

# Taxi and Livery Crashes In New York City, 1990-99

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## About Schaller Consulting

Schaller Consulting serves government, business and non-profit groups seeking to satisfy customer needs in all forms of urban transportation including bus, subway, paratransit, taxicab, livery and auto.

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## Coverage of This Report

This report covers all crashes occurring in New York City that involved taxicabs and for-hire vehicles licensed by the City of New York and that were reported to the New York State Department of Motor Vehicles. DMV supplied data files with crash data to Schaller Consulting in response to Freedom of Information requests.

Taxicabs are the familiar yellow medallion cabs, of which there are currently 12,187 licensed in New York City. The for-hire vehicle (FHV), or livery, category includes car services, black cars and limousines seating fewer than 9 passengers. There are 45,000 licensed FHVs in New York City.

This analysis covers over 130,000 taxi and livery crashes occurring between 1990 and 1999. Data for 1999 only recently became available from DMV; data for 2000 are not yet available.

Three-quarters of taxi/livery crashes reported to DMV (primarily by the police) involve personal injury to vehicle occupants, pedestrians or bicyclists. State law requires that crashes involving personal injury or property damage in excess of \$1,000 be reported. Since many crashes involve property damage less than \$1,000, the total number of taxi/livery crashes is much higher than indicated by DMV records. Based on insurance company data, it can be estimated that the total number of taxi/livery crashes is approximately four to five times the number reported to DMV.

DMV records do not distinguish between taxicab and livery vehicles, yet this breakout is of considerable interest and significance. Thus, as part of the analysis, the two types of vehicles were identified based on the unique sequences of license plate numbers assigned to each type of vehicle. The medallion taxi category includes the “medallion” plates that use the 4-digit medallion number assigned by the Taxi and Limousine Commission, and so-called “TT” and “SBV” plates. The FHV or livery category is comprised primarily of “TC” plates.

Plate numbers were missing in 18% of taxi/livery crashes in recent years. The most likely explanation for the missing plate numbers is errors in recording taxicabs’ full plate numbers in cases where the plate includes a small subscripted number. The problem first occurred when this type of plate was introduced in about 1991. Analysis of the DMV data found that the pattern of missing plates was strongly correlated with the pattern of taxi crashes across the city, analyzed on a police precinct basis. As a result, missing plates were allocated to the taxi or livery categories based on a statistical model that considered the known number of taxi and livery crashes in each precinct. Depending on the year, 93-97% of the missing plates were allocated to the taxi category and the remainder to the livery category.

Not included in this analysis are out-of-town taxicabs and liveries not licensed by TLC.

## Summary

Public safety is a primary reason that the City government regulates taxicab and livery services. From the earliest days of the taxi industry in New York, safety was a major concern of the public, regulators and the industry. Accident and insurance concerns helped justify the moratorium on issuing medallion licenses in the 1930s and led to stringent vehicle inspections and tighter regulations over the past quarter century. In the last several years, the Taxi and Limousine Commission has taken several steps to reduce the number of taxi and livery crashes. TLC mandated higher levels of insurance coverage, driver drug testing and defensive driver training in 1998. A “critical driver” point system to weed out persistent traffic violators was implemented in February 1999. Celebrity announcements reminding taxi passengers to buckle up were begun in August 1997.

This report presents a comprehensive analysis of taxi and livery crash data. It addresses several important questions: What is the level of risk to the public from taxi and livery crashes? Have crashes been increasing or decreasing in recent years? What has been the impact of regulatory initiatives?

The news for passengers, drivers and the public is both good and bad. Public safety has improved in several areas:

- In 1999, the number of taxicab crashes involving personal injury or fatality declined for the fifth year in a row.
- The incidence of serious injury has declined, most substantially for livery riders but also for livery and taxi drivers and to a lesser extent for taxi passengers.

The study also identifies two serious problems:

- Livery crashes involving personal injury or fatality increased 26% in the past five years, including increases in each of the past three years (1997-99).
- Taxi passengers are far more likely than other vehicle occupants to sustain relatively serious injuries when involved in a crash. In 1999, 11.5% of rear-seat taxi passengers involved in crashes sustained injuries such as fractures, concussions, internal injuries, bleeding, burns, contusions and abrasions. The injury rate for taxi passengers is much higher than for rear-seat livery passengers (3.0%) or for rear-seat passengers in other vehicles involved in taxi/livery crashes (3.1%). In other words, looking at the various vehicles involved in taxi/livery crashes, *taxi passengers are three times more likely to be relatively seriously injured than passengers in other vehicles.*

The first problem is fairly easy to account for. Growth in livery crashes is primarily from the growth of that industry. While crashes are occurring at a somewhat greater rate per vehicle (0.21 injury crashes per licensed livery in 1992 versus 0.23 in 1999), the 50% increase in the number of liveries over this time period is the larger factor.

