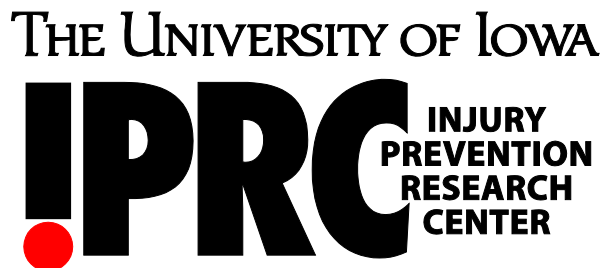


Iowa Child Passenger Safety Survey

2018

*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.

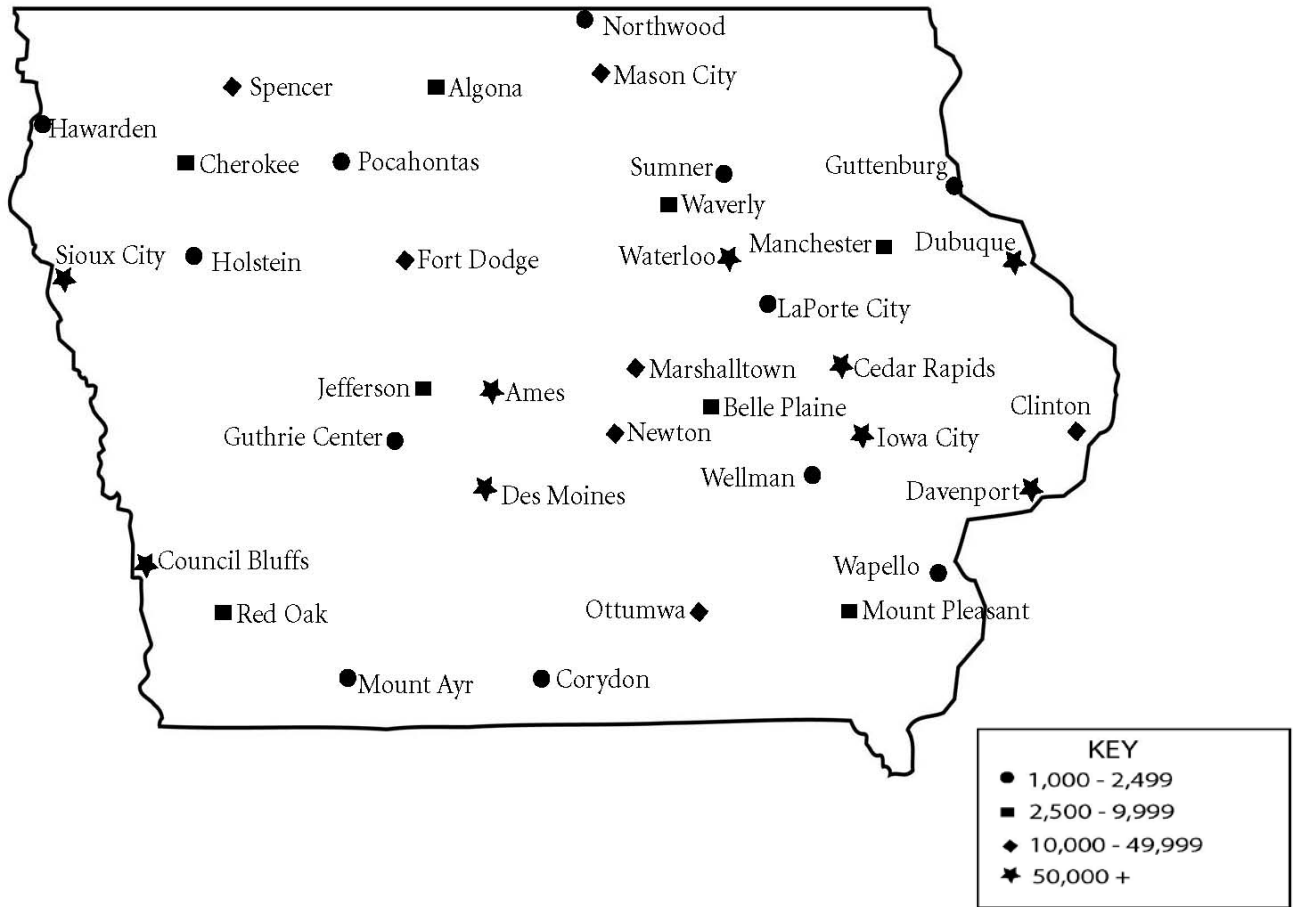


Figure 1. 2018 Iowa Child Passenger Survey Locations

Table 1. Iowa Child Passenger Restraint Survey Locations, 2018

<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 May through August, 2018. All observations were of children and youth from birth through age seventeen and accompanying adult drivers.

Results

A total of 3,055 observations were made and complete data were captured for 2,930 observations. The breakdown of missing and/or incomplete data is as follows: 75 drivers refused to provide information to the surveyor about age (including both Driver and Child/Passenger ages), 21 observations were missing Seating Position (Front or Back) values, 19 observations were missing Driver Age values, 6 observations were missing Restraint Use by Child/Passenger values, 3 observations were missing Driver Belted values, and 1 observation was 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), given they have historically been more likely to have unrestrained children/passengers. The following results include these observable values in the totals, when possible, 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	204 / 6.9%
2-5	763 / 25.6%
6-13	1445 / 48.5%
14-17	568 / 19.1%
Total	2980* / 100%

**75 refusals*

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). 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. (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.) While the majority of all children are being restrained in motor vehicles, as the child’s age increases they are less likely to be restrained (p<0.01). Ninety-eight percent of toddlers, 96% of the youth, and 95% of teens were restrained. Overall, 97.1% of all children observed were restrained; an increase of 2.6% from the 2017 survey total of 94.5%.

