2021 Survey of Front Seat Occupant Restraint Use In 18 Texas Cities

Prepared by

Katie N. Womack
Center for Transportation Safety

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Texas Department of Transportation
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Anna Red, OP Program Manager

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author, and do not necessarily represent those of the State of Texas, the Texas Department of Transportation or any political subdivision of the State or Federal Government.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

Since 1985, the Texas A&M Transportation Institute (TTI) has conducted urban area surveys to measure safety belt use in Texas. A baseline survey was conducted in 12 cities prior to the passage of the mandatory belt use law (MUL), which went into effect September 1, 1985. Fourteen cities were surveyed in 1986 to measure the first full year of MUL impact. The locations were expanded to 18 in 1988, and TTI continues to conduct the longitudinal survey of front seat driver and passenger use in these areas. This report documents the results of the 2021 survey.

SURVEY DESCRIPTION

Figure 1 shows the sample of 18 cities currently used as observation sites. In each study city, six sites were used to represent a geographic cross-section of the city. Each intersection selected for observation was controlled by either a stop sign or traffic signal and on roadways with sufficient traffic volume such that 200 vehicles could be observed within an hour or less time. All observations were recorded during daylight hours and on weekdays during the timeframe of May 17 through June 17, 2021.

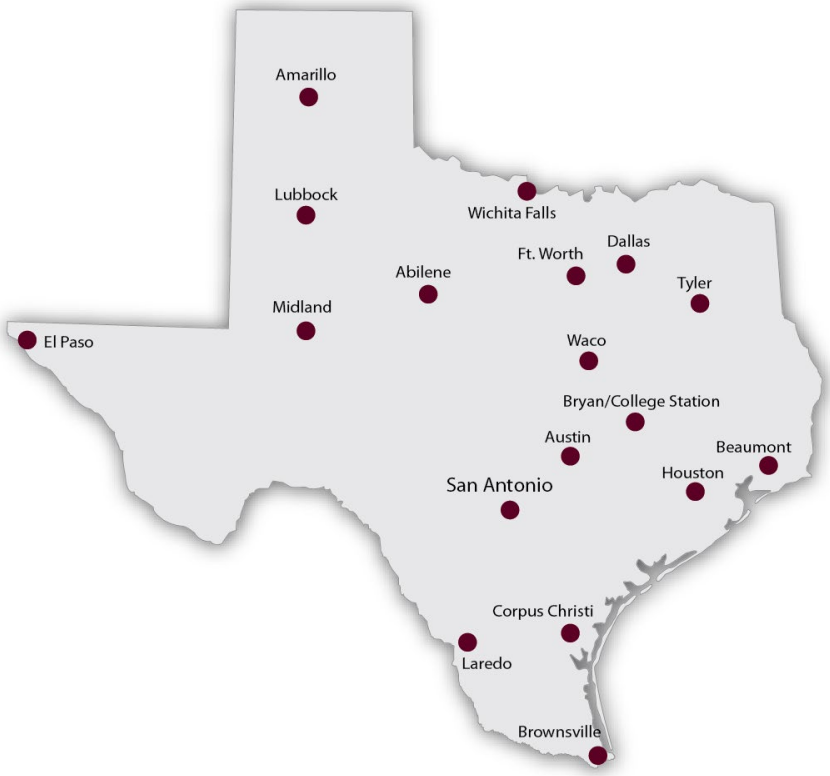

Figure 1. Study Cities in the Texas Safety Belt Observational Survey

Observers recorded restraint use for drivers and right front seat outboard passengers as determined by the use of a shoulder harness or child safety seat. Eligible vehicles in this survey were passenger cars and pickup trucks.

The following information was collected for each eligible vehicle:

- Driver and front seat outboard passenger restraint use (yes or no).
- Front seat occupant gender (male or female).
- Estimated driver age (15–19, 20–60, 61+).
- Estimated front outboard passenger age (0–4, 5–14, 15–19, 20–60, 61+).
- Pickup truck (yes or no).

2021 SURVEY RESULTS

In the combined 18-city sample, 26,047 front seat occupants were observed at a total of 108 intersections. The percent of front seat occupants restrained in these urban area locations was estimated as **88.3**. Drivers were seat belted at a rate of **88.2** percent and passengers at a rate of **88.8** percent. The sample size of drivers was 21,600 and passengers was 4,447. The graphs and tables on the following pages present the survey results across all cities with respect to the variables included in the observations. Additionally, safety belt use by city is provided and comparisons with the 2020 survey and prior years' surveys are shown.

Figure 2 provides the observed belt use percentages for the 18 cities included in the 2021 survey. These results are also given in Table 1, along with driver and passenger belt use rates for each city. Table 2 compares this year's rates to the 2020 rates by city. There was no statistically significant change in seat belt use in 10 of the 18 cities. Two cities showed a statistically significant decrease in use – Amarillo and Wichita Falls. Six of the 18 cities showed increases in belt use in 2021 over 2020 that were statistically significant: Brownsville, Bryan/College Station, El Paso, Laredo, Lubbock, and Midland.

