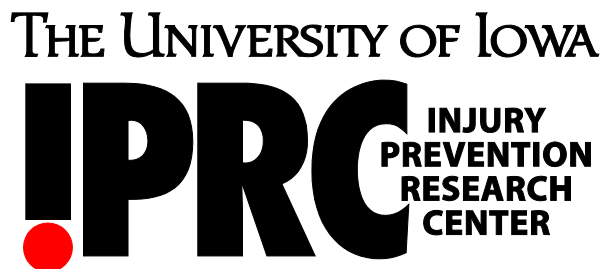


Iowa Child Passenger Safety Survey

2021

*Conducted by the
University of Iowa Injury Prevention Research Center
Under contract to Iowa Governor's Traffic Safety Bureau*



Background

Since 1985, Iowa has had a law requiring all young children riding in motor vehicles to be properly protected through the use of child seats, booster seats, and/or seat belts. In 2004 and again in 2009, the Iowa Legislature revised the requirements of the child passenger safety law. Iowa's current child passenger safety law requires that:

<i>Children must ride in an appropriate rear-facing child safety seat until one year of age and at least 20 pounds.</i>
<i>Children must ride in a child safety seat or a booster seat through the age of 5 years.</i>
<i>Children ages 6 through 17 must ride in a booster seat or be secured by a seat belt.</i>

In order to measure compliance with these laws and to direct educational efforts, observational child restraint usage surveys have been conducted annually since 1988. The surveys are funded by the Governor's Traffic Safety Bureau (GTSB) within the Iowa Department of Public Safety. The GTSB has contracted with The University of Iowa Injury Prevention Research Center (UI IPRC) to conduct these child passenger safety surveys since 1996.

Introduction and Methods

In an effort to accurately determine compliance with Iowa's child passenger safety law, in particular the requirement for use of child safety and booster seats, observers must be able to obtain a clear view into the vehicle. Starting with the 2005 survey, the basic protocol was changed from the previous "drive-by" observational methodology to a more "in-person" approach. The original survey design had not been updated since the 1980s, so the entire Iowa Child Passenger Restraint Survey protocol was also reassessed to ensure statistically valid representation of Iowa's total population mix. A workgroup consisting of UI IPRC faculty and staff and colleagues from the GTSB and Blank Children's Hospital was convened in early 2005 and charged with redesigning the survey methodology.

Researchers determined that to best represent Iowa's population the survey needed to be conducted in 36 communities across the state ranging in size from 1,424 persons in Wellman to Des Moines with 217,521 persons. Figure 1 identifies the communities on a map of Iowa. The list of communities, their size range, and the number of children needing to be observed at each location is listed in Table 1. Note that as a result of the 2010 Census, the town of Hawarden's population increased to 2,546 thus bumping them into the second tier of community size and increasing their sample size from 50 to 75 observations.

The workgroup decided that the survey would best be implemented at sites such as gas stations or fast-food restaurants where the surveyor could approach the motor vehicle and quickly collect the desired information. The protocol calls for a well-identified surveyor to position themselves where they can see vehicles pull up carrying passengers who appear to be up to seventeen years of age. The surveyor approaches the vehicle and politely asks the driver if they would be willing to participate in a child and youth passenger safety survey. If the driver agrees, the surveyor confirms the age of the passenger(s) in the vehicle and quickly notes restraint use. No identifying information is collected (e.g., names or license plate numbers). The surveyor thanks the occupants and offers the adult a card describing Iowa's child passenger safety law and identifying who to contact for additional information.

Given the pandemic, surveyors this year wore face masks and maintained as much physical distance as practicable in order to complete the survey.