Table 3. Restraint Use by Child's Age

Age	Not Restrained Number / Percent	Restrained Number / Percent	Total
< 2	0 / 0.0%	204 / 100.0%	204
2-5	10 / 1.3%	753 / 98.7%	763
6-13	48 / 3.3%	1397 / 96.7%	1445
14-17	28 / 4.9%	540 / 95.1%	568
Total	86 / 2.9%	2,894 / 97.1%	2980*

**75 refusals*

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 761 toddlers observed, 47 (6.2%) were restrained only by a seatbelt, which is an increase from 2017 (4.2%). This increase in improper restraint reflects the need for Iowans to understand the importance of using booster seats. If Iowa's statewide restraint use is recalculated without including the improperly restrained children, the statewide average drops from 97.1% to 95.4%.

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	201 / 98.5%	2 / 1.0%	1 / 0.5%	0 / 0.0%	204
2-5	447 / 58.7%	257 / 33.8%	47 / 6.2%	10 / 1.3%	761
6-13	14 / 1.0%	299 / 20.8%	1080 / 75.0%	48 / 3.3%	1141
14-17	0 / 0.0%	1 / 0.2%	539 / 94.9%	28 / 4.9%	568
Total	663 / 22.3%	559 / 18.8%	1667 / 56.1%	86 / 2.9%	2974*

**81 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 remained true in the 2018 survey. In the most rural communities (1,000-2,499) 93.3% of the children were restrained by some means compared to 99.0% in the urban areas. The same relationship holds true when rates of properly (i.e., legally) restrained children are compared across small towns (90.4%) and cities (97.5%).

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	498 / 93.3%	483 / 90.4%	36 / 6.7%	534
2,500-9,999	648 / 98.2%	641 / 97.1 %	12 / 1.8%	660
10,000-49,999	650 / 96.0%	639 / 94.4 %	27 / 4.0%	677
≥ 50,000	1092 / 99.0%	1075 / 97.5 %	11 / 1.0%	1103
Total	2888 / 97.1%	2838 / 95.4%	86 / 2.9%	2974**

* Properly means in compliance with Iowa law.

**81 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 and it highlights the lack of restraint use (8%) among the smallest communities included in the survey.

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	104 / 19.0%	88 / 16.1%	312 / 57.0%	44 / 8.0%	548
2,500-9,999	163 / 24.3%	126 / 18.8%	370 / 55.1%	13 / 1.9%	672
10,000-49,999	130 / 18.6%	138 / 19.7%	401 / 57.3%	31 / 4.4%	700
≥ 50,000	270 / 23.9%	219 / 19.4%	627 / 55.6%	13 / 1.2%	1129
Total	667 / 21.9%	571 / 18.7%	1710 / 56.1%	101 / 3.3%	3049

**6 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 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 kids properly restrained sorted by community size, ranging from 81.3% to 100%.

Table 7. Restraint Use by Child Age and Survey Location, 2018

	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	4	0	0	0	7	12	0	1	0	8	25	4	0	0	13	0
Ames	122	16	0	0	0	18	21	2	0	0	18	29	1	0	0	17	0
Belle Plaine	75	3	0	0	0	12	2	1	0	0	6	38	0	0	0	13	0
Cedar Rapids	122	5	0	0	0	15	5	4	0	1	12	43	1	0	0	36	0
Cherokee	73	8	0	0	0	9	12	1	0	0	7	28	0	0	0	7	1
Clinton	100	4	0	0	0	17	1	3	0	0	12	41	0	0	0	21	0
Corydon	48	3	0	0	0	2	9	1	0	0	4	14	3	0	0	7	5
Council Bluffs	120	12	0	0	0	17	13	0	0	0	18	37	0	0	0	22	1
Davenport	126	3	0	1	0	16	7	0	0	1	15	54	0	0	0	29	0
Des Moines	120	12	0	0	0	14	22	1	0	0	10	37	1	0	0	21	2
Dubuque	125	6	0	0	0	17	4	3	0	1	14	60	2	0	0	18	0
Fort Dodge	97	10	0	0	0	9	11	0	3	0	15	30	1	0	0	17	1
Guthrie Center	49	7	0	0	0	3	5	0	0	0	6	11	2	0	0	13	2
Guttenberg	50	2	0	0	0	13	1	2	1	0	2	22	0	0	0	7	0
Hawarden	73	7	0	0	0	10	9	0	0	0	5	27	3	0	0	12	0
Holstein	45	3	1	0	0	6	4	0	0	0	4	20	0	0	0	7	0
Iowa City	128	7	0	0	0	49	4	1	0	8	21	33	0	0	0	5	0
Jefferson	73	8	0	0	0	12	10	0	0	1	8	25	0	0	0	9	0
LaPorte City	49	3	0	0	0	8	1	2	1	0	2	23	1	0	0	8	0
Manchester	75	3	0	0	0	15	1	1	0	0	5	34	0	0	0	16	0
Marshalltown	91	10	0	0	0	12	18	1	0	0	4	25	1	0	0	17	3
Mason City	97	6	0	0	0	11	5	0	0	0	20	27	3	0	0	23	2
Mount Ayr	45	4	0	0	0	2	5	0	0	0	6	17	6	0	0	4	1
Mount Pleasant	73	2	0	0	0	27	2	3	0	1	9	18	0	0	0	11	0
Newton	95	8	1	0	0	10	11	2	1	0	5	34	1	0	0	20	2
Northwood	50	2	0	0	0	2	9	0	0	0	4	15	4	0	0	11	3
Ottumwa	100	4	0	0	0	11	3	4	0	0	0	47	5	0	0	24	2
Pocahontas	49	3	0	0	0	4	8	0	0	0	5	16	0	0	0	11	2
Red Oak	70	7	0	0	0	10	7	0	1	0	9	20	1	0	1	13	1
Sioux City	115	13	0	0	0	14	13	1	0	0	14	30	3	0	0	27	0
Spencer	97	5	0	0	0	12	13	0	1	0	14	32	0	0	0	20	0
Sumner	50	1	0	0	0	11	3	2	0	0	0	18	0	0	0	15	0
Wapello	50	2	0	0	0	9	2	4	1	0	3	20	1	0	0	8	0
Waterloo	125	3	0	0	0	18	0	4	0	0	7	76	0	0	0	17	0
Waverly	74	1	0	0	0	16	2	1	0	0	5	37	0	0	0	12	0
Wellman	49	4	0	0	0	9	2	3	0	1	2	17	3	0	0	8	0
TOTAL	2974	201	2	1	0	447	257	47	10	14	299	1080	47	0	1	539	28