The highest combined driver and front seat passenger belt use in 2021 was observed in Laredo at 93.9 percent. Laredo had exceptionally high passenger restraint use at 97.4 percent. Four other cities had combined driver and passenger seat belt use above 90 percent: Austin, Brownsville, Bryan/College Station, and El Paso. The lowest rate was observed in Fort Worth at 82.4 percent. The overall results for the 2021 survey across all cities showed a 0.9 percentage point change from 2020, increasing from 87.4 percent to 88.3 percent. The 0.9 percentage point increase is statistically significant.

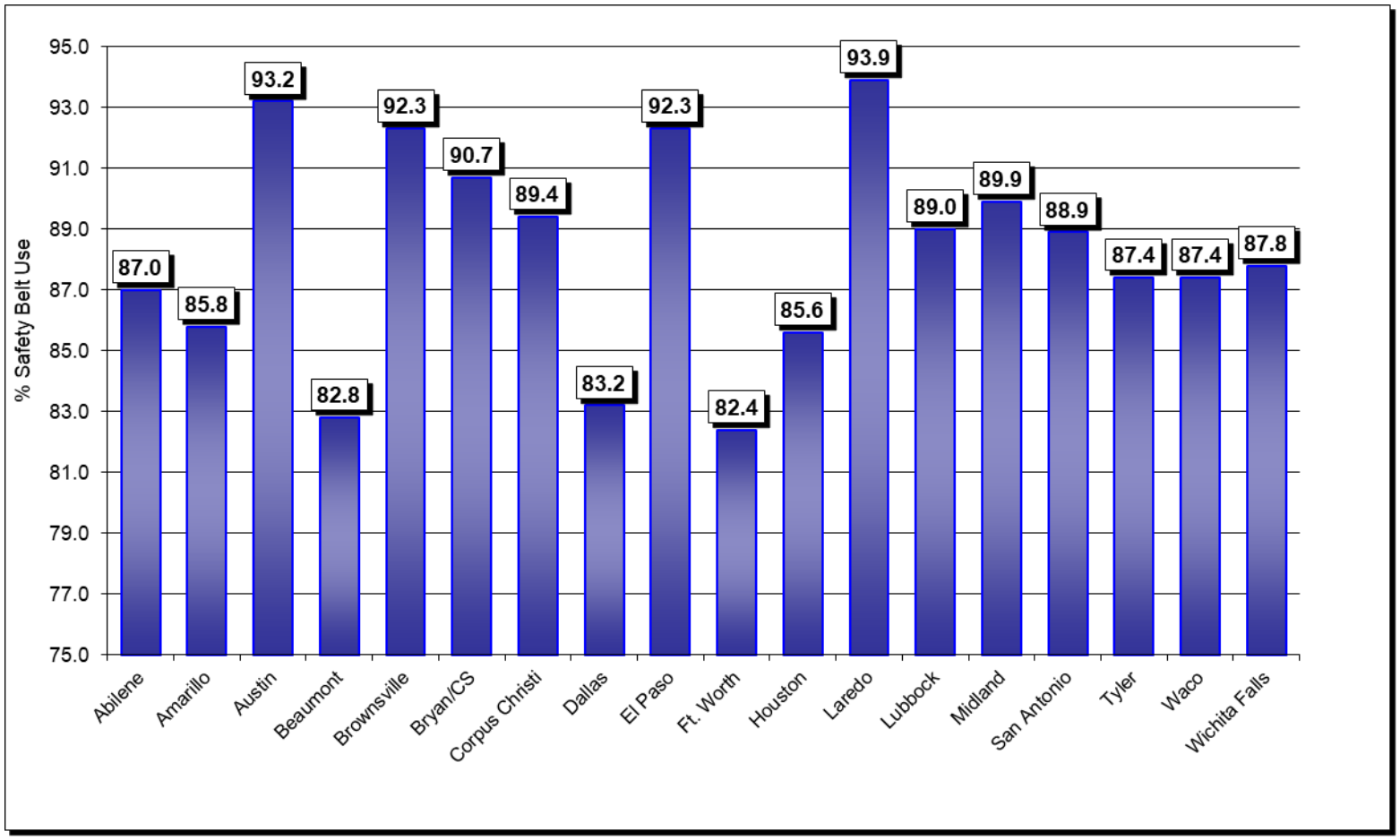

Figure 2. 2021 Safety Belt Use by City

Table 1. 2021 Safety Belt Use in the 18 Texas Cities

City	% Driver Belt Use	Driver N	% Passenger Use	Passenger N	% Restrained	Total N Observed
Abilene	87.3	1200	86.0	243	87.0	1443
Amarillo	85.6	1200	87.0	246	85.8	1446
Austin	93.3	1200	92.2	180	93.2	1380
Beaumont	82.9	1200	82.3	226	82.8	1426
Brownsville	91.8	1200	94.1	340	92.3	1540
Bryan/CS	90.4	1200	92.0	226	90.7	1426
Corpus Christi	88.8	1200	91.8	292	89.4	1492
Dallas	83.8	1200	78.3	152	83.2	1352
El Paso	92.0	1200	93.5	275	92.3	1475
Ft. Worth	83.3	1200	78.3	230	82.4	1430
Houston	85.8	1200	84.3	248	85.6	1448
Laredo	92.9	1200	97.4	343	93.9	1543
Lubbock	88.5	1200	91.3	265	89.0	1465
Midland	89.8	1200	90.1	171	89.9	1371
San Antonio	88.9	1200	88.6	272	88.9	1472
Tyler	87.8	1200	85.3	238	87.4	1438
Waco	86.9	1200	89.8	265	87.4	1465
Wichita Falls	88.3	1200	85.5	235	87.8	1435
Total	**88.2**	**21600**	**88.8**	**4447**	**88.3**	**26047**

Table 2. 2021 Safety Belt Use Compared to 2020 in 18 Texas Cities

City	2020 % Belt Use	2021 % Belt Use	Percentage Point Change
Abilene	86.0	87.0	1.0
Amarillo	88.4	85.8	-2.6*
Austin	91.7	93.2	1.5
Beaumont	84.5	82.8	-1.7
Brownsville	89.3	92.3	3.0*
Bryan/College Station	87.6	90.7	3.1*
Corpus Christi	88.4	89.4	1.0
Dallas	85.4	83.2	-2.2
El Paso	87.5	92.3	4.8*
Ft. Worth	83.7	82.4	-1.3
Houston	86.7	85.6	-1.1
Laredo	88.1	93.9	5.8*
Lubbock	85.9	89.0	3.1*
Midland	87.5	89.9	2.4*
San Antonio	88.3	88.9	0.6
Tyler	88.3	87.4	-0.9
Waco	85.2	87.4	2.2
Wichita Falls	90.6	87.8	-2.8*
Combined City Total	**87.4**	**88.3**	**0.9***

*Denotes statistically significant change from previous year.

RESULTS BY OCCUPANT CHARACTERISTICS