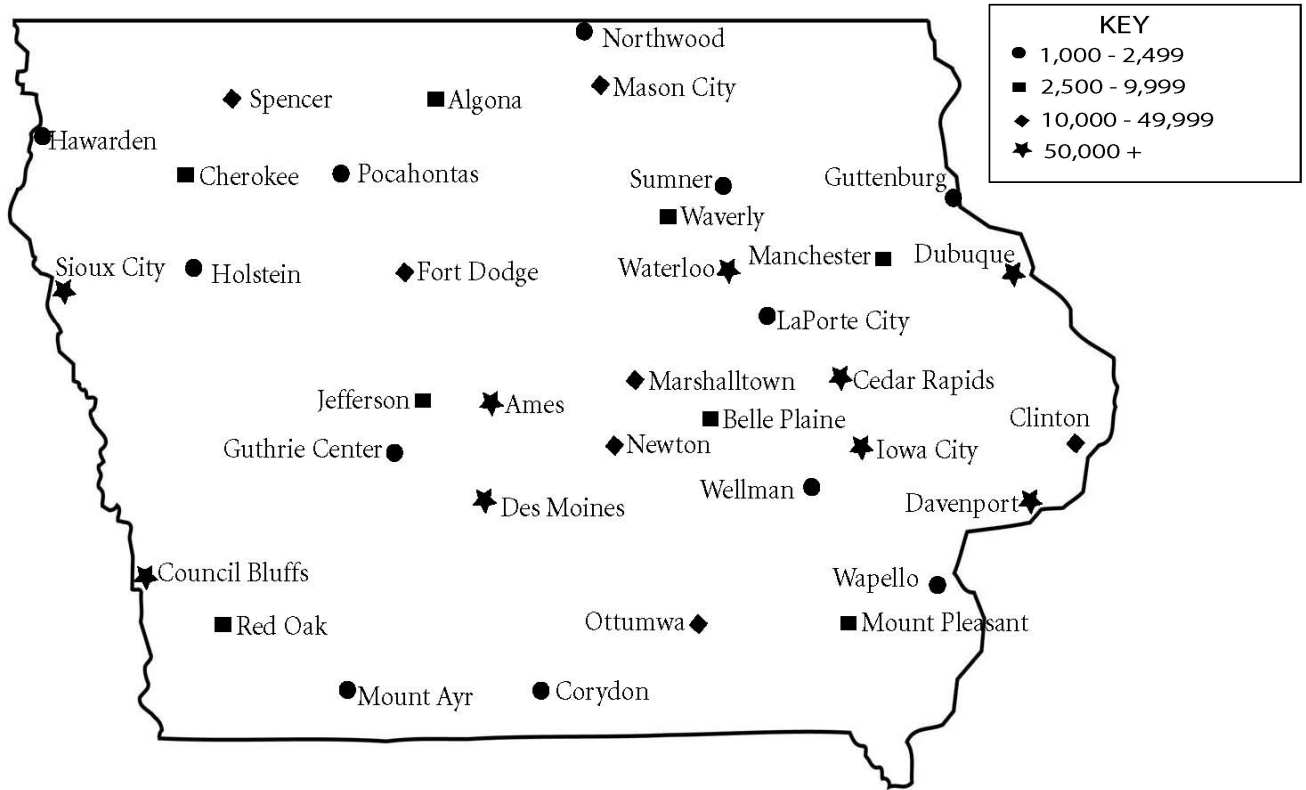


Figure 1. 2021 Iowa Child Passenger Survey Locations

Table 1. Iowa Child Passenger Restraint Survey Locations, 2021

<p>Communities 1,000 – 2,499 Minimum of 50 kids observed at each location</p>	<ol style="list-style-type: none"> 1. Corydon 2. Guthrie Center 3. Guttenberg 4. Holstein 5. Laporte City 6. Mount Ayr 7. Northwood 8. Pocahontas 9. Sumner 10. Wapello 11. Wellman
<p>Communities 2,500 – 9,999 Minimum of 75 kids observed at each location</p>	<ol style="list-style-type: none"> 1. Algona 2. Belle Plaine 3. Cherokee 4. Hawarden 5. Jefferson 6. Manchester 7. Mount Pleasant 8. Red Oak 9. Waverly
<p>Communities 10,000 – 49,999 Minimum of 100 observed kids at each location</p>	<ol style="list-style-type: none"> 1. Clinton 2. Fort Dodge 3. Marshalltown 4. Mason City 5. Newton 6. Ottumwa 7. Spencer
<p>Communities 50,000+ Minimum of 125 observed kids at each location</p>	<ol style="list-style-type: none"> 1. Ames 2. Cedar Rapids 3. Council Bluffs 4. Davenport 5. Des Moines 6. Dubuque 7. Iowa City 8. Sioux City 9. Waterloo

The IPRC hired two temporary part-time surveyors and trained them in proper survey protocol. The survey was then carried out across the state during the months of July through September, 2021. All observations were of children and youth from birth through age seventeen and accompanying adult or teen (aged 16 or 17) drivers.

Results

Observations were attempted with a total of 2,059 drivers, of which 1,974 (95.9%) drivers agreed to participate. These 1,974 drivers were carrying a total of 2,976 children. The breakdown of missing and/or incomplete data (due to surveyor error or refusal) is as follows:

- 86 (2.8%) observations were missing child age
- 94 (3.0%) observations were missing Seating Position (Front or Back) values
- 93 (3.0%) observations were missing Driver Age values
- 100 (3.2%) observations were missing Restraint Use by Child/Passenger values
- 75 (2.4%) observations were missing Driver Belted values
- 95 (3.0%) observations were missing Vehicle Type value.

The observable values of those who refused to give their age or child’s ages were still collected (e.g., restraint use, seating position) when possible, given they have historically been more likely to have unrestrained children/passengers. The following results include these observable values in the totals otherwise the missing data or refusals are noted with each table. Table 2 lists the number of infants (< 2 yr.), toddlers (2-5 yrs.), youth (6-13 yrs.), and teens (14-17) included in the survey.

Table 2. Number of Children Observed by Age

Age	Number of Children Observed / Percent
< 2	160 / 5.4%
2-5	1,085 / 36.5%
6-13	1,618 / 54.4%
14-17	112 / 3.8%
Total	2,976* / 100%

**86 missing data on age not included*

Table 3 identifies the number of restrained versus unrestrained passengers in each age range (regardless of whether the type of restraint use was appropriate for the child’s age). In 2021, 100% of children observed under age 6 were restrained by some means. From this information, it is clear that lowans understand the importance of securing infants in child safety seats, with 100% of children age one year or younger being properly restrained. While the majority of children are being restrained in motor vehicles, as the child’s age increases, they are less likely to be restrained. All (100%) toddlers (2-5), 94.4% of youth (6-13), and 88.4% of teens (14-17) were restrained. Overall, 96.5% of all children observed were restrained; an increase of 2.5% from the 2020 survey total of 94%.

Table 3. Restraint Use by Child's Age

Age	Not Restrained Number / Percent	Restrained Number / Percent	Total
< 2	0 / 0.0%	160 / 100%	160
2-5	0 / 0.0%	1,078 / 100%	1,078
6-13	90 / 5.6%	1,524 / 94.4%	1,614
14-17	13 / 11.0%	95 / 89.0%	108
Total	103 / 3.5%	2,857 / 96.5%	2,960*

**101 missing data*

The numbers contained in Table 3 for each age group represent children who were restrained by any means including a seatbelt alone, which for infants and toddlers is neither safe nor legal under Iowa's Child Passenger Safety law. Table 4 displays type of restraint use by age of the child. Of the 1,078 toddlers observed, 198 (18.4%) were restrained only by a seatbelt, which is an increase from 2020 (2.9%). This increase in improper toddler restraint is troubling. **If Iowa's statewide restraint use is re-calculated without including the improperly restrained children, the statewide average drops from 96.5% to 89.8%.**

Table 4. Type of Restraint Use by Child's Age

Age	Child Safety Seat with Seatbelt	Booster Seat with Seatbelt	Seatbelt only	Not Restrained	Total
< 2	160 / 100%	0 / 0%	0 / 0.0%	0 / 0.0%	160
2-5	574 / 53.3%	306 / 28.4%	198 / 18.4%	0 / 0.0%	1,078
6-13	4 / 0.3%	63 / 3.9%	1,457 / 90.3%	90 / 5.6%	1,614
14-17	0 / 0.0%	0 / 0.0%	95 / 88.0%	13 / 12.0%	108
Total	738 / 24.9%	369 / 12.5%	1,750 / 59.1%	103 / 3.5%	2,960*

**101 missing data*

The trend in previous observational surveys of restraint use in Iowa has been that persons in the metropolitan areas restrain their children at a higher rate than those in the rural communities. As displayed in Table 5, this was not the case in the 2021 survey, rather, a variety of usage rates was seen in the community groups. Table 5 displays rates of proper restraint compared with rates of restraint by any means and rates of no restraint. Note that "properly restrained" means observing proper use of a child safety seat secured by the vehicle's seat belt. More technical measures of correct restraint use typically checked in a child seat clinic, e.g., belt tightness, were not evaluated. In the most rural communities (1,000-2,499) 97.3% of the children were restrained by some means compared to 96.9% in the urban areas. The previously observed trend does hold true, however, when comparing rates of proper (i.e., legal) restraint by community size. Although the 2021 disparity is not as drastic as past years, rates of properly restrained children are lower in rural communities (89.6%) than in urban areas (89.9%).