Table 8. Percent Restraint Use by Child Age and Survey Location, 2018

	% All Kids Properly Restrained	% All kids Restrained (Inc. 2-5yrs in belt only)	% < 2 Restrained	% 2-5 Properly Restrained	% 6-13 Restrained	% 14-17 Restrained
Algona	93.2	93.2	100	95.0	89.2	100
Ames	97.5	99.2	100	95.1	97.9	100
Belle Plaine	98.7	100	100	93.3	100	100
Cedar Rapids	95.9	99.2	100	83.3	98.2	100
Cherokee	97.3	98.6	100	95.5	100	87.5
Clinton	96.0	99.0	100	85.7	98.1	100
Corydon	81.3	83.0	100	91.7	85.7	58.3
Council Bluffs	99.2	99.2	100	100	100	95.7
Davenport	99.2	100	75.0	100	100	100
Des Moines	96.7	97.5	100	97.3	97.9	91.3
Dubuque	97.6	98.4	100	87.5	97.4	100
Fort Dodge	94.8	94.8	100	87.0	97.8	94.4
Guthrie Center	91.8	91.8	100	100	89.5	86.7
Guttenberg	94.0	98.0	100	82.4	100	100
Hawarden	95.9	95.9	100	100	91.4	100
Holstein	97.8	100	100	100	100	100
Iowa City	99.2	100	100	98.1	100	100
Jefferson	100	100	100	100	100	100
LaPorte City	91.8	95.9	100	75.0	96.2	100
Manchester	98.7	100	100	94.1	100	100
Marshalltown	94.5	95.6	100	96.8	96.7	85.0
Mason City	94.8	94.8	100	100	94.0	92.0
Mount Ayr	84.4	84.4	100	100	79.3	80.0
Mount Pleasant	95.9	100	100	90.6	100	100
Newton	92.6	95.8	88.9	87.5	97.5	90.9
Northwood	86.0	86.0	100	100	82.6	78.6
Ottumwa	89.0	93.0	100	77.8	90.4	92.3
Pocahontas	95.9	95.9	100	100	100	84.6
Red Oak	95.8	95.8	100	94.4	96.7	93.3
Sioux City	96.5	97.4	100	96.4	93.6	100
Spencer	99.0	99.0	100	96.2	100	100
Sumner	96.0	100	100	87.5	100	100
Wapello	88.0	96.0	100	68.8	95.8	100
Waterloo	96.8	100	100	81.8	100	100
Waverly	98.6	100	100	94.7	100	100
Wellman	87.8	93.9	100	78.6	87.0	100

Table 9. Proportion of Children Properly Restrained by Community Size, 2018

Communities 1,000 - 2,499	Guttenberg	94.0%
	Sumner	96.0%
	LaPorte City	91.8%
	Corydon	81.3%
	Pocahontas	95.9%
	Wapello	88.0%
	Guthrie Center	91.8%
	Wellman	87.8%
	Northwood	86.0%
	Mount Ayr	84.4%
Communities 2,500 - 9,999	Holstein	97.8%
	Waverly	98.6%
	Belle Plaine	98.7%
	Algona	93.2%
	Cherokee	97.3%
	Jefferson	100%
	Manchester	98.7%
	Red Oak	95.8%
Communities 10,000 - 49,999	Mount Pleasant	95.9%
	Hawarden	95.9%
	Spencer	99.0%
	Clinton	96.0%
	Newton	92.6%
	Fort Dodge	94.8%
	Mason City	94.8%
Communities 50,000+	Marshalltown	94.5%
	Ottumwa	89.0%
	Dubuque	97.6%
	Des Moines	96.7%
	Council Bluffs	99.2%
	Ames	97.5%
	Sioux City	96.5%
	Iowa City	99.2%
	Davenport	99.2%
	Cedar Rapids	95.9%
Waterloo	96.8%	

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, 70.6% of all children and youth were observed in the back seat. Almost all of the children in child safety seats (99.4%) and booster seats (98.1%) were placed in the backseat. However, of those restrained only by a seatbelt the percentages were much closer (50.5% back vs 49.5% front). The percentages of unrestrained were also more similar in the back (63.4%) vs. the front (36.6% front).

