

# Descriptive Overview of Linked 2018 Crash and Emergency Department Visit Data

North Carolina Crash Injury Surveillance System

February 22, 2021

Revised March 15, 2021

Katherine Peticolas, MPS, PMP

Mike Dolan Fliss, PhD, MPS, MSW

Katherine J. Harmon, PhD, MPH

Anna E. Waller, ScD

This slide deck was supported by the National Center for Injury Prevention and Control of the Centers for Disease Prevention and Control (CDC) under award number CE16-1602. The content is solely the responsibility of the authors and does not necessarily represent the official views of the CDC.



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# Funding and NC DPH Data Attribution & Disclaimer

## **Funding**

The funding source for this project was based on the year four motor vehicle supplement of the five-year CDC grant Core State Violence and Injury Prevention Program (Core SVIPP), which was awarded to the North Carolina Division of Public Health (NC DPH) Injury and Violence Prevention Branch (IVPB). The University of North Carolina at Chapel Hill Injury Prevention Research Center (UNC IPRC) was contracted to complete the work (contract numbers 00039605 and 00040532).

## **NC DPH Data Attribution & Disclaimer**

NC DETECT is a statewide public health syndromic surveillance system, funded by the NC Division of Public Health (NC DPH) Federal Public Health Emergency Preparedness Grant and managed through collaboration between NC DPH and UNC-CH Department of Emergency Medicine's Carolina Center for Health Informatics. The NC DETECT Data Oversight Committee does not take responsibility for the scientific validity or accuracy of methodology, results, statistical analyses, or conclusions presented.

# Acknowledgements

We would like to acknowledge our Project Team members: Clifton Barnett, Ingrid Bou-Saada, Alan Dellapenna, Jr., Dennis Falls, Amy Ising, Nancy Lefler, Steve Marshall, Scott Proescholdbell, and Eric Rodgman. We would also like to acknowledge Lana Deyneka and Zach Faigen from the Communicable Disease Branch of the North Carolina Division of Public Health, who provided permission for the NC DETECT emergency department visit data used in the data linkage, and Matt Avery of the State Center for Health Statistics, who provided the death certificate data used in the data linkage.

**Mike Dolan Fliss, PhD, MPS, MSW**

University of North Carolina Injury Prevention Research Center  
North Carolina Division of Public Health  
Injury and Violence Prevention Branch

**Katherine Peticolas, MPS, PMP**

North Carolina Division of Public Health  
Injury and Violence Prevention Branch

**Katherine J. Harmon, PhD, MPH**

University of North Carolina Highway Safety Research Center

**Anna Waller, ScD**

Carolina Center for Health Informatics  
University of North Carolina School of Medicine,  
Department of Emergency Medicine

# Background

- The first year (2019-2020) of the North Carolina Crash Injury Surveillance System (NC-CISS) project linked two health outcome datasets with 2018 crash report data: death certificate data and emergency department visit data.
- This report provides a selection of descriptive analyses of the linked crash and emergency department visit dataset.
- More reports from the project are available at the [CCHI Transportation & Health Data website](#).

## Notes:

- Emergency department visit data were used for all demographic data except when they were unknown.
- All percentages have been rounded to the nearest integer so may not total to 100%.

# Data Descriptions

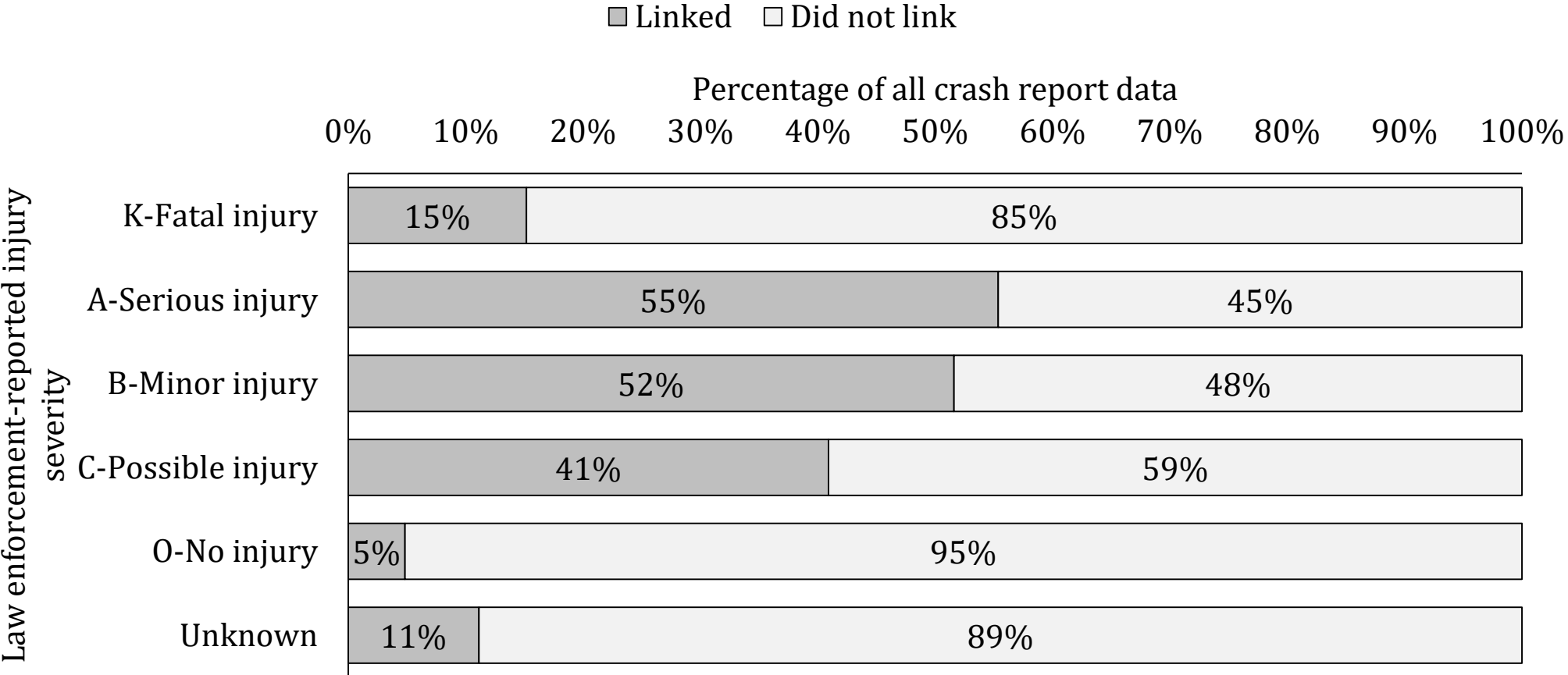
Crash report data are recorded by law enforcement officers for motor vehicle crashes involving a motor vehicle in transport resulting in an un-stabilized situation, which includes at least one harmful event. North Carolina crash records must meet at least one of the following criteria: The crash resulted in a fatality, a non-fatal personal injury, total property damage amounting to \$1,000.00 or more, property damage of any amount to a vehicle seized, or the vehicle has been seized and is subject to forfeiture under G. S. 20-28.3. In addition, a reportable motor vehicle traffic crash must occur on a trafficway (any land way open to the public as a matter of right or custom for moving persons or property from one place to another) or occur after the motor vehicle runs off the roadway but before events are stabilized.

