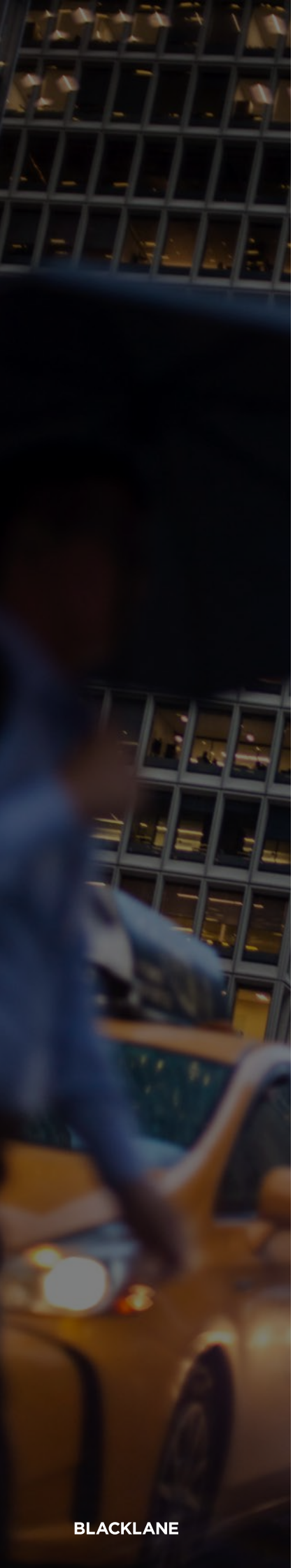
BLACKLANE

UPGRADE YOUR TRAVELS

Which ride service is safest?

New York City for hire vehicle (FHV) crash analysis: 2016-2021

June 2022



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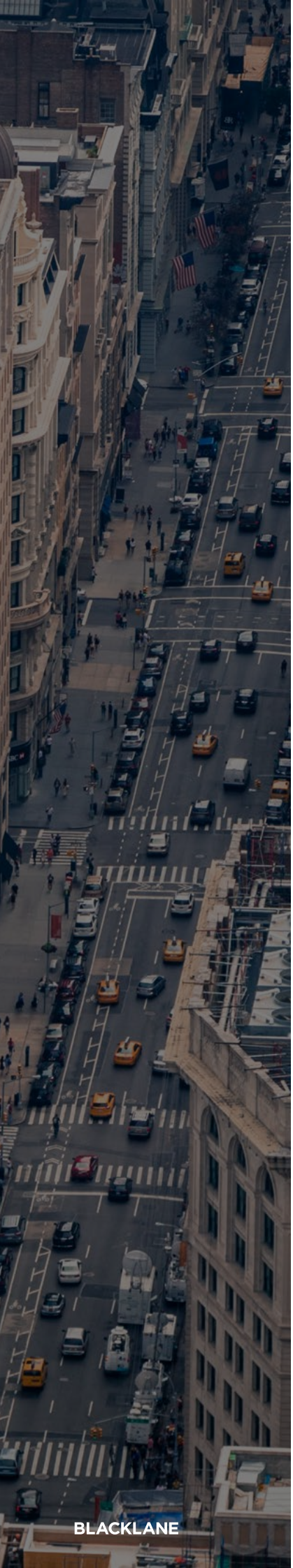


Executive summary

Luxury Limousines, which are premium chauffeured vehicles, give the safest rides in New York City. From 2016-2021, Luxury Limousines had:

- **The lowest percentage of crashes that result in injuries.** Only 14% of Luxury Limousine crashes involved an injury. That increased to 23% for Black Cars (overwhelmingly ride-hailing vehicles), 18% for Medallion Taxis, 24% for Street Hail Liveries (also known as green taxis), and 28% for Liveries. Injuries may be to passengers, drivers, pedestrians, and/or cyclists.

- **The lowest rate of crashes.** Per one million miles, Black Cars had 7% more crashes than Luxury Limousines did. Medallion Taxis had 28% more. Outer-borough services of Street Hail Liveries and Liveries had 142% and 99% more crashes, respectively.

- **The lowest rate of crashes involving injuries.** The safety gaps here are even more stark. Per one million miles, Black Cars had 76% more crashes involving injuries than Luxury Limousines did. Medallion Taxis got into 63% more crashes involving injuries. Street Hail Liveries had 317% more of these crashes and Liveries had 301% more.

Introduction

Blacklane is the global chauffeur service, serving New York and hundreds of other cities across more than 50 countries around the world. Blacklane analyzed 2016-2021 ("crash period") New York City crash data of five for hire vehicles (FHV) categories:[1]

- **Black Cars**, whose trips were done by high-volume ride-hailing companies 97% of the time in the crash period. The remaining 3% were from traditional black car service. No differentiation between ride-hailing and traditional black car crashes was available.[2] TLC data combines both into a single "Black Cars" category when reporting crash data. Black Cars may not perform street hail rides.