Table 5. Restraint Use by Community Size

Community Size	Number / % Restrained (by any means)	Number / % Restrained Properly*	Number / % Not Restrained	Total
1,000-2,499	534 / 97.3%	492 / 89.6%	15 / 2.7%	549
2,500-9,999	624 / 96.6%	583 / 90.2%	22 / 3.4%	646
10,000-49,999	636 / 95.2%	598 / 89.5%	32 / 4.8%	668
≥ 50,000	1,063 / 96.9%	986 / 89.9%	34 / 3.1%	1,097
Total	2,857 / 96.5%	2,659 / 89.8%	103 / 3.5%	2,960**

* Properly means in compliance with Iowa law.

**101 missing data

Table 6 displays type of restraint use type by size of the community. This table includes information of observations where age information was not available (one additional observation). As mentioned earlier, the rate of unrestrained children by community size is inconsistent with past years. Between 2018 and 2020, the smallest communities (1,000-2,499) had the highest rate of unrestrained children among all community sizes; whereas in 2021, the smallest communities had the lowest rate of unrestrained children (2.7%).

Table 6. Type of Restraint Use by Community Size

Community Size	Child Safety Seat with Seatbelt	Booster Seat with Seatbelt	Seatbelt only	Not Restrained	Total
1,000-2,499	142 / 25.9%	72 / 13.1%	320 / 58.3%	15 / 2.7%	549
2,500-9,999	133 / 20.6%	84 / 13.0%	407 / 63.0%	22 / 3.4%	646
10,000-49,999	165 / 24.7%	60 / 9.0%	411 / 61.4%	33 / 4.9%	669
≥ 50,000	298 / 27.2%	153 / 14.0%	612 / 55.8%	34 / 3.1%	1,097
Total	738 / 24.9%	369 / 12.5%	1,750 / 59.1%	104 / 3.5%	2,961*

*100 missing data

Information on the number of children by age and restraint use observed at each individual location can be found in Table 7 including the number of toddlers restrained by only a seatbelt. Table 8 presents the restraint use by age as percentages for each location. Table 8 includes the percentage of children restrained by any means and also those children who are restrained in compliance with Iowa’s law for each survey location. Table 9 lists the percentage of children properly restrained sorted by community size, ranging from 72.9% to 100%.

Table 7. Restraint Use by Child Age and Survey Location, 2021

	Total Kids	Age < 2				Age 2 - 5				Age 6-13				Age 14-17			
		CSS	Booster	Belt	None	CSS	Booster	Belt Only	None	CSS	Booster	Belt Only	None	CSS	Booster	Belt Only	None
Algona	74	1	0	0	0	9	3	4	0	2	6	47	0	0	0	2	0
Ames	98	6	0	0	0	18	2	4	0	0	1	61	0	0	0	5	1
Belle Plaine	50	4	0	0	0	12	8	2	0	0	1	23	0	0	0	0	0
Cedar Rapids	125	11	0	0	0	40	27	6	0	0	8	33	0	0	0	0	0
Cherokee	72	1	0	0	0	5	1	0	0	0	2	51	5	0	0	5	2
Clinton	100	8	0	0	0	17	9	17	0	0	0	46	0	0	0	3	0
Corydon	50	0	0	0	0	12	2	0	0	0	0	35	0	0	0	1	0
Council Bluffs	125	5	0	0	0	18	7	4	0	0	3	64	17	0	0	4	3
Davenport	125	10	0	0	0	20	21	13	0	0	0	54	0	0	0	7	0
Des Moines	125	5	0	0	0	28	7	0	0	1	3	63	11	0	0	5	2
Dubuque	124	4	0	0	0	17	18	16	0	0	0	62	0	0	0	7	0
Fort Dodge	99	6	0	0	0	10	9	0	0	0	5	50	9	0	0	10	0
Guthrie Center	50	2	0	0	0	7	4	1	0	0	1	29	6	0	0	0	0
Guttenberg	50	2	0	0	0	14	3	10	0	0	0	21	0	0	0	0	0
Hawarden	75	4	0	0	0	6	6	2	0	0	1	46	4	0	0	6	0
Holstein	49	4	0	0	0	7	0	2	0	0	2	25	2	0	0	6	1
Iowa City	125	9	0	0	0	43	20	9	0	0	8	35	0	0	0	1	0
Jefferson	75	4	0	0	0	8	6	2	0	0	1	42	2	0	0	10	0
LaPorte City	50	4	0	0	0	10	12	6	0	0	1	16	0	0	0	1	0
Manchester	75	4	0	0	0	12	5	11	0	0	0	40	0	0	0	3	0
Marshalltown	99	7	0	0	0	22	2	2	0	1	0	64	0	0	0	1	0
Mason City	100	7	0	0	0	18	7	2	0	0	1	58	4	0	0	1	2
Mount Ayr	50	2	0	0	0	7	5	1	0	0	1	34	0	0	0	0	0
Mount Pleasant	75	4	0	0	0	20	18	7	0	0	1	24	0	0	0	1	0
Newton	70	0	0	0	0	8	2	4	0	0	0	40	13	0	0	1	2
Northwood	50	4	0	0	0	13	1	0	0	0	1	25	6	0	0	0	0
Ottumwa	100	5	0	0	0	25	10	13	0	0	0	43	0	0	0	4	0
Pocahontas	50	2	0	0	0	9	3	5	0	0	3	28	0	0	0	0	0
Red Oak	75	5	0	0	0	15	3	3	0	0	2	38	9	0	0	0	0
Sioux City	125	4	0	0	0	20	6	10	0	0	1	84	0	0	0	0	0
Spencer	100	6	0	0	0	25	7	0	0	0	8	47	2	0	0	5	0
Sumner	50	3	0	0	0	12	8	9	0	0	1	16	0	0	0	1	0
Wapello	50	1	0	0	0	14	10	4	0	0	0	20	0	0	0	1	0
Waterloo	125	8	0	0	0	31	21	15	0	0	0	47	0	0	0	3	0
Waverly	75	5	0	0	0	12	19	10	0	0	1	28	0	0	0	0	0
Wellman	50	3	0	0	0	10	14	4	0	0	0	18	0	0	0	1	0
TOTAL	2960	160	0	0	0	574	306	198	0	4	63	1457	90	0	0	95	13

