

# NYC COLLISION PATTERNS BY INCOME

ROBERT YATES  
M.S STATISTICS  
NEBDHUB & NSDC  
TRANSPORTATION DATA  
SCIENCE PROJECT (TDSP)

UNDERSTANDING COLLISION CAUSES ACROSS SOCIOECONOMIC BOUNDARIES TO PROMOTE EQUITABLE ROAD SAFETY

## INTRODUCTION

Traffic safety is not uniformly distributed across urban areas, and understanding how collision patterns vary with neighborhood income levels is crucial for developing equitable transportation policies.

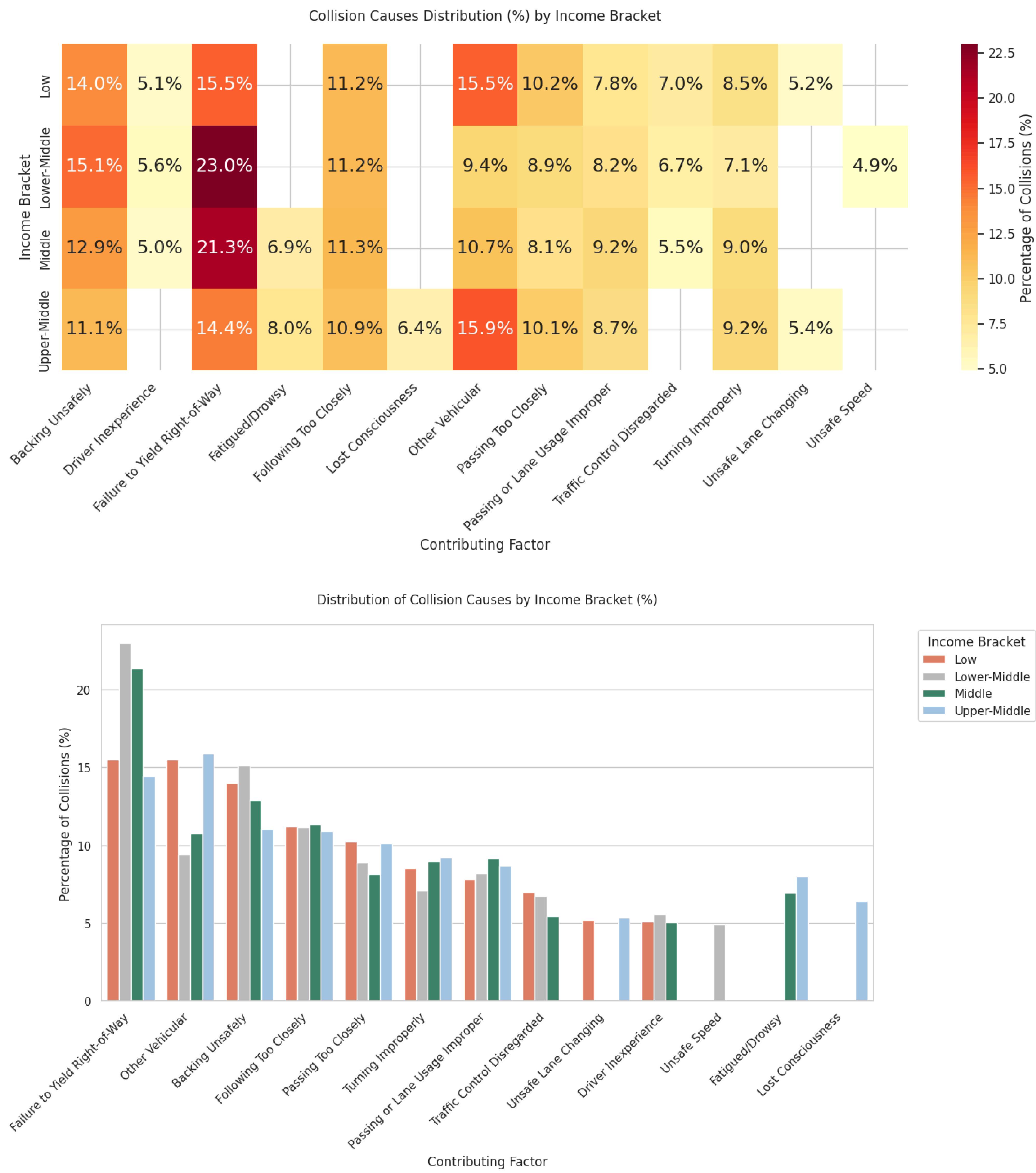
This research analyzes NYPD collision data<sup>1</sup> merged with U.S Census Bureau income data<sup>2</sup> to identify potential disparities in traffic safety across different socioeconomic areas.

## OBJECTIVE

- To understand if certain collision causes are more prevalent in specific income areas
- To narrow down policy by providing data that will allow the targeting of individual collision causes in specific neighborhoods, as opposed to broad infrastructure improvements.

## METHODOLOGY

- Combined NYPD Motor Vehicle Collisions Data with Census income data
- Categorized neighborhoods into income brackets using Census Bureau quintiles
- Analyzed distribution of collision causes across income levels
- Omitted “Unspecified” and “Driver Inattention” as their overwhelming frequency obscured insights.
- Created percentage-based visualizations to normalize for population differences



## KEY FINDINGS

Key patterns across income brackets:

- Failure to Yield significantly higher in Lower-Middle and Middle income (21-23%) vs. other areas (14-15%)
- Driver condition issues (fatigue, consciousness) unique to higher income areas
- Traffic control violations decrease as neighborhood income increases
- Higher rates of preventable incidents (unsafe backing, improper turns) in lower income areas
- Greater percentage of driver inexperience incidents in lower income areas.

## RECOMMENDATIONS

This research demonstrates that traffic safety in NYC varies significantly by neighborhood income level. Data reveals distinct patterns: failure-to-yield incidents peak in middle-income areas (23%), preventable accidents concentrate in lower-income zones (19% unsafe backing and driver inexperience), and driver condition issues are more prevalent in upper-income regions (14% driver consciousness and fatigue-related).

The findings indicate the need for income-sensitive safety interventions. I recommend implementing targeted solutions based on area-specific crash patterns: enhanced right-of-way systems, strategic driver training programs, and focused safety campaigns. These insights provide a foundation for developing more effective, equitable traffic safety measures across New York City.

## FUTURE RESEARCH

- Examine mortality rates and severity of collision contributing factors across different income levels
- Expand analysis to include contributing factors of secondary vehicle