- **Liveries**, pre-arranged service that charges on the basis of a flat rate, time, mileage, or zones. Liveries primarily serve outer boroughs and are not permitted to perform street hail rides.

- **Luxury Limousines**, which are primarily rides from chauffeur companies in high-quality, late-model sedans and SUVs. Passengers are charged based on garage-to-garage service and on a flat rate basis or per unit of time or mileage. Luxury Limousines have higher insurance requirements per person and per incident than Black Cars.[3] They are not permitted to perform street hail rides.

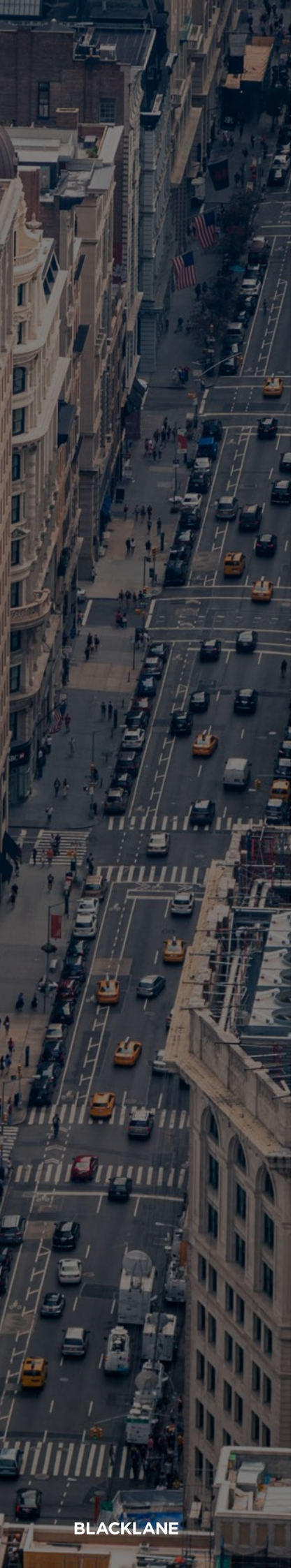
- **Medallion Taxis**, commonly known as yellow cabs. They are allowed to perform street hails and electronically hailed rides anywhere in the city.

- **Street Hail Liveries**, also known as green taxis. They can accept street hails and electronically hailed rides in Upper Manhattan, and anywhere in the Bronx, Brooklyn, Queens, and Staten Island. They may be dispatched by for hire vehicle bases for pre-arranged trips. They can only pick up airport passengers if the trip is pre-arranged through a base.

[1] Key findings come from comparisons and analysis of cumulative data over the entire crash period.

[2] See p. 11 in "Methodology"

[3] NYC.gov, "NEW OR RENEWAL BLACK CAR OR LUXURY LIMOUSINE BASE STATION." Accessed March 14, 2022.



The data and Blacklane's analysis of New York City crashes by category reveal:

- The superior safety of chauffeured rides compared to ride-hailing, taxis, and other for hire vehicles over a six-year period.
- The varying levels of risks of injury to drivers, passengers, cyclists, and/or pedestrians when crashes occur.
- Why chauffeur service is safer than taxis, ride-hailing, and livery service in New York City. Blacklane used (1) mileage data provided by New York City, (2) its own mileage data and (3) assumptions to estimate mileage as detailed in the "Methodology" section.[4]

