Center for CSSM Survey Statistics and Methodology

Iowa Seat Belt Use Survey
2023 Data Collection
Methodology Report

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Introduction

In 2011 the National Highway Traffic Safety Administration (NHTSA) issued new requirements for observing and reporting seat belt use that were designed to achieve greater consistency and comparability in state-wide seat belt use reporting. The requirements included the involvement of a qualified statistician in the sampling and weighting portions of the process as well as a variety of operational details. Each state's sampling plan and its selected sample of road segments was required to be reviewed and redrawn every five years.

The Iowa Governor's Traffic Safety Bureau contracted with Iowa State University's Center for Survey Statistics and Methodology (CSSM) (then Survey & Behavioral Research Services) in 2011 to develop the study design and data collection plan for the State of Iowa's annual survey that would meet NHTSA's new requirements. A seat belt survey plan for Iowa was developed by CSSM with statistical expertise provided by Zhengyuan Zhu, Ph.D., Professor of Statistics at Iowa State University and Director of CSSM. The plan was approved by NHTSA on March 19, 2012 and implemented by CSSM each year thereafter.

As required by NHTSA, the Iowa plan was revised and a new sample drawn in the fall/winter of 2016 by Dr. Emily Berg, Assistant Professor of Statistics at Iowa State University. Dr. Berg followed the protocol of the original approved plan, sampling 15 counties (as in 2012) and increasing the number of sampled road segments from 75 to 84. The revised plan was approved in March of 2017 and implemented by CSSM annually from 2017-2021. In late 2021 the plan was again revised with new counties and road segments sampled by Dr. Berg. This plan, again with 84 road segments from 15 counties, was approved in March of 2022 and implemented from 2022-2023.

2023 Data Collection

The Iowa GTSB has contracted with CSSM on an annual basis to conduct the seat belt use data collection since 2012. The primary contact at the Iowa GTSB in 2023 is Brandi Thompson, Program Administrator. The primary contact at CSSM is Allison Anderson, Survey Unit Director. The CSSM Seat Belt Survey Project Managers are Jody Fox and Neely Lehman. The CSSM statistician is Emily Berg, PhD, Assistant Professor of Statistics at Iowa State University. This report describes the data collection process for obtaining 2023 seat belt use data as stipulated by the approved study design. It also includes tables with overall results showing seat belt use in Iowa.

Preparation

Preparation for the 2023 seat belt use data collection involved several components, including verification of the usability of the sampled sites, revision of materials for Data Collectors, and notification of appropriate local personnel prior to data collection.

Site Verification.

The Iowa Seat Belt Survey Plan includes 84 road segments or sites sampled for annual observation, allocated among 15 sampled counties. There are 5 sites in 14 of the counties and 14 sites in Polk County. The sites are identified by Object ID and Route ID numbers. CSSM worked with staff from *InTrans*, the Iowa State University Institute of Transportation, to obtain data and photographic resources that allow staff to examine each site remotely for accessibility, safety, and practicality. The CSSM Project Managers examined the 84 sites and checked with the Department of Transportation and other online sources for scheduled construction that could impact traffic patterns. Two sites were identified as unusable for 2023 data collection due to construction or detours. The other 82 sites were verified as safe and useable for 2023.

Materials Preparation.

CSSM staff used online maps and Google Earth to identify and recommend observation points that would be safe and still provide the visibility necessary to observe seat belt use. CSSM staff created maps and travel directions for Data Collectors to use as references when traveling to sites. Google Earth and Google maps served as effective resources. Equipment was prepared for use by Data Collectors, including vests, hats, warning lights, "Survey Crew" signs, and timers. Data collection forms were updated and printed. Data Collection schedules were prepared for each Data Collector and administrative procedures were documented.

Notification.

Prior to the beginning of data collection, the GTSB representative notified law enforcement personnel in each of the site areas. CSSM staff notified other appropriate city/county and Department of Transportation personnel. The purpose was to ensure that the appropriate officials in each site area would be aware of the project and the days and times that Data Collectors would be at work in their area.

Data Collection Staff Training

Iowa used four data collectors in 2023, responsible for 20 to 24 sites each. Three data collectors were experienced, having worked as data collectors for the project in the past. One was new this year and received some extra training, opportunities to ask questions and practice. Quality Control (QC) functions were filled by two CSSM staff members.

Figure 1.

Iowa Observational Survey of Seat Belt Use: 2023
Governor's Traffic Safety Bureau/Iowa State University

Training Agenda
Friday, June 30

9a	Arrive, Introductions, Overview, order lunch, etc.
10a	Safety – David Veneziano, INTRANS
	Break
11-ish	Training Manual, Forms overview; Aimee with Expense Reimbursement, Timekeeping, etc.
12p	Lunch
1p	Assignments/Google Earth
3-ish	Break
3:15p	Assignments/Google Earth/Practice
3:45p	Equipment and Supplies
4p	Other/Additional questions and/or training topics as needed

Training for 2023 was held at CSSM on one day, June 30, 2023, with field data collection beginning on July 1, 2023. (See Figure 1 for the training agenda.) The training included a combination of lecture, classroom and field exercises. Training sessions covered data collection protocols, including how to find the observation sites, choosing an observation location, how to properly collect data, practice in what counts as seat belt "use," "nonuse," and "use unknown," what to do if data cannot be collected at a site due to road construction, weather, or other circumstances, and the appropriate management and submission of collected data. Roadside safety training was conducted by David Veneziano, Safety Circuit Rider at Iowa State University's Institute for Transportation (*InTrans*).