Table 10. Type of Restraint Use by Location in the Vehicle, 2018

Restraint Type	Front Seat	Back Seat	Total
Child Safety Seat with Seatbelt	4 / 0.6%	659 / 99.4%	663
Booster Seat with Seatbelt	11 / 1.9%	557 / 98.1%	568
Seatbelt only	839 / 49.5%	857 / 50.5%	1696
Not Restrained	37 / 36.6%	64 / 63.4%	101
Total	891 / 29.4%	2137 / 70.6%	3028*

*27 missing data

The surveyors also noted whether or not the motor vehicle drivers were wearing their seat belts. 94.0% of the drivers observed were wearing a seat belt, an increase from 2017 (90.7%). Table 11 contains driver seat belt use data by size grouping of the community. Much like the child passenger restraint use statistics, drivers in the more rural communities had lower usage rates compared to the urban areas. Table 12 lists observed driver seat belt use for each community, which ranged from a low of 77.8% to a high of 100%.

Table 11. Driver Seat Belt Use by Community Size, 2018

Community Size	Driver Belted	Driver Not Belted	Total
1,000-2,499	355 / 89.2%	43 / 10.8%	398
2,500-9,999	401 / 94.8%	22 / 5.2%	423
10,000-49,999	438 / 93.6%	30 / 6.4%	468
≥ 50,000	656 / 96.5%	24 / 3.5%	680
Total	1850 / 94.0%	119 / 6.0%	1969

Table 12. Driver Seat Belt Use, 2018

	Total Drivers Observed	Number Drivers Belted	% Drivers Belted	Number Drivers Not Belted	% Drivers Not belted
Algona	46	39	84.8	7	15.2
Ames	72	69	95.8	3	4.2
Belle Plaine	46	45	97.8	1	2.2
Cedar Rapids	82	77	93.9	5	6.1
Cherokee	47	43	91.5	4	8.5
Clinton	79	77	97.5	2	2.5
Corydon	36	28	77.8	8	22.2
Council Bluffs	77	73	94.8	4	5.2
Davenport	83	82	98.8	1	1.2
Des Moines	79	74	93.7	5	6.3
Dubuque	78	76	97.4	2	2.6
Fort Dodge	64	59	92.2	5	7.8
Guthrie Center	37	30	81.1	7	18.9
Guttenberg	37	36	97.3	1	2.7
Hawarden	45	41	91.1	4	8.9
Holstein	30	26	86.7	4	13.3
Iowa City	58	58	100.0	0	0.0
Jefferson	42	41	97.6	1	2.4
LaPorte City	39	37	94.9	2	5.1
Manchester	53	52	98.1	1	1.9
Marshalltown	57	51	89.5	6	10.5
Mason City	60	57	95.0	3	5.0
Mount Ayr	35	28	80.0	7	20.0
Mount Pleasant	49	48	98.0	1	2.0
Newton	67	59	88.1	8	11.9
Northwood	31	25	80.7	6	13.4
Ottumwa	72	67	93.1	5	6.9
Pocahontas	37	32	86.5	5	13.5
Red Oak	51	48	94.1	3	5.9
Sioux City	74	70	94.6	4	5.4
Spencer	69	68	98.6	1	1.5
Sumner	40	40	100.0	0	0.0
Wapello	38	37	97.4	1	2.6
Waterloo	77	77	100.0	0	0.0
Waverly	44	44	100.0	0	0.0
Wellman	38	36	94.7	2	5.3
TOTAL	1969	1850	94.0	119	6.0

Conclusions

Results from the 2018 survey indicate that the vast majority of lowans understand the importance of restraining their children. This is especially true for infants with nearly 100% being restrained in child safety seats. The 2018 results showed increases in restraint use across all age groups, with a particularly large increase among teens (ages 14 to 17) going from 88.8% in 2017 to 95.1% in 2018 and this has been an increasing trend over the past five years.

However, the results revealed there are still several areas with room for improvement. Of the 761 toddlers (2-5 years of age) observed, 6.2% were restrained only by a seatbelt. It remains pertinent that lowans be informed on the importance of using booster seats. Overall, 95.4% of all children observed were properly restrained, an increase compared to the 2016 (91.9%) and the 2017 (93.4%) surveys.

Consistent with past years, the 2018 survey results indicated lower restraint use in the more rural communities. As the size of the community decreased, less restraint use was observed for both child passengers and drivers. Among children in the smallest communities (1,000-2,499) proper child restraint use averaged 90.4% and ranged from a low of 81.3% to a high of 100%. Among drivers in these small communities, the average restraint use was 89.2% and ranged from a low of 77.8% to a high of 100%.

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, 70.6% of all children and youth were observed in the back seat. Almost all of the children in child safety seats (99.4%) and booster seats (98.1%) were placed in the backseat, while 50.5% of those restrained only with a seat belt were secured in the rear location. Of the passengers riding unrestrained, the percentage riding in the front seat decreased from 52.4% in 2017 to 36.6% in 2018. Despite this decrease, these results highlight the continued need to reach out to teens on the importance of restraint use in all seating positions within a vehicle.

It should also be noted that the Iowa Legislature passed and the Governor signed into law bills that strengthened the Iowa Child Passenger Safety Law in their 2004 and 2010 sessions. In general terms, the revised law required infants to be in child safety seats, toddlers from age 2 through 5 years to be secured using either a child safety seat or booster seat, and youth through age 17 to be secured with a seatbelt when riding in the back seat. All age groups must be restrained when in the front seat of a motor vehicle. As a result of these revisions the annual Iowa Child Passenger Restraint Survey protocol was redesigned to allow the surveyors to obtain a better view into vehicles and to include the older youth. The survey was also redesigned to result in a better statistical representation of the entire state population.

The 2018 Iowa Child Passenger Restraint Survey was successfully completed and will continue to provide valuable comparable information for years to come. As a result of the older age requirement for rear seat passengers a new survey situation is possible where the vehicle could have a teen driver with teen passengers. This is likely to lead to different restraint use compared to when an adult is the driver. Beginning with the 2010 survey, information was collected indicating when the driver was less than 18 years old. It is anticipated that a detailed analysis of teen drivers and passengers will be conducted.