Luxury Limousine crashes are the least likely to result in injury

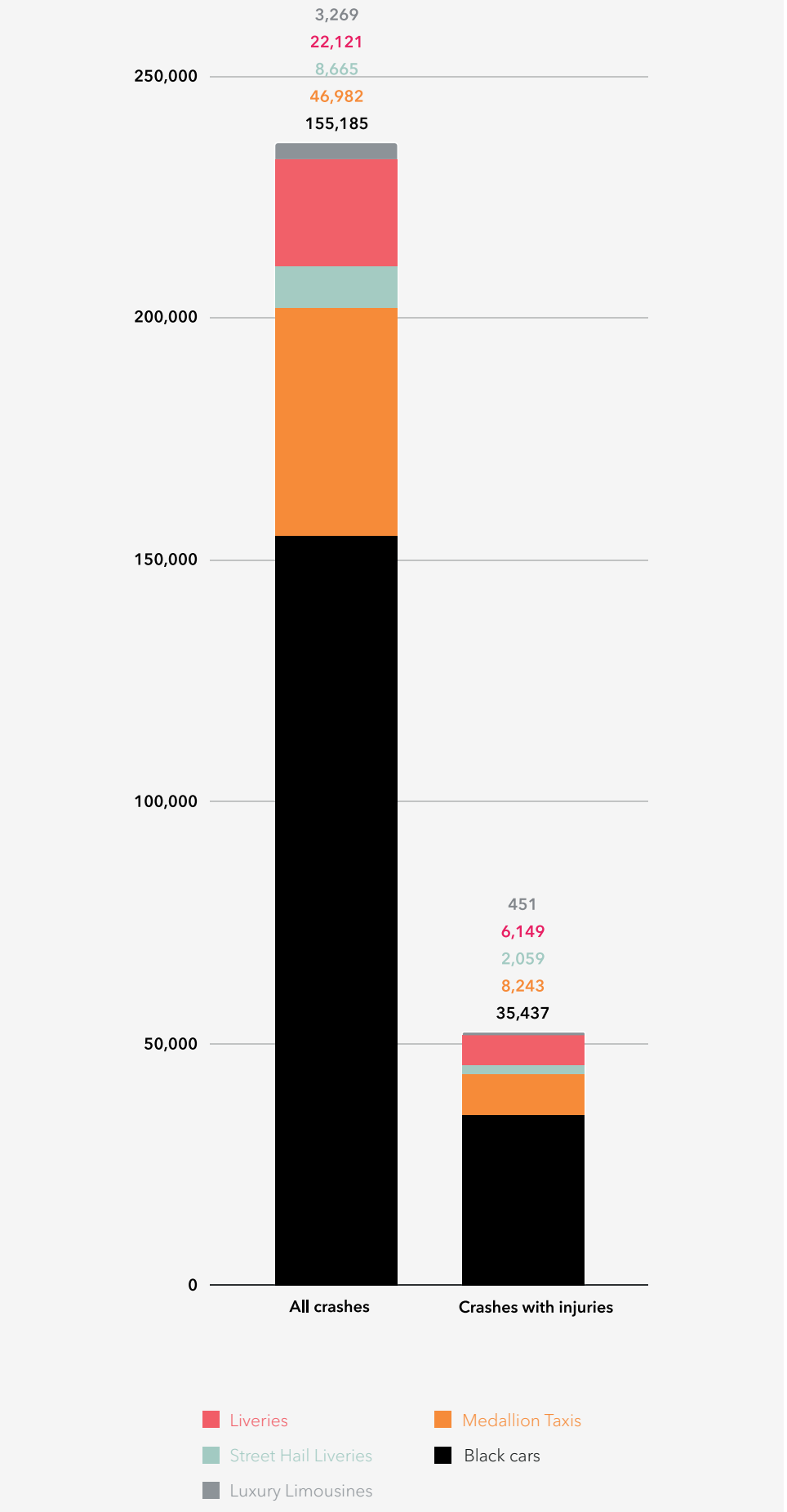
Total rides, crashes, and crashes involving injuries rose from 2016 to 2018, declined in 2019, and plummeted in 2020 and 2021 due to the pandemic.

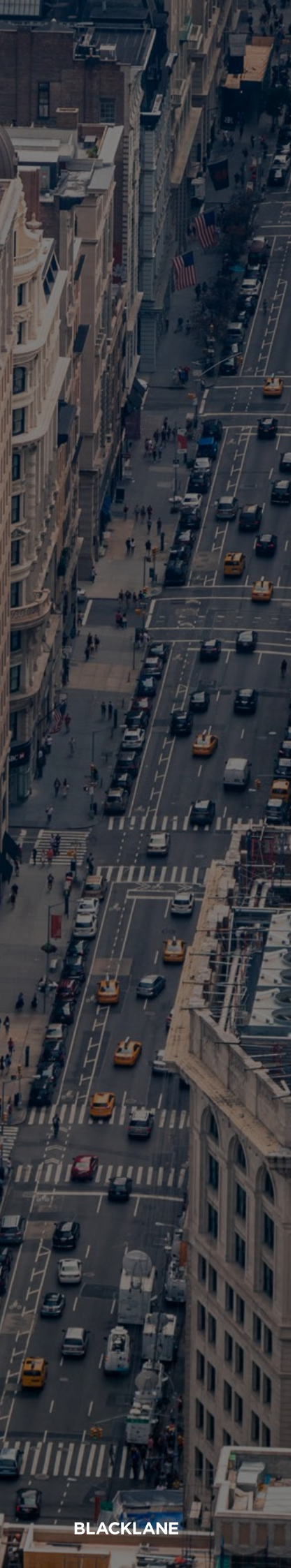
Over the crash period, Black Cars had the most crashes by far, as well as the most crashes involving injuries. Medallion Taxis were second in both crash categories. These numbers align with overall trip numbers. Black Cars – overwhelmingly ride-hailing services – had the most rides over that time period, followed by Medallion Taxis.

An analysis of the numbers shows that Liveries were the most likely vehicles to have an injury if a crash occurred, at one in 3.6 crashes. Street Hail Liveries and Black Cars were next, at one in 4.2 and 4.3 crashes, respectively. Medallion Taxis had an injury in about one in 5.6 crashes. Luxury Limousines had the lowest likelihood of injury in the event of a crash, occurring about one in seven crashes.