Female drivers and passengers had higher safety belt usage rates than males, as seen in Figure 3. Female drivers were belted 3.5 percentage points more often than male drivers were and female passengers were belted 6.0 percentage points more often than male passengers were.

The age group with the highest driver seat belt use was seniors, with an average across 18 cities of 91.4 percent. The lowest belt use was among teen drivers, estimated as 15 to 19 years old, who were observed seat belted at 86.5 percent (see Figure 4). As shown in Figure 5, senior passengers were most often observed wearing safety belts (93.2 percent). Children who were front seat passengers (5-14 years old) were the least often measurable age group observed using a restraint system at 83.9 percent use. Only five children under five years old were observed riding in the front seat and are therefore not shown on the graph.

Figures 6 and 7 show differences in safety belt use at each age level between males and females. The highest driver belt use rate was observed among senior female drivers (92.7 percent), with teen female drivers very close to that rate at 92.1 percent. The lowest rate observed was among teen male drivers (81.2 percent). This year female senior passengers had the highest passenger belt use rate at 94.8 percent.

RESULTS BY VEHICLE CHARACTERISTICS

Driver and passenger seat belt use was observed to be higher for car drivers and passengers than for pickup truck occupants, as seen in Figure 8 for the two positions separately. Driver and passenger belt use in cars was 88.9 percent and 89.4 percent, respectively, while in pickups the driver and passenger use percentages were 86.2 percent and 86.9 percent, respectively. The difference for all occupants by vehicle type was 2.7 percentage points, with car occupants belted more often than pickup occupants.

SEAT BELT USE ASSOCIATION

As was true in previous surveys, there was an association between driver restraint use and passenger restraint use, often referred to as the audience effect. In the 2021 survey, 20.6 percent of vehicles observed had a passenger in the front outboard seating position. In this sample of 4,447 vehicles, if the driver was using a seat belt, it was highly likely that the passenger was also. This was the case 94.2 percent of the time, as seen in Table 3.

