

# NYC Motor Vehicle Collisions (2012 - 2023)

## Executive Data Analysis Report

Date: February 2026

### Executive Summary

This report analyses 87,154 motor vehicle collisions recorded in New York City from 2012 to 2023 (NYC Open Data / Kaggle).

### Key findings

- Collisions rose steadily from 2012–2017, then began a clear and sustained decline starting in 2018 – the safest year on record for NYC motorists.
- Brooklyn and Queens consistently account for the highest number of crashes, injuries, and fatalities.
- Passenger vehicles dominate involvement.
- Human factors remain the primary (and largely unspecified) cause of crashes despite advanced infrastructure.

The downward trend since 2018 is encouraging and aligns with Vision Zero efforts, but Brooklyn's persistent position as the most dangerous borough demands targeted intervention.

### 1. Data Preparation & Cleaning

- Dataset sourced from Kaggle (NYC Motor Vehicle Collisions).
- Checked structure, data types, and missing-value percentages.
- Duplicates on CRASH\_DATE (99.8%) were retained – date is critical for time-series analysis.
- Columns with >50% missing values → dropped.
- Columns with <50% missing values → rows dropped (dropna).
- Renamed: VEHICLE\_TYPE\_CODE\_1 → VEHICLE\_TYPE,  
CONTRIBUTING\_FACTOR\_VEHICLE\_1 → CONTRIBUTING\_FACTOR.
- Derived features:
- CRASH\_YEAR, CRASH\_MONTH, CRASH\_DAY from CRASH\_DATE
- HOUR\_of\_COLLISION from CRASH\_TIME
- TIME\_DAY (Morning/Afternoon/Evening/Night) via custom function
- Partial cleaning applied to VEHICLE\_TYPE features.
- Final clean dataset size: ~87,154 high-quality records.

### 2. Yearly Collision Trends (2012–2023)

Year	Total Crashes	Trend Vs Previous Years
2012	68561	-
2013	136893	Rising
2014	132640	Rising
2015	140197	Peaked
2016	80917	Sharp Decline
2017	71662	Dropped
2018	74793	Safest year according to reports (NEW YORK TIMES)
2019	67550	Continuing Decline
2020	31195	Decline (Due to Covid Travel Restrictions)
2021	28651	Decline
2022	26736	Decline

2023	18359	Decline
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## Insight

2018 was the safest year for motorists in the 12-year period (confirmed by New York Times reporting). Average yearly deaths have also declined since 2018.

### 3. Deep Dive: The Safest Year – 2018

- Lowest crashes and lowest fatalities of the entire period.
- Monthly pattern in 2018:
  - Lowest in January–February
  - Clear peak in June–July (summer months)
- Same summer peak visible in monthly fatalities for 2018. This suggests seasonal behaviour (more leisure driving, tourism, longer daylight) overrides the overall downward trend.

### 4. Geographic Distribution – Borough Analysis

Total crashes by borough (top 2 dominate)

- Brooklyn – highest number of collisions
- Queens – second highest

### Deaths & Injuries

Brooklyn and Queens again lead in both absolute numbers.

### Breakdown by road-user type

- Brooklyn is the most dangerous borough for every road-user category (drivers, passengers, cyclists, pedestrians).
- Queens is usually second – except for pedestrians, where Manhattan takes second place.

### 5. Vehicles Involved in Crashes

Passenger vehicles (sedans, SUVs, etc.) are by far the most frequently involved vehicle type.

Commercial vehicles, buses, and motorcycles appear far less often in the aggregate.

### 6. Contributing Factors

- A large proportion of crashes have unspecified contributing factors.
- Even with NYC's advanced traffic signals, cameras, and infrastructure, human behaviour remains the dominant (and hardest to predict) cause.

### Recommendations & Policy Implications

1. Focus enforcement & engineering on Brooklyn – the single highest-risk borough across all metrics.
2. Summer safety campaigns (June–August) – target leisure driving, speeding, and distracted driving.
3. Pedestrian safety in Manhattan – second-highest pedestrian risk after Brooklyn.
4. Improve contributing-factor reporting – mandatory fields or better training for officers to reduce “unspecified” entries.
5. Continue and expand Vision Zero measures (speed cameras, protected bike lanes, leading pedestrian intervals) – the post-2018 decline shows they are working.
6. Targeted interventions for passenger vehicles (the majority) – e.g., distracted-driving enforcement, advanced driver-assistance reminders.

### **Final Takeaway**

- New York City has made measurable progress in road safety since 2018 – the safest year in the dataset – with collisions and fatalities trending downward even through the pandemic recovery.
- However, Brooklyn stands out as the persistent hotspot, and summer months continue to show dangerous spikes.
- The data confirms what traffic-safety experts already know:
- Advanced infrastructure alone is not enough.
- Sustained focus on human behaviour, seasonal patterns, and the highest-risk borough (Brooklyn) will be required to drive collisions and fatalities even lower in the coming years.
- NYC is on the right trajectory – this analysis shows exactly where to apply the next push.