Motor Vehicle Crashes in Children <15 Years Old, Texas Linked Data 2019-2020

Prepared by the Office of Injury Prevention

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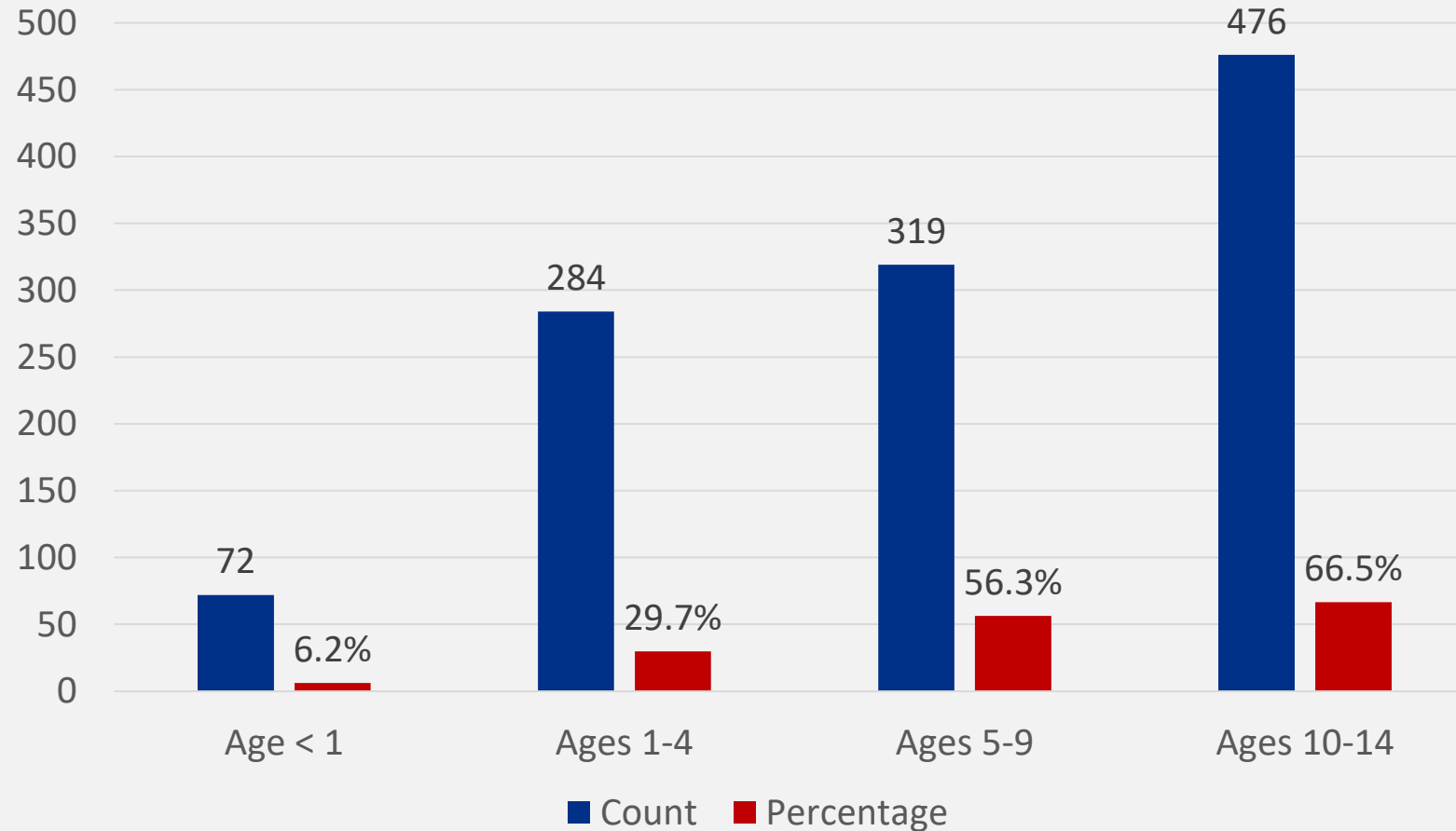**Jia Benno MPH, Manager**

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4. Variables: restraint type by demographics, incident hour, location in vehicle, crash severity, injury severity score, patient disposition, hospital designation, geographical locations
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Texas Department of Transportation (TxDOT) 2021 Motor Vehicle Crashes, Texas

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❑ 1 reportable crash occurred every minute
❑ 1 person was injured every 2 minutes
❑ 1 person was killed every 2 hours

In 2021, **46.20%** of the people killed in vehicles where restraint usage was applicable, and usage was known were reported as not restrained when the fatal crash occurred.

2020 Motor Vehicle Traffic Deaths from WISQARS*, Age Group 0-14, U.S.

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Texas Department of State Health Services

	Count	Percentage
Age < 1	72	6.2%
Ages 1-4	284	29.7%
Ages 5-9	319	56.3%
Ages 10-14	476	66.5%

■ Count   ■ Percentage

*WISQARS – Web-based Injury Statistics Query And Reporting System

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Datasets

Emergency Medical Service (EMS) and Trauma Hospitalizations:
Health and Safety Code, Chapter 92 states EMS agencies report all runs, and hospitals must report significant trauma injuries, submersions, traumatic brain injuries (TBIs), and spinal cord injuries (SCIs).

- **EMS** - National EMS Information System standard (NEMSIS)
- **Trauma**- National Trauma Data Bank (NTDB) Standard

Crashes: TxDOT Crash Records Information System (CRIS) - a statewide database for all reported motor vehicle traffic crashes.