Table 8. Percent Restraint Use by Child Age and Survey Location, 2021

	% All Kids Properly Restrained	% All kids Restrained (Inc. 2-5yrs in belt only)	% < 2 Properly Restrained	% 2-5 Properly Restrained	% 6-13 Restrained	% 14-17 Restrained
Algona	94.6%	100%	100%	75.0%	100%	100%
Ames	94.9%	99.0%	100%	83.3%	100%	83.3%
Belle Plaine	96.0%	100%	100%	90.9%	100%	n/a
Cedar Rapids	95.2%	100%	100%	91.8%	100%	n/a
Cherokee	90.3%	90.3%	100%	100%	91.4%	71.4%
Clinton	83.0%	100%	100%	60.5%	100%	100%
Corydon	100%	100%	n/a	100%	100%	100%
Council Bluffs	80.8%	84.0%	100%	86.2%	79.8%	57.1%
Davenport	89.6%	100%	100%	75.9%	100%	100%
Des Moines	89.6%	89.6%	100%	100%	85.9%	71.4%
Dubuque	87.1%	100%	100%	68.6%	100%	100%
Fort Dodge	90.9%	90.9%	100%	100%	85.9%	100%
Guthrie Center	86.0%	88.0%	100%	91.7%	83.3%	n/a
Guttenberg	80.0%	100%	100%	63.0%	100%	n/a
Hawarden	92.0%	94.7%	100%	85.7%	92.2%	100.0%
Holstein	89.8%	93.9%	100%	77.8%	93.1%	85.7%
Iowa City	92.8%	100%	100%	87.5%	100%	100%
Jefferson	94.7%	97.3%	100%	87.5%	95.6%	100%
LaPorte City	88.0%	100%	100%	78.6%	100%	100%
Manchester	85.3%	100%	100%	60.7%	100%	100%
Marshalltown	98.0%	100%	100%	92.3%	100%	100%
Mason City	92.0%	94.0%	100%	92.6%	93.7%	33.3%
Mount Ayr	98.0%	100%	100%	92.3%	100%	n/a
Mount Pleasant	90.7%	100%	100%	84.4%	100%	100%
Newton	72.9%	78.6%	n/a	71.4%	75.5%	33.3%
Northwood	88.0%	88.0%	100%	100%	81.3%	n/a
Ottumwa	87.0%	100%	100%	72.9%	100%	100%
Pocahontas	90.0%	100%	100%	70.6%	100%	n/a
Red Oak	84.0%	88.0%	100%	85.7%	81.6%	n/a
Sioux City	92.0%	100%	100%	72.2%	100%	n/a
Spencer	98.0%	98.0%	100%	100%	96.5%	100%
Sumner	82.0%	100%	100%	69.0%	100%	100%
Wapello	92.0%	100%	100%	85.7%	100%	100%
Waterloo	88.0%	100%	100%	77.6%	100%	100%
Waverly	86.7%	100%	100%	75.6%	100%	n/a
Wellman	92.0%	100%	100%	85.7%	100%	100%

Table 9. Percent of Children Properly Restrained by Community Size, 2021

Communities 1,000 - 2,499	Guttenberg	80.0%
	Sumner	82.0%
	LaPorte City	88.0%
	Corydon	100%
	Pocahontas	90.0%
	Wapello	92.0%
	Guthrie Center	86.0%
	Wellman	92.0%
	Northwood	88.0%
	Mount Ayr	98.0%
Communities 2,500 - 9,999	Holstein	89.8%
	Waverly	86.7%
	Belle Plaine	96.0%
	Algona	94.6%
	Cherokee	90.3%
	Jefferson	94.7%
	Manchester	85.3%
	Red Oak	84.0%
Communities 10,000 - 49,999	Mount Pleasant	90.7%
	Hawarden	92.0%
	Spencer	98.0%
	Clinton	83.0%
	Newton	72.9%
	Fort Dodge	90.9%
	Mason City	92.0%
	Marshalltown	98.0%
Communities 50,000+	Ottumwa	87.0%
	Dubuque	87.1%
	Des Moines	89.6%
	Council Bluffs	80.8%
	Ames	94.9%
	Sioux City	92.0%
	Iowa City	92.8%
	Davenport	89.6%
Cedar Rapids	95.2%	
	Waterloo	88.0%

The survey also collected information on child placement within the vehicle—front seat vs. back seat. Safety experts strongly recommend placing all children in the rear seat regardless of their age. Table 10 displays the number and percentage of children in each location by type of restraint use. Overall, 87.2% of all children and youth were observed in the back seat. Almost all the children in child safety seats (99.6%) and booster seats (99.2%) were placed in the backseat. However, of those restrained only by a seatbelt the percentages were slightly more equally distributed between the front (21.2%) and back (78.8%). Unrestrained children were mainly in the back (96.2%), compared to the front (3.8%).

Table 10. Type of Restraint Use by Location in the Vehicle, 2021

Restraint Type	Front Seat	Back Seat	Total
Child Safety Seat with Seatbelt	3 / 0.4%	732 / 99.6%	735
Booster Seat with Seatbelt	3 / 0.8%	366 / 99.2%	369
Seatbelt only	369 / 21.2%	1,376 / 78.8%	1,745
Not Restrained	4 / 3.8%	100 / 96.2%	104
Total	379 / 12.8%	2,574 / 87.2%	2,953*

**108 missing data*

The surveyors also noted whether the motor vehicle drivers were wearing their seat belts. 99.8% of the drivers observed were wearing a seat belt, an increase from 2020 (90.2%). Tables 11 and 12 list observed driver seat belt use for community size and for each community, respectively. While it does not have a major impact, it should be noted that due to a data collection error, some communities had each child passenger listed with a separate vehicle, even if more than one child passenger was in the same vehicle.

Table 11. Driver Seat Belt Use by Community Size, 2021

Community Size	Driver Belted	Driver Not Belted	Total
1,000-2,499	547 / 100%	0 / 0%	547
2,500-9,999	652 / 100%	0 / 0%	652
10,000-49,999	662 / 98.9%	7 / 1.1%	669
≥ 50,000	1,100 / 100%	0 / 0%	1,100
Total	2,968 / 99.8%	7 / 0.2%	2,968*

**93 missing data*

Table 12. Driver Seat Belt Use, 2021

	Total Drivers Observed	Number Drivers Belted	% Drivers Belted	Number Drivers Not Belted	% Drivers Not belted
Algona	77	77	100	0	0
Ames	99	99	100	0	0
Belle Plaine	50	50	100	0	0
Cedar Rapids	125	125	100	0	0
Cherokee	75	75	100	0	0
Clinton	100	100	100	0	0
Corydon	47	47	100	0	0
Council Bluffs	125	125	100	0	0
Davenport	125	125	100	0	0
Des Moines	125	125	100	0	0
Dubuque	125	125	100	0	0
Fort Dodge	96	89	92.7	7	7.3
Guthrie Center	50	50	100	0	0
Guttenberg	50	50	100	0	0
Hawarden	75	75	100	0	0
Holstein	50	50	100	0	0
Iowa City	125	125	100	0	0
Jefferson	75	75	100	0	0
LaPorte City	50	50	100	0	0
Manchester	75	75	100	0	0
Marshalltown	100	100	100	0	0
Mason City	101	101	100	0	0
Mount Ayr	49	49	100	0	0
Mount Pleasant	75	75	100	0	0
Newton	71	71	100	0	0
Northwood	50	50	100	0	0
Ottumwa	100	100	100	0	0
Pocahontas	50	50	100	0	0
Red Oak	75	75	100	0	0
Sioux City	126	126	100	0	0
Spencer	101	101	100	0	0
Sumner	51	51	100	0	0
Wapello	50	50	100	0	0
Waterloo	125	125	100	0	0
Waverly	75	75	100	0	0
Wellman	50	50	100	0	0
TOTAL	2968	2961	99.8	7	0.2