[4] Windels Marx peer reviewed this report and provided comments, data analysis and regulatory input to Blacklane.

2016 - 2021 Crashes



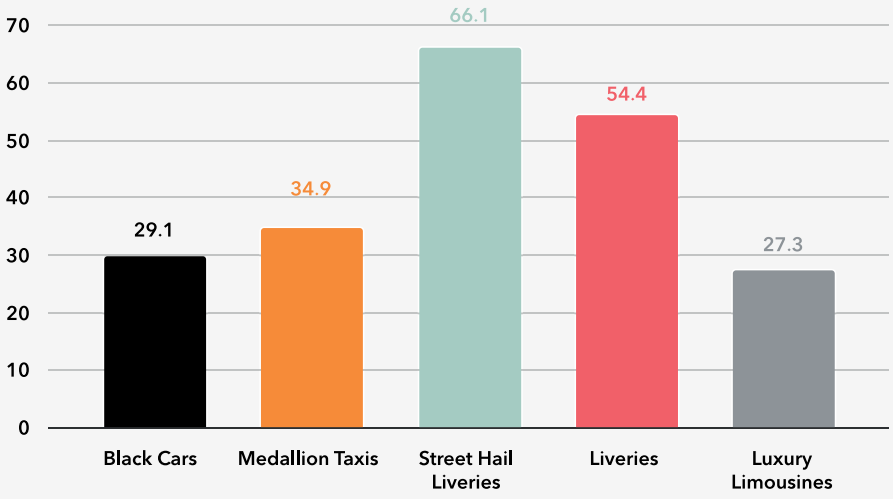


	All crashes (2016-2021)	Crashes involving injury of any severity (2016-2021)	Percent of Crashes Involving an Injury (2016-2021)
Black Cars	155,185	35,437	23%
Medallion Taxis	46,982	8,243	18%
Street Hail Liveries	8,665	2,059	24%
Liveries	22,121	6,149	28%
Luxury Limousines	3,269	451	14%

Luxury Limousines give the safest trips

To measure risk equally among each ride category, Blacklane normalized crash data per one million miles.[5] The conclusion: Luxury Limousines were by far the safest form of for hire rides in the city.

Crashes per 1 million miles: 2016 - 2021

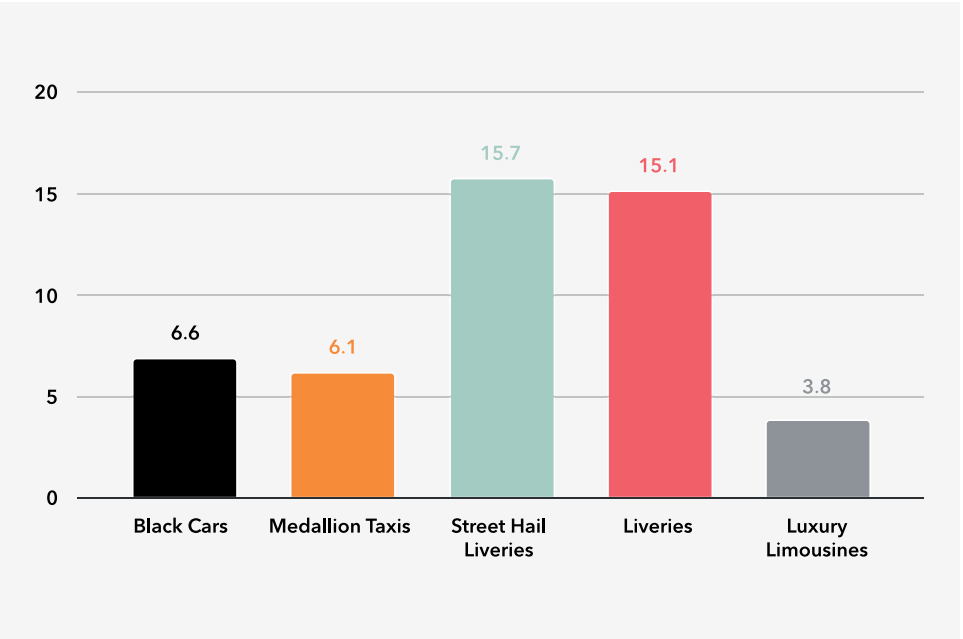


[5] See "Methodology" section below.

Over the six-year period, Luxury Limousines were involved in 27.3 crashes per one million miles, the fewest of all categories. Black Cars and Medallion Taxis followed, getting into approximately 11 and 13 crashes, respectively, for every 10 that Luxury Limousines had. Liveries doubled the crashes of Luxury Limousines per million miles and Street Hail Liveries has 24 crashes for every 10 Luxury Limousine crashes.