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Method

- Datasets Used:
    - Previously prepared CRIS–EMS–Trauma linked datasets.
    - Combined: calendar year 2019 (N= 9,801) and 2020 (N = 9,570).
- Inclusion Criteria:
    - Unit type: Motor Vehicle N = 17,232 (excluded trains, trailers, etc.).
    - Age Group: ages 0-14. There were 772 total children included.
- Per epidemiology best practice, EMS/TR suppressed data when there were less than five records to protect identifiable data.
- Analyses conducted using SAS Base 9.4.

Child Passenger Safety Law in Texas

Child Passenger Safety Seat Systems (Transportation Code 545.412):
It is an offense to transport an unsecured child who is younger than eight and is not 4 feet 9 inches tall.
Drivers must use a child passenger safety seat system while driving a vehicle and follow the manufacturer's instructions.

"Passenger vehicle" means a passenger car, light truck, sport utility vehicle, or passenger van designed to transport 15 or fewer passengers, including the driver.

"Child passenger safety seat system" means an infant or child passenger restraint system that meets the federal crash-tested restraint system standards as set by the National Highway Traffic Safety Administration (NHTSA).

NHTSA Car Seat Recommendations

Car Seat Recommendations for Children

There are many car seat choices on the market. Use the information below to help you choose the type of car seat that best meets your child's needs.

Age (Years)

Birth	1	2	3	4	5	6	7	8	9	10	11	12	13+
Rear-Facing Car Seat													
	Forward-Facing Car Seat												
			Booster Seat										
								Seat Belt					