Some sites were brought up on Google Earth and discussed with the assigned observer, so that access to the sites and safe observation locations were clearly understood. All sites assigned to our new observer were viewed on Google Earth and discussed regarding safety, placement of signs, and any other details deemed necessary. This allowed for good discussion among observers, providing many useful suggestions and comments.

The quality control monitors reviewed their procedures with the Project Manager to ensure that they were updated on specific duties of the position. Quality Control duties included conducting unannounced site visits to a minimum of two sites for each Data Collector and reviewing the Data Collector's field protocol. The QC Monitors met with the Data Collectors in the field to answer questions and offer assistance as needed.

Data Collectors were provided with bright yellow high-vis vests and hats to wear for safety and protection from sun and light rain. Each Data Collector had a flashing amber light to put on his/her car and timer to use as

needed. Each Data Collector was also provided with two "Survey Crew" signs and sandbag weights for use in high speed areas and other sites as appropriate.

Observation Protocols and Procedures

All passenger vehicles, including commercial vehicles weighing less than 10,000 pounds, were eligible for observation. Data Collectors completed two forms in the field, the Observation Site Form and the Observation Tally Form, which are shown in Appendixes A and B. The Observation Site Form documented descriptive information about each site. Data Collectors recorded information including observation date, site location and number, alternative site data, traffic directions and lanes available and observed, start and end times for observations, and weather conditions.

The Observation Tally Form was used to mark belt use/non-use/unknown use for drivers and right front passengers. Using the Observation Tally Form, seat belt use observations were made of all passenger vehicle drivers and right front seat occupants in the selected lane. The only passenger vehicle right front seat occupants excluded from the study were child passengers traveling in child seats with harness straps. If there was no passenger in the right front seat of an observed vehicle, that information was also noted on the Observation Tally Form.

Seat Belt use categories - Data Collectors recorded belt use for the driver and right front seat passenger using the definitions shown in Figure 2 below, which were provided in the federal regulations.

Figure 2.

Code	Meaning	Definition
Y	Yes, belted	The shoulder belt is in front of the person's shoulder.
N	No, unbelted	The shoulder belt is not in front of the person's shoulder.
U	Unknown	It cannot reasonably be determined whether the driver or right front passenger is belted.
NP	No passenger	There is no right front passenger present.

Scheduling.

Data collectors were generally assigned one county with five observation sites per work day. The 14 Polk County sites were divided among two Data Collectors over three days. A schedule of sites with observation start times was provided by CSSM in order to ensure a representative sampling of times of day for the data collection and to allow for proper notification of county/city and law enforcement personnel. Observations were to start at the assigned times, as much as possible, and to continue for exactly 45 minutes each.

Observations.

Data Collectors observed one lane and one direction of travel per observation site. The direction of travel was identified by the Project Manager in keeping with the sampled direction associated with segments of divided highways; however, Data Collectors were allowed to observe the other direction if safety or windshield glare dictated. Deviations from the randomly assigned direction were noted on the Observation Site Form. If an assigned road segment included an intersection, Data Collectors were instructed to make sure they observe traffic traveling on the assigned road segment, not the cross-street.

Lower volume roadways such as county roads and streets were observed from a field drive or other location where data collectors could safely move their vehicles from the roadway. In some cases, Data Collectors

observed from their vehicle while, in most cases, observing from outside of the vehicle was more effective. At times Data Collectors found that sitting in the back of their pick-up truck, van, or SUV provided the safest observation point with the best view.

Whenever possible, observations for high-volume, limited access roadways were made from an overpass. Observing from an overpass allowed for comparatively easy viewing of seatbelt use by both the driver and the passenger. Gravel road overpasses were preferred because of the low traffic volume, reducing safety hazards to the Data Collector. In some instances, observing from an overpass required moving the observation point from the specific road segment by a few miles; however, because of the limited exit and entrance ramps to these roadways, there were no significant changes to the observed vehicles between the assigned road segment and the observation point.

If a low volume overpass was not available, Data Collectors were allowed to observe traffic at an exit ramp or rest stop. Because the exit ramp/rest stop only sampled a portion of the traffic passing on the main highway, an additional traffic volume count was required in order to adjust for the reduced numbers. Data collectors completed a traffic count of the assigned highway segment immediately following the observations at the ramp/rest stop. Using a safe observation point from which to view passing cars (but not necessarily belt usage), the data collector counted passing cars in one direction and in one lane of the assigned road segment, timing the number of minutes to reach a count of 100 cars. If the traffic volume was low, the data collector recorded the number of cars observed in a 15-minute time frame. This traffic count information was recorded on the Observation Site Form and was used by the statistician to adjust the seat belt usage observation data for weighting purposes. Two rest stop sites were used in 2023.

Alternate Sites.

Two sites were permanently replaced with alternates following data collection in 2022 for data collector safety reasons, one in Polk County and one in Pottawattamie County. Additionally, in 2023, two planned alternate sites were assigned due to construction or detours, one in Tama County and one in Clinton County. For all other sites if there was difficulty in locating a useable and safe place to observe that required the Data Collector to deviate farther than 2 miles (or more than one block in city situations) from the selected road segment, he/she was instructed to call the office before proceeding and to note the location as an alternate site on the Observation Site form. For the 2023 no additional data collection sites were needed.