The second problem is more difficult to understand fully though several explanations can be adduced. The higher incidence of injury to taxi passengers may be linked to the presence of partitions in most medallion cabs, which introduce a very hard surface in an otherwise cushioned environment. This is the one clear difference in the passenger environment in taxis versus other vehicles.

One clear contributing factor is taxi passengers' reluctance to wear seat belts. Only 17% of rear-seat taxi passengers involved in crashes in 1999 were wearing seat belts<sup>1</sup>—one-half the figure for livery passengers and one-quarter the figure for passengers in other vehicles.<sup>2</sup> Taxi passengers not wearing a restraint are nearly twice as likely to sustain relatively severe injuries as those wearing a restraint (15.6% vs. 8.6% for 1997-99).

Seat belt usage is only one facet of this story, however. Even when wearing restraints, taxi passengers experience high injury rates. Looking just at seat belt users, 8.6% of taxi passengers are relatively seriously injured, a substantially higher rate than for livery passengers (3.3%) or passengers in other vehicles involved in taxi/livery crashes (3.9%).

Restraints do help, however. Unfortunately, seat belt usage has not budged during the past five years among taxi passengers involved in crashes. By contrast, 35% of livery passengers in crashes were wearing belts in 1999, up from 29% in 1994.

Other highlights of the report:

- 16% of injury crashes citywide involve taxis or liveries.
- 30% of injury crashes in Manhattan involve taxis or liveries.
- In Manhattan, livery crashes (2,951) approached the level of taxi crashes (3,368).
- 16 of the 29 persons fatally injured in taxi/livery crashes in 1999 were pedestrians, and one was a bicyclist.

## **Implications**

This report is focused on identifying trends and problems rather than making policy recommendations. Two areas clearly need further attention:

- What has produced five years of steady decline in taxi crashes? Are regulatory changes to be credited? What is the role of escalating demand for taxi service? How can these improvements be transferred to the livery sector?
- Why are taxi passengers at so much greater risk of serious injury? What role is played by partitions? Do passengers pay less attention to their surroundings in cabs and are thus less braced when crashes occur? How can passenger use of seat belts be increased?

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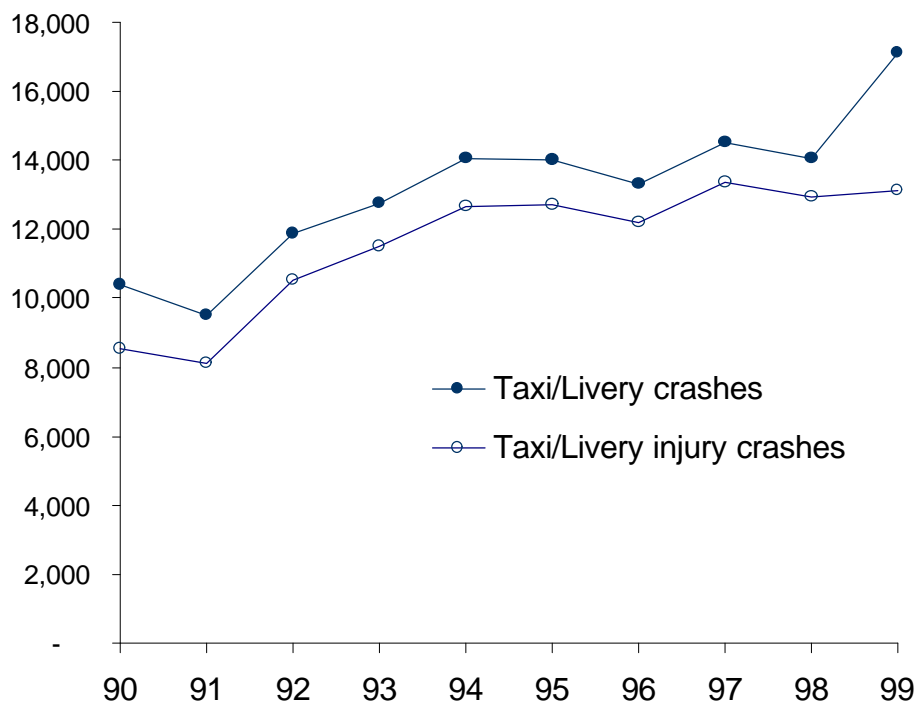
<sup>1</sup> 50% were recorded as not wearing a restraint; belt usage is unknown for the remaining 32%.