REAR-FACING CAR SEAT

FORWARD-FACING CAR SEAT
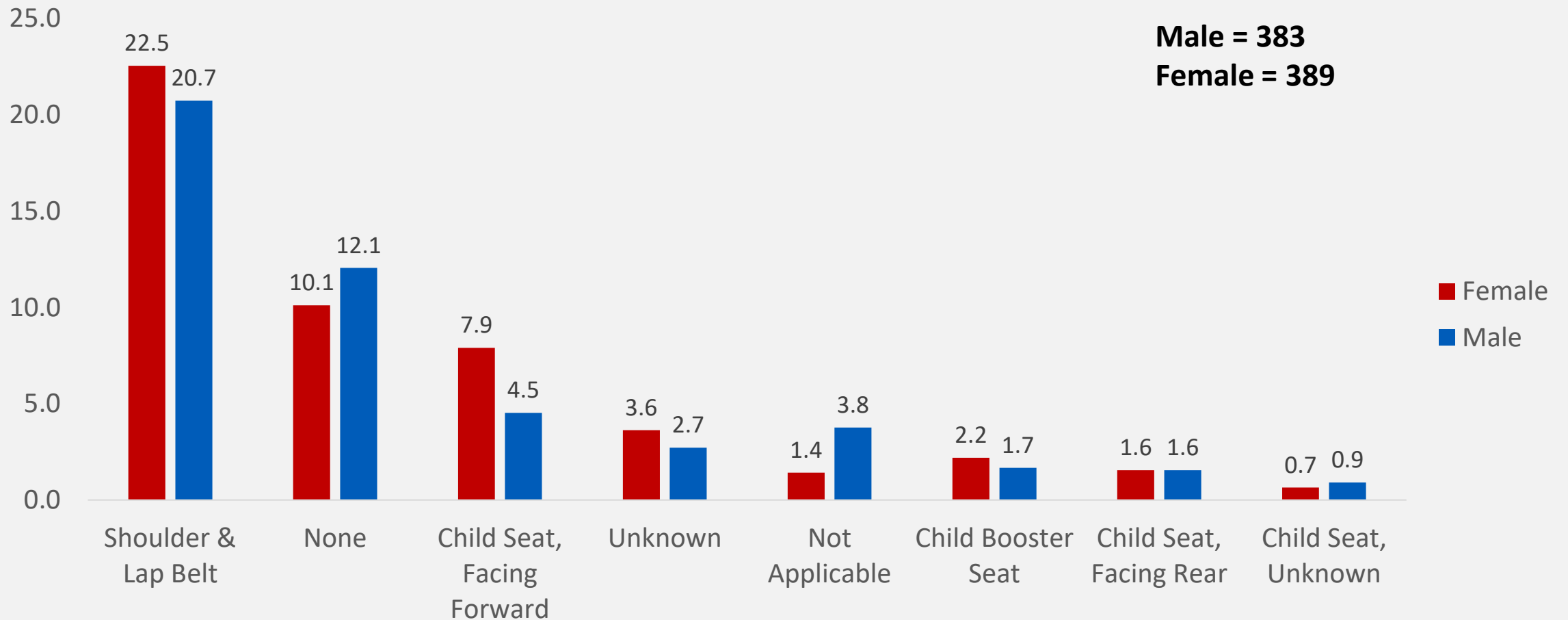
BOOSTER SEAT

SEAT BELT
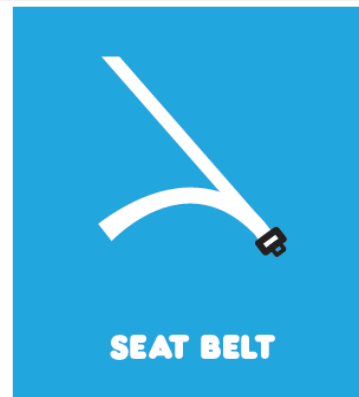
Source: National Highway Traffic Safety Administration (NHTSA)
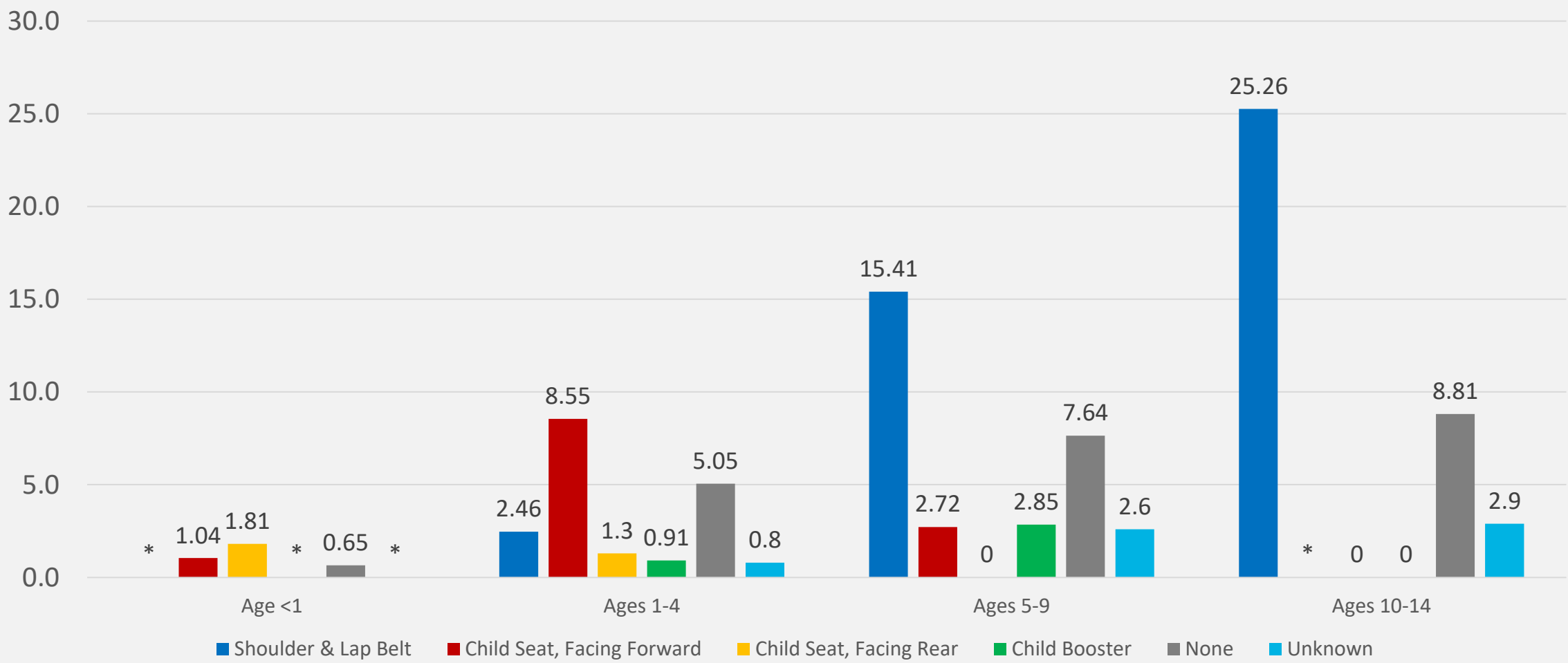
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2019 and 2020 Age Group Distribution, Texas (N= 772)

Age Group	Frequency	Percent
<1	32	4.2
1-4	163	21.1
5-9	258	33.4
10-14	319	41.3
Total	772	100.0

2019 and 2020 Restraint Type Percentage by Sex, Texas (N = 772)

Male = 383
Female = 389

Female, Male

Restraint Type	Female	Male
Shoulder & Lap Belt	22.5	20.7
None	10.1	12.1
Child Seat, Facing Forward	7.9	4.5
Unknown	3.6	2.7
Not Applicable	1.4	3.8