**There were 355,571 crashes involving 832,058 persons included in the 2018 crash report dataset.**

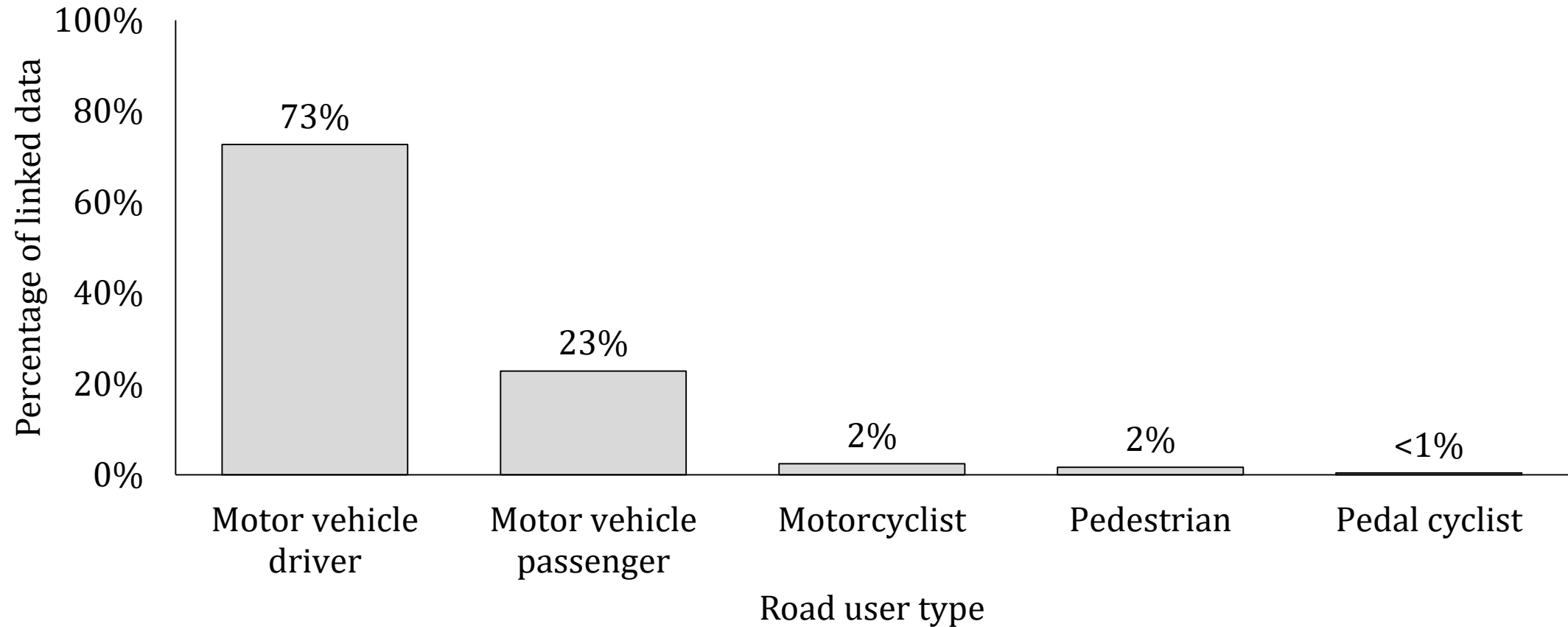
Emergency department visit data are pulled from NC DETECT, North Carolina's statewide syndromic surveillance system. As mandated by North Carolina Statute § 130A-480 Emergency Department Data Reporting, NC DETECT receives daily extracts through the North Carolina Healthcare Association (NCHA), consisting of select data elements from all ED visits to 24/7 civilian acute care hospital affiliated EDs in NC.

**There were 5,084,987 emergency department (ED) visits in the 2018 dataset.**

# Persons reported to have moderate and serious crash injuries were most likely to be linked with emergency department visit data. (N=91,766 linked crash-ED visits; N=832,058 persons in crash report data)



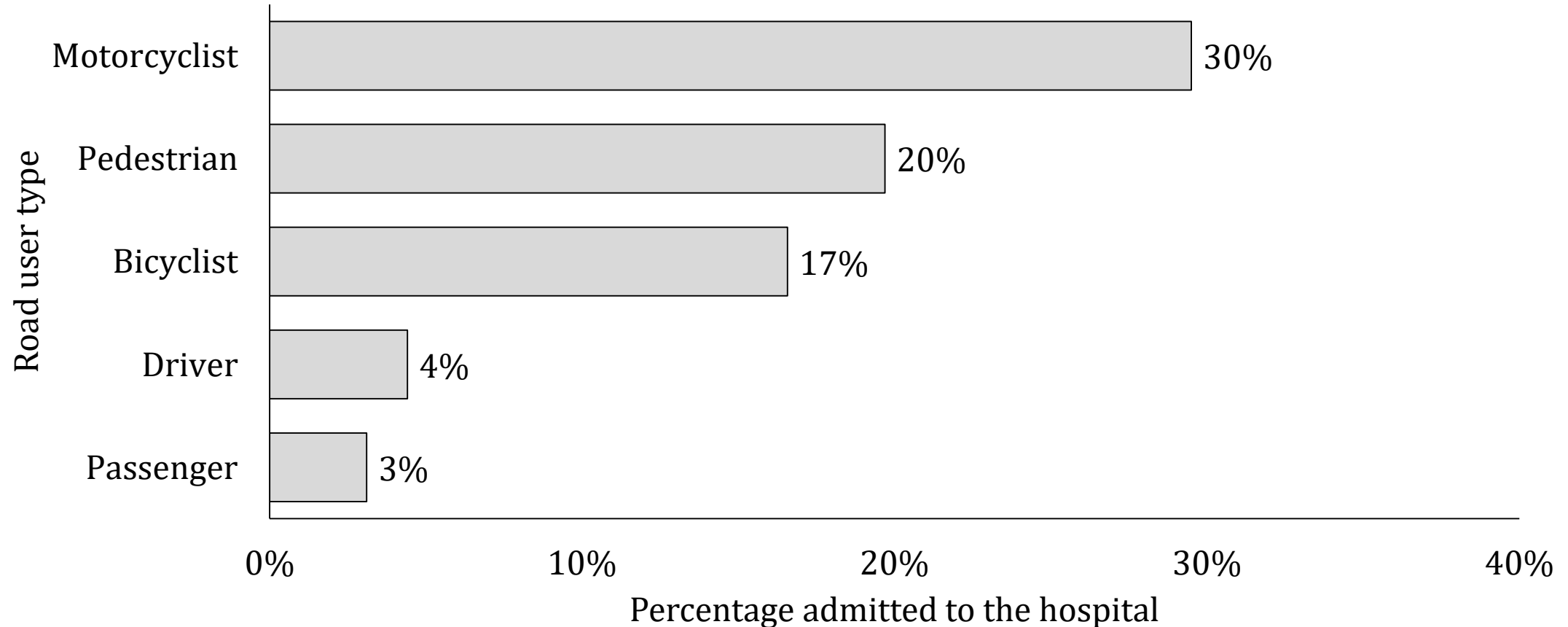
# 95% of linked crash-ED visit records were for motor vehicle occupants. (N=91,699 linked crash-ED visits \*)



\*67 records with 'other' or 'unknown' as the road user type were excluded

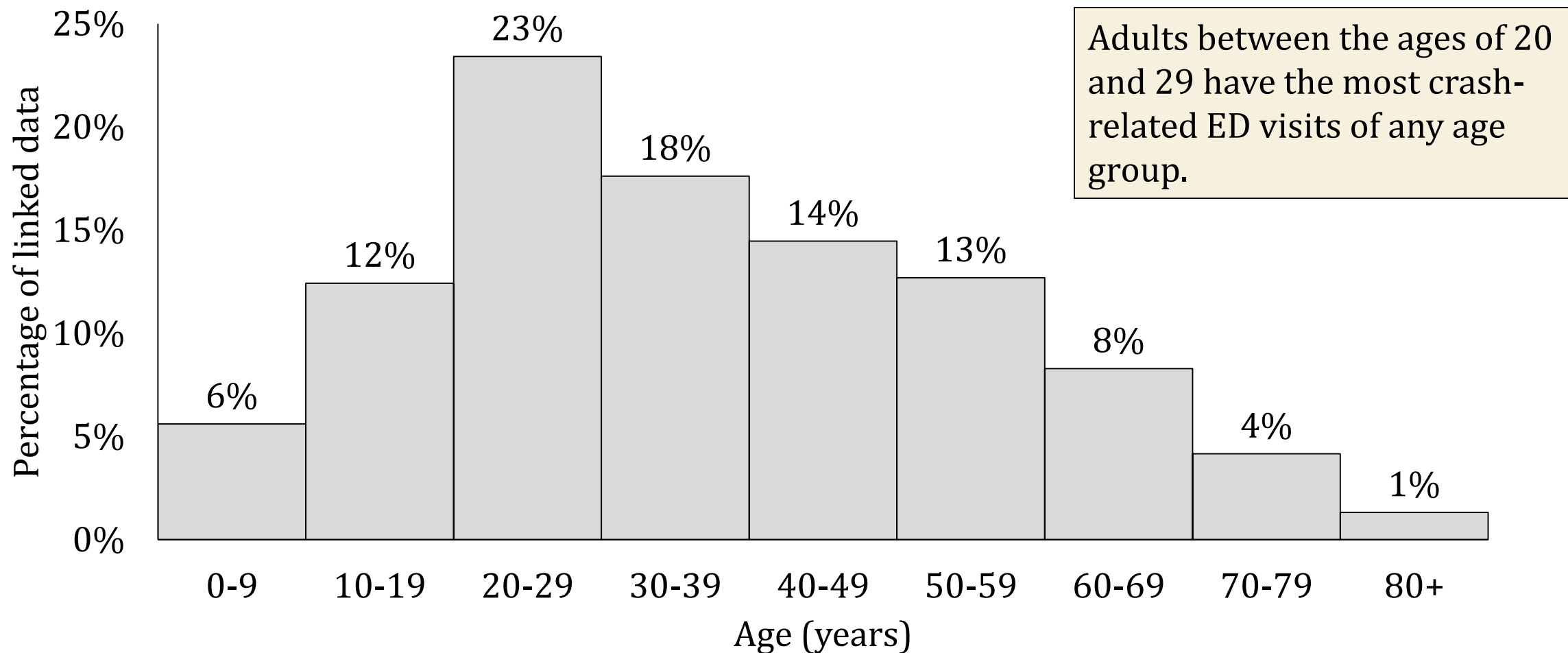


# Motorcyclists were the most likely road user type to be admitted to the hospital from the ED. (N=91,699 linked crash-ED visits \*)