<sup>2</sup> Restraints were used by 35% of livery rear-seat passengers and 61% of rear-seat passengers in other vehicles involved in taxi/livery crashes.

## Taxi/Livery Crashes Increased Since 1990

- There were 17,127 taxi/livery crashes in New York City in 1999.
- 13,126 taxi/livery crashes entailed personal injury to a vehicle occupant, pedestrian or bicyclist. There were 29 crashes involving fatalities.
- Medallion taxicabs were involved in 4,270 crashes in 1999 while liveries were involved in 13,134 crashes.
- Injury crashes have increased 4% since 1994 after jumping by 48% from 1990 to 1994.
- The large increase in total crashes (injury and non-injury) from 1998 to 1999, shown in Figure 1, was due to the increase in reported non-injury (property damage only) crashes. This increase is the product of a change in DMV reporting requirements.<sup>3</sup>

Figure 1. Taxi/Livery Crashes in New York City<sup>4</sup>



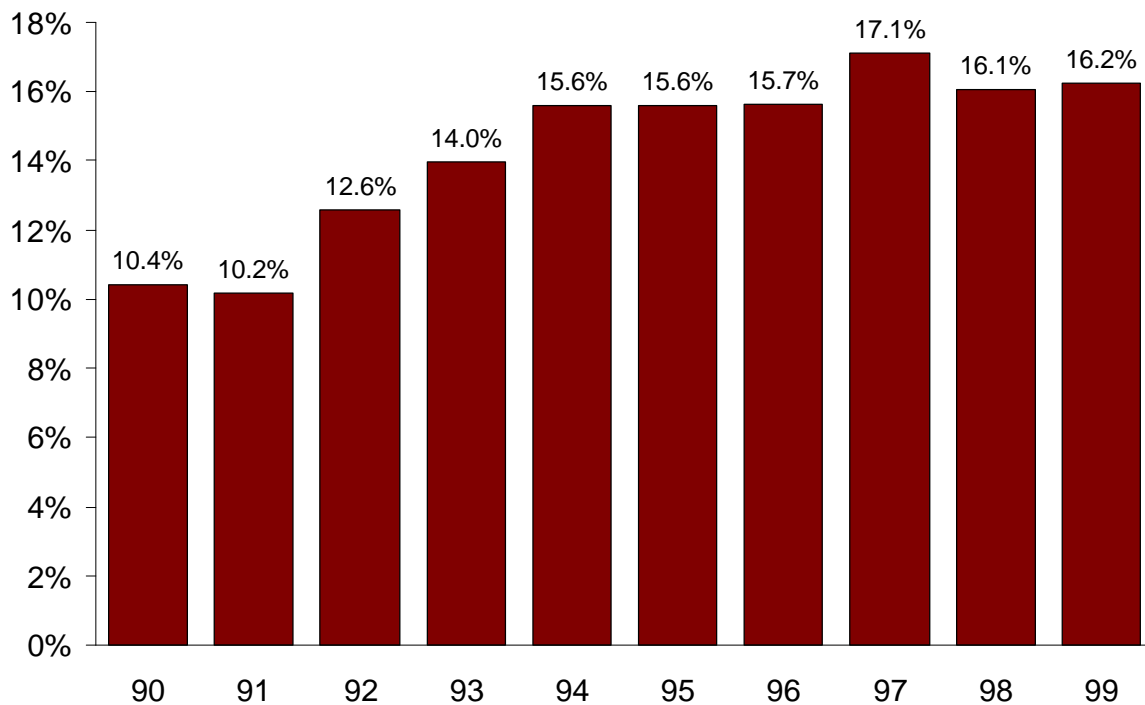
<sup>3</sup> DMV now requires crash reports when “apparent” property damage is over \$1,000 rather than where the damage is known to be over \$1,000.

<sup>4</sup> See also Table 1 in the Appendix.

## Taxi/Liveries Are In 16% of All Crashes in NYC

- The 13,126 taxi/livery crashes involving personal injury in 1999 represent 16.2% of all crashes in New York City in 1999.
- 8% of fatal crashes citywide involved taxicabs and/or liveries.
- In Manhattan, taxi/livery crashes account for 27% of all crashes and 30% of all injury crashes.
- In 1990, taxis and liveries accounted for 10.4% of all crashes in the city.
- In contrast to the early-90s, the increase in crashes in recent years is largely a result of the growing number of taxis and liveries in New York City. Taxi/livery injury crashes on a per-vehicle basis increased from 0.19 in 1990 to 0.25 in 1992, they declined to 0.23 in 1999.