Child Booster Seat	2.2	1.7
Child Seat, Facing Rear	1.6	1.6
Child Seat, Unknown	0.7	0.9

2019 and 2020 Restraint Type Percentage by Age Group, Texas (N= 772)

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2019 and 2020 Restraint Type Percentage by Race and Ethnicity, Texas (N= 772)

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Legend:
- White
- Black
- Hispanic

Category	White	Black	Hispanic
Shoulder & Lap Belt	13.9	10.6	17.6
Child Seat, Facing Forward	3.5	2.3	5.6
Child Seat, Facing Rear	0.8	0.9	1.4
Child Booster Seat	1.6	0	1.8
None	4.5	6.5	10.8
Unknown	1.3	1.9	2.6

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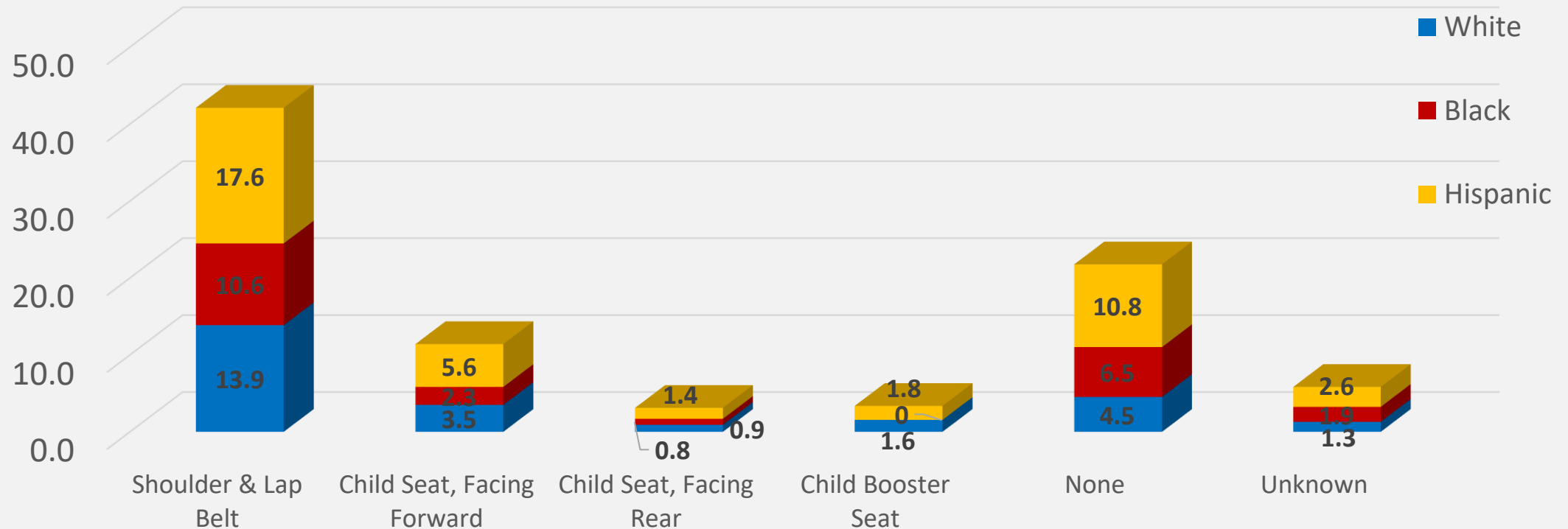
2019 and 2020 Time of Day Count, Texas (N=772)