Table 3. Association between Driver and Passenger Restraint Use

Driver Restraint Use	Passenger Restraint Use		
	% Unrestrained (#)	% Restrained (#)	Total
Unrestrained	43.9 (210)	56.1 (268)	100 (478)
Restrained	5.8 (229)	94.2 (3740)	100 (3969)

Figure 3. 2021 Safety Belt Use by Gender

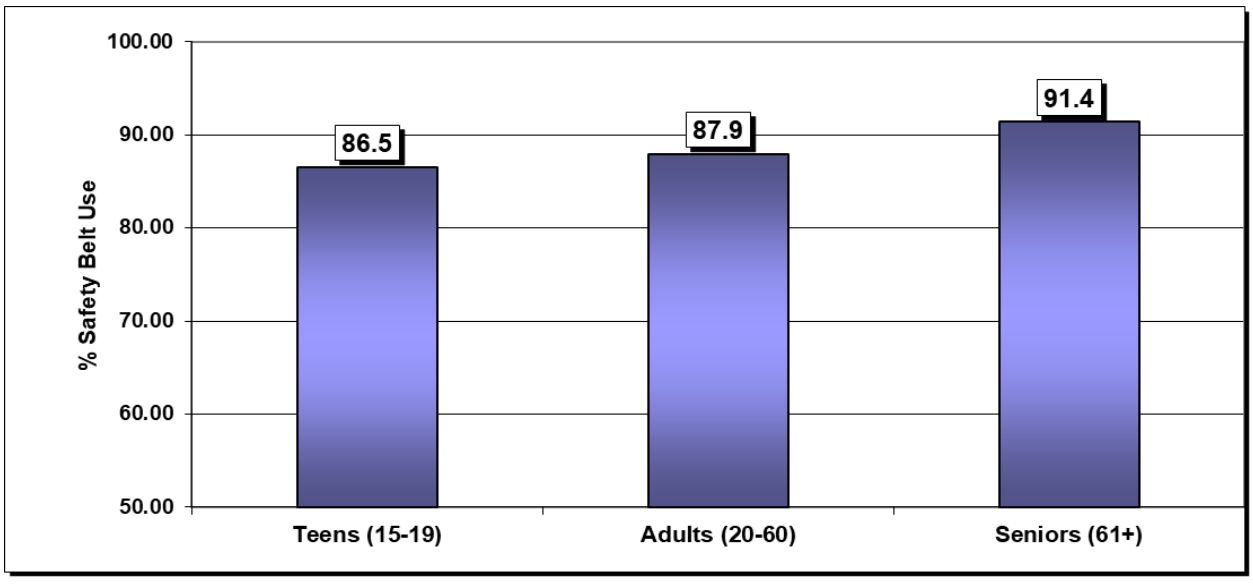

Figure 4. 2021 Driver Safety Belt Use by Age