Figure 2. Taxi/Livery Crashes as Percent Of All NYC Crashes<sup>5</sup>

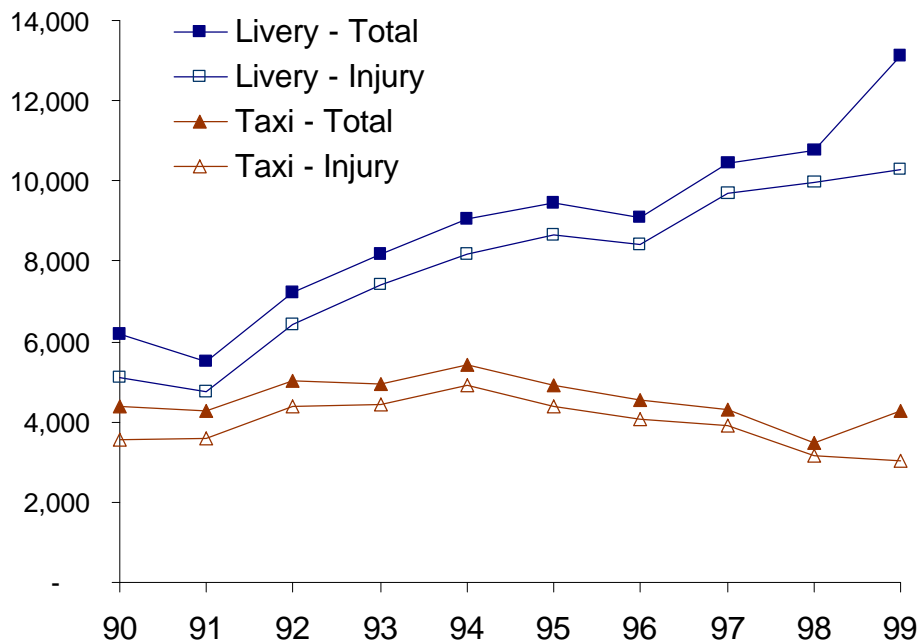


<sup>5</sup> See also Table 2 in Appendix.

## Since 1994, Fewer Taxicab Crashes But More Livery Crashes

- The increase in taxi/livery crashes during the 1990s is attributable to livery cars, not medallion taxis. (Liveries include neighborhood car services, black cars and limousines seating fewer than nine passengers.) Livery crashes involving injury increased 26% in the last five years, from 8,179 in 1994 to 10,290 in 1999.
- Taxi crashes involving injury grew by 37% from 1990 to 1994, then declined by 38% from 1994 to 1999.
- Taxi crashes involving injury decreased 3.2% from 1998 to 1999.

Figure 3. Taxi and Livery Crashes, Total and Injury<sup>6</sup>

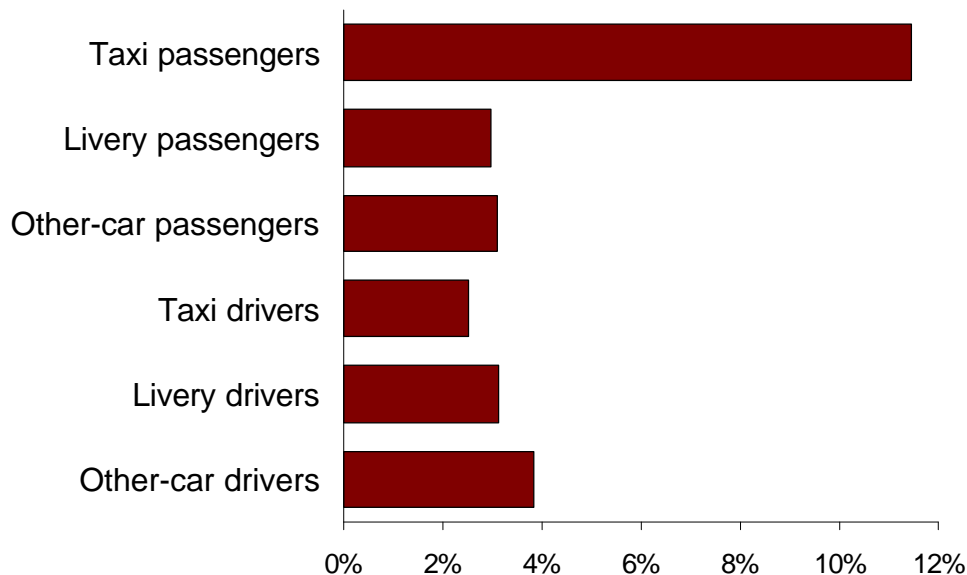


<sup>6</sup> See also Table 1 in Appendix.