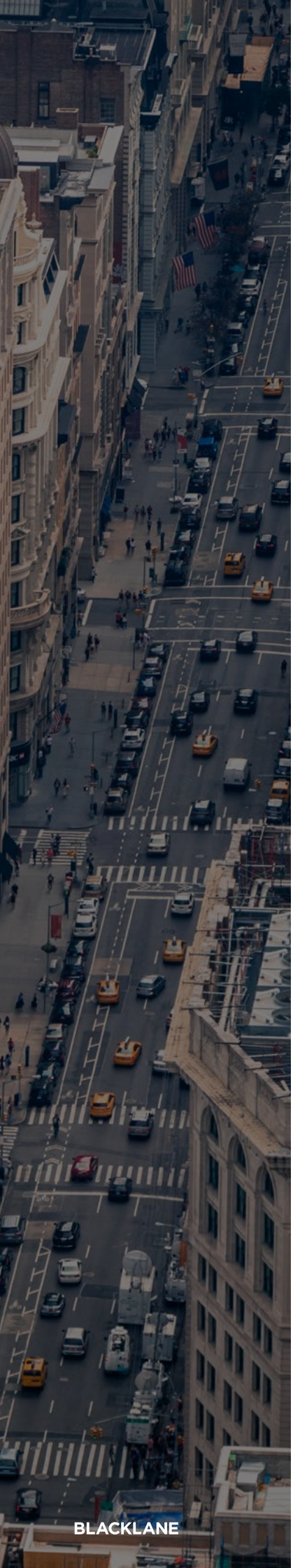
Put another way, Luxury Limousines had one crash every 36,630 miles on average, while Black Cars had a crash every 33,364 miles. For Medallion Taxis, it was one crash in 28,653 miles. Liveries crashed once every 18,382 miles and Street Hail Liveries crashed every 15,128 miles.

Crashes with injuries per 1 million miles: 2016 - 2021



Injury-related crashes reveal an even bigger disparity between the safety of Luxury Limousines and danger of other ride services. For every 10 Luxury Limousine crashes with injuries per one million miles, Medallion Taxis had 16 and Black Cars had 17. Liveries had 40 and Street Hail Liveries had 42, more than four times that of Luxury Limousines.

In other words, Luxury Limousines had a crash involving an injury once every 263,158 miles on average. Medallion Taxis had one every 163,934 miles. For Black Cars, the average was one every 151,515 miles. Liveries had an injury-related crash every 66,225 miles and Street Hail Liveries had one every 63,694 miles.



Why chauffeur service is safest: vehicles, drivers and business model?

Vehicles

Two elements that define Luxury Limousine service, and the chauffeur industry globally, are vehicle quality and vehicle age.

A premium experience requires premium vehicles. In New York, this means a high number of Cadillacs, along with Lincoln, Mercedes-Benz and BMW.

These vehicles come with advanced safety features, especially in vehicles tailored for chauffeured driving. Examples include cameras and radar sensors to better detect surroundings and notify chauffeurs of potential dangers. Many chauffeured SUVs have a camera display in lieu of a traditional rear-view mirror. This allows the chauffeur to have an unobstructed view behind the SUV even if the back row is full of passengers or if luggage stacks up to the back window.

High-end chauffeur companies also tend to limit vehicles to no more than four model years old. The average age of a vehicle in Blacklane's fleet, for example, is 18 months. The most recent New York data shows that the average age of yellow taxis is 4.5 years old and for green taxis is 7.5 years old. The average age of ride-hailing vehicles is 4.2 years old.[6]

Medallion Taxis, Black Cars and Luxury Limousines are all inspected three times per year in New York. Street Hail Liveries are only inspected twice per year.

[6] NYC Taxi & Limousine Commission, "2020 FACT BOOK."

Driver Quality

New York City's Taxi and Limousine Commission (TLC) is rare in that it "has a single license for taxi and for-hire vehicle drivers," including operators of Medallion Taxis, Black Cars, and Luxury Limousines.[7] Across most of the U.S., ride-hailing drivers simply need their private driver's license.

However, companies providing Luxury Limousine rides in New York still maintain their own hiring standards. These typically exceed the requirements of Medallion Taxi and ride-hailing drivers in terms of the years of experience, professionalism, and attention to detail, all of which contribute to safety on the road.