Rescheduling.

If an assigned road segment was temporarily unavailable due to a traffic accident or inclement weather, data collection was to be rescheduled another week for the same time and day of the week. Pottawattamie County sites needed to be rescheduled in 2023 due to inclement weather.

Results

Data collection for 2023 occurred from Saturday, July 1 through Friday, July 14, 2023. During verification of data collected, data from one site was determined to be unusable in Polk County and that site was recounted on Saturday July 22, 2023. The 2023 seat belt use data collection resulted in the observation of **13,493 passenger vehicles**, with a right front seat passenger in 5,548 of those vehicles, for a total of **19,041 potential observations** of belt use. Of these 19,041 potential observations, there were 12,846 drivers and 5,059 right front passengers who were observed wearing seat belts (total 17,905 seat belt users). Seat belts were not worn by 399 drivers and 261 right front passengers (total 660unbelted). Data collectors were unable to

identify the seat belt use of 248 drivers and 228 passengers (total 476 unknown use). The **unknown use, or "nonresponse rate," is .0250 or 2.50%**. This is well within the range allowed by federal regulations, which require the nonresponse rate to be below 10%.

Federal regulations require a minimum of 7500 observations, and the 2023 total of 13,493 passenger vehicles with 19,041 observed occupants far exceeds the minimum requirement.

Eight quality control checks were completed in 2023. Each of the four data collectors was observed by a quality control monitor at two unannounced sites to ensure compliance with project protocols. This comprises 9.5% of the sites (8 out of 84), which exceeds the minimum of 5% required by federal regulations. One Data Collector was observed by the Quality Control Monitor to be outside one assigned segment. The Quality Control Monitor instructed the Data Collector to move to the correct location for observation and data collection was completed at the correct location.

CSSM held a debriefing session with Data Collectors and Quality Control Monitors on Friday, July 28, 2023. The primary purpose was to identify any problems or issues relating to the selected sites that should be addressed in future data collection. There were no major issues identified.

Federal regulations require the calculation of seat belt use to be conducted with weighted data as described in the approved survey plan. Data weighting was completed by Dr. Emily Berg, Assistant Professor of Statistics at Iowa State University. Based on the weighted data, **Iowa's overall seat belt use rate for 2023 is 96.99%**, with an **estimated standard error of** 0.704**% (± 0.7%)**. The standard error for 2023 observations falls within NTSA's established limits of **±**2.5%. Weighted seat belt use rates and standard errors for the state and by driver and passenger are shown in Figure 3 with overall weighted state-wide rates since 2013 shown in Figure 4.

Figure 3. Iowa's Seat Belt Use Estimates and Standard Errors, 2023.

Category	Estimate (%)	Standard Error (%)
Total Iowa	96.986	0.704
Driver	97.176	0.757
Passenger	96.508	0.720

Figure 4. Iowa's Annual Weighted Seat Belt Use Rate, 2013-2023.

Year	Weighted Belt Use
2023	**96.99%**
2022	**95.88%**
2021	92.66%
2020	95.2%
2019	94.6%
2018	93.9%
2017	91.4%
2016	93.8%
2015	93.0%
2014	92.8%
2013	91.9%

Tables and Appendices

Table 1 lists the 84 observation sites with selected characteristics and the number of belted drivers and right front passengers.

Tables 2 and 3 show the seat belt use of drivers and passengers by county. Table 2 contains the number or count of each category of belt use by drivers, passengers, and total for each sampled county. Table 3 contains two types of unweighted percentages of belt use for drivers, passengers, and combined total for each county. The "% of Total Belted" is the percent of the total number of persons (both drivers and passengers) who were belted. The "% of Known Belted" removes the persons with unknown belt use from the base number, so it becomes the percent of persons with known seat belt status who were belted. **Note that these percentages are unweighted and the state-wide seat belt use percentage in this table is slightly different than the weighted seat belt use percentage required by federal regulations for reporting.** Nevertheless, the unweighted percentages in Table 3 enable legitimate comparisons between seat belt users/nonusers and between counties.

Tables 4 and 5 show the seat belt use of drivers and passengers by road type. Table 4 contains the number in each category and Table 5 contains unweighted percentages. Federal regulations require the survey plan to classify road types as primary (including interstates), secondary, and local.

Table 6 contains seat belt use of drivers and passengers by day of the week and road type. The percentages included in the table are unweighted.

Table 7 contains sample weights for each observation site as well as seat belt use for drivers and passengers (number or count). This information is provided for Part B reporting purposes.