Appendix B contains a five-year comparison of the 2014 through 2018 survey results.

Appendix A

Iowa's 2018 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

Principal Investigator

Cara J. Hamann, MPH, PhD
Faculty Associate
The University of Iowa Injury Prevention Research Center
145 N. Riverside Dr.
S449 CPHB
Iowa City, IA 52242
(319) 384-1513
cara-hamann@uiowa.edu

Field Surveyors

Craig Baldwin, Merville, IA
Allan Mebus, Coralville, IA

Data Entry

Henna McCoy

Data Analyst

Henna McCoy

GTSB Contact

Mick Mulhern

Appendix B

Comparison of 2014 - 2018 Iowa Child Passenger Safety Survey Results

The following Tables allow for comparison between the 2014-2018 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	2014	2015	2016	2017	2018
< 2	279 / 9.2%	284 / 9.3%	243 / 8.0%	228 / 7.4%	204 / 6.9%
2-5	794 / 26.0%	839 / 27.5%	909 / 29.8%	843 / 27.4%	763 / 25.6%
6-13	1,315 / 43.1%	1,341 / 44.0%	1417 / 46.5%	1403 / 45.7%	145 / 48.5%
14-17	662 / 21.7%	587 / 19.2%	480 / 15.7%	600 / 19.5%	568 / 19.1%
Total	3,050 / 100%	3,051 / 100%	3,049 / 100%	3,074 / 100%	2980 / 100%

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

% Not Restrained						% Restrained					
Age	2014	2015	2016	2017	2018	Age	2014	2015	2016	2017	2018
< 2	0.4%	1.0%	0.4%	0.07%	0.0%	< 2	99.6%	98.9%	99.6%	99.9%	100.0%
2-5	2.9%	2.4%	2.5%	2.1%	1.3%	2-5	97.1%	97.6%	97.5%	97.9%	98.7%
6-13	6.4%	5.8%	7.1%	5.8%	3.3%	6-13	93.6%	94.2%	92.9%	94.2%	96.7%
14-17	15.7%	14.8%	16.5%	11.2%	4.9%	14-17	84.3%	85.2%	83.5%	88.8%	95.1%
Total	6.9%	6.2%	6.7%	5.5%	2.9%	Total	93.1%	93.8%	93.3%	94.5%	97.1%

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

Child Safety Seat with Seatbelt						Booster Seat with Seatbelt					
Age	2014	2015	2016	2017	2018	Age	2014	2015	2016	2017	2018
< 2	98.9%	98.6%	98.9%	98.7%	98.5%	< 2	0.0%	0.3%	0.0%	0.4%	1.0%
2-5	47.0%	47.7%	44.3%	55.8%	58.7%	2-5	44.7%	44.5%	48.3%	38.0%	33.8%
6-13	0.6%	0.0%	0.2%	1.1%	1.0%	6-13	19.2%	18.5%	18.6%	21.7%	20.8%
14-17	0.0%	0.0%	0.0%	0.0%	0.0%	14-17	0.0%	0.0%	0.2%	0.3%	0.2%
Total	21.5%	22.3%	21.3%	23.1%	22.3%	Total	19.9%	20.4%	23.1%	20.4%	18.8%

Seatbelt Only						Not Restrained					
Age	2014	2015	2016	2017	2018	Age	2014	2015	2016	2017	2018
< 2	0.7%	0.0%	0.0%	0.0%	0.5%	< 2	0.4%	1.1%	0.4%	0.9%	0.0%
2-5	5.4%	5.5%	4.8%	4.1%	6.2%	2-5	2.9%	2.4%	2.5%	2.1%	1.3%
6-13	73.8%	75.7%	74.0%	71.4%	75.0%	6-13	6.4%	5.8%	7.2%	5.8%	3.3%
14-17	84.3%	85.2%	83.3%	88.5%	94.9%	14-17	15.7%	14.8%	16.5%	11.2%	4.9%
Total	51.6%	51.2%	23.1%	51.0%	56.1%	Total	7.0%	5.8%	6.7%	5.5%	2.9%

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

Community Size	Percent Restrained (by any means)					Percent Restrained Properly*					Percent Not Restrained				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
1,000-2,499	90.0%	89.5%	91.1%	92.6%	93.3%	88.2%	88.5%	88.2%	91.5%	90.4%	10.0%	10.5%	8.9%	7.4%	6.7%
2,500-9,999	92.1%	91.7%	91.5%	92.3%	98.2%	90.2%	90.4%	90.4%	91.0%	97.1%	7.9%	8.3%	8.5%	7.7%	1.8%
10,000-49,999	93.9%	95.3%	93.1%	93.6%	96.0%	92.9%	95.1%	92.9%	92.1%	94.4%	6.1%	4.7%	6.9%	6.4%	4.0%
≥ 50,000	94.6%	96.4%	95.5%	97.4%	99.0%	93.1%	94.3%	93.2%	96.5%	97.5%	5.4%	3.6%	4.5%	2.6%	1.0%
Total	93.0%	93.8%	93.3%	94.5%	97.1%	91.5%	92.3%	91.7%	93.4%	95.4%	6.2%	7.0%	6.7%	5.5%	2.9%

*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				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
1,000-2,499	19.5%	20.6%	23.8%	18.9%	19.0%	21.6%	17.6%	21.6%	19.5%	16.1%
2,500-9,999	20.6%	21.8%	18.1%	22.9%	24.3%	17.7%	19.6%	22.1%	20.6%	18.8%
10,000-49,999	22.0%	20.1%	19.4%	19.7%	18.6%	19.6%	20.4%	23.6%	21.2%	19.7%
≥ 50,000	22.8%	24.8%	23.1%	27.4%	23.9%	20.6%	22.2%	24.1%	20.3%	19.4%
Total	21.6%	22.3%	21.3%	23.1%	21.9%	19.9%	20.4%	23.1%	20.4%	18.7%