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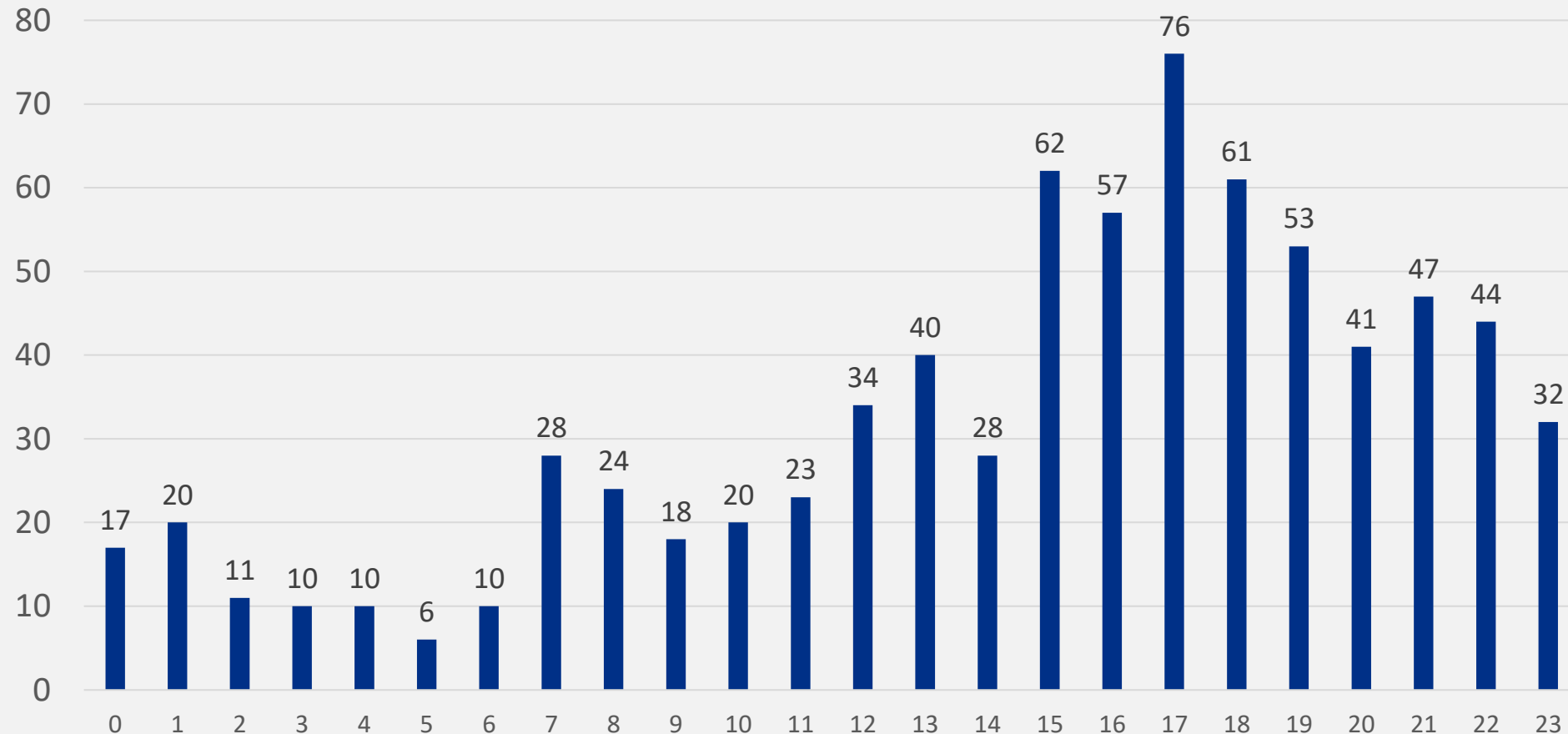
2019 and 2020 Location in Vehicle Percentage by Age Group, Texas (N = 772)

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Legend:
- <1
- 1-4
- 5-9
- 10-14

	Driver	Passenger/Occupant	Driver of Motorcycle	Passenger/Occupant on Motorcycle
<1	0.0	4.2	0.0	0.0
1-4	0.0	21.0	0.0	*
5-9	*	32.8	*	*
10-14	3.2	36.1	1.6	*