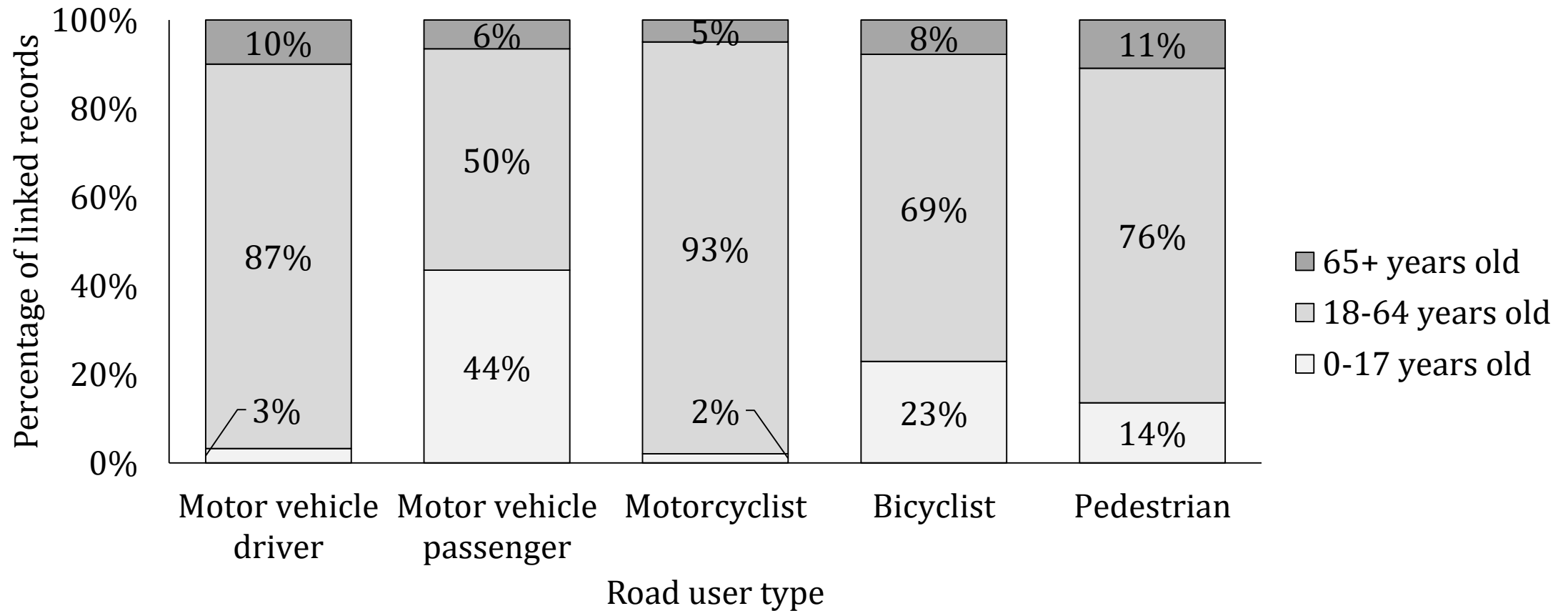


\*67 records with 'other' or 'unknown' as the road user type were excluded

# Young adults were the most common age group for linked crash and ED visit records. (N=91,766 linked crash-ED visits)

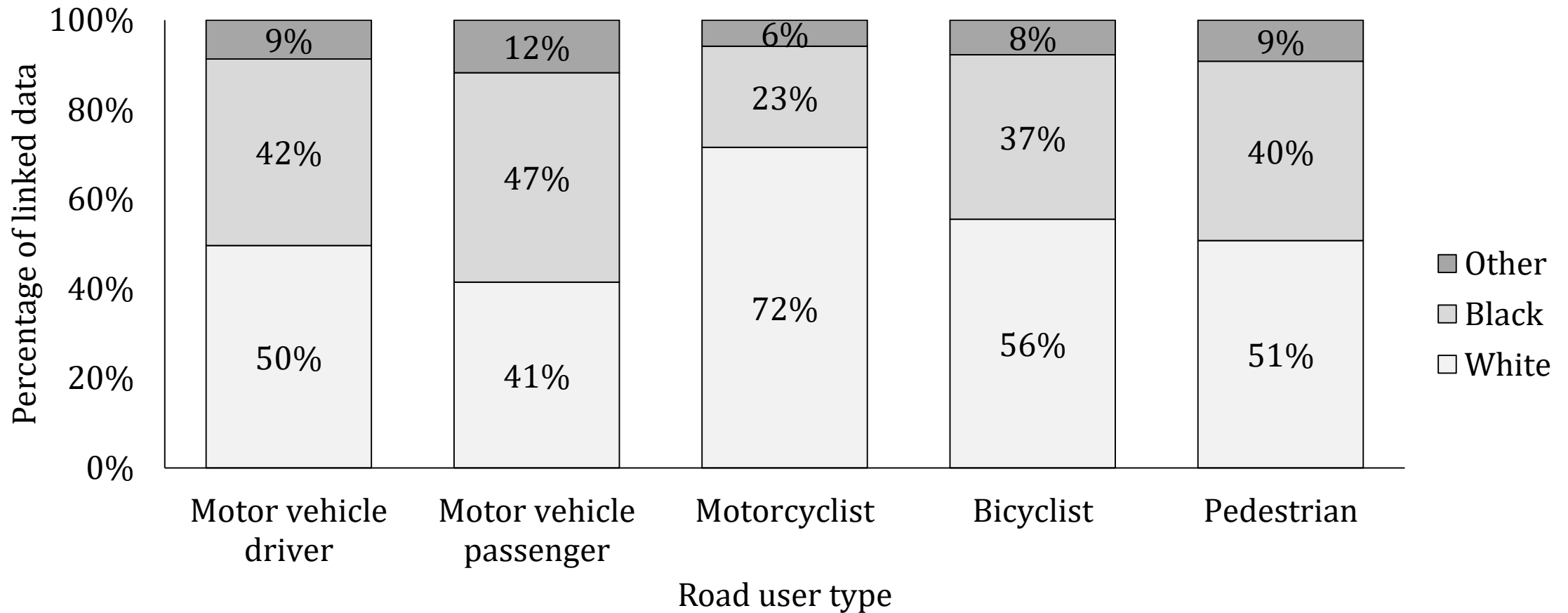


Across all road user types, children were most frequently characterized as motor vehicle passengers in linked crash-ED visit data. (N=91,699 linked crash-ED visits \*)



\*67 records with 'other' or 'unknown' as the road user type were excluded

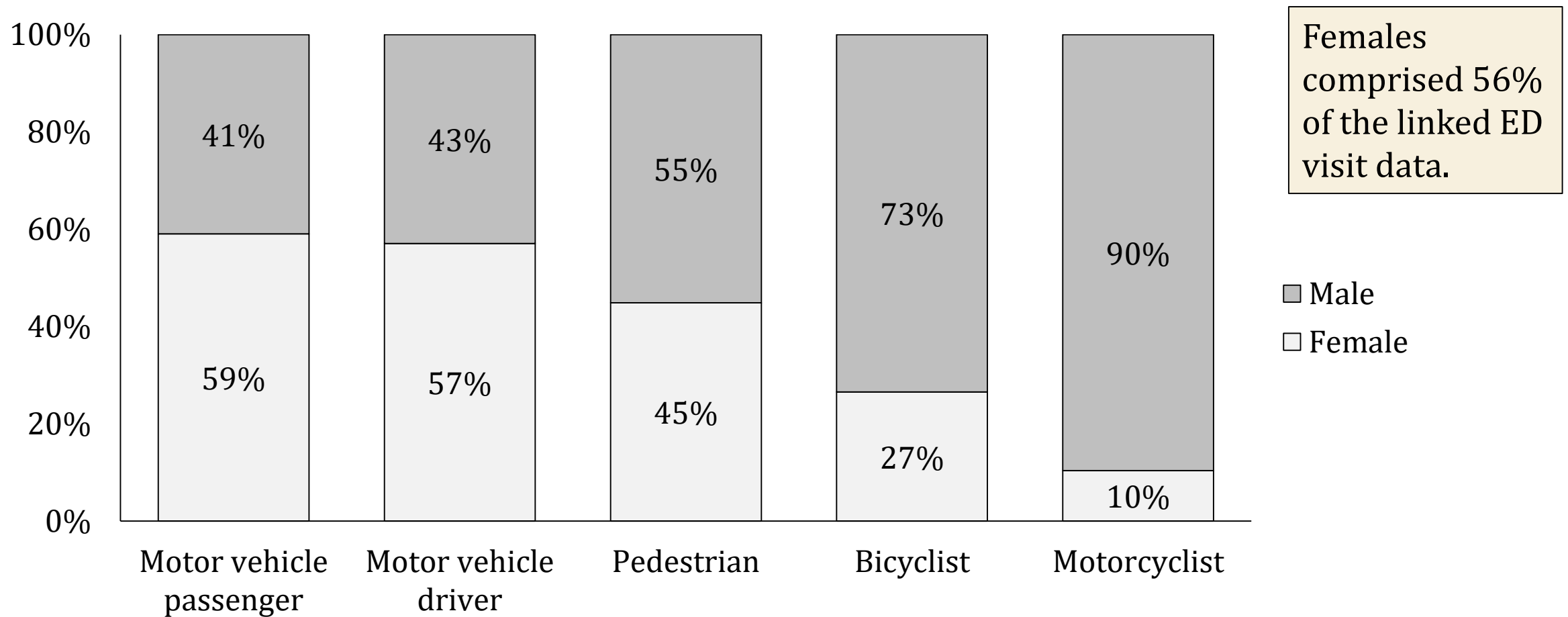
# The breakdown by race varied by different types of road users in 2018 linked crash-ED visit data. (N=91,697 linked crash-ED visits\*)