Appendix A. Observation Site Form
Appendix B. Observation Tally Form

Table 1. 2023 Seat Belt Usage by Site

No.	County	ObjectID	Road Name	Road Type	Day of Week	Start Time	Vehicle Count	Drivers Belted	Right Front Passenger Count	Right Front Passengers Belted
1	Cass	62871013	I 80 E	Primary	Tuesday	3:30 PM	350	338	166	156
2	Cass	62869070	I 80 E	Primary	Tuesday	1:00 PM	301	284	123	117
3	Cass	62873677	I 80 W	Primary	Tuesday	2:15 PM	361	351	166	150
4	Cass	62881404	10TH STREET	Local	Tuesday	11:05 AM	55	42	17	13
5	Cass	62919461	IA 92 E/W	Secondary	Tuesday	10:00 AM	30	28	7	7
6	Cedar	62798486	IA 130 E/W	Secondary	Tuesday	3:15 PM	78	72	13	13
7	Cedar	62872668	I 80 W	Primary	Tuesday	10:50 AM	221	210	93	90
8	Cedar	62873984	I 80 W	Primary	Tuesday	1:05 PM	24	22	11	11
9	Cedar	62876490	I 80 W	Primary	Tuesday	9:30 AM	190	183	63	60
10	Cedar	62950525	ROSE AVENUE	Local	Tuesday	12:04 PM	19	17	7	7
11	Clinton	62819116	NORTH BLUFF BLVD	Secondary	Thursday	9:10 AM	124	117	27	24
12	Clinton	62827550	US 61 S	Secondary	Thursday	7:15 AM	135	126	26	21
13	Clinton	62900672	MILL CREEK PARKWAY	Local	Thursday	1:00 PM	156	148	38	36
14	Clinton	62797689	5TH AVENUE SOUTH	Secondary	Thursday	11:10 AM	65	63	12	11
15	Clinton	63002428	US 30 W	Secondary	Thursday	10:10 AM	203	198	66	63
16	Hamilton	62935472	US 69 N/S	Secondary	Tuesday	10:00 AM	32	23	11	8
17	Hamilton	62861630	I 35 N	Primary	Tuesday	11:30 AM	98	89	42	18
18	Hamilton	62858913	I 35 N	Primary	Tuesday	2:34 PM	174	152	67	50
19	Hamilton	62921261	I 35 S	Primary	Tuesday	1:10 PM	129	122	56	28
20	Hamilton	63013008	ALFRED STREET	Local	Tuesday	8:30 AM	1	1	0	0
21	Hardin	62781357	US 20 W	Secondary	Thursday	9:40 AM	109	93	44	31
22	Hardin	62783085	US 20 W	Secondary	Thursday	1:50 PM	122	98	43	30
23	Hardin	62845110	CO HIGHWAY D35	Local	Thursday	10:50 AM	13	6	3	1
24	Hardin	62997885	DEPOT STREET	Local	Thursday	12:28 PM	8	4	0	0
25	Hardin	63014889	US 20 E	Secondary	Thursday	9:30 AM	133	94	64	20
26	Jasper	62744348	IA 163 E	Secondary	Thursday	2:44 PM	225	218	75	67
27	Jasper	62868826	E 19TH STREET N	Local	Thursday	9:15 AM	13	12	5	4
28	Jasper	62879158	I 80 E	Primary	Thursday	10:33 AM	326	318	184	178
29	Jasper	62871279	I 80 E	Primary	Thursday	11:52 AM	314	307	138	129
30	Jasper	62872270	I 80 E	Primary	Thursday	1:28 AM	317	303	118	113
31	Madison	62792082	NORTHEAST 4TH STREET	Local	Wednesday	5:30 PM	3	2	1	1
32	Madison	62873812	I 80 W	Primary	Wednesday	4:10 PM	244	235	98	67
33	Madison	62910006	IA 92 E/W	Secondary	Wednesday	11:30 AM	46	37	6	4
34	Madison	62920420	US 169 N/S	Secondary	Wednesday	1:30 PM	8	7	1	0
35	Madison	62946268	2ND AVENUE	Local	Wednesday	2:45 PM	3	3	2	1
36	Mills	62754731	221ST STREET	Local	Saturday	11:15 AM	31	29	13	11
37	Mills	62858774	I 29 S	Primary	Saturday	9:00 AM	243	239	139	127
38	Mills	62782194	I 29 N	Primary	Saturday	10:15 AM	208	201	142	136
39	Mills	62861429	I 29 S	Primary	Saturday	7:45 AM	319	313	193	181
40	Mills	63036628	US 34 E/W	Secondary	Saturday	1:30 PM	137	126	63	57
41	Muscatine	62846476	IA 38 N/S	Secondary	Monday	9:55 AM	80	73	18	17
42	Muscatine	62883673	US 6 E/W	Secondary	Monday	8:50 AM	38	35	9	9