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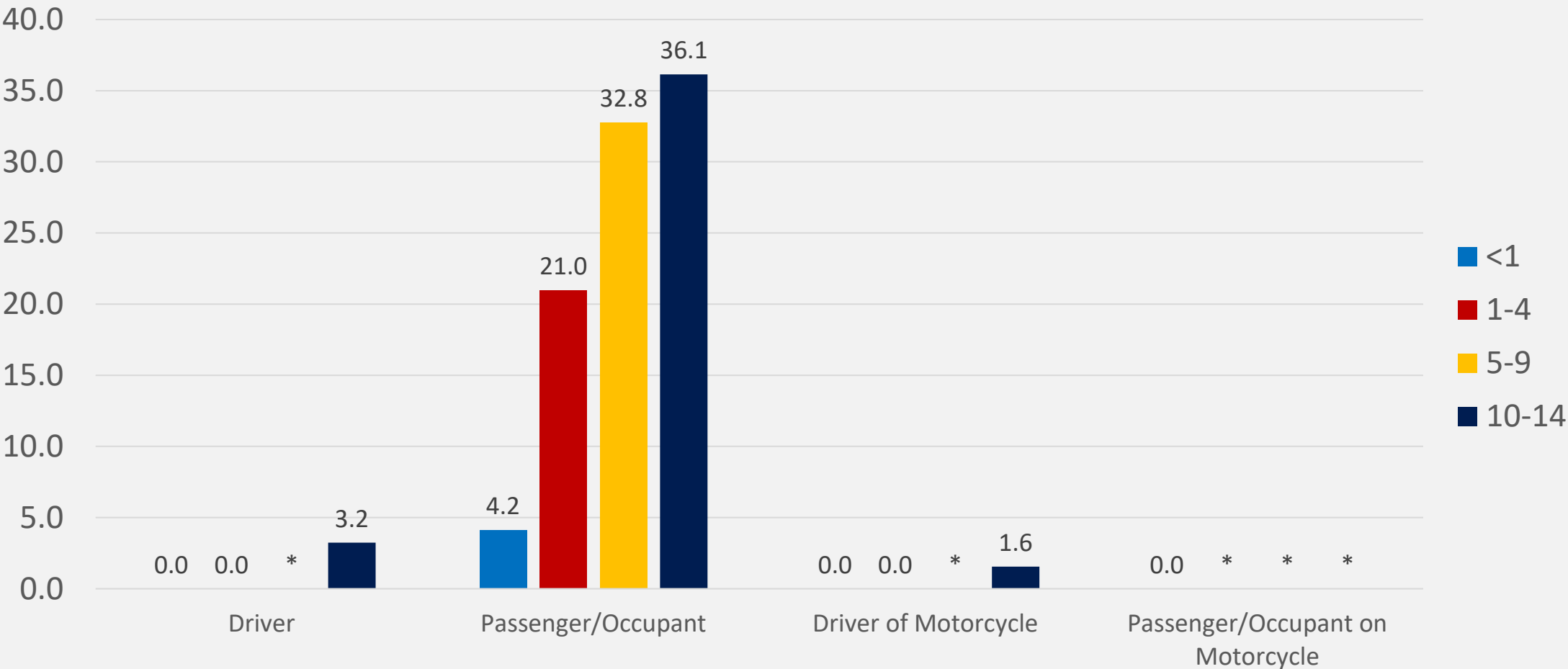
2019 and 2020 Crash Severity Percentage by Age Group, Texas (Total = 772)

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Texas Department of State Health Services

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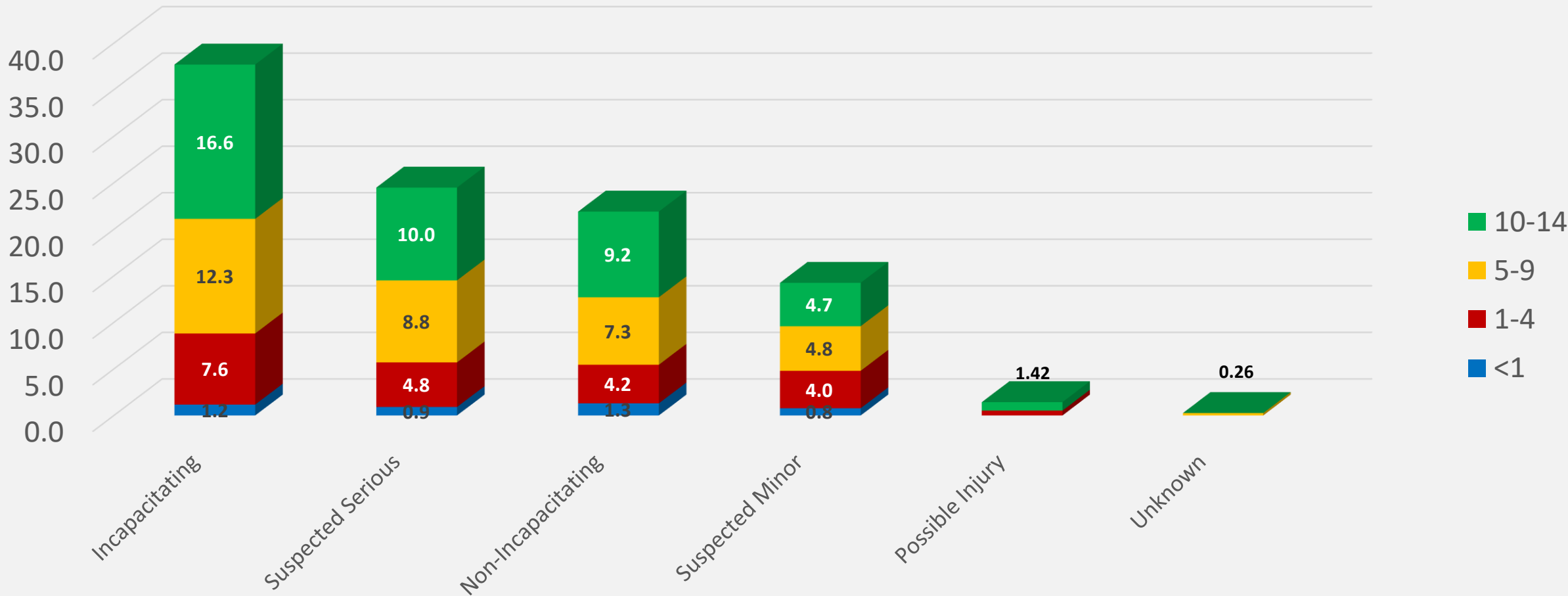
Definition: Injury Severity Score (ISS)