Conclusions

Results from the 2021 survey indicate that the majority of lowans understand the importance of restraining their children. This is especially true for infants with 100% being restrained in child safety seats. Among children aged 5 and under, 0% were observed to be not restrained by any means. This finding is a decrease from the 2020 results (1.3%). Drivers were also restrained at a rate of 99.8% in 2021, an increase from 92.2% in 2020.

The results also revealed there are still several areas with room for improvement. It remains pertinent that lowans be informed on the importance of using booster seats, child safety seats, and what type of restraint their child needs in accordance with Iowa law. Although the 2021 results showed an increase in restraint use overall, there was a large increase in improperly restrained children. For instance, toddlers restrained with only a seatbelt went from 3.5% in 2020 to 18.4% in 2021. Much of this increase came from observations of toddlers in daycare vans in which they were belted only, instead of being in boosters. Overall, 89.8% of all children observed were properly restrained, a decrease from 93.0% in the 2020 survey.

In contrast with past years, the 2021 survey results do not indicate lower rates of restraint use in the more rural communities. Restraint use by any means among all children was highest (97.3%) in the smallest communities (1,000-2,499), compared with all other community sizes. In past years, lower rates of restraint use were observed for both child passengers and drivers as the size of the community decreased. In 2021, the lowest level of restraint use (95.2%) was observed in communities with a population between 10,000 and 49,999. However, this year may be an anomaly, given trends over the previous four years all show lower restraint use as community size decreases.

The survey also collects information on child placement within the vehicle—front seat vs. back seat. Safety experts strongly recommend placing all children in the rear seat regardless of their age. Overall, 87.2% of all children and youth were observed in the back seat. Almost all the children in child safety seats (99.6%) and booster seats (99.2%) were placed in the back seat, while 78.8% of those restrained only with a seat belt were secured in the back seat. Of the passengers riding unrestrained, the percentage riding in the front seat decreased from 50.3% in 2020 to 3.8% in 2021. Although these results are encouraging, there is a continued need to reach out to teens on the importance of restraint use in all seating positions within a vehicle.

The 2021 Iowa Child Passenger Restraint Survey was successfully completed and will continue to provide valuable comparison information for years to come.

Additional detailed analyses were conducted this year using data from the last 14 years of this survey. Results have been published in two papers that are In Press:

Hamann C, Missikpode C, Peek-Asa C (In Press). Trends in youth passenger restraint use by rurality and age, 2006-2019, Traffic Injury Prevention.

Missikpode C, Hamann CJ, Peek-Asa C (In Press). Association between driver and child passenger restraint: Analysis of community-based observational survey data from 2005 to 2019, Journal of Safety Research, <https://doi.org/10.1016/j.jsr.2021.08.016>

Key takeaways and implications from these papers included the following:

Key Takeaways

- Unbelted drivers are more likely to have unbelted passengers, especially when the driver is a teenager (16 or 17)
- Rural areas have lower child restraint use
- Restraint use decreases as child age increases
- Restraint use increased across all age groups over the 14-year study period with the largest gains in the oldest ages (though they had the most opportunity for improvement)

Implications

- Efforts to increase belt use among drivers may lead to increases in child passenger restraint
- Targeted efforts to increase restraint use in rural areas and among older children may have the greatest impact on overall occupant protection

Appendix B contains a five-year comparison of the 2017 through 2021 survey results.

Appendix A

Iowa's 2021 Child Passenger Safety Survey Project Personnel

Conducted by the University of Iowa Injury Prevention Research Center
Under contract to Iowa Governor's Traffic Safety Bureau

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Appendix B

Comparison of 2017 - 2021 Iowa Child Passenger Safety Survey Results

The following Tables allow for comparison between the 2017-2021 child passenger safety survey results.

Comparison Tables

1. Number of Children Observed by Age
2. Restraint Use by Child's Age
3. Type of Restraint Use by Child's Age
4. Restraint Use by Community Size
5. Type of Restraint Use by Community Size
6. Restraint Use by Child's Age by Survey Location
7. Type of Restraint Use by Location in the Vehicle
8. Driver Seat Belt Use by Community Size
9. Driver Seat Belt Use by Survey Location

**Comparison Table 1
Number of Children Observed by Age**

Age	2017	2018	2019	2020	2021
< 2	228 / 7.4%	204 / 6.9%	200 / 6.5%	157 / 6.7%	160 / 5.4%
2-5	843 / 27.4%	763 / 25.6%	834 / 27.0%	595 / 25.5%	1085 / 36.5%
6-13	1,403 / 45.7%	145 / 48.5%	1,501 / 48.6%	1,154 / 49.5%	1,618 / 54.4%
14-17	600 / 19.5%	568 / 19.1%	556 / 18.0%	426 / 18.3%	112 / 3.8%
Total	3,074 / 100%	2,980 / 100%	3,091 / 100%	2,404 / 100%	2,975 / 100%

**Comparison Table 2
Restraint Use by Child's Age**

% Not Restrained						% Restrained					
Age	2017	2018	2019	2020	2021	Age	2017	2018	2019	2020	2021
< 2	0.07%	0.0%	1.0%	0.0%	0.0%	< 2	99.9%	100%	99.0%	100%	100%
2-5	2.1%	1.3%	2.2%	1.3%	0.0%	2-5	97.9%	98.7%	97.8%	98.7%	100%
6-13	5.8%	3.3%	3.5%	6.2%	5.6%	6-13	94.2%	96.7%	96.5%	93.9%	94.4%
14-17	11.2%	4.9%	7.7%	14.6%	12.0%	14-17	88.8%	95.1%	92.3%	85.5%	88.0%
Total	5.5%	2.9%	3.7%	6.1%	3.5%	Total	94.5%	97.1%	96.3%	94.0%	96.5%