## Extent of Injuries Greater for Taxi Passengers

- Overall, 41% of all vehicle occupants in taxi/livery crashes in 1999 were injured. (This includes taxi and livery passengers and drivers and the occupants of other vehicles with which they collided.)
- 1.4% of vehicle occupants experienced fatal injuries or severe injuries that DMV classifies as Injury Code A. These include broken or distorted limbs, skull fractures, amputations, concussions, internal injuries, severe bleeding, and inability to leave the crash scene without assistance.
- An additional 2.5% experienced injuries that DMV classifies as Injury Code B. These include minor bleeding, contusions, abrasions and moderate or minor burns.
- Passengers in medallion taxis are three times more likely to experience these severe or moderate Class A/Class B injuries compared with other vehicle occupants in the same crashes. In 1999, 11.5% of taxi rear-seat passengers experienced relatively severe injuries, compared with 3.1% of rear-seat passengers of other vehicles involved in taxi/livery crashes. The comparable figures are lower for taxi and livery drivers and livery rear-seat passengers.

Figure 4. Percentage of Vehicle Occupants Experiencing Class A or B Injuries or Fatalities, for Taxi/Livery Crashes, 1999.<sup>7</sup>

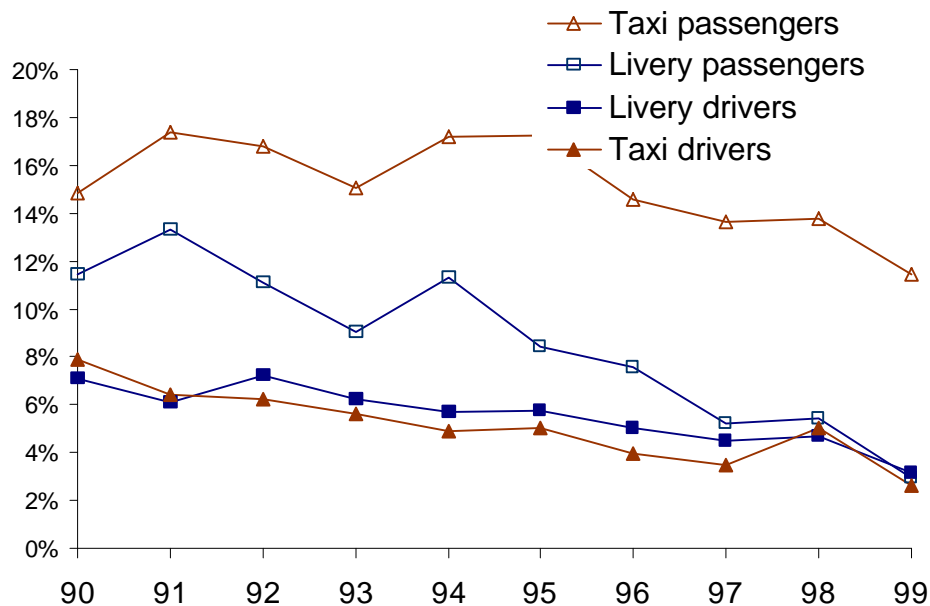


<sup>7</sup> Passengers are rear-seat passengers only. "Other-car" refers to vehicles involved in taxi and livery crashes other than the taxi and livery vehicles themselves. See also Table 3 in the Appendix.

## Injury Rates Remain High for Taxi Passengers Despite Overall Declines

- The rate of serious injuries declined for all categories of passengers in taxi/livery vehicles during the 1990s.
- The extent of these declines varied considerably. Declines exceeded 50% for every category of vehicle occupant *except* taxicab passengers. For example, the rate of serious injuries for livery passengers fell from 9-13% in the first half of the decade to 3.0% in 1999.
- By contrast, the rate of serious injuries for taxi passengers fell from 14-17% in the first half of the decade to 11.5% in 1999.

Figure 5. Percentage of Taxi/Livery Passengers and Drivers Experiencing Class A or B Injuries, or Fatalities, 1990-99<sup>8</sup>