\*67 records with 'other' or 'unknown' as the road user type were excluded; 2 records were excluded for lacking a race entry in both datasets

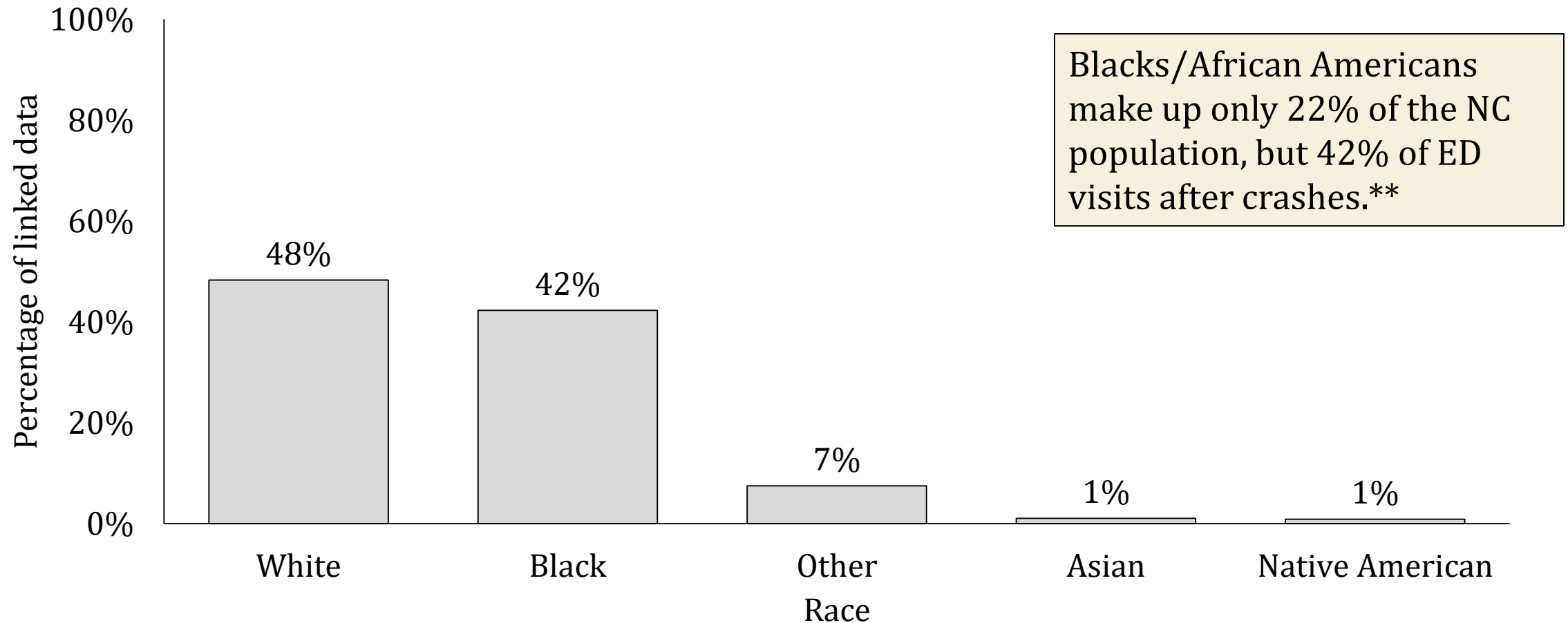
\*\*The following ED race designations were combined into 'Other': American Indian, Asian, Other, Pacific Islander; when race was absent in the ED data crash data were used which does not separate ethnicity; 'Hispanic' race entries were defaulted to 'White'

# The breakdown by sex varied by different types of road users in 2018 linked crash-ED visit data. (N=91,698 linked crash-ED visits\*)



\*67 records with 'other' or 'unknown' as the road user type were excluded; 1 record was excluded due to missing a sex designation in both datasets

# The breakdown by race of 2018 linked crash-ED visit data suggest health outcome disparities. (N=91,764 linked crash-ED visits\*)

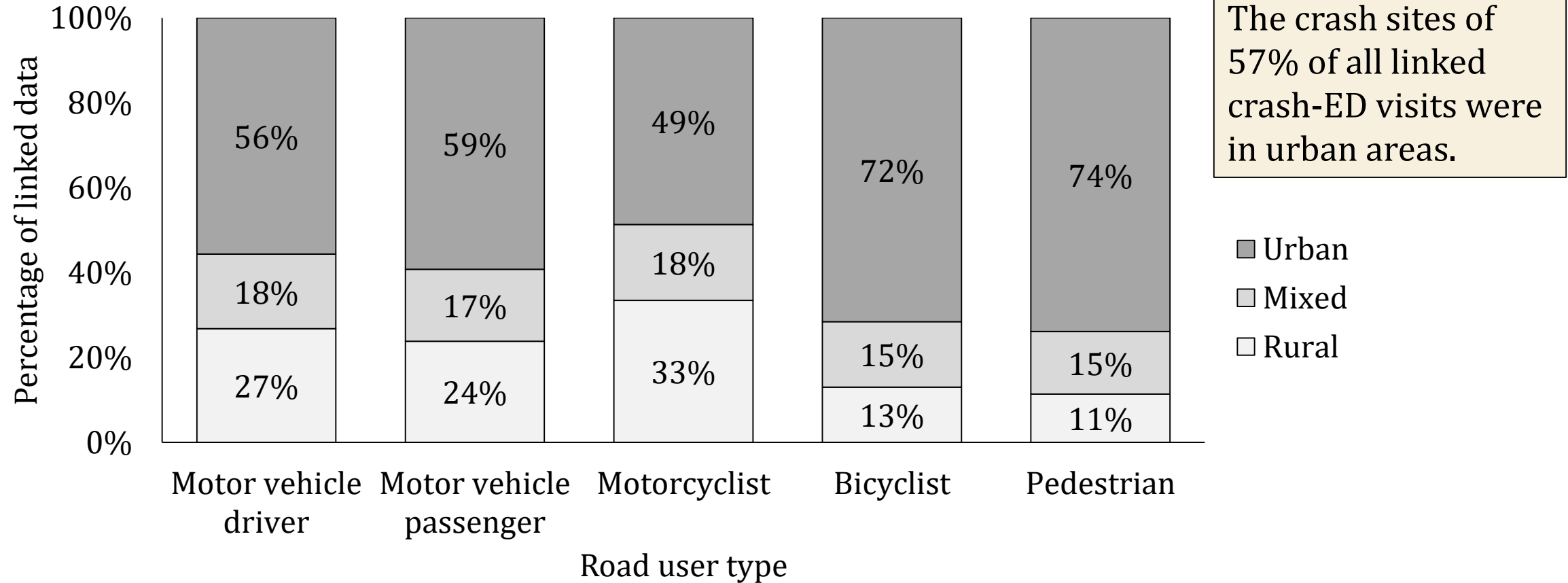


\*Race designation based on ED visit data unless it was missing; 2 records were excluded because neither data source indicated a race designation