No.	County	ObjectID	Road Name	Road Type	Day of Week	Start Time	Vehicle Count	Drivers Belted	Right Front Passenger Count	Right Front Passengers Belted
43	Muscatine	62943188	US 61 N	Secondary	Monday	11:05 AM	133	126	36	34
44	Muscatine	62971371	US 61 N	Secondary	Monday	1:07 PM	150	142	41	39
45	Muscatine	63042421	200TH STREET	Local	Monday	2:15 AM	67	62	9	9
46	O'Brien	62761855	390TH STREET	Local	Monday	10:49 AM	23	23	5	5
47	O'Brien	62867037	IA 60 N	Secondary	Monday	8:29 AM	91	84	31	30
48	O'Brien	62886573	IA 60 S	Secondary	Monday	9:35 AM	113	106	38	36
49	O'Brien	62948573	IA 10 E/W	Secondary	Monday	12:08 PM	10	10	3	3
50	O'Brien	63020223	NORTHWEST BLVD	Local	Monday	7:18 AM	19	18	2	1
51	Polk	62876369	I 80 W	Primary	Wednesday	3:28 PM	487	474	154	147
52	Polk	62748369	IA 163 E	Secondary	Sunday	11:50 AM	220	214	115	111
53	Polk	62772160	MUSKOGEE AVENUE	Local	Sunday	2:30 PM	5	5	0	0
54	Polk	62831528	FLEUR DRIVE	Secondary	Sunday	1:20 PM	234	228	85	81
55	Polk	62859653	NW 9TH STREET	Local	Saturday	10:43 AM	158	154	57	54
56	Polk	62861559	I 35 N	Primary	Wednesday	1:16 PM	596	573	216	207
57	Polk	62870021	I 80 W	Primary	Saturday	8:30 AM	586	572	303	293
58	Polk	62873841	I 80 W	Primary	Saturday	7:08 AM	11	9	3	3
59	Polk	63029382	Ashworth Road	Secondary	Wednesday	12:15 PM	150	143	44	43
60	Polk	62828269	I 235 W	Primary	Sunday	4:40 PM	566	557	287	280
61	Polk	62879911	I 80 E	Primary	Wednesday	4:40 PM	565	550	91	87
662	Polk	62884333	60TH STREET	Secondary	Wednesday	2:17 PM	206	194	58	51
63	Polk	62924625	US 69 N/S	Secondary	Saturday	9:39 AM	11	7	4	3
664	Polk	63081332	GRAND AVENUE	Secondary	Sunday	3:30 PM	177	171	84	73
65	Pottawattamie	62765549	10TH AVENUE	Local	Sunday	9:30 AM	1	1	0	0
66	Pottawattamie	62869130	I 80 E	Primary	Sunday	12:30 PM	356	350	220	211
67	Pottawattamie	62872327	I 80 W	Primary	Sunday	8:00 AM	269	256	119	109
68	Pottawattamie	62875270	I 80 W	Primary	Sunday	11:00 AM	363	355	218	201
69	Pottawattamie	62917690	NASH BOULEVARD	Secondary	Sunday	3:00 PM	172	159	65	51
70	Scott	62826343	US 61 S	Secondary	Friday	12:10 PM	160	147	50	46
71	Scott	62868688	I 80 E	Primary	Friday	9:15 AM	326	320	157	148
72	Scott	62877733	I 80 W	Primary	Friday	10:35 AM	350	338	166	157
73	Scott	62947974	E PLEASANT STREET	Local	Friday	2:24 PM	6	5	2	2
74	Scott	63046770	EAST 53RD STREET	Secondary	Monday	3:30 PM	217	207	52	48
75	Tama	62827370	US 63 N/S	Secondary	Friday	2:04 PM	47	47	11	11
76	Tama	62828413	US 63 N/S	Secondary	Friday	1:00 PM	90	72	26	18
77	Tama	62893597	EAST STREET, N/S	Local	Friday	10:00 AM	5	5	0	0
78	Tama	62983342	IA 8 E/W	Secondary	Friday	10:55 AM	32	32	9	8
79	Tama	62991055	1ST STREET	Local	Friday	3:10 PM	14	14	3	3
80	Woodbury	62774974	CHAMBERS STREET	Local	Sunday	2:06 PM	77	68	30	29
81	Woodbury	62782484	US 20 W	Secondary	Sunday	11:45 AM	114	112	65	59
82	Woodbury	62865471	I 29 S	Primary	Sunday	4:45 PM	313	298	171	164
83	Woodbury	62996218	US 20 E	Secondary	Sunday	12:50 PM	135	127	69	64
84	Woodbury	63042628	WESLEY PARKWAY	Secondary	Sunday	3:20 PM	182	172	79	73
							13493	**12846**	**5548**	**5059**

Table 2. 2023 Driver and Passenger Seat Belt Use by County (n)

	Driver				Right Front Passenger				Total			
County	Total	Belted	Not Belted	Un-known	Total	Belted	Not Belted	Un-known	Total	Belted	Not Belted	Un-known
Cass	1097	1043	53	1	479	443	36	0	1576	1486	89	1
Cedar	532	504	17	11	187	181	2	4	719	685	19	15
Clinton	683	652	22	9	169	155	9	5	852	807	31	14
Hamilton	434	387	10	37	176	104	13	59	610	491	23	96
Hardin	385	295	16	74	154	82	17	55	539	377	33	129
Jasper	1195	1158	13	24	520	491	4	25	1715	1649	17	49
Madison	304	284	16	4	108	73	6	29	412	357	22	33
Mills	938	908	30	0	550	512	38	0	1488	1420	68	0
Muscatine	468	438	17	13	113	108	5	0	581	546	22	13
O'Brien	256	241	5	10	79	75	0	4	335	316	5	14
Polk	3972	3851	91	30	1501	1433	54	14	5473	5284	145	44
Pottawattamie	1161	1121	40	0	622	572	50	0	1783	1693	90	0
Scott	1059	1017	26	16	427	401	16	10	1486	1418	42	26
Tama	188	170	18	0	49	40	4	5	237	210	22	5
Woodbury	821	777	25	19	414	389	7	18	1235	1166	32	37
TOTALS	**13493**	**12846**	**399**	**248**	**5548**	**5059**	**261**	**228**	**19041**	**17905**	**660**	**476**