**Comparison Table 3
Type of Restraint Use by Child's Age**

Child Safety Seat with Seatbelt						Booster Seat with Seatbelt					
Age	2017	2018	2019	2020	2021	Age	2017	2018	2019	2020	2021
< 2	98.7%	98.5%	99.0%	99.4%	100%	< 2	0.4%	1.0%	0.0%	0.0%	0.0%
2-5	55.8%	58.7%	58.0%	58.4%	53.3%	2-5	38.0%	33.8%	34.5%	36.7%	28.4%
6-13	1.1%	1.0%	1.9%	2.3%	0.3%	6-13	21.7%	20.8%	18.5%	21.4%	3.9%
14-17	0.0%	0.0%	0.0%	0.0%	0.0%	14-17	0.3%	0.2%	0.2%	0.2%	0.0%
Total	23.1%	22.3%	23.0%	22.8%	24.9%	Total	20.4%	18.8%	18.3%	20.0%	12.5%

Seatbelt Only						Not Restrained					
Age	2017	2018	2019	2020	2021	Age	2017	2018	2019	2020	2021
< 2	0.0%	0.5%	0.0%	0.6%	0.0%	< 2	0.9%	0.0%	1.0%	0.0%	0.0%
2-5	4.1%	6.2%	5.3%	3.5%	18.4%	2-5	2.1%	1.3%	2.2%	1.4%	0.0%
6-13	71.4%	75.0%	76.2%	70.1%	90.3%	6-13	5.8%	3.3%	3.5%	6.2%	5.6%
14-17	88.5%	94.9%	92.1%	85.2%	88.0%	14-17	11.2%	4.9%	7.7%	14.6%	12.0%
Total	51.0%	56.1%	55.0%	51.1%	59.1%	Total	5.5%	2.9%	3.7%	6.1%	3.5%

**Comparison Table 4
Restraint Use by Community Size**

Community Size	Percent Restrained (by any means)					Percent Restrained Properly*					Percent Not Restrained				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
1,000-2,499	92.6%	93.3%	92.2%	88.8%	97.3%	91.5%	90.4%	89.7%	88.0%	89.6%	7.4%	6.7%	7.8%	11.2%	2.7%
2,500-9,999	92.3%	98.2%	95.6%	93.0%	96.6%	91.0%	97.1%	94.7%	91.7%	90.2%	7.7%	1.8%	4.4%	7.0%	3.4%
10,000-49,999	93.6%	96.0%	95.9%	95.8%	95.2%	92.1%	94.4%	94.4%	94.0%	89.5%	6.4%	4.0%	4.1%	4.2%	4.8%
≥ 50,000	97.4%	99.0%	98.9%	96.9%	96.9%	96.5%	97.5%	97.7%	96.5%	89.9%	2.6%	1.0%	1.1%	3.2%	3.1%
Total	94.5%	97.1%	96.3%	93.9%	96.5%	93.4%	95.4%	94.9%	93.0%	89.8%	5.5%	2.9%	3.7%	6.1%	3.5%

*Properly means in compliance with Iowa law.

**Comparison Table 5
Type of Restraint Use by Community Size**

Community Size	Child Safety Seat with Seatbelt					Booster Seat with Seatbelt				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
1,000-2,499	18.9%	19.0%	18.4%	17.3%	25.9%	19.5%	16.1%	15.9%	18.2%	13.1%
2,500-9,999	22.9%	24.3%	23.4%	24.6%	20.6%	20.6%	18.8%	17.0%	18.9%	13.0%
10,000-49,999	19.7%	18.6%	23.2%	21.7%	24.7%	21.2%	19.7%	19.6%	21.9%	9.0%
≥ 50,000	27.4%	23.9%	24.4%	25.6%	27.2%	20.3%	19.4%	19.5%	20.0%	14.0%
Total	23.1%	21.9%	22.9%	22.7%	24.9%	20.4%	18.7%	18.3%	19.7%	12.5%

Community Size	Seatbelt only					Not Restrained				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
1,000-2,499	54.2%	56.9%	57.9%	53.4%	58.3%	7.4%	8.0%	7.8%	11.2%	2.7%
2,500-9,999	48.8%	55.1%	54.8%	48.6%	63.0%	7.7%	1.9%	4.8%	8.0%	3.4%
10,000-49,999	52.7%	57.3%	52.3%	79.8%	61.4%	6.4%	4.4%	4.9%	6.7%	4.9%
≥ 50,000	49.7%	55.5%	54.9%	50.7%	55.8%	2.6%	1.2%	1.1%	3.7%	3.1%
Total	51.0%	56.1%	54.8%	50.7%	59.1%	5.5%	3.3%	4.0%	7.0%	3.5%