\*\*Source: <https://www.census.gov/quickfacts/nc>

# The rurality\* of crash sites varied for different types of road users in 2018 linked crash-ED visit data.

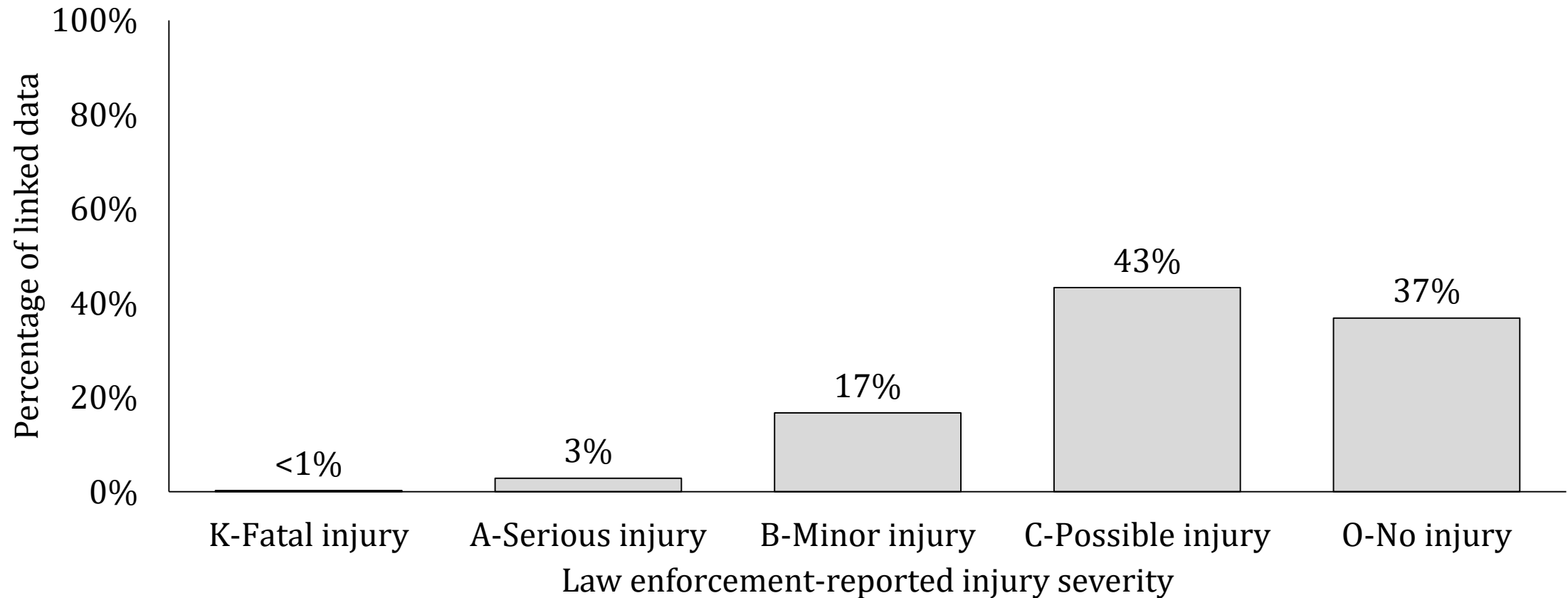
(N=91,699 linked crash-ED visits \*\*)



\*Rurality is designated by law enforcement officers as part of the crash report. Rural: <30% developed; Mixed: 30-70% developed; Urban: >70% developed

\*\*67 records with 'other' or 'unknown' as the road user type were excluded

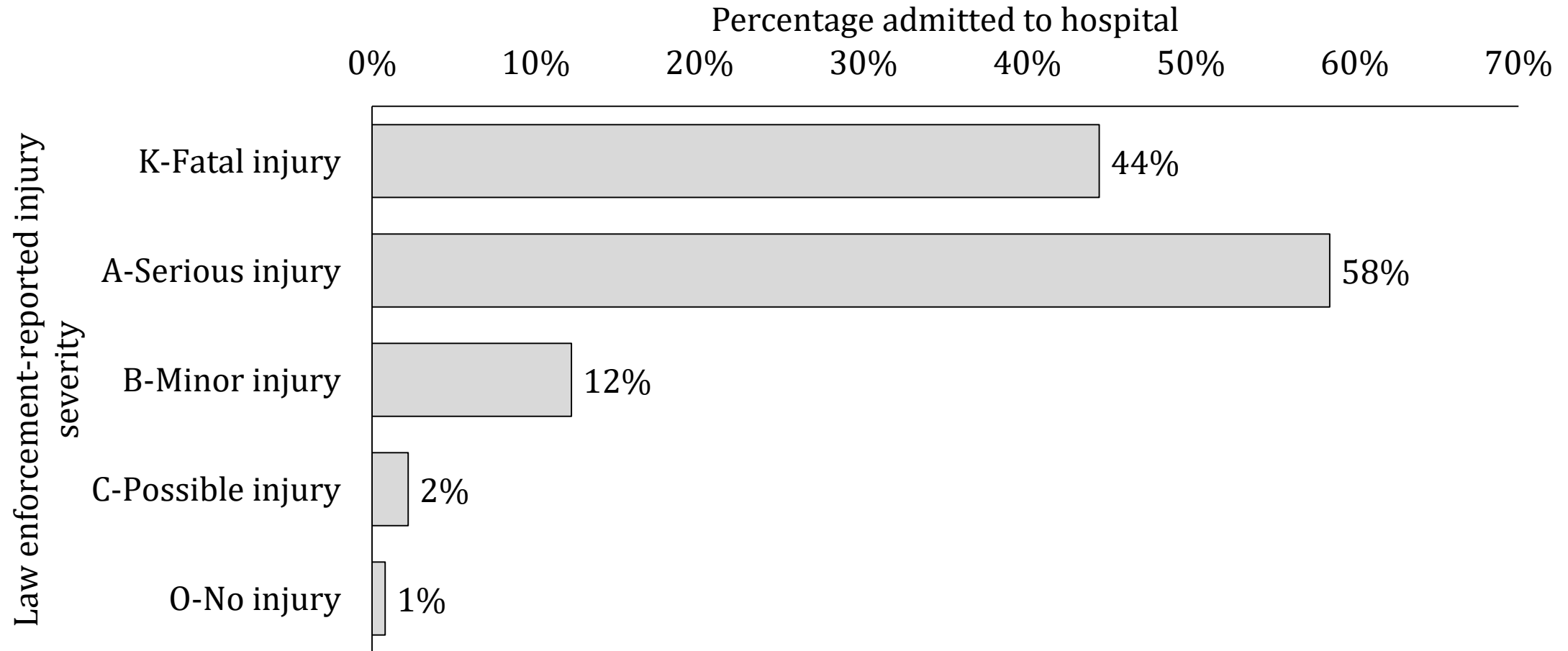
# 37% of the linked crash-ED visits were for persons who appeared uninjured at the crash scene (N=90,497 linked crash-ED visits\*)



\*Excludes 1,269 records with no law enforcement-reported injury severity

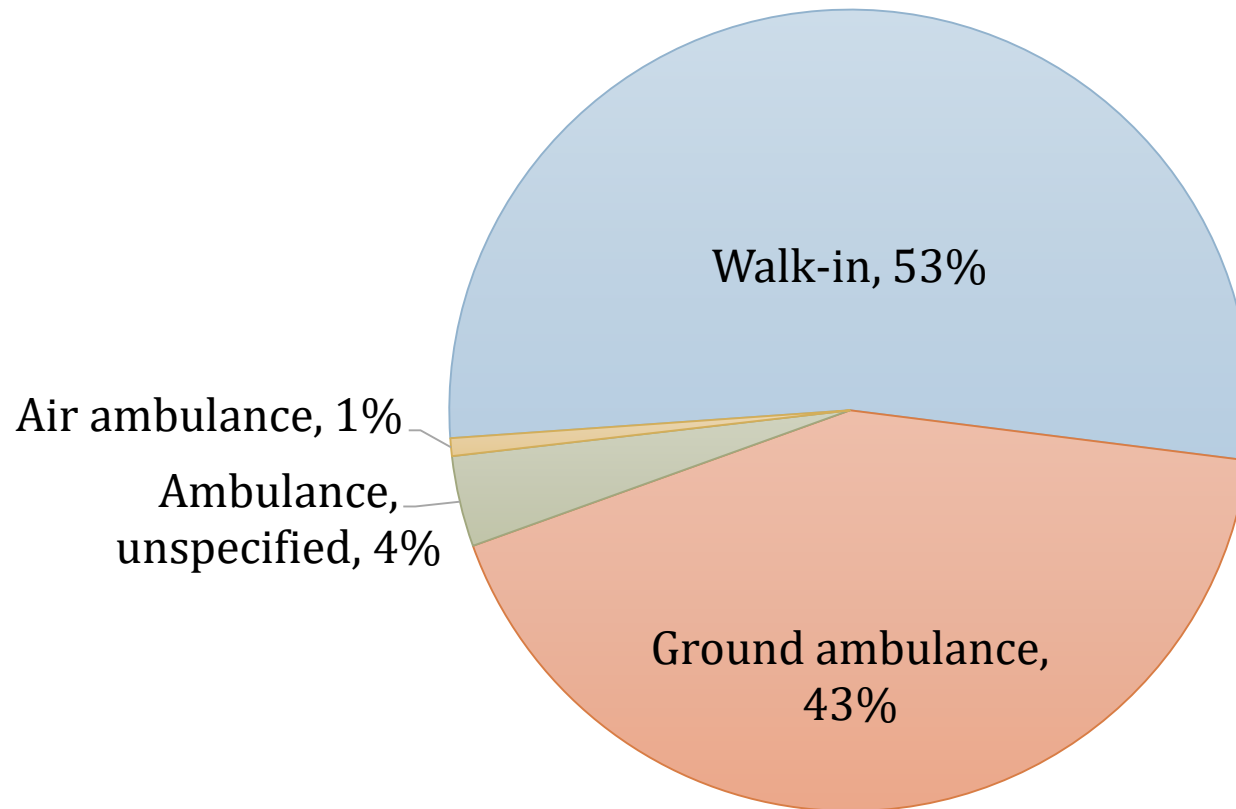


# Nearly 60% of persons with reported serious injuries were admitted to the hospital. (N=90,497 linked crash-ED visits\*)