Table 3. 202 Driver and Passenger Seat Belt Use by County (unweighted percentages)

County	Drivers		Right Front Passengers		TOTAL	
	% of Total Belted	% of Known Belted	% of Total Belted	% of Known Belted	% of Total Belted	% of Known Belted
Cass	95.1%	95.2%	92.5%	92.5%	94.3%	94.3%
Cedar	94.7%	96.7%	96.8%	98.9%	95.3%	97.3%
Clinton	95.5%	96.7%	91.7%	94.5%	94.7%	96.3%
Hamilton	89.2%	97.5%	59.1%	88.9%	80.5%	95.5%
Hardin	76.6%	94.9%	53.2%	82.8%	69.9%	92.0%
Jasper	96.9%	98.9%	94.4%	99.2%	96.2%	99.0%
Madison	93.4%	94.7%	67.6%	92.4%	86.7%	94.2%
Mills	96.8%	96.8%	93.1%	93.1%	95.4%	95.4%
Muscatine	93.6%	96.3%	95.6%	95.6%	94.0%	96.1%
O'Brien	94.1%	98.0%	94.9%	100.0%	94.3%	98.4%
Polk	97.0%	97.7%	95.5%	96.4%	96.5%	97.3%
Pottawattamie	96.6%	96.6%	92.0%	92.0%	95.0%	95.0%
Scott	96.0%	97.5%	93.9%	96.2%	95.4%	97.1%
Tama	90.4%	90.4%	81.6%	90.9%	88.6%	90.5%
Woodbury	94.6%	96.9%	94.0%	98.2%	94.4%	97.3%
Total	**95.2%**	**97.0%**	**91.2%**	**95.1%**	**94.0%**	**96.4%**

Table 4. 2023 Seat Belt Use by Road Type (n)

	Drivers				Right Front Passengers				Total Occupants			
Road Type	Total	Belted	Not Belted	Un-known	Total	Belted	Not Belted	Un-known	Total	Belted	Not Belted	Un-known
Local	677	619	41	17	194	177	11	6	871	796	52	23
Primary	8607	8319	190	98	3904	3618	165	121	12511	11937	355	219
Secondary	4209	3908	168	133	1450	1264	85	101	5659	5172	253	234
TOTAL	**13493**	**12846**	**399**	**248**	**5548**	**5059**	**261**	**228**	**19041**	**17905**	**660**	**476**

Table 5. 2023 Seat Belt Use by Road Type (unweighted percentages)

	Drivers		Right Front Passengers		Total	
Road Type	% of Total Belted	% of Known Belted	% of Total Belted	% of Known Belted	% of Total Belted	% of Known Belted
Local	91.4%	93.8%	91.2%	94.1%	91.4%	93.9%
Primary	96.7%	97.8%	92.7%	95.6%	95.4%	97.1%
Secondary	92.8%	95.9%	87.2%	93.7%	91.4%	95.3%
TOTAL	**95.2%**	**97.0%**	**91.2%**	**95.1%**	**94.0%**	**96.4%**

Table 6. 2023 Driver and Passenger Seat Belt Use by Day and Road Type (n & unweighted %)

	Drivers Belted	Total Drivers	Passengers Belted	Total Passengers	% Drivers Belted	% Passengers Belted
Sunday	**3073**	**3184**	**1506**	**1607**	**96.5%**	**93.7%**
Local	74	83	29	30	89.2%	96.7%
Primary	1816	1867	965	1015	97.3%	95.1%
Secondary	1183	1234	512	562	95.9%	91.1%
Monday	**886**	**941**	**231**	**244**	**94.2%**	**94.7%**
Local	103	109	15	16	94.5%	93.8%
Primary	0	0	0	0	0.0%	0.0%
Secondary	783	832	216	228	94.1%	94.7%
Tuesday	**1934**	**2063**	**728**	**842**	**93.7%**	**86.5%**
Local	60	75	20	24	80.0%	83.3%
Primary	1751	1848	680	787	94.8%	86.4%
Secondary	123	140	28	31	87.9%	90.3%
Wednesday	**2218**	**2308**	**608**	**671**	**96.1%**	**90.6%**
Local	5	6	2	3	83.3%	66.7%
Primary	1832	1892	508	559	96.8%	90.9%
Secondary	381	410	98	109	92.9%	89.9%
Thursday	**2105**	**2263**	**728**	**843**	**93.0%**	**86.4%**
Local	170	190	41	46	89.5%	89.1%
Primary	928	957	420	440	97.0%	95.5%
Secondary	1007	1116	267	357	90.2%	74.8%
Friday	**980**	**1030**	**393**	**424**	**95.1%**	**92.7%**
Local	24	25	5	5	96.0%	100.0%
Primary	658	676	305	323	97.3%	94.4%
Secondary	298	329	83	96	90.6%	86.5%
Saturday	**1650**	**1704**	**865**	**917**	**96.8%**	**94.3%**
Local	183	189	65	70	96.8%	92.9%
Primary	1334	1367	740	780	97.6%	94.9%
Secondary	133	148	60	67	89.9%	89.6%
Total	**12846**	**13493**	**5059**	**5548**	**95.2%**	**91.2%**