Community Size	Seatbelt only					Not Restrained				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
1,000-2,499	48.9%	51.3%	45.7%	54.2%	56.9%	10.0%	10.6%	8.9%	7.4%	8.0%
2,500-9,999	53.9%	50.4%	51.3%	48.8%	55.1%	7.9%	8.3%	8.5%	7.7%	1.9%
10,000-49,999	52.3%	54.7%	50.1%	52.7%	57.3%	6.1%	4.7%	6.9%	6.4%	4.4%
≥ 50,000	51.1%	49.3%	48.4%	49.7%	55.5%	5.4%	3.6%	4.5%	2.6%	1.2%
Total	51.6%	51.2%	48.9%	51.0%	56.1%	6.9%	6.2%	6.7%	5.5%	3.3%

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

	Percent Age < 2 Properly* Restrained					Percent Age 2-5 Properly* Restrained				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Algona	100.0%	100.0%	100%	100%	100%	100.0%	100.0%	100%	95.9%	95.0%
Ames	100.0%	100.0%	100%	90.9%	100%	94.7%	97.4%	91.2%	100%	95.1%
Belle Plaine	100.0%	100.0%	100%	100%	100%	83.3%	82.6%	86.4%	84.6%	93.3%
Cedar Rapids	100.0%	100.0%	100%	100%	100%	81.5%	96.7%	93.8%	96.3%	83.3%
Cherokee	100.0%	85.7%	100%	100%	100%	95.5%	94.7%	88.0%	100%	95.5%
Clinton	100.0%	100.0%	100%	100%	100%	100.0%	96.3%	94.3%	88.5%	85.7%
Corydon	100.0%	100.0%	100%	100%	100%	95.2%	100.0%	100%	100%	91.7%
Council Bluffs	93.8%	100.0%	100%	100%	100%	94.4%	95.6%	95.7%	94.3%	100%
Davenport	100.0%	100.0%	100%	100%	75.0%	89.7%	85.7%	74.1%	88.9%	100%
Des Moines	100.0%	100.0%	100%	100%	100%	92.7%	97.1%	97.2%	100%	97.3%
Dubuque	100.0%	88.9%	100%	100%	100%	100.0%	96.8%	100%	93.0%	87.5%
Fort Dodge	100.0%	87.5%	100%	100%	100%	100.0%	100.0%	92.6%	96.6%	87.0%
Guthrie Center	100.0%	100.0%	100%	100%	100%	93.3%	90.9%	100%	100%	100%
Guttenberg	100.0%	100.0%	100%	100%	100%	92.9%	100.0%	94.7%	100%	82.4%
Hawarden	100.0%	100.0%	100%	100%	100%	86.4%	89.5%	94.4%	94.7%	100%
Holstein	100.0%	100.0%	100%	100%	100%	76.0%	86.7%	92.9%	92.3%	100%
Iowa City	100.0%	100.0%	100%	100%	100%	100.0%	87.5%	93.0%	98.2%	98.1%
Jefferson	100.0%	100.0%	100%	90.0%	100%	94.4%	91.7%	88.9%	100%	100%
LaPorte City	100.0%	100.0%	100%	100%	100%	100.0%	91.7%	100%	100%	75.0%
Manchester	100.0%	87.5%	100%	100%	100%	100.0%	72.7%	100%	93.1%	94.1%
Marshalltown	100.0%	100.0%	87.5%	100%	100%	96.4%	81.8%	69.4%	89.3%	96.8%
Mason City	100.0%	100.0%	100%	100%	100%	93.1%	91.7%	100%	96.8%	100%
Mount Ayr	100.0%	100.0%	100%	100%	100%	78.6%	100.0%	84.6%	100%	100%
Mt. Pleasant	100.0%	100.0%	100%	100%	100%	68.0%	94.4%	85.7%	80.8%	90.6%
Newton	100.0%	100.0%	100%	100%	88.9%	92.6%	100.0%	100%	92.6%	87.5%
Northwood	66.7%	----	100%	83.3%	100%	100.0%	71.4%	100%	85.7%	100%
Ottumwa	100.0%	100.0%	100%	100%	100%	76.0%	92.6%	85.0%	70.4%	77.8%
Pocahontas	100.0%	100.0%	100%	100%	100%	90.9%	100.0%	92.9%	100%	100%
Red Oak	100.0%	100.0%	100%	100%	100%	90.0%	90.0%	95.5%	100%	94.4%
Sioux City	100.0%	100.0%	100%	100%	100%	93.9%	97.2%	85.3%	96.3%	96.4%
Spencer	100.0%	100.0%	100%	100%	100%	96.0%	96.0%	100%	100%	96.2%
Sumner	100.0%	100.0%	100%	100%	100%	91.7%	100.0%	87.0%	100%	87.5%
Wapello	100.0%	100.0%	100%	100%	100%	87.5%	76.9%	92.9%	70.0%	68.8%
Waterloo	100.0%	100.0%	100%	100%	100%	100.0%	75.0%	100%	92.3%	81.8%
Waverly	100.0%	100.0%	100%	100%	100%	83.3%	100.0%	93.1%	94.7%	94.7%
Wellman	66.7%	100.0%	100%	100%	100%	93.3%	90.9%	100%	86.7%	78.6%