\*Excludes 1,269 records with no law enforcement-reported injury severity

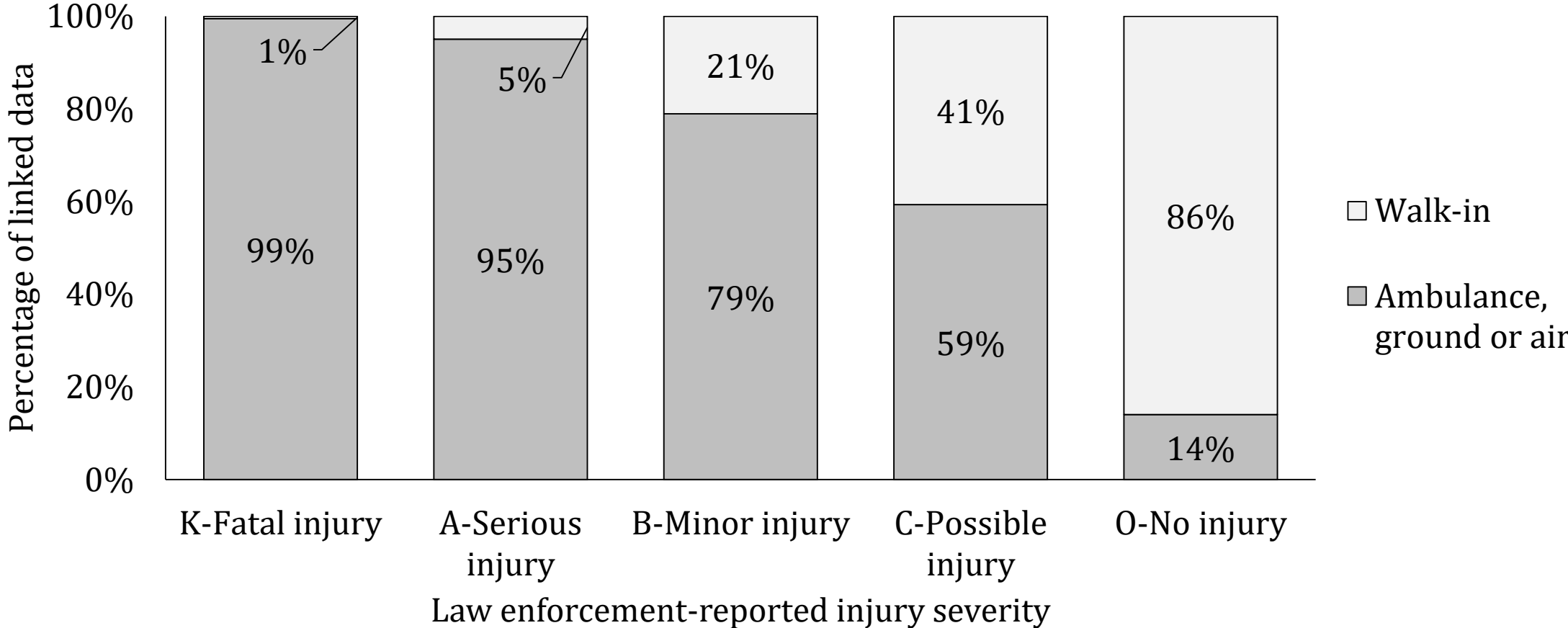
# More than half of ED visits after 2018 crashes were walk-ins. (N=84,260 linked crash-ED visits\*)



\*Excludes 2,979 records with 'other' or 'unknown' modes of transportation and 4,527 missing modes of transportation.

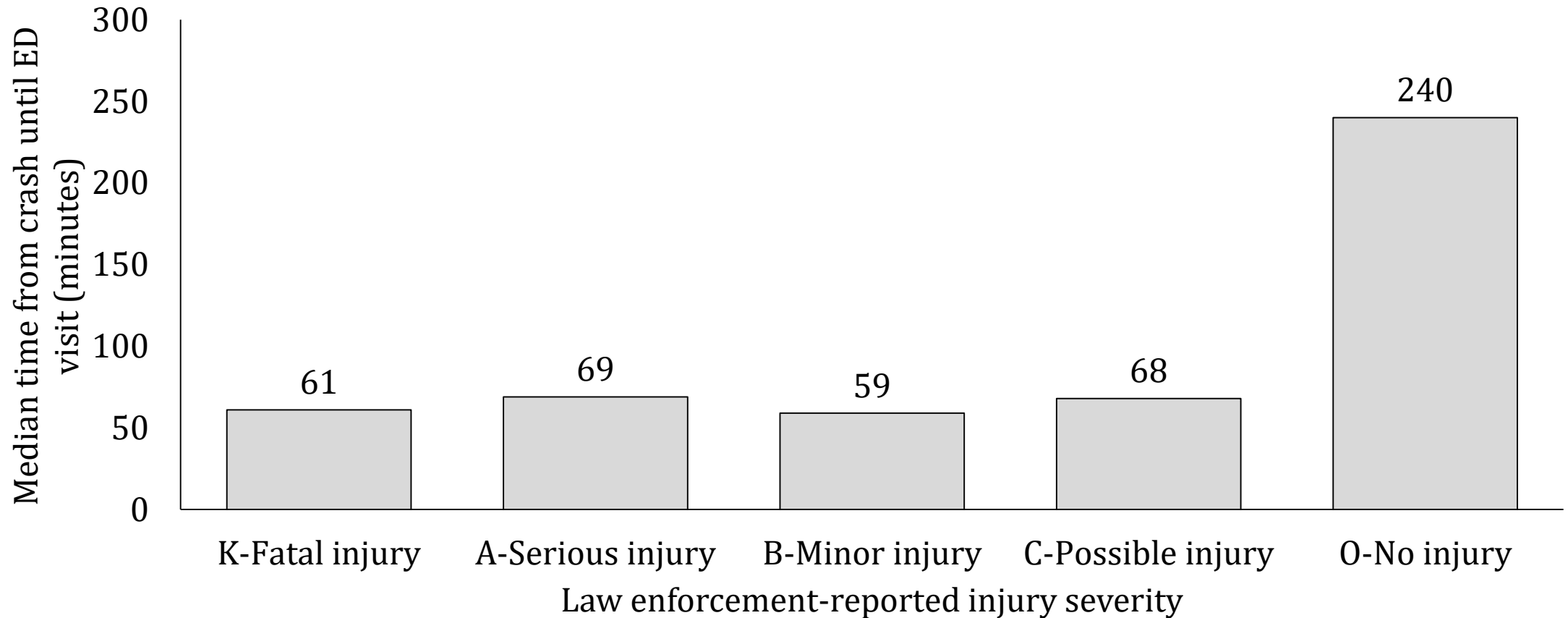
# Transportation to the ED broadly reflects the injury severity categories reported by law enforcement .