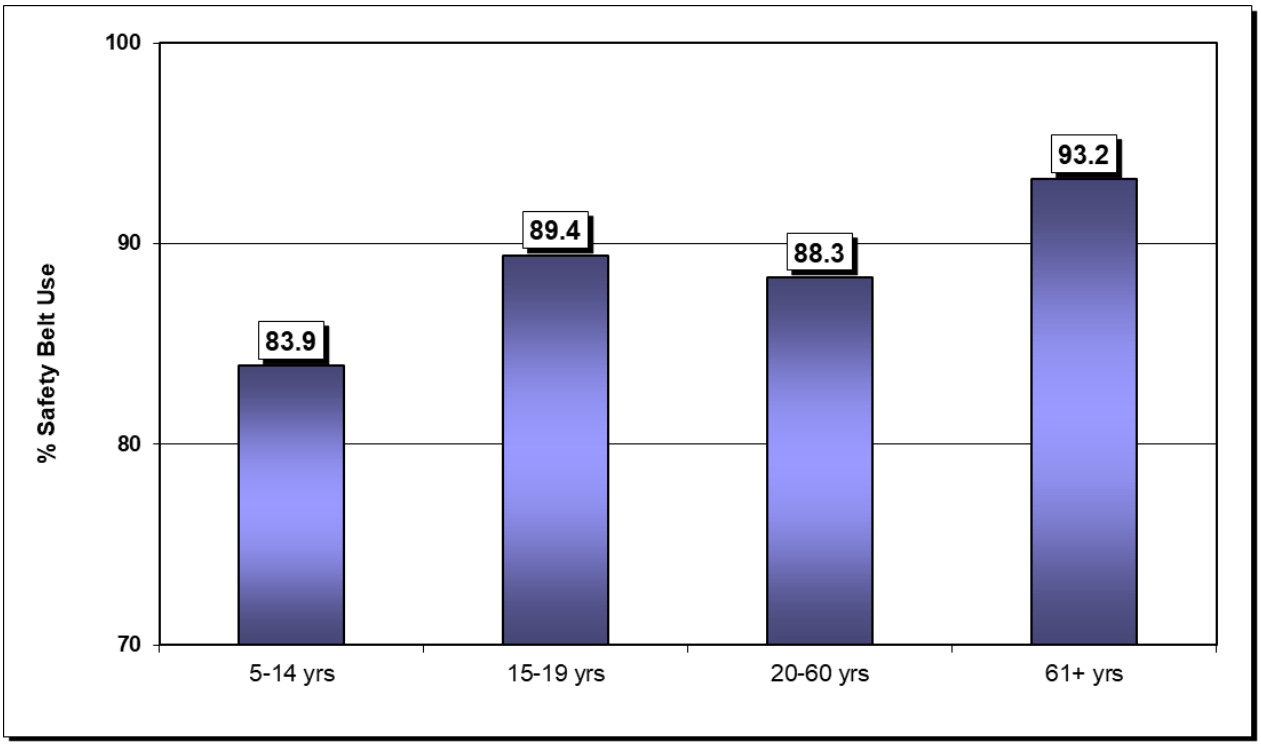

Figure 5. 2021 Passenger Safety Belt Use by Age

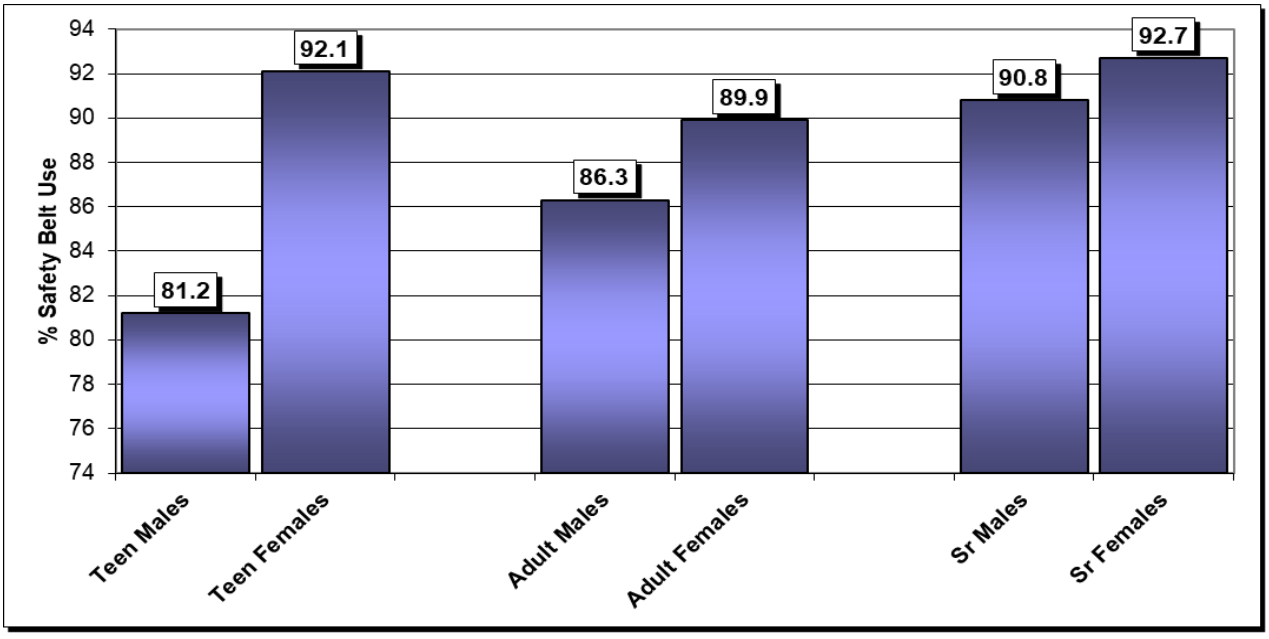

Figure 6. 2021 Driver Safety Belt Use by Age and Gender

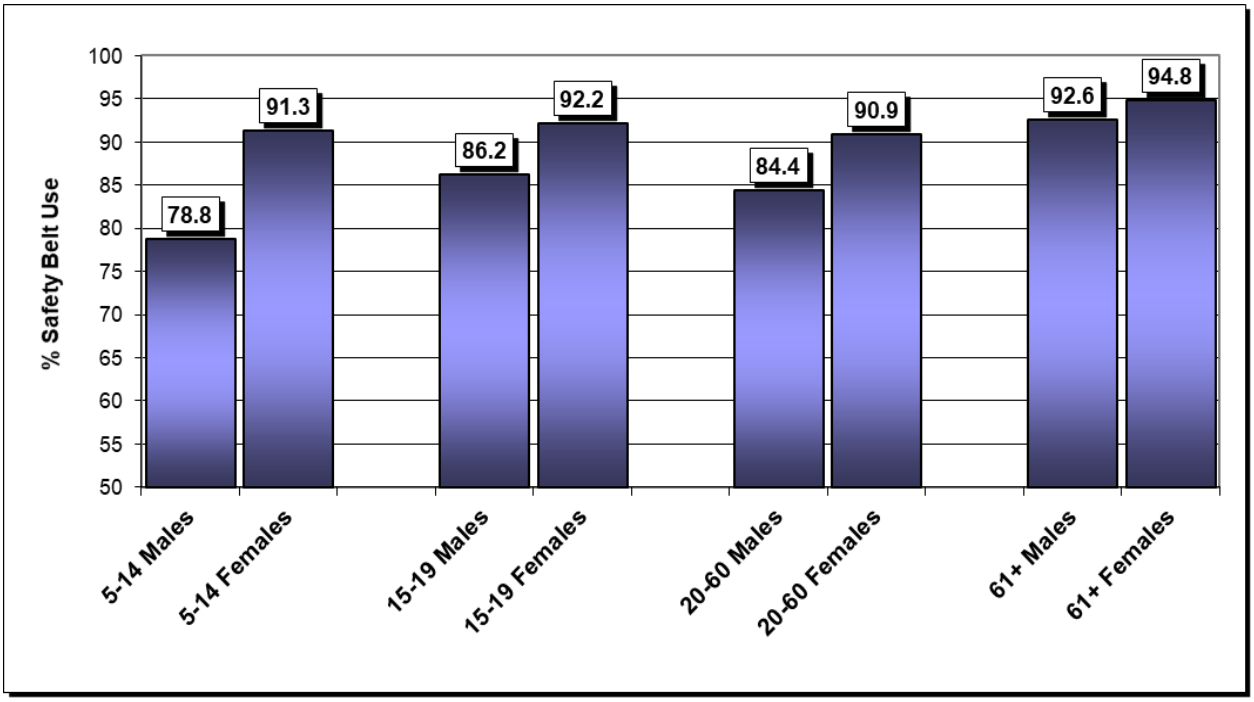

Figure 7. 2021 Passenger Safety Belt Use by Age and Gender

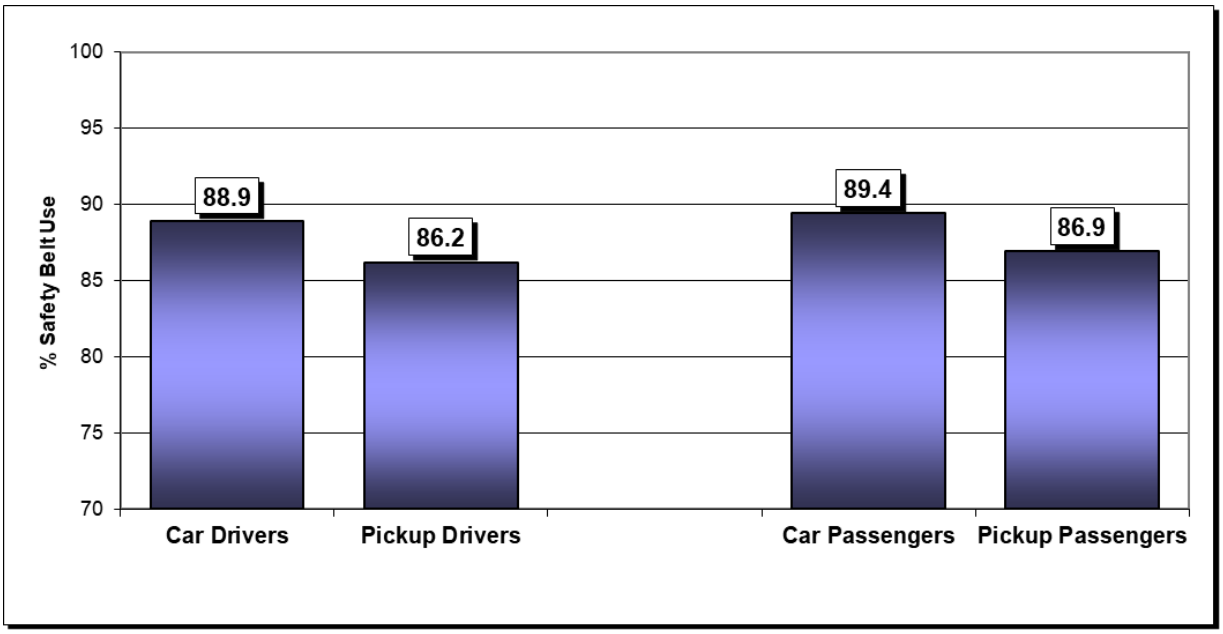

Figure 8. 2021 Safety belt Use by Vehicle Type

LONGITUDINAL LOOK

The chart provided in Figure 9 shows the trend line of front seat occupant restraint use since 1985. This chart includes all data from all sites throughout the longitudinal period in which the surveys have been conducted. Figure 10 shows driver and passenger trends over the comparable time period. City-level driver and passenger use for each year are available and can be obtained from the author.