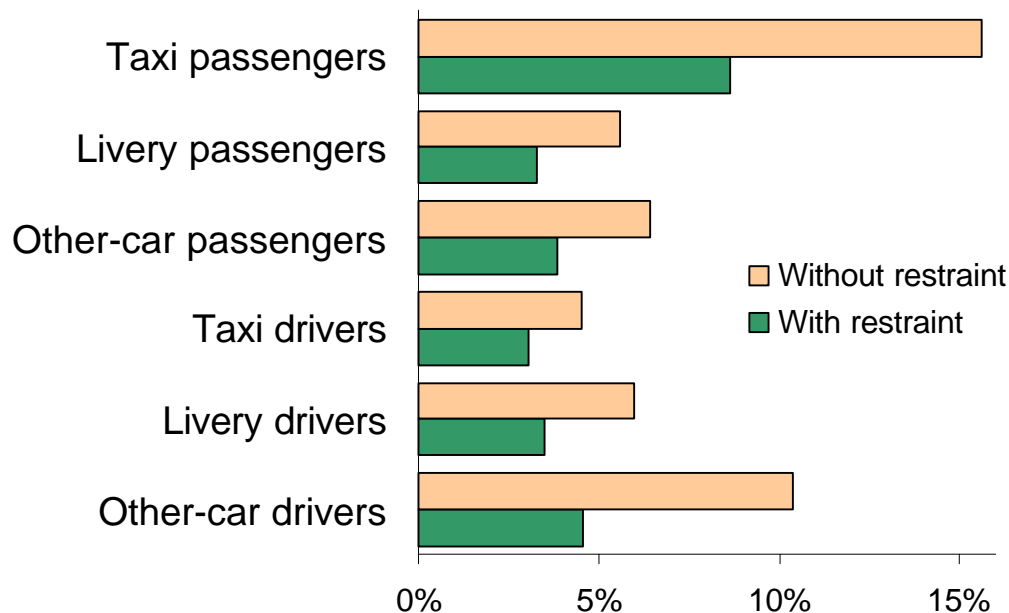


<sup>8</sup> See also Table 3 in Appendix A.

## Even for Seat Belt Users, Injuries More Severe In Taxis

- The rate of severe or moderate injury is higher for unrestrained vehicle occupants than those wearing seat belts, as shown in the figure below.
- Even taxi passengers who wear seat belts, however, are more likely to sustain serious or moderate injuries compared with other passengers in taxi/livery crashes. Serious or moderate injuries are sustained by 8.6% of belt-wearing taxi passengers compared with 3.3% of belt-wearing livery passengers.
- Unrestrained taxi passengers are the most likely to be sustain relatively severe injuries; 15.6% sustain serious or moderate injuries compared with 5.6% of livery passengers.
- Taxi drivers experience serious or moderate injuries at about one-third the rate of their passengers.

Figure 6. Class A/B Injury Rates by Restraint Usage, 1997-99<sup>9</sup>

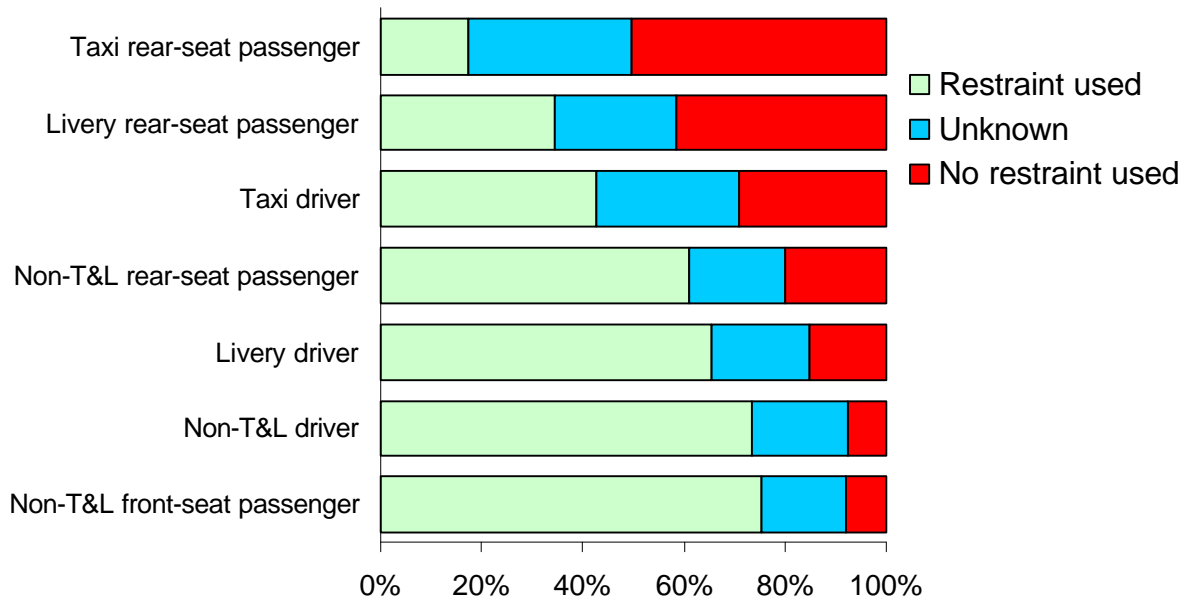


<sup>9</sup> Passengers are rear-seat passengers only. See also Table 4 in the Appendix.