(N=83,055 linked crash-ED visits\*)



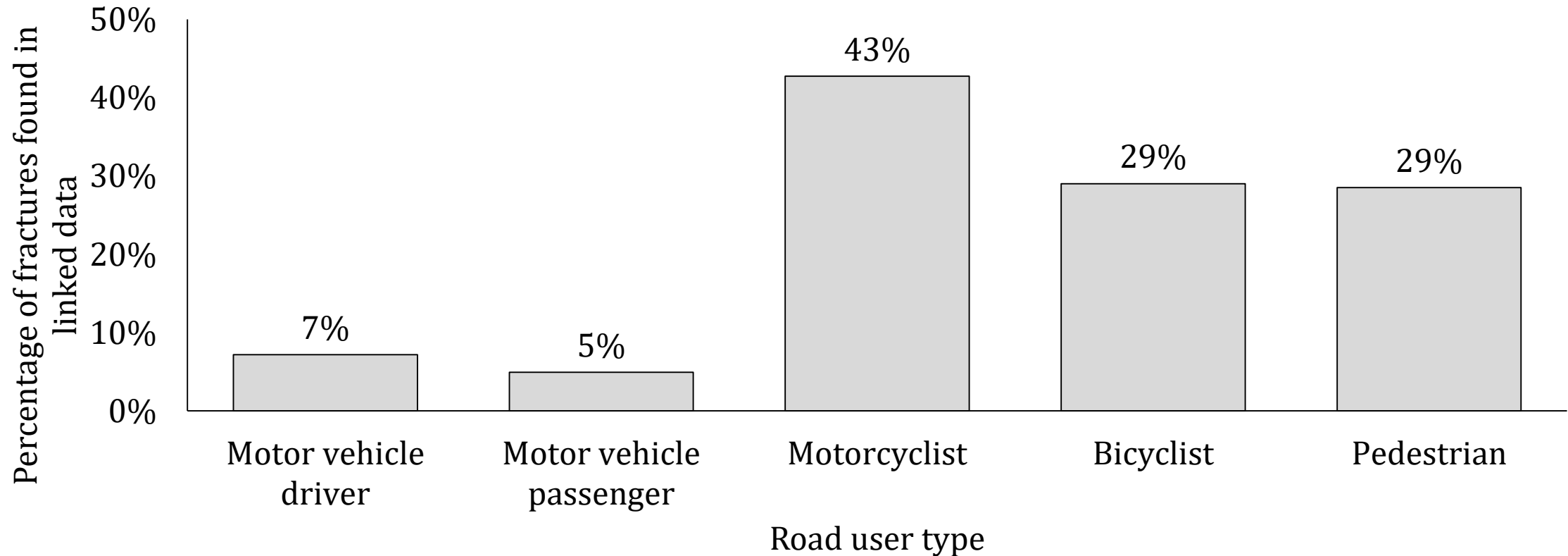
\*Excludes 2,979 records with 'other' or 'unknown' modes of transportation, 4,527 missing modes of transportation, and 1,205 with no reported injury severity.

# Crash victims with no reported injury on the crash report took longer to visit the ED\* . (N=89,386 linked crash-ED visits\*)



\*\*Excludes 1,234 records with an unreported injury severity rating

# Fractures are more common for motorcyclists, bicyclists, and pedestrians\* . (N=90,274 linked crash-ED visits\*\*)

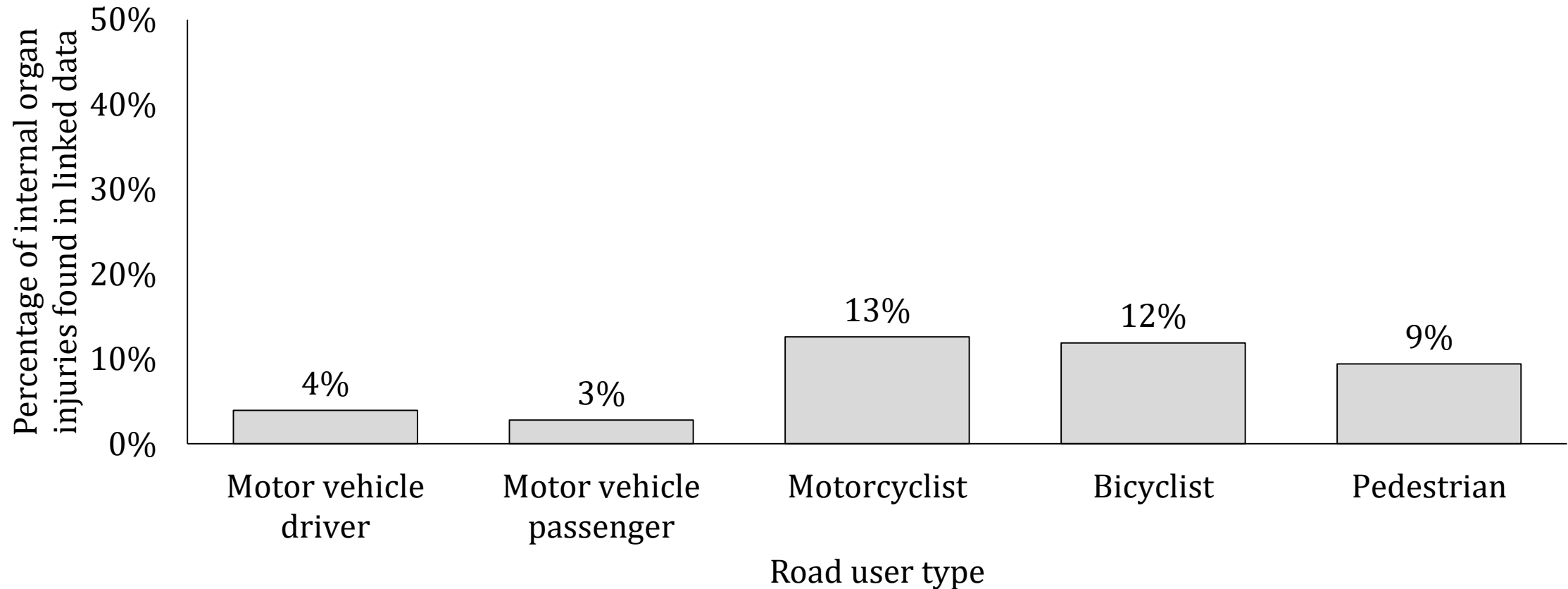


\* Data reflect the percentage of persons with one or more fractures by road user type, so data do not add up to 100%. Mapped using S and T diagnosis codes using CDC injury mapping: Injury Data and Resources - Tools and Frameworks. (n.d.). Retrieved January 8, 2021, from [https://www.cdc.gov/nchs/injury/injury\\_tools.htm](https://www.cdc.gov/nchs/injury/injury_tools.htm)

\*\*Excludes 223 fatalities and 1,269 records with injury severity designations of 'Unknown'

# Internal organ injuries are more common for motorcyclists, bicyclists, and pedestrians\*.

(N=90,274 linked crash-ED visits\*\*)

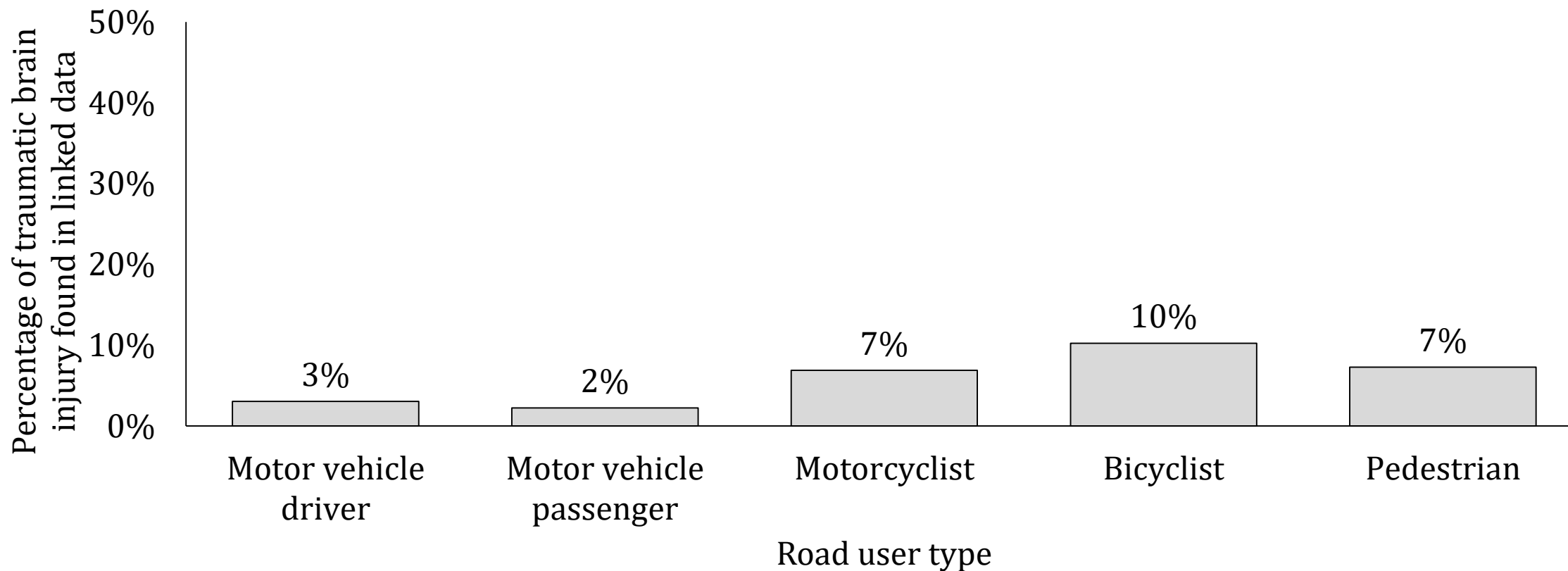


\* Data reflect the percentage of persons with one or more internal organ injury by road user type, so data do not add up to 100%. Mapped using S and T diagnosis codes using CDC injury mapping: Injury Data and Resources - Tools and Frameworks. (n.d.). Retrieved January 8, 2021, from [https://www.cdc.gov/nchs/injury/injury\\_tools.htm](https://www.cdc.gov/nchs/injury/injury_tools.htm)