For example, a 2016 report from New York's Taxi & Limousine Commission showed that Luxury Limousine drivers, across the entire sector, had the lowest averages of:

- Injury crashes per vehicle;
- Vehicle safety violations per vehicle; and
- Base safety violations per vehicle.[8]

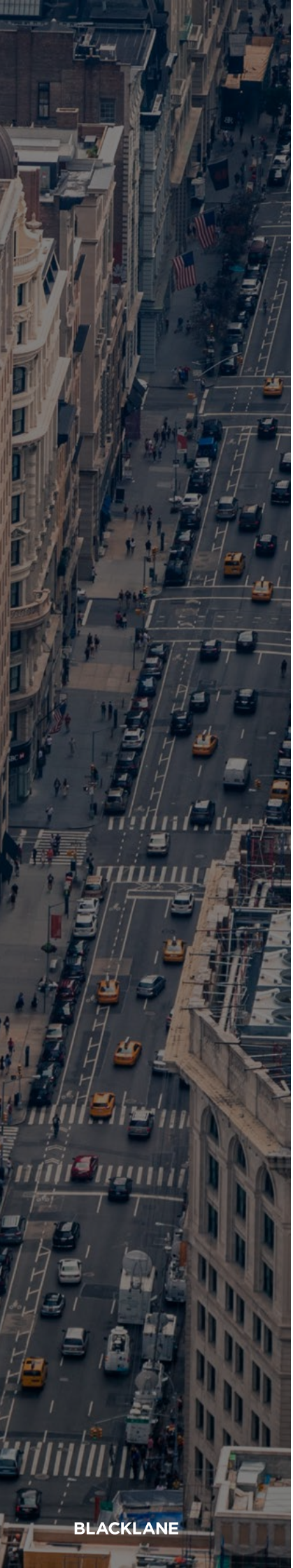
The data covered the period from July to December 2015, covering 771 for hire vehicle bases that dispatched more than 65,500 cars.[9] The base categories were Black Car, Livery, and Luxury Limousines.

	Injury crashes per vehicle	Vehicle safety violations per vehicle	Base safety violations per vehicle
Luxury Limousines	0.01	0.09	0.01
Black Car	0.04	0.10	0.02
Livery	0.05	0.06	0.03

[7] NYC.gov, TLC Driver License. Accessed January 13, 2020.

[8] NYC Open Data, Vision Zero Base Report.

[9] NYC.gov. "Vision Zero Base Reports." Accessed August 13, 2021.



Fare Type

The nature of chauffeured rides may also affect safety. Driver pay for ride-hailing and taxi trips typically depends on the number of rides completed. More rides equal more fares, and therefore, more income. Drivers then have an incentive to complete trips quickly and take the most fares as possible each shift.

Chauffeurs, on the other hand, schedule prearranged rides that most commonly get booked hours or days ahead of time. Passengers also tend to ride with chauffeurs for a defined time period, often several hours. Chauffeurs most commonly receive hourly pay, diminishing the incentives to quickly complete each trip.

Methodology

Monthly trip data comes from the New York City Taxi & Limousine Commission (TLC) Aggregated Reports.[10]

Crash data comes from the New York City Taxi & Limousine Commission Local Law 31 report.[11]

The TLC documents crashes in eight vehicle categories. This report excludes:

- Unaffiliated For Hire Vehicles (FHVs)
- Commuter Vans, because they operate with "seating capacities of 9-20 passengers on a prearranged regular daily basis."[12]
- Paratransit vehicles, because they are limited to passengers with disabilities and most often go to and from health care facilities.[13]

[10] NYC.gov, Aggregated Reports "Yellow Taxi, Green Taxi, and FHV Monthly Data," Monthly Data Reports. Accessed March 2, 2022.

[11] NYC.gov, NYC Government Publication "Quarterly Crash Data Involving TLC-Licensed Vehicles." Accessed March 11, 2022.

[12] NYC.gov, "Commuter Van Base." Accessed March 11, 2022.

[13] NYC.gov, "Paratransit Bases." Accessed March 11, 2022.

To analyze crash data, Blacklane aligned and grouped crash and trip categories as follows. "FHV" stands for "For Hire Vehicle."

Crash categories	Trip categories
Medallion Taxis	Yellow Taxi
Street Hail Liveries	Green Taxi
Black Cars	FHV: High Volume + Traditional Black Car
Luxury Limousines	FHV - Lux Limo
Liveries	FHV - Livery

Crash data does not cover non-TLC vehicles that may have crashed in New York, such as taxis, ride-hailing, or chauffeur service licensed in other jurisdictions. The data represent the number of vehicles per category in a crash, not the exact number of crashes. Multiple TLC vehicles could be involved in a single crash.

Trip data comes from the New York City Taxi & Limousine Commission "Monthly Data Reports" showing the volume of rides per day in each month.[14] We multiplied daily data by the number of days in the given month.