### Seat Belt Usage Lowest Among Taxi Passengers

- Most taxi passengers involved in crashes failed to use a safety restraint in the cab. In 1999, 17% of taxi rear-seat passengers were using a restraint while 50% were known to be not using a restraint. Restraint use was not reported for the remaining 32% of passengers.
- Livery passengers are twice as likely as taxi passengers to use a safety restraint; 35% of rear-seat livery passengers used a restraint in 1999 while 41% did not.
- At least four in 10 taxi drivers and two in three livery drivers involved in crashes were using a safety restraint in 1999.
- Occupants of other vehicles involved in taxi/livery crashes were much more likely to use a safety restraint than taxi/livery passengers. Three-quarters of drivers and front-seat passengers in non-taxi/livery vehicles involved in these crashes were using a restraint, as were 61% of rear-seat passengers.
- In other words, rear-seat passengers in non-taxi/livery vehicles are three times more likely to use a restraint than rear-seat taxi passengers involved in the same crashes.

Figure 7. Restraint Use by Type of Vehicle and Position in Vehicle, for Vehicles Involved in Taxi/Livery Crashes, 1999<sup>10</sup>

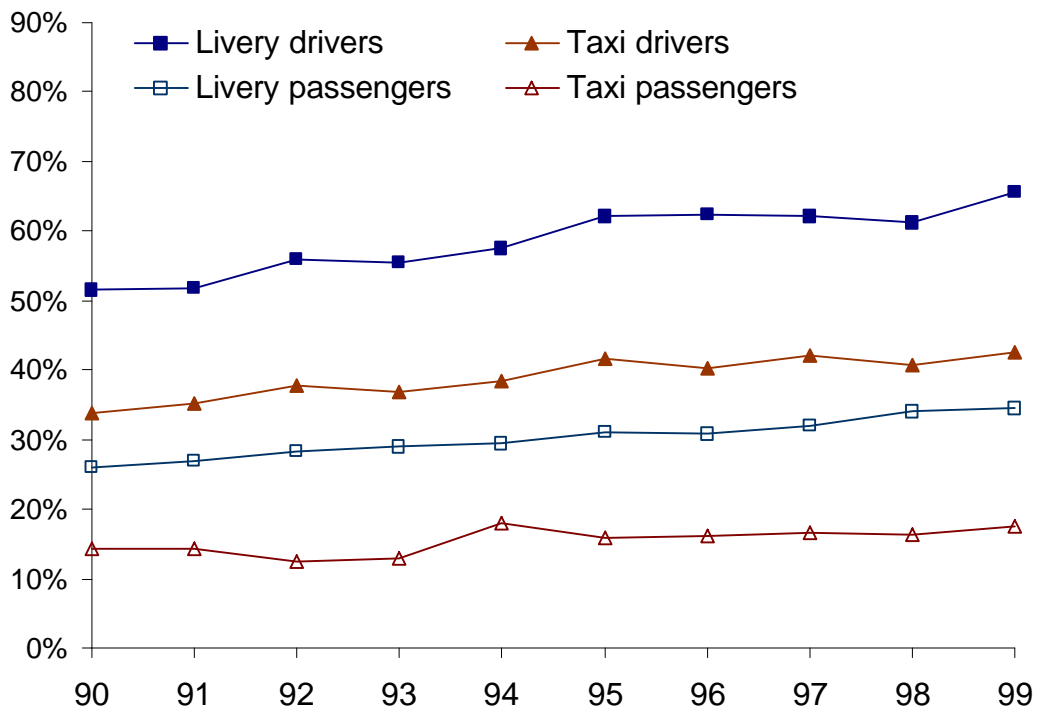


<sup>10</sup> See also Table 5 in the Appendix.

## Seat Belt Usage Increasing Slowly

- Taxi passengers' use of restraints increased, but only slightly, during the 1990s. While 14% of rear-seat passengers used belts in 1990, the figure rose to 18% in 1994 and has been stable since then.
- Livery passengers' use of seat belts increased somewhat in the 1990s, from 26% in 1990 to 35% in 1999, for rear-seat passengers involved in crashes.
- Restraint use by taxi and livery drivers increased significantly in the 1990s.