\*\*Excludes 223 fatalities and 1,269 records with injury severity designations of 'Unknown'

# 10% of bicyclists had a traumatic brain injury\*.

(N=90,274 linked crash-ED visits\*\*)

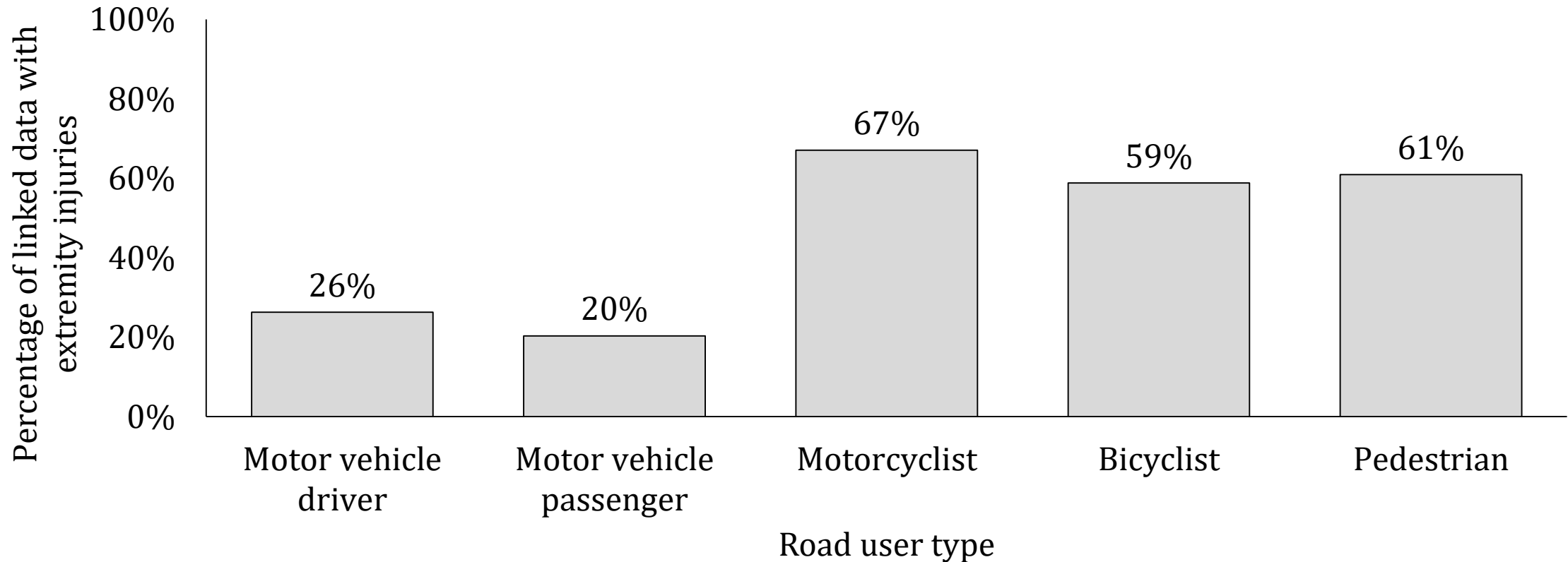


\* Data reflect the percentage of persons with one or more traumatic brain injuries by road user type, so data do not add up to 100%. Mapped using S and T diagnosis codes using CDC injury mapping: Injury Data and Resources - Tools and Frameworks. (n.d.). Retrieved January 8, 2021, from [https://www.cdc.gov/nchs/injury/injury\\_tools.htm](https://www.cdc.gov/nchs/injury/injury_tools.htm)

\*\*Excludes 223 fatalities and 1,269 records with injury severity designations of 'Unknown'

# Arm and leg injuries were more common for motorcyclists, bicyclists and pedestrians\*.

(N=91,699 linked crash-ED visits with N=87,258 ICD-10-CM codes that corresponded to the CDC Injury Matrix \*\*)



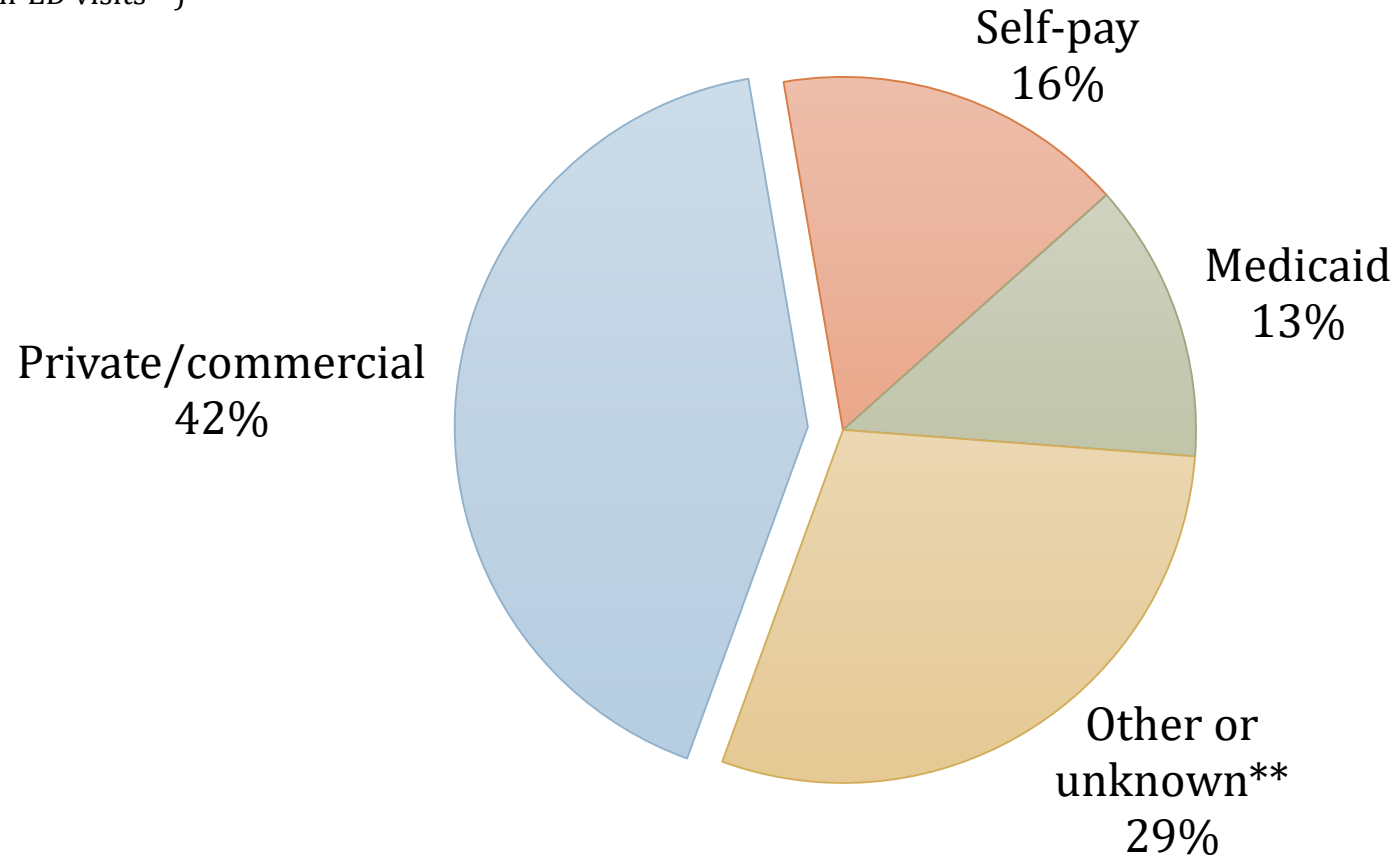
\* Data reflect the percentage of persons with one or more extremity injuries by road user type, so data do not add up to 100%. Mapped using S and T diagnosis codes using CDC injury mapping: Injury Data and Resources - Tools and Frameworks. (n.d.). Retrieved January 8, 2021, from [https://www.cdc.gov/nchs/injury/injury\\_tools.htm](https://www.cdc.gov/nchs/injury/injury_tools.htm)

\*\*Excludes 67 road user types of 'other' or 'unknown'



# Only 42% of linked crash-ED visits for patients younger than 65 had private insurance as the primary payor.

(N=83,018 linked crash-ED visits\*\*)



\*Excludes 443 linked records with no entry for the primary payor

\*\*Includes 371 'no charge' ED visits

# Contact Information

Our project email address is [ncciss@office.unc.edu](mailto:ncciss@office.unc.edu).

Thank you for your interest in motor vehicle crash injury research!