The Injury Severity Score (ISS) assesses the combined effects of patients with multiple injuries and is based on an anatomical injury severity classification: the Abbreviated Injury Scale (AIS). AIS is an anatomically based injury severity scoring system that classifies each injury by body region on a six-point scale.
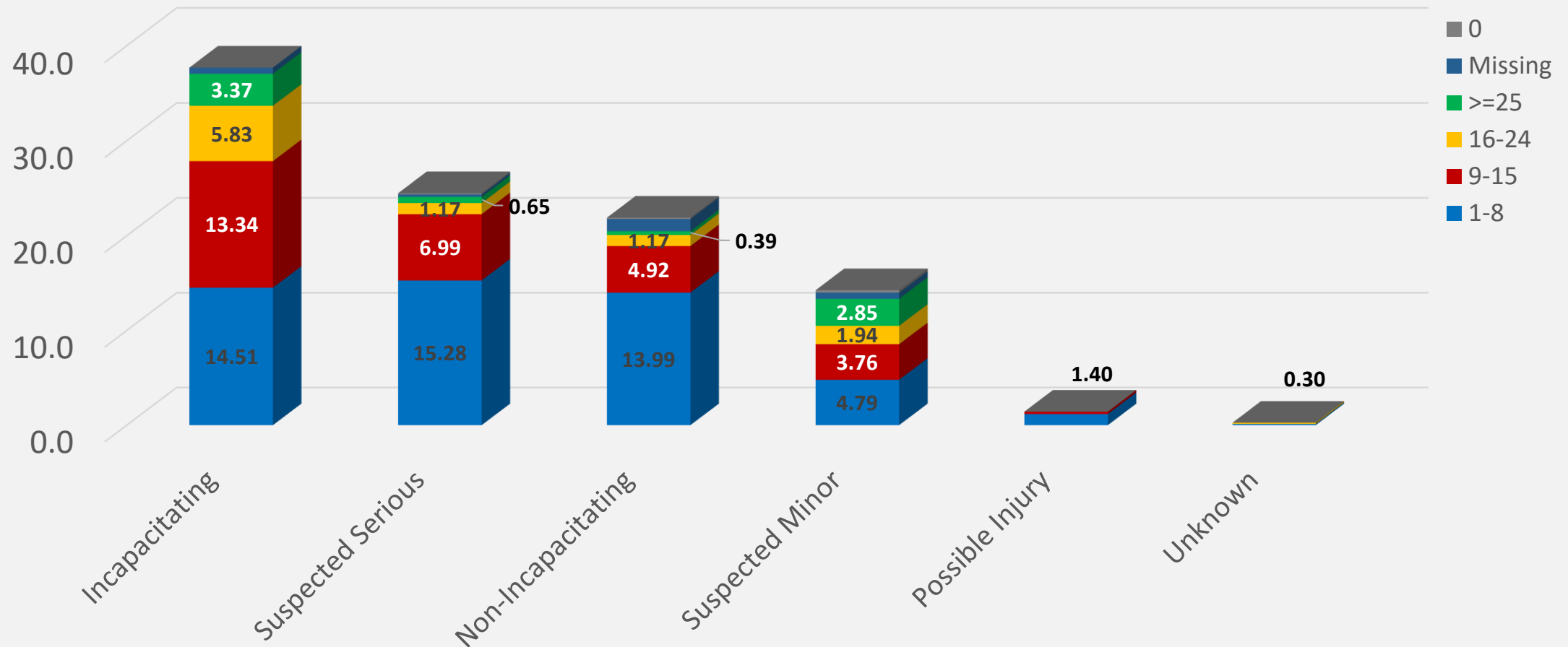
AIS Ranges used:
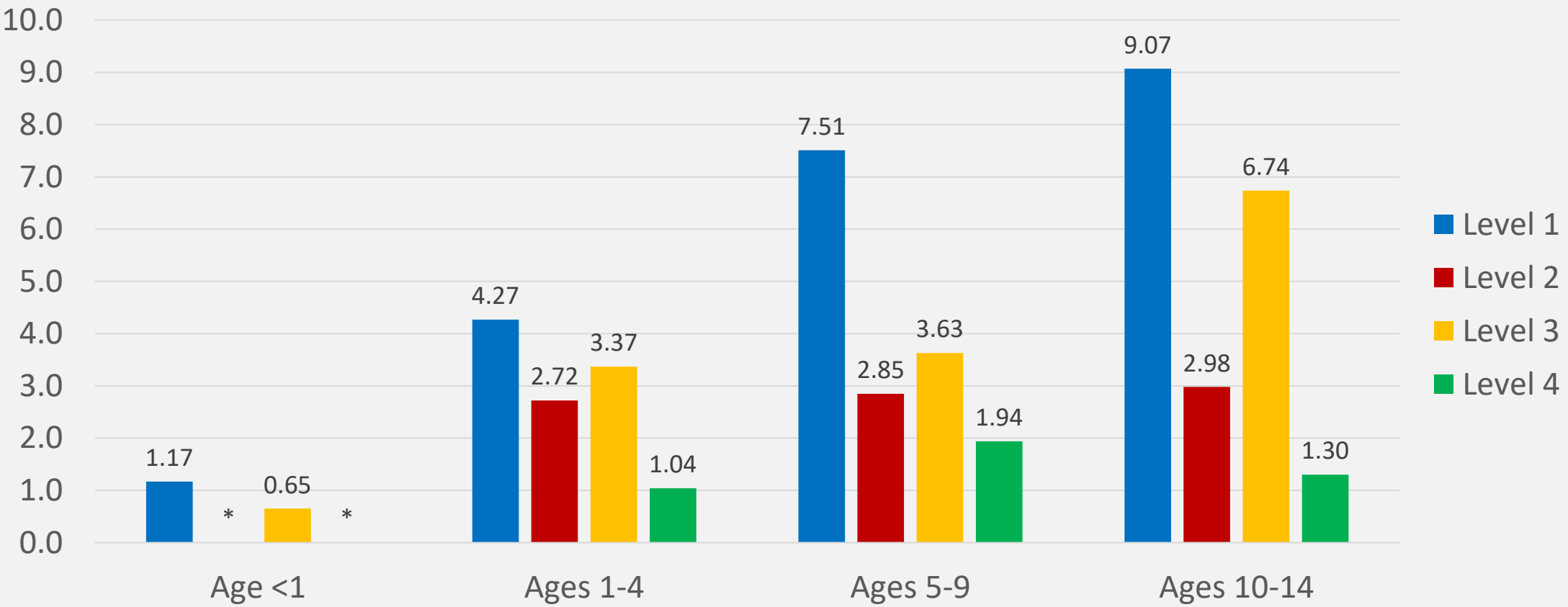- 0 (less severe);
- 1-8;
- 9-15;
- 16-24; and
- >=25 (most severe).