Table 7. Sample Weights and Seat Belt Use by Observation Site: Part B Reporting Data (n)

Site ID	Site Type	Date Observed	Sample Weight	Number of Drivers	Number of Front Passengers	Number of Occupants Belted	Number of Occupants Unbelted	Number of Occupants Unknown Belt Use
301	Original	7/11/2023	47.76406742	350	166	494	22	0
302	Original	7/11/2023	330.717446	301	123	401	23	0
303	Original	7/11/2023	83.33237406	361	166	501	25	1
304	Original	7/11/2023	1093.542917	55	17	55	17	0
305	Original	7/11/2023	381.5156151	30	7	35	2	0
306	Original	7/11/2023	231.5322024	78	13	85	4	2
307	Original	7/11/2023	33.35465161	221	93	300	9	5
308	Original	7/11/2023	1400.615166	24	11	33	1	1
309	Original	7/11/2023	223.2330819	190	63	243	4	6
310	Original	7/11/2023	13505.2184	19	7	24	1	1
311	Alternate	7/13/2023	310.5738325	124	27	141	9	1
312	Original	7/13/2023	2553.595256	135	26	147	8	6
313	Original	7/13/2023	468.2567764	156	38	184	7	3
314	Original	7/13/2023	6395.941711	65	12	74	3	0
315	Original	7/13/2023	227.2718916	203	66	261	4	4
316	Original	7/11/2023	44004.12511	32	11	31	1	11
317	Original	7/11/2023	23.43638478	98	42	107	2	31
318	Original	7/11/2023	62.43854024	174	67	202	6	33
319	Original	7/11/2023	48.50361707	129	56	150	14	21
320	Original	7/11/2023	7919.639615	1	0	1	0	0
321	Original	7/6/2023	108.8412011	109	44	124	15	14
322	Original	7/6/2023	1807.725441	122	43	128	4	33
323	Original	7/6/2023	2149.931632	13	3	7	0	9
324	Original	7/6/2023	7903.234144	8	0	4	3	1
325	Original	7/6/2023	114.0486426	133	64	114	11	72
326	Original	7/6/2023	1590.622391	225	75	285	1	14
327	Original	7/6/2023	3203.203685	13	5	16	0	2
328	Original	7/6/2023	46.75491782	326	184	496	4	10
329	Original	7/6/2023	124.6887654	314	138	436	4	12
330	Original	7/6/2023	103.2311211	317	118	416	8	11
331	Original	7/12/2023	11139.20342	3	1	3	0	1
332	Original	7/12/2023	187.2715634	244	98	302	12	28
333	Original	7/12/2023	277.5003028	46	6	41	9	2
334	Original	7/12/2023	1733.624868	8	1	7	1	1
335	Original	7/12/2023	15010.88792	3	2	4	0	1
336	Original	7/8/2023	4875.239511	31	13	40	4	0
337	Original	7/8/2023	40.17870062	243	139	366	16	0
338	Original	7/8/2023	42.67769356	208	142	337	13	0
339	Original	7/8/2023	375.2958392	319	193	494	18	0
340	Original	7/8/2023	816.532318	137	63	183	17	0
341	Original	7/10/2023	61.02668232	80	18	90	5	3
342	Original	7/10/2023	447.3230096	38	9	44	1	2
343	Original	7/10/2023	647.1841996	133	36	160	6	3

Site ID	Site Type	Date Observed	Sample Weight	Number of Drivers	Number of Front Passengers	Number of Occupants Belted	Number of Occupants Unbelted	Number of Occupants Unknown Belt Use
344	Original	7/10/2023	588.9716003	150	41	181	6	4
345	Original	7/10/2023	2209.655156	67	9	71	4	1
346	Original	7/10/2023	267.9291172	23	5	28	0	0
347	Original	7/10/2023	1026.588464	91	31	114	4	4
348	Original	7/10/2023	370.252558	113	38	142	0	9
349	Original	7/10/2023	1259.320084	10	3	13	0	0
350	Original	7/10/2023	942.9104692	19	2	19	1	1
351	Original	7/5/2023	534.0552336	487	154	621	12	8
352	Original	7/2/2023	130.1634286	220	115	325	10	0
353	Original	7/2/2023	11848.34123	5	0	5	0	0
354	Original	7/2/2023	578.7946428	234	85	309	10	0
355	Original	7/1/2023	12239.90208	158	57	208	7	0
356	Original	7/5/2023	334.8498123	596	216	780	18	14
357	Alternate	7/22/2023	867.9286059	586	303	865	24	0
358	Original	7/1/2023	46.7796284	11	3	12	2	0
359	Original	7/5/2023	334.4006287	150	44	186	4	4
360	Original	7/2/2023	670.5806222	566	287	837	16	0
361	Original	7/5/2023	131.3698877	565	91	637	10	9
362	Original	7/5/2023	1019.364875	206	58	245	11	8
363	Original	7/1/2023	338.5022629	11	4	10	4	1
365	Original	7/2/2023	239.1784889	177	84	244	17	0
366	Original	7/9/2023	1559.146041	1	0	1	0	0
367	Original	7/9/2023	1214.770515	356	220	561	15	0
368	Original	7/9/2023	159.856342	269	119	365	23	0
369	Original	7/9/2023	125.9489281	363	218	556	25	0
370	Alternate	7/9/2023	899.9487487	172	65	210	27	0
371	Original	7/7/2023	3388.001588	160	50	193	10	7
372	Original	7/7/2023	570.8568078	326	157	468	8	7
373	Original	7/7/2023	260.1531308	350	166	495	12	9
374	Original	7/7/2023	15512.09203	6	2	7	1	0
375	Original	7/10/2023	849.0066139	217	52	255	11	3
376	Original	7/14/2023	105.3294625	47	11	58	0	0
377	Original	7/14/2023	1239.451534	90	26	90	22	4
378	Original	7/14/2023	12978.58445	5	0	5	0	0
379	Original	7/14/2023	1712.851845	32	9	40	0	1
380	Alternate	7/14/2023	8896.318191	14	3	17	0	0
381	Original	7/9/2023	1935.159127	77	30	97	7	3
382	Original	7/9/2023	32059.85385	114	65	171	1	7
383	Original	7/9/2023	39.26782778	313	171	462	9	13
384	Original	7/9/2023	89.73162702	135	69	191	3	10
385	Original	7/9/2023	565.4102821	182	79	245	12	4
			TOTALS:	**13493**	**5548**	**17905**	**660**	**476**