The 2021 survey data collection occurred during a similar timeframe as prior years, during the May/June window in the 18 cities. During this time, the State was not under any travel restrictions. The number of observations by demographics is comparable to prior years, and the increase from last year is statistically significant. However, this year's combined 18-city use rate overall did not increase to levels that were observed in the 10 years prior to 2020 (see Figure 9). Biggest gains this year in seat belt use were among females, both as drivers and as passengers. The most notable decrease was among teen male drivers, whose seat belt use decreased from 2020 by 2.5 percentage points, which also occurred in 2020 when compared to 2019. For the second year in a row, the passenger restraint use rate was higher than the driver use rate.

SUMMARY

Results of the 2021 survey of occupant restraint use show urban seat belt use of **88.3** percent, as indicated from 26,047 observations in 18 cities. The observational data revealed that passengers were more often restrained than drivers. Drivers were restrained **88.2** percent of the time, and passengers were restrained **88.8** percent of the time. Overall, females were slightly more likely to use seat belts than males, with a 3.9 percentage point difference in use for drivers and passengers combined. Senior passengers were the most frequent users. Children under 15 were least likely to be buckled as passengers observed in the front seat. As in previous years, passengers were more likely to be buckled up when the driver was buckled up. Restraint use for drivers in cars was higher than driver restraint use in pickup trucks; 88.9 percent for car drivers compared to 86.2 percent for pickup drivers, and 89.4 percent for car passengers compared to 86.9 percent for pickup passengers. This year's safety belt use rate of 88.3 percent for front seat occupants is a statistically significant increase from the 2020 rate of 87.4 percent, but indicate that current seat belt use rates in Texas have not yet returned to the pre-pandemic level in over half of the urban areas surveyed.