Figure 8. Restraint Usage of Taxi/Livery Drivers and Rear-Seat Passengers Involved in Crashes, 1990-99<sup>11</sup>

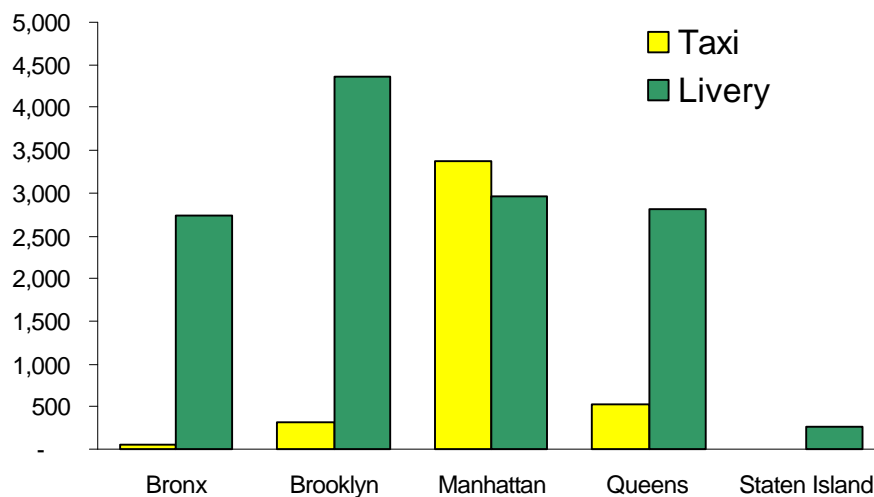


<sup>11</sup> See also Table 5 in the Appendix.

## Manhattan Leads In Taxi/Livery Crashes

- 6,121 of the 17,127 taxi/livery crashes in 1999 occurred in Manhattan.
- 30% of all injury crashes in Manhattan in 1999 involved taxis or liveries.
- 16% of all crashes citywide in 1999 involved taxis or liveries.
- The large majority of taxi crashes occurred in Manhattan (3,368 in Manhattan versus 902 in the other four boroughs combined).
- The number of livery crashes in Manhattan (2,951) is approaching the number of taxi crashes in Manhattan.
- Brooklyn led the city in livery crashes, with 4,369 in 1999, followed by Queens (2,808), the Bronx (2,741) and Staten Island (265).

Figure 9. Taxi and Livery Crashes by Borough, 1999<sup>12</sup>

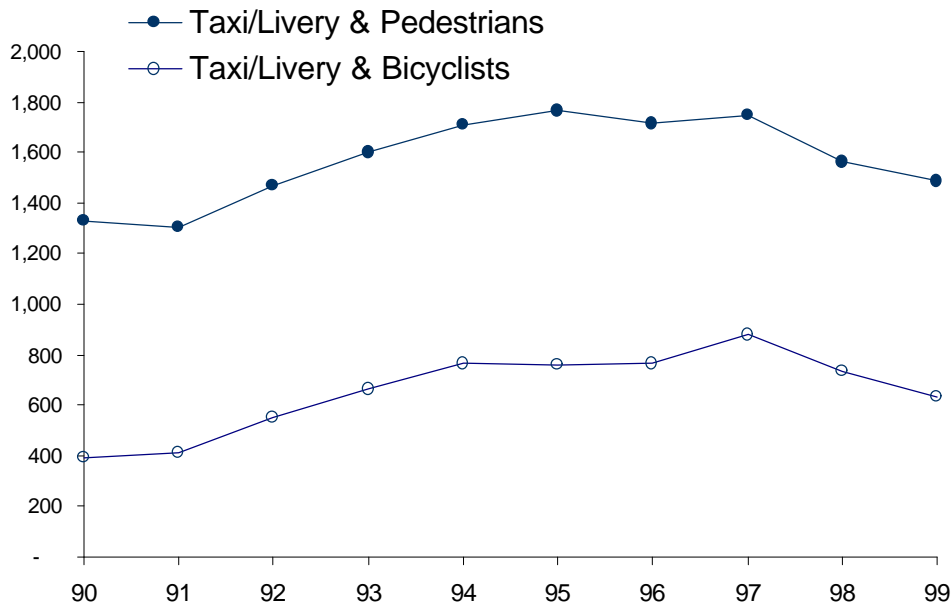


<sup>12</sup> See also Table 6 in the Appendix.

## Pedestrians and Bicyclists In Taxi/Livery Crashes

- 1,485 taxi/livery crashes caused pedestrian injuries in 1999. Pedestrians were injured in 11% of all taxi/livery injury crashes. Sixteen resulted in pedestrian fatalities.
- As with overall taxi/livery crashes, the number involving pedestrian injuries increased in the early 1990s but declined since 1995.
- Pedestrian fatalities fell from a high of 24 in 1990 to ten in 1998 and 16 in 1999.
- 632 taxi/livery crashes injured bicyclists in 1999. One resulted in a bicyclist fatality.

Figure 10. Crashes Involving Pedestrians or Bicyclists and Taxis/Liveries<sup>13</sup>



<sup>13</sup> See also Table 7 in Appendix.

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