*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				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Algona	90.9%	100.0%	92.1%	88.9%	89.2%	100.0%	73.7%	81.3%	84.6%	100%
Ames	98.0%	97.9%	96.2%	100%	97.9%	100.0%	93.1%	92.6%	88.5%	100%
Belle Plaine	97.0%	97.1%	73.8%	97.8%	100%	73.7%	100.0%	60.0%	77.8%	100%
Cedar Rapids	85.1%	95.6%	91.5%	100%	98.2%	76.0%	77.5%	100%	88.9%	100%
Cherokee	97.6%	90.0%	100%	100%	100%	83.3%	100.0%	91.7%	92.3%	87.5%
Clinton	100.0%	95.2%	92.3%	93.8%	98.1%	90.6%	100.0%	88.2%	100%	100%
Corydon	73.9%	88.0%	90.5%	84.0%	85.7%	100.0%	85.7%	71.4%	57.1%	58.3%
Council Bluffs	91.8%	97.8%	98.1%	100%	100%	73.7%	100.0%	92.3%	94.4%	95.7%
Davenport	90.4%	95.9%	90.3%	100%	100%	76.0%	87.5%	72.2%	88.5%	100%
Des Moines	94.0%	98.2%	96.2%	100%	97.9%	100.0%	100.0%	83.3%	90.9%	91.3%
Dubuque	100.0%	100.0%	100%	94.3%	97.4%	96.1%	100.0%	100%	100%	100%
Fort Dodge	87.2%	95.8%	90.5%	94.4%	97.8%	88.0%	84.2%	87.0%	90.9%	94.4%
Guthrie Center	84.6%	96.0%	89.2%	84.6%	89.5%	85.7%	60.0%	100%	92.3%	86.7%
Guttenberg	88.2%	100.0%	100%	92.6%	100%	100.0%	100.0%	77.8%	80.0%	100%
Hawarden	87.8%	82.4%	90.2%	70.6%	91.4%	45.5%	73.7%	54.5%	66.7%	100%
Holstein	79.2%	72.7%	86.4%	91.3%	100%	80.0%	55.6%	81.8%	90.0%	100%
Iowa City	97.9%	98.2%	92.6%	100%	100%	85.0%	94.1%	60.0%	100%	100%
Jefferson	94.3%	92.3%	97.6%	90.2%	100%	88.2%	88.9%	100%	54.5%	100%
LaPorte City	100.0%	94.4%	100%	100%	96.2%	100.0%	91.7%	77.8%	91.7%	100%
Manchester	92.6%	90.0%	100%	100%	100%	90.6%	100.0%	78.6%	100%	100%
Marshalltown	90.0%	90.9%	95.8%	95.7%	96.7%	100.0%	88.9%	100%	95.2%	85.0%
Mason City	91.7%	97.7%	96.3%	97.5%	94.0%	100.0%	87.0%	94.1%	77.8%	92.0%
Mount Ayr	54.1%	69.6%	77.3%	82.6%	79.3%	25.0%	69.2%	72.7%	66.7%	80.0%
Mt. Pleasant	89.3%	90.0%	97.2%	95.7%	100%	72.0%	63.6%	76.2%	100%	100%
Newton	93.2%	97.6%	82.4%	97.3%	97.5%	94.4%	88.9%	93.3%	83.3%	90.9%
Northwood	92.0%	84.0%	92.0%	88.2%	82.6%	100.0%	81.8%	71.4%	61.5%	78.6%
Ottumwa	88.6%	94.9%	90.6%	81.0%	90.4%	61.5%	66.7%	68.2%	82.8%	92.3%
Pocahontas	96.2%	95.0%	93.1%	66.7%	100%	90.9%	66.7%	66.7%	92.9%	84.6%
Red Oak	89.1%	94.6%	88.6%	76.3%	96.7%	84.6%	58.3%	70.0%	77.8%	93.3%
Sioux City	98.2%	94.5%	92.6%	94.9%	93.6%	92.6%	95.2%	100%	87.5%	100%
Spencer	94.7%	100.0%	100%	94.7%	100%	100.0%	100.0%	95.2%	90.9%	100%
Sumner	100.0%	95.7%	100%	100%	100%	100.0%	100.0%	100%	100%	100%
Wapello	90.5%	100.0%	84.6%	92.0%	95.8%	90.0%	77.8%	37.5%	100%	100%
Waterloo	100.0%	88.5%	100%	96.2%	100%	73.1%	81.8%	100%	95.5%	100%
Waverly	100.0%	96.2%	90.3%	97.4%	100%	100.0%	100.0%	87.5%	100%	100%
Wellman	90.0%	95.2%	95.5%	91.3%	87.0%	76.9%	73.3%	73.3%	100%	100%

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

Restraint Type	Front Seat					Back Seat				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Child Safety Seat with Seatbelt	.05%	.07%	0.2%	0.8%	0.6%	99.5%	99.3%	99.8%	99.2%	99.4%
Booster Seat with Seatbelt	2.3%	0.8%	0.7%	1.1%	1.9%	97.7%	99.2%	99.3%	98.9%	98.1%
Seatbelt only	46.0%	45.8%	46.0%	51.1%	49.5%	54.0%	54.2%	54.0%	48.9%	50.5%
Not Restrained	45.3%	42.5%	29.9%	52.4%	36.6%	54.7%	57.5%	70.1%	47.6%	63.4%
Total	26.4%	27.4%	24.8%	29.3%	29.4%	72.6%	73.6%	75.2%	70.7%	70.6%