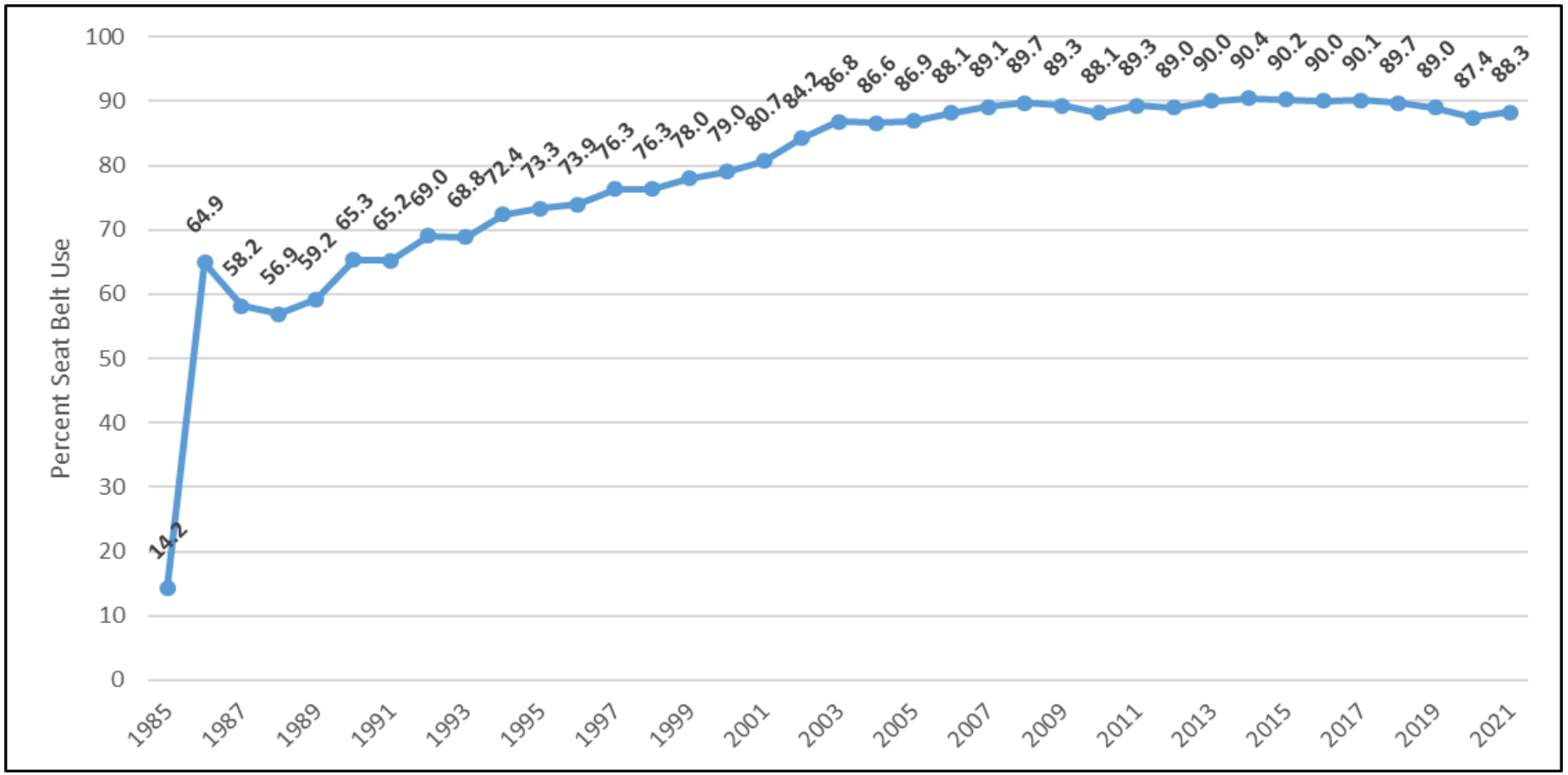

Figure 9. Front Seat Occupant Restraint Use by Year

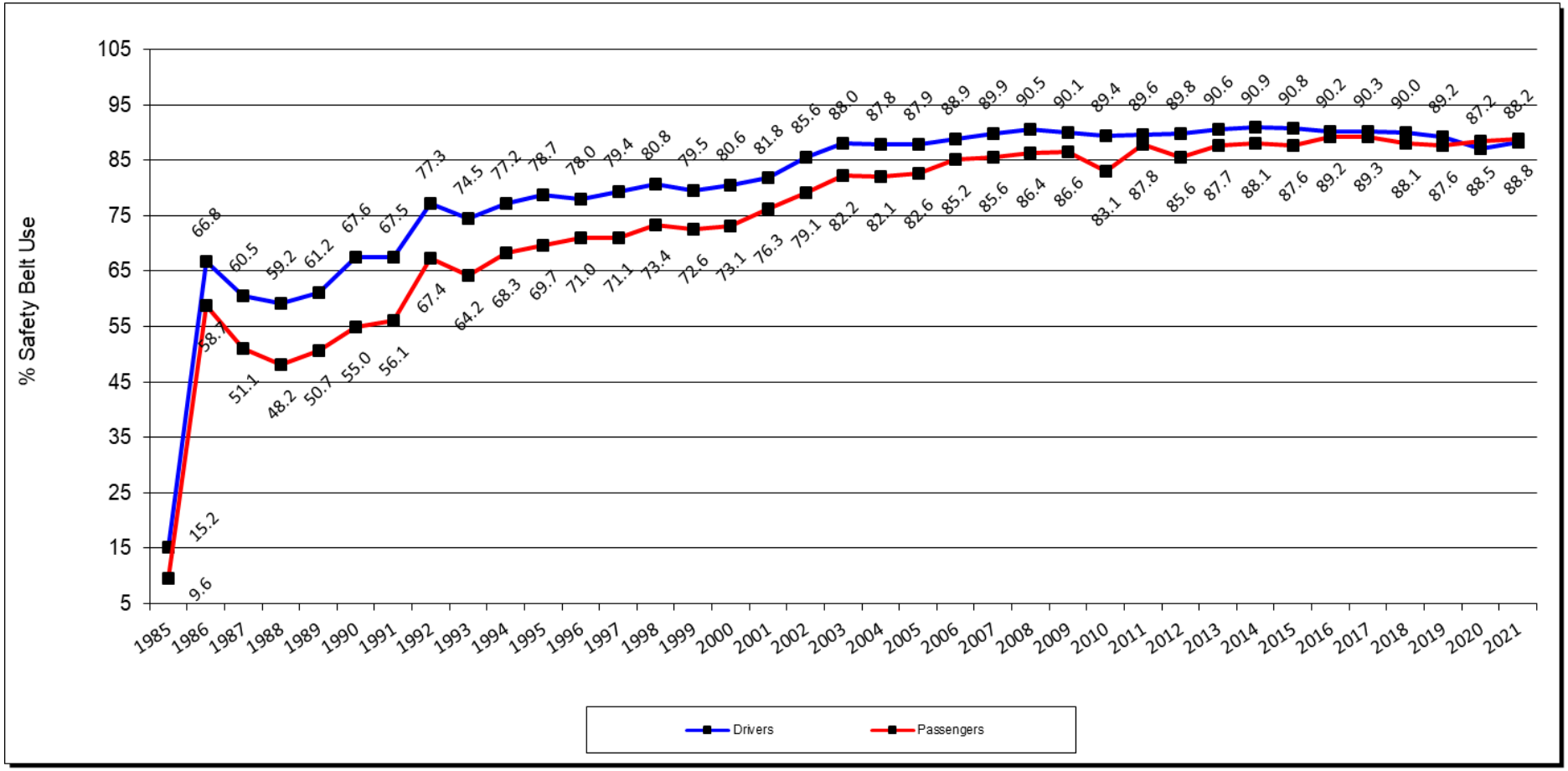

Figure 10. Driver and Passenger Occupant Restraint Use by Year