**Comparison Table 6
Restraint Use by Child Age and Survey Location**

	Percent Age < 2 Properly* Restrained					Percent Age 2-5 Properly* Restrained				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Algona	100%	100%	100%	100%	100%	95.9%	95.0%	95.8%	95.8%	75.0%
Ames	90.9%	100%	100%	100%	100%	100%	95.1%	91.7%	100%	83.3%
Belle Plaine	100%	100%	100%	100%	100%	84.6%	93.3%	94.7%	100%	90.9%
Cedar Rapids	100%	100%	100%	100%	100%	96.3%	83.3%	90.9%	92.3%	91.8%
Cherokee	100%	100%	100%	100%	100%	100%	95.5%	92.0%	95.7%	100%
Clinton	100%	100%	100%	100%	100%	88.5%	85.7%	96.2%	85.7%	60.5%
Corydon	100%	100%	100%	100%	n/a	100%	91.7%	100%	100%	100%
Council Bluffs	100%	100%	100%	100%	100%	94.3%	100%	94.9%	100%	86.2%
Davenport	100%	75.0%	100%	100%	100%	88.9%	100%	69.7%	90%	75.9%
Des Moines	100%	100%	100%	100%	100%	100%	97.3%	100%	100%	100%
Dubuque	100%	100%	100%	100%	100%	93.0%	87.5%	100%	100%	68.6%
Fort Dodge	100%	100%	100%	100%	100%	96.6%	87.0%	100%	95.7%	100%
Guthrie Center	100%	100%	100%	100%	100%	100%	100%	100%	100%	91.7%
Guttenberg	100%	100%	100%	100%	100%	100%	82.4%	100%	100%	63.0%
Hawarden	100%	100%	100%	100%	100%	94.7%	100%	93.8%	88.2%	85.7%
Holstein	100%	100%	100%	100%	100%	92.3%	100%	100%	100%	77.8%
Iowa City	100%	100%	100%	100%	100%	98.2%	98.1%	96.8%	100%	87.5%
Jefferson	90.0%	100%	100%	100%	100%	100%	100%	100%	90.9%	87.5%
LaPorte City	100%	100%	100%	100%	100%	100%	75.0%	60.0%	75%	78.6%
Manchester	100%	100%	100%	100%	100%	93.1%	94.1%	87.5%	100%	60.7%
Marshalltown	100%	100%	66.7%	100%	100%	89.3%	96.8%	86.2%	83.3%	92.3%
Mason City	100%	100%	100%	100%	100%	96.8%	100%	96.2%	92.9%	92.6%
Mount Ayr	100%	100%	100%	100%	100%	100%	100%	72.7%	66.7%	92.3%
Mt. Pleasant	100%	100%	100%	100%	100%	80.8%	90.6%	89.5%	100%	84.4%
Newton	100%	88.9%	100%	100%	n/a	92.6%	87.5%	100%	93.8%	71.4%
Northwood	83.3%	100%	100%	100%	100%	85.7%	100%	78.6%	90.9%	100%
Ottumwa	100%	100%	100%	100%	100%	70.4%	77.8%	75.0%	96.2%	72.9%
Pocahontas	100%	100%	100%	100%	100%	100%	100%	95.7%	100%	70.6%
Red Oak	100%	100%	100%	100%	100%	100%	94.4%	95.0%	88.9%	85.7%
Sioux City	100%	100%	100%	100%	100%	96.3%	96.4%	100%	97.2%	72.2%
Spencer	100%	100%	100%	100%	100%	100%	96.2%	93.3%	100%	100%
Sumner	100%	100%	100%	100%	100%	100%	87.5%	83.3%	100%	69.0%
Wapello	100%	100%	100%	100%	100%	70.0%	68.8%	84.6%	100%	85.7%
Waterloo	100%	100%	100%	100%	100%	92.3%	81.8%	97.4%	97.3%	77.6%
Waverly	100%	100%	100%	100%	100%	94.7%	94.7%	100%	100%	75.6%
Wellman	100%	100%	100%	100%	100%	86.7%	78.6%	66.7%	100%	85.7%

*Properly refers to in compliance with Iowa law.

Comparison Table 6 (continued)
Restraint Use by Child Age and Survey Location

	Percent Age 6-13 Restrained					Percent Age 14-17 Restrained				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Algona	88.9%	89.2%	93.9%	93.9%	100%	84.6%	100%	76.9%	76.9%	100%
Ames	100%	97.9%	100%	95.1%	100%	88.5%	100%	100%	94.1%	83.3%
Belle Plaine	97.8%	100%	97.4%	100%	100%	77.8%	100%	100%	75.0%	n/a
Cedar Rapids	100%	98.2%	97.1%	96.2%	100%	88.9%	100%	100%	90.9%	n/a
Cherokee	100%	100%	97.0%	96.8%	91.4%	92.3%	87.5%	75.0%	90.9%	71.4%
Clinton	93.8%	98.1%	100%	88.9%	100%	100%	100%	100%	100%	100%
Corydon	84.0%	85.7%	84.4%	76.2%	100%	57.1%	58.3%	80.0%	73.3%	100%
Council Bluffs	100%	100%	96.1%	96.8%	79.8%	94.4%	95.7%	100%	100%	57.1%
Davenport	100%	100%	100%	97.8%	100%	88.5%	100%	100%	100%	100%
Des Moines	100%	97.9%	98.3%	96.2%	85.9%	90.9%	91.3%	93.8%	81.8%	71.4%
Dubuque	94.3%	97.4%	98.4%	98.4%	100%	100%	100%	100%	95.5%	100%
Fort Dodge	94.4%	97.8%	97.7%	96.0%	85.9%	90.9%	94.4%	100%	100%	100%
Guthrie Center	84.6%	89.5%	93.3%	92.3%	83.3%	92.3%	86.7%	81.3%	42.9%	n/a
Guttenberg	92.6%	100%	100%	100%	100%	80.0%	100%	100%	100%	n/a
Hawarden	70.6%	91.4%	86.5%	84.2%	92.2%	66.7%	100%	81.3%	43.8%	100.0%
Holstein	91.3%	100%	92.3%	100%	93.1%	90.0%	100%	60%	69.2%	85.7%
Iowa City	100%	100%	100%	76.9%	100%	100%	100%	100%	100%	100%
Jefferson	90.2%	100%	97.4%	100%	95.6%	54.5%	100%	54.6%	62.5%	100%
LaPorte City	100%	96.2%	100%	100%	100%	91.7%	100%	85.7%	87.5%	100%
Manchester	100%	100%	100%	100%	100%	100%	100%	100%	90.1%	100%
Marshalltown	95.7%	96.7%	83.0%	100%	100%	95.2%	85.0%	83.3%	66.7%	100%
Mason City	97.5%	94.0%	97.7%	96.6%	93.7%	77.8%	92.0%	95.5%	87.5%	33.3%
Mount Ayr	82.6%	79.3%	90.0%	77.8%	100%	66.7%	80.0%	73.3%	100%	n/a
Mt. Pleasant	95.7%	100%	100%	100%	100%	100%	100%	100%	84.2%	100%
Newton	97.3%	97.5%	87.0%	92.0%	75.5%	83.3%	90.9%	94.1%	87.5%	33.3%
Northwood	88.2%	82.6%	82.6%	85.2%	81.3%	61.5%	78.6%	66.7%	80.0%	n/a
Ottumwa	81.0%	90.4%	100%	94.5%	100%	82.8%	92.3%	100%	90.9%	100%
Pocahontas	66.7%	100%	84.6%	73.1%	100%	92.9%	84.6%	72.7%	66.7%	n/a
Red Oak	76.3%	96.7%	94.3%	96.8%	81.6%	77.8%	93.3%	100%	66.7%	n/a
Sioux City	94.9%	93.6%	100%	97.6%	100%	87.5%	100%	95.8%	89.3%	n/a
Spencer	94.7%	100%	100%	100%	96.5%	90.9%	100%	90.9%	93.3%	100%
Sumner	100%	100%	95.2%	93.1%	100%	100%	100%	100%	85.7%	100%
Wapello	92.0%	95.8%	96.6%	86.4%	100%	100%	100%	100%	92.9%	100%
Waterloo	96.2%	100%	100%	98.4%	100%	95.5%	100%	100%	88.9%	100%
Waverly	97.4%	100%	100%	97.7%	100%	100%	100%	100%	85.7%	n/a
Wellman	91.3%	87.0%	100%	83.9%	100%	100%	100%	100%	100%	100%