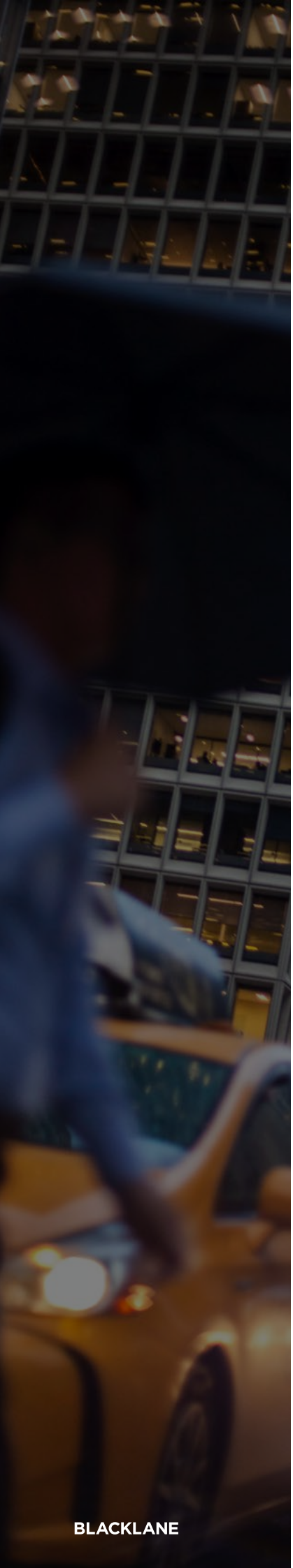
To calculate crash rates per one million miles, Blacklane started with monthly crash data by vehicle category provided by the TLC.[15] We used a combination of third-party data, internal data and assumptions on the average distance per trip for the vehicle categories. The formula is:

$$\text{Crashes per 1,000,000 miles} = \frac{\text{Crashes per time period}}{\text{Trip miles with passengers per time period}} \times 1{,}000{,}000$$

We derived miles for each category using precise data where possible and assumptions when necessary.

[14] NYC.gov, Aggregated Reports "Yellow Taxi, Green Taxi, and FHV Monthly Data," Monthly Data Reports. Accessed March 11, 2022.

[15] "Local Law 31 of 2014. Vision Zero: Crash Data Involving TLC-Licensed Vehicles" as of March 11, 2022.



- **Medallion Taxis (Yellow Taxis):** New York City TLC provided total trip mileage from January 2016 - August 2020 through a Freedom of Information Act (FOIA) request. For September - December 2020, we applied the average distance per trip from the previous eight months of 2020. For 2021, we used the average distance per trip from January 2016 - August 2020. The average distance ranged from 2.55 - 2.83 miles per trip.

- **Street Hail Liveries (Green Taxis):** As with Medallion Taxis, New York City TLC compiles data on all trips each calendar year. For the period from 2015 to 2020, we took the average fares of street-hailed rides – the overwhelming majority of all Green Taxi trips – to best filter out rides that had distances of hundreds of thousands and tens of thousands of miles. For 2021, data were available for January - July. We applied that average distance to the full year.[16] Street-hailed rides are categorized as "Trip_type" 1.[17] Average annual trip distance was from 2.68 to 4.62 miles.

- **Black Cars** have no published data on the average ride distance. The city's online FHV trip records do not show distance traveled per journey. Further, they encompass livery, luxury limousine, and black car bases together. Therefore, we used a different third-party data to derive the average ride distance.

  First, we started with a bottom-up analysis using a 2018 report from Bruce Schaller, a former Deputy Commissioner for Traffic and Planning at the New York City Department of Transportation and Policy Director at the NYC TLC, which reported that, "In New York City, the average TNC trip is about 5.5 miles in distance and 24 minutes in duration." This data is derived from self-reported survey results from the 2016-17 National Household Travel Survey (NHTS).[18] "TNC" is short for "transportation networking companies" and is another term for ride-hailing.

  The Taxi & Limousine Commission publishes the average minutes per trip for all ride-hailing companies, going back to June 2017.[19] Rides averaged 20 minutes most months through December 2018. In 2019, they were most often 18 or 19 minutes long. Times dropped to 13-17 minutes on average in 2020 until March 2021, before returning to 18 or 19 minutes for the rest of 2021.[20]

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[16] NYC Open Data, 2016 Green Taxi Trip Data, 2017 Green Taxi Trip Data, 2018 Green Taxi Trip Data, 2019 Yellow Taxi Trip Data, 2020 Green Taxi Trip Data and 2021 Green Taxi Trip Data (Jan-Jul).

[17] NYC.gov, Data Dictionary - LPEP Trip Records, May 1, 2018.

[18] "The New Automobility: Lyft, Uber and the Future of American Cities" by Bruce Schaller of Schaller Consulting. July 25, 2018.

[19] NYC.gov, Aggregated Reports "Monthly Data Reports."

[20] toddwschneider.com, Taxi and Ridehailing Usage in New York City. Accessed May 27, 2021.

Therefore, we kept the 5.5 mile figure for 2016. From 2017-2019, we maintained the ratio of 24 minutes and 5.5 miles, calculating 4.58 miles in 2017 and 2018 and 4.35 miles in 2019. We kept the 4.35 mile average in 2020 and 2021, assuming that the correlation between time of ride and distance traveled differed during the pandemic months due to less traffic.

