (Livery Transport Bylaw 6M2007 regulates the vehicle-for-hire industry, including taxis, limousines and ridesharing companies); Chicago (the TNP Ordinance of 2014 establishes a licensing and regulatory framework for TNCs); Seattle (which also regulates TNC vehicles and drivers operating standards). In Singapore and Montreal specific regulations will be implemented soon, both planned to be effective from October 2020.

Do you have specific specific regulations for TNC?



Measuring impact of TNC

Out of the cities declaring regulating TNCs, four of them (Calgary, Montreal, Shanghai and Shenzhen) are measuring the impact of TNCs on the conventional taxi market as well as widely on public transport. Moreover, from the study it emerges that the data of the impact of TNCs, also on congestion levels, might be less likely measured by the taxi regulators rather than other public agencies, suggesting a fragmented governance that might impede a global shared understanding of the phenomenon of TNCs and ride-hailing.



► Barcelona

CONCLUSION

Good taxi systems have a balance between supply and demand as well as regulatory and organisational structure.

Data collected shows that taxi vehicles have a very high utilisation therefore it is very important to keep a low average age of the vehicles, to switch to alternative fuels (ongoing) and improve operations with higher ratios of daily km driven with passengers over the total daily km driven.

Use of technology and integration with the wider mobility ecosystem can definitely help taxis to deliver more value to customers and also to diversify their business models and we see signs that this transformation has started with some cities being more advanced than others.

LIST OF PARTICIPATING ORGANISATIONS



TAXI AND
RIDE-HAILING



► Hong Kong

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This Statistics Brief was prepared by UITP Taxi & Ride-hailing Committee

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