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

Community Size	Driver Belted					Driver Not Belted				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
1,000-2,499	86.4%	87.3%	89.8%	81.9%	89.2%	13.6%	12.7%	10.2%	18.1%	10.8%
2,500-9,999	92.7%	93.2%	91.7%	88.1%	94.8%	7.3%	6.8%	8.3%	11.9%	5.2%
10,000-49,999	95.4%	97.1%	94.1%	91.5%	93.6%	4.6%	2.9%	5.9%	8.5%	6.4%
≥ 50,000	96.5%	98.6%	98.0%	96.1%	96.5%	3.5%	1.4%	2.1%	3.9%	3.5%
Total	93.6%	95.0%	94.2%	90.7%	94.0%	6.4%	5.0%	5.8%	9.3%	6.0%

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

	Percent Drivers Belted					Percent Drivers NOT Belted				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Algona	94.7%	88.0%	90.7%	82.4%	84.8%	5.3%	12.0%	9.3%	17.6%	15.2%
Ames	96.8%	99.2%	93.6%	92.0%	95.8%	3.2%	0.8%	6.4%	8.0%	4.2%
Belle Plaine	100.0%	100.0%	97.3	91.3%	97.8%	0.0%	0.0%	2.7%	8.7%	2.2%
Cedar Rapids	97.6%	100.0%	100%	96.4%	93.9%	2.4%	0.0%	0.0%	3.6%	6.1%
Cherokee	90.7%	90.7%	96.0%	87.2%	91.5%	9.3%	9.3%	4.0%	12.8%	8.5%
Clinton	96.0%	99.0%	96.0%	97.9%	97.5%	4.0%	1.0%	4.0%	2.1%	2.5%
Corydon	62.0%	78.0%	90.0%	59.4%	77.8%	38.0%	22.0%	10.0%	40.6%	22.2%
Council Bluffs	90.4%	95.2%	100%	93.7%	94.8%	9.6%	4.8%	0.0%	6.3%	5.2%
Davenport	100.0%	100.0%	97.6%	94.4%	98.8%	0.0%	0.0%	2.4%	5.6%	1.2%
Des Moines	97.6%	98.4%	96.0%	96.2%	93.7%	2.4%	1.6%	4.0%	3.8%	6.3%
Dubuque	99.2%	100.0%	100%	99.2%	97.4%	0.8%	0.0%	0.0%	0.8%	2.6%
Fort Dodge	89.0%	98.0%	93.0%	92.4%	92.2%	11.0%	2.0%	7.0%	7.6%	7.8%
Guthrie Center	90.0%	88.0%	90.0%	77.1%	81.1%	10.0%	12.0%	10.0%	22.9%	18.9%
Guttenberg	94.0%	98.0%	96.0%	97.4%	97.3%	6.0%	2.0%	4.0%	2.6%	2.7%
Hawarden	84.0%	81.3%	84.0%	77.5%	91.1%	16.0%	18.8%	16.0%	22.5%	8.9%
Holstein	80.0%	78.0%	88.0%	75.9%	86.7%	20.0%	22.0%	12.0%	24.1%	13.3%
Iowa City	98.4%	100.0%	100%	100.0%	100.0%	1.6%	0.0%	0.0%	0.0%	0.0%
Jefferson	92.0%	93.3%	82.7%	83.3%	97.6%	8.0%	6.7%	17.3%	16.7%	2.4%
LaPorte City	96.0%	96.0%	96.0%	97.3%	94.9%	4.0%	4.0%	4.0%	2.7%	5.1%
Manchester	95.0%	100.0%	97.3%	100.0%	98.1%	5.0%	0.0%	2.7%	0.0%	1.9%
Marshalltown	95.0%	94.0%	93.0%	95.2%	89.5%	5.0%	6.0%	7.0%	4.8%	10.5%
Mason City	96.0%	95.0%	90.0%	92.3%	95.0%	4.0%	5.0%	10.0%	7.7%	5.0%
Mount Ayr	56.0%	64.0%	72.0%	61.1%	80.0%	44.0%	36.0%	28.0%	38.9%	20.0%
Mount Pleasant	93.3%	98.7%	100%	91.2%	98.0%	6.7%	1.3%	0.0%	8.8%	2.0%
Newton	97.0%	97.0%	91.9%	85.7%	88.1%	3.0%	3.0%	8.1%	14.3%	11.9%
Northwood	96.0%	72.0%	84.0%	68.4%	80.7%	14.0%	28.0%	16.0%	31.6%	13.4%
Ottumwa	100.0%	99.0%	100%	85.1%	93.1%	0.0%	1.0%	0.0%	14.9%	6.9%
Pocahontas	88.0%	88.0%	90.0%	80.7%	86.5%	12.0%	12.0%	10.0%	19.3%	13.5%
Red Oak	85.3%	86.7%	85.3%	72.0%	94.1%	14.7%	13.3%	14.7%	28.0%	5.9%
Sioux City	92.0%	97.6%	94.4%	92.3%	94.6%	8.0%	2.4%	5.6%	7.7%	5.4%
Spencer	95.0%	98.0%	95.0%	89.1%	98.6%	5.0%	2.0%	5.0%	10.9%	1.5%
Sumner	100.0%	98.0%	100%	100.0%	100.0%	0.0%	2.0%	0%	0.0%	0.0%
Wapello	98.0%	100.0%	86.0%	93.9%	97.4%	2.0%	0.0%	14.0%	6.1%	2.6%
Waterloo	96.8%	96.8%	100%	98.3%	100.0%	3.2%	3.2%	0.0%	1.7%	0.0%
Waverly	96.0%	100.0%	92.0%	98.5%	100.0%	4.0%	0.0%	8.0%	1.5%	0.0%
Wellman	100.0%	100.0%	96.1%	82.9%	94.7%	0.0%	0.0%	3.9%	17.1%	5.3%
TOTAL	93.0%	93.0%	94.2%	90.7%	94.0%	7.0%	7.0%	5.8%	9.3%	6.0%