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2019 and 2020 ISS, Texas (Total = 772)

ISS	Frequency
0	*
1-8	385
9-15	226
16-24	79
>=25	56
Missing	22
Total	**772**

2019 and 2020 Crash Severity Percentage by ISS, Texas (Total = 772)

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Legend:
- 0
- Missing
- >=25
- 16-24
- 9-15
- 1-8

Incapacitating: 14.51, 13.34, 5.83, 3.37
Suspected Serious: 15.28, 6.99, 1.17, 0.65
Non-Incapacitating: 13.99, 4.92, 1.17, 0.39
Suspected Minor: 4.79, 3.76, 1.94, 2.85
Possible Injury: 1.40
Unknown: 0.30

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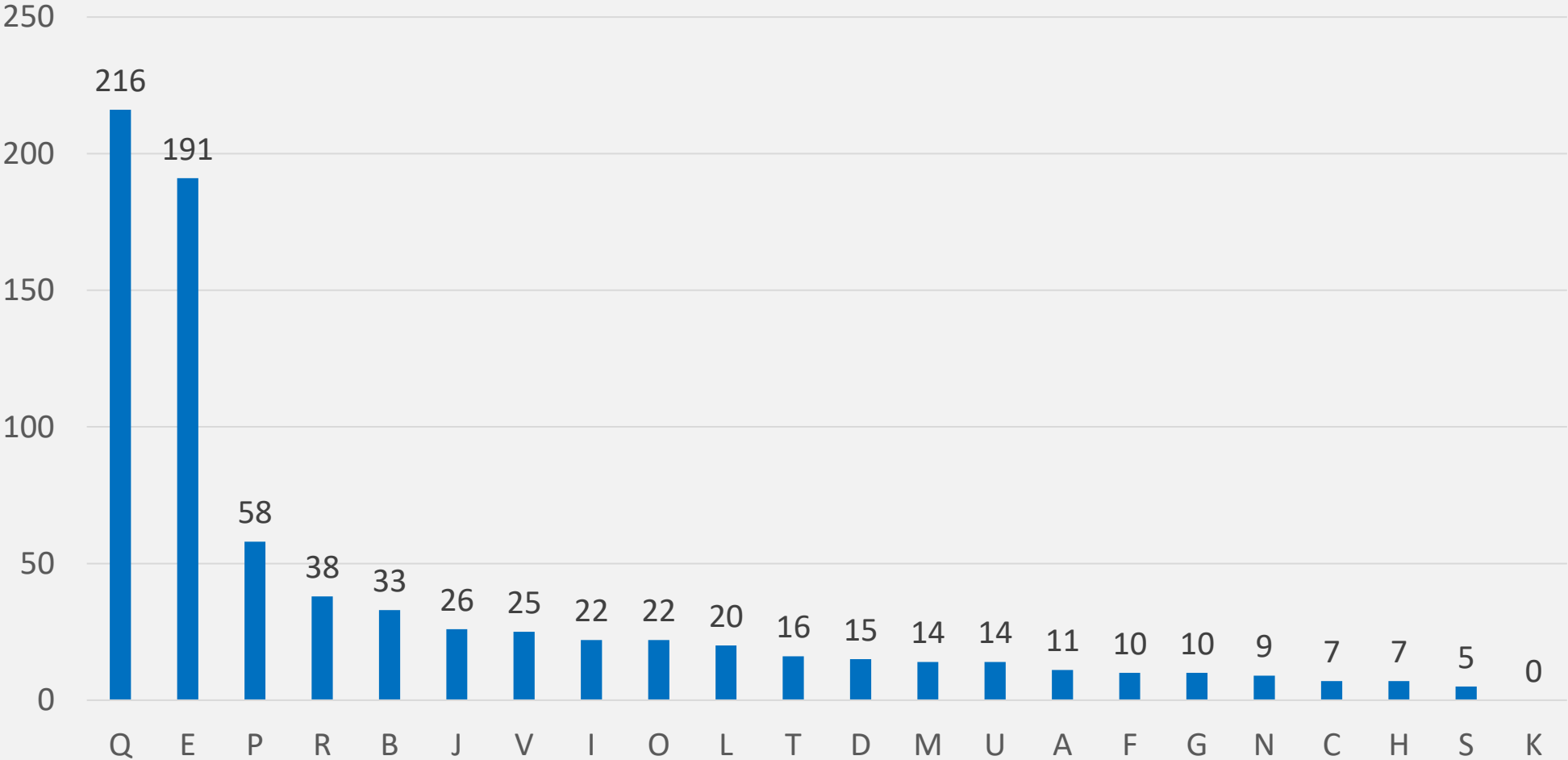
2019 and 2020 Restraint Type by Rural versus Not Rural Count, Texas, (N = 772)
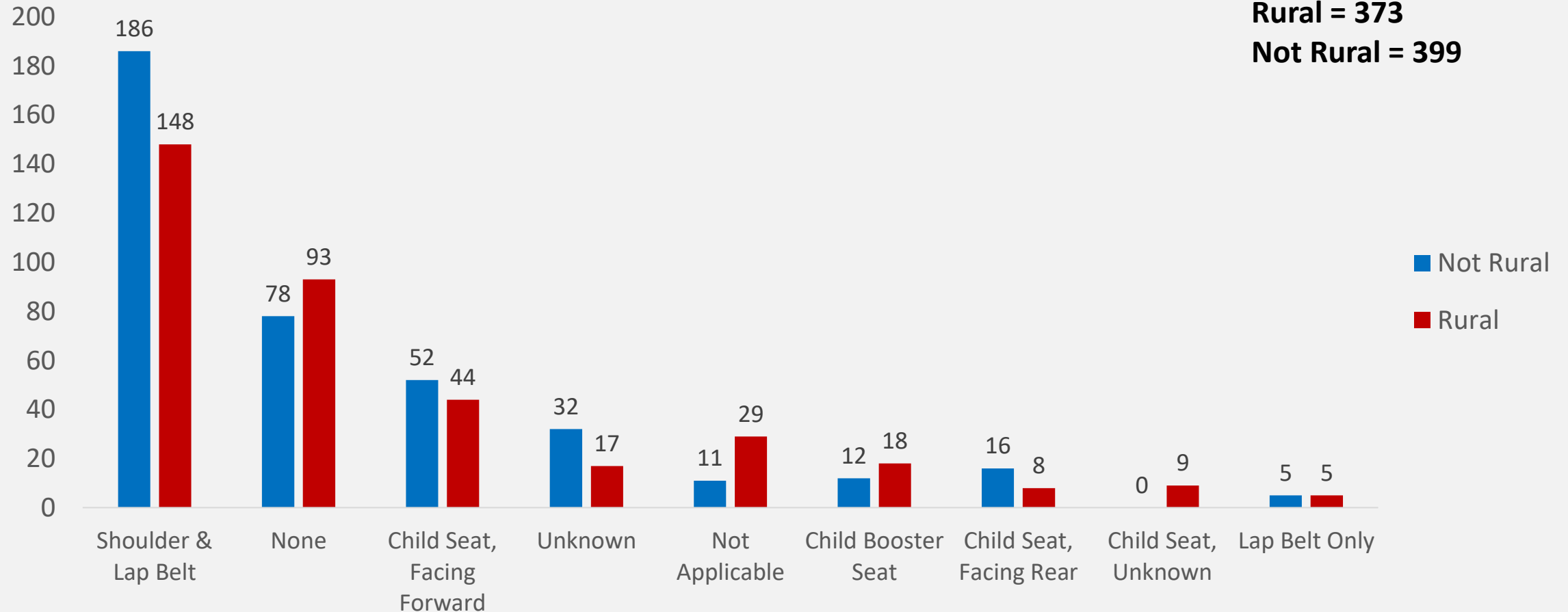
2019 and 2020 Incidents by Trauma Service Areas Count, Texas, (N = 772)

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Q	E	P	R	B	J	V	I	O	L	T	D	M	U	A	F	G	N	C	H	S	K
216	191	58	38	33	26	25	22	22	20	16	15	14	14	11	10	10	9	7	7	5	0

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Lives Saved by Child Restraints and Seat Belts, USA and Texas (2017- NHTSA)

Lives Saved by Child Restraints, Age 4 and Younger

- USA: 325
- TX: 50

Lives Saved by Seat Belts, Age 5 and Older

- USA: 14,955
- TX: 1,725

Please choose and use the right car seat correctly every time your child is in the car.

Limitations

Texas EMS and Trauma Registry (EMSTR) data uses passive record surveillance submitted by Texas EMS entities and hospitals.

EMSTR can only report on records that it receives and should not be considered complete or representative of all Texas EMS entities and hospitals.

This report only includes data from crashes where EMS arrived at the scene and the child was transported to a trauma center. This may miss minor injuries or children who die on the scene.

Resources

- dshs.texas.gov/saferiders/CPSlaw.shtm

- nhtsa.gov/equipment/car-seats-and-booster-seats

- txdot.gov/data-maps/crash-reports-records/motor-vehicle-crash-statistics/archive/2020-crash-statistics.html

- National Trauma Data Bank (NTDB) data dictionary: facs.org/quality-programs/trauma/tqp/center-programs/ntdb/ntds

- ftp.dot.state.tx.us/pub/txdot-info/trf/crash_statistics/automated/standard-extract.xlsx

- The National Emergency Medical Services Information System (NEMSIS) data dictionary: nemsis.org/technical-resources/version-3/version-3-data-dictionaries/

- Coding is based on the ICD10CM (International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)

- Centers for Disease Control and Prevention – Web-based Injury Statistics Query and Reporting System (WISQARS)

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Thank you

Registry Operations Support: Injury.web@dshs.texas.gov

Data Analysis and Epidemiology: Injury.epi@dshs.texas.gov