**Comparison Table 7
Type of Restraint Use by Location in the Vehicle**

Restraint Type	Front Seat					Back Seat				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Child Safety Seat with Seatbelt	0.8%	0.6%	1.8%	1.3%	0.4%	99.2%	99.4%	98.2%	98.7%	99.6%
Booster Seat with Seatbelt	1.1%	1.9%	1.2%	1.7%	0.8%	98.9%	98.1%	98.8%	98.3%	99.2%
Seatbelt only	51.1%	49.5%	47.9%	45.0%	21.2%	48.9%	50.5%	52.1%	55.0%	78.6%
Not Restrained	52.4%	36.6%	47.1%	50.3%	3.8%	47.6%	63.4%	52.9%	49.7%	96.2%
Total	29.3%	29.4%	28.8%	26.9%	12.8%	70.7%	70.6%	71.2%	73.1%	87.2%

**Comparison Table 8
Driver Seat Belt Use by Community Size**

Community Size	Driver Belted					Driver Not Belted				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
1,000-2,499	81.9%	89.2%	90.4%	84.4%	100%	18.1%	10.8%	9.6%	15.6%	0.0%
2,500-9,999	88.1%	94.8%	92.2%	88.1%	100%	11.9%	5.2%	7.8%	11.9%	0.0%
10,000-49,999	91.5%	93.6%	93.9%	89.7%	98.9%	8.5%	6.4%	6.1%	10.3%	1.1%
≥ 50,000	96.1%	96.5%	97.5%	95.2%	100%	3.9%	3.5%	2.5%	4.8%	0.0%
Total	90.7%	94.0%	94.1%	90.2%	99.8%	9.3%	6.0%	5.9%	9.9%	0.2%

**Comparison Table 9
Driver Seat Belt Use by Survey Location**

	Percent Drivers Belted					Percent Drivers NOT Belted				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Algona	82.4%	84.8%	84.8%	96.2%	100%	17.6%	15.2%	15.2%	3.9%	0.0%
Ames	92.0%	95.8%	100%	94.1%	100%	8.0%	4.2%	0.0%	5.9%	0.0%
Belle Plaine	91.3%	97.8%	98.0%	94.3%	100%	8.7%	2.2%	2.0%	5.71%	0.0%
Cedar Rapids	96.4%	93.9%	98.8%	95.7%	100%	3.6%	6.1%	1.2%	4.3%	0.0%
Cherokee	87.2%	91.5%	91.3%	97.7%	100%	12.8%	8.5%	8.7%	2.3%	0.0%
Clinton	97.9%	97.5%	100%	95.5%	100%	2.1%	2.5%	0.0%	4.6%	0.0%
Corydon	59.4%	77.8%	90.6%	81.3%	100%	40.6%	22.2%	9.4%	18.8%	0.0%
Council Bluffs	93.7%	94.8%	94.7%	97.8%	100%	6.3%	5.2%	5.3%	2.2%	0.0%
Davenport	94.4%	98.8%	100%	98.2%	100%	5.6%	1.2%	0.0%	1.8%	0.0%
Des Moines	96.2%	93.7%	97.1%	91.8%	100%	3.8%	6.3%	2.9%	8.2%	0.0%
Dubuque	99.2%	97.4%	98.9%	97.2%	100%	0.8%	2.6%	1.1%	2.8%	0.0%
Fort Dodge	92.4%	92.2%	98.3%	91.3%	92.7%	7.6%	7.8%	1.7%	8.7%	7.3%
Guthrie Center	77.1%	81.1%	90.3%	91.3%	100%	22.9%	18.9%	9.7%	12.9%	0.0%
Guttenberg	97.4%	97.3%	100%	100%	100%	2.6%	2.7%	0.0%	0.0%	0.0%
Hawarden	77.5%	91.1%	87.8%	80.9%	100%	22.5%	8.9%	12.2%	19.2%	0.0%
Holstein	75.9%	86.7%	87.5%	85.0%	100%	24.1%	13.3%	12.5%	15.0%	0.0%
Iowa City	100%	100%	98.4%	100%	100%	0.0%	0.0%	1.6%	0.0%	0.0%
Jefferson	83.3%	97.6%	89.1%	74.2%	100%	16.7%	2.4%	10.9%	25.8%	0.0%
LaPorte City	97.3%	94.9%	94.4%	100%	100%	2.7%	5.1%	5.6%	0.0%	0.0%
Manchester	100%	98.1%	100%	100%	100%	0.0%	1.9%	0.0%	0.0%	0.0%
Marshalltown	95.2%	89.5%	86.2%	94.3%	100%	4.8%	10.5%	13.8%	5.7%	0.0%
Mason City	92.3%	95.0%	98.4%	88.4%	100%	7.7%	5.0%	1.6%	11.6%	0.0%
Mount Ayr	61.1%	80.0%	81.8%	74.3%	100%	38.9%	20.0%	18.2%	25.7%	0.0%
Mount Pleasant	91.2%	98.0%	100%	92.5%	100%	8.8%	2.0%	0.0%	7.5%	0.0%
Newton	85.7%	88.1%	87.9%	86.1%	100%	14.3%	11.9%	12.1%	14.0%	0.0%
Northwood	68.4%	80.7%	81.5%	100%	100%	31.6%	13.4%	18.5%	0.0%	0.0%
Ottumwa	85.1%	93.1%	98.7%	97.6%	100%	14.9%	6.9%	1.3%	2.4%	0.0%
Pocahontas	80.7%	86.5%	85.2%	85.2%	100%	19.3%	13.5%	14.8%	14.8%	0.0%
Red Oak	72.0%	94.1%	94.2%	86.1%	100%	28.0%	5.9%	5.8%	14.0%	0.0%
Sioux City	92.3%	94.6%	100%	91.4%	100%	7.7%	5.4%	0.0%	8.6%	0.0%
Spencer	89.1%	98.6%	93.0%	94.7%	100%	10.9%	1.5%	7.0%	5.3%	0.0%
Sumner	100%	100%	97.1%	91.7%	100%	0.0%	0.0%	2.9%	8.3%	0.0%
Wapello	93.9%	97.4%	97.4%	89.7%	100%	6.1%	2.6%	2.6%	10.3%	0.0%
Waterloo	98.3%	100%	100%	98.3%	100%	1.7%	0.0%	0.0%	1.7%	0.0%
Waverly	98.5%	100%	100%	96.2%	100%	1.5%	0.0%	0.0%	3.9%	0.0%
Wellman	82.9%	94.7%	100%	91.2%	100%	17.1%	5.3%	0.0%	8.8%	0.0%
TOTAL	90.7%	94.0%	95.5%	92.2%	99.8%	9.3%	6.0%	4.5%	7.9%	0.2%