Second, we used a top-down calculation using TLC data obtained through a Freedom of Information Law request for 2016-2020. The regulator provided the average monthly mileage per vehicle of High Volume For-Hire Services. The TLC classifies those as "companies which, through their subsidiary bases, dispatch at least 10,000 trips per day."[21]

To get an industry-level average of the mileage per trip, we:

- Multiplied the average miles per vehicle by the number of vehicles each month. The product was the total number of miles driven.

- Removed the estimated miles driven for personal trips. Schaller estimated that in 2016, 245 million miles driven on TNC vehicles were for personal use out of 1.19 billion miles. That ratio works out to 21.9%.[22] We removed that percentage for the duration of the crash period.

- Removed the mileage driven without passengers. An analysis of the effect of the minimum TNC driver pay standard showed that driver utilization rates – the percentage of time drivers had a passenger in their vehicle – in June 2018 was 54.8%. In June 2019, it was 55.9%.[23] The city's minimum driver pay standard became effective in February 2019, so we used 54.8% for January 2016 - January 2019 and 55.9% for February 2019 - December 2021.

- Divided the remaining passenger miles for the full year by the number of annual trips for 2016-2020. For 2021, we kept the same number as 2020.

The report uses the average of both analyses as the average trip distance for ride-hailing journeys.

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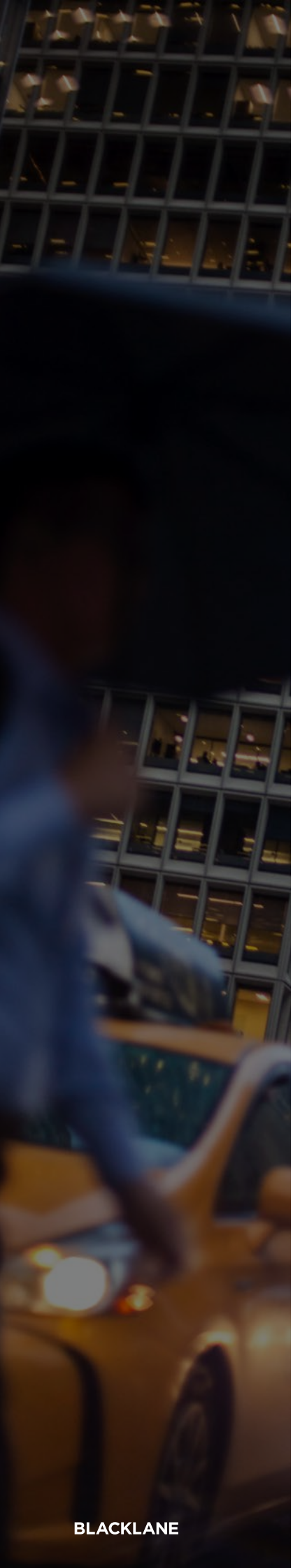
[21] NYC.gov, "For-Hire Vehicle." Accessed May 2, 2022.

[22] "UNSUSTAINABLE? The Growth of App-Based Ride Services and Traffic, Travel and the Future of New York City" by Bruce Schaller of Schaller Consulting. February 27, 2017.

[23] "New York City's Gig Driver Pay Standard: Effects on Drivers, Passengers, and the Companies" by Dmitri Koustas, James Parrott and Michael Reich. December 2020.



Calculation of ride-hailing average miles per trip

Year	2016	2017	2018	2019	2020	2021
Bottom-up	5.50	4.58	4.58	4.35	4.35	4.35
Top-down	6.17	5.37	4.41	4.63	4.59	4.59
Average	5.84	4.98	4.50	4.49	4.47	4.47

New York City Black Car trips also include the traditional Black Car service for prearranged rides. There is no data available on the average length of these trips. Therefore, we estimated these to be the average of Medallion Taxi and Luxury Limousine trips, resulting in 12.72 - 13.88 miles per trip each year. Even if this estimate is greatly inaccurate, it would minimally affect the Black Car crash rates.

- **Liveries** have average times, but not average distances, published by New York City TLC. Because both Livery and Green Taxis focus on the outer boroughs, we correlated the time of rides between the two groups. Livery rides were 18% to 28% longer than Green Taxis on average, so we increased Livery average distance proportionately. This resulted in average trip distances each year between 3.40 and 5.45 miles.

- **Luxury Limousines** do not have average distances published by New York City TLC. In this case, we used the average distance of Blacklane rides occuring in our New York business district from 2016-2021 (meaning the ride started and/or ended in the New York metropolitan area). We excluded long-distance rides between popular destinations including Boston, the Hamptons, Philadelphia and Washington, D.C. because those would skew the findings to make Luxury Limousines look more favorable. Average distances ranged from 22.74 to 25.00 miles.

Windels Marx peer reviewed this report and provided comments, data analysis and regulatory input to Blacklane.

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