Appendix A. Observation Site Form 2023

Iowa Seat Belt Survey

Observation Site Form

Data Collector ID# _____ **Date:** _____ / _____ **/2023**

Site Identification:

ID: _____ **County :** _____

Road Name: _____ **Co Site #:** _____

Site Start and End Time:

Start time for observations: _____**am/pm**

End time for observations: _____**am/pm**

(Total observation period MUST last exactly 45 minutes)

Site Description:

Selected traffic flow direction: North South East West

Total number of lanes in selected direction: _____

Weather Conditions: **Clear** **Cloudy/PC** **Light Fog** **Light Rain**

Alternate Site Information:

Is this an alternate site (not including a recommended observation point)**?** **No** **Yes**

If yes, why was an alternate site needed?

_____

Traffic Count:

Is a traffic count required (exit ramp or rest stop)**?** **No** **Yes**

If yes,
Number of Cars: _____ **Duration:** _____

Appendix B. Observation Tally Form 2023

Iowa Seat Belt Survey – Observation Form

County: _____ **Page** ___ **of** ___

County site #: _____

ID #: _____ **Data Collector ID#** _____

Responses: Y = Yes, N = No, U = Unknown, NP = No Passenger

VEHICLE NUMBER	DRIVER SEATBELT USE			PASSENGER SEATBELT USE			
1	Y	N	U	Y	N	U	NP
2	Y	N	U	Y	N	U	NP
3	Y	N	U	Y	N	U	NP
4	Y	N	U	Y	N	U	NP
5	Y	N	U	Y	N	U	NP
6	Y	N	U	Y	N	U	NP
7	Y	N	U	Y	N	U	NP
8	Y	N	U	Y	N	U	NP
9	Y	N	U	Y	N	U	NP
10	Y	N	U	Y	N	U	NP
11	Y	N	U	Y	N	U	NP
12	Y	N	U	Y	N	U	NP
13	Y	N	U	Y	N	U	NP
14	Y	N	U	Y	N	U	NP
15	Y	N	U	Y	N	U	NP
16	Y	N	U	Y	N	U	NP
17	Y	N	U	Y	N	U	NP
18	Y	N	U	Y	N	U	NP
19	Y	N	U	Y	N	U	NP
20	Y	N	U	Y	N	U	NP
21	Y	N	U	Y	N	U	NP
22	Y	N	U	Y	N	U	NP
23	Y	N	U	Y	N	U	NP
24	Y	N	U	Y	N	U	NP
25	Y	N	U	Y	N	U	NP
26	Y	N	U	Y	N	U	NP
27	Y	N	U	Y	N	U	NP
28	Y	N	U	Y	N	U	NP
29	Y	N	U	Y	N	U	NP
30	Y	N	U	Y	N	U	NP
31	Y	N	U	Y	N	U	NP
32	Y	N	U	Y	N	U	NP
33	Y	N	U	Y	N	U	NP
34	Y	N	U	Y	N	U	NP
35	Y	N	U	Y	N	U	NP
36	Y	N	U	Y	N	U	NP
37	Y	N	U	Y	N	U	NP
38	Y	N	U	Y	N	U	NP
39	Y	N	U	Y	N	U	NP
40	Y	N	U	Y	N	U	NP

VEHICLE NUMBER	DRIVER SEATBELT USE			PASSENGER SEATBELT USE			
41	Y	N	U	Y	N	U	NP
42	Y	N	U	Y	N	U	NP
43	Y	N	U	Y	N	U	NP
44	Y	N	U	Y	N	U	NP
45	Y	N	U	Y	N	U	NP
46	Y	N	U	Y	N	U	NP
47	Y	N	U	Y	N	U	NP
48	Y	N	U	Y	N	U	NP
49	Y	N	U	Y	N	U	NP
50	Y	N	U	Y	N	U	NP
51	Y	N	U	Y	N	U	NP
52	Y	N	U	Y	N	U	NP
53	Y	N	U	Y	N	U	NP
54	Y	N	U	Y	N	U	NP
55	Y	N	U	Y	N	U	NP
56	Y	N	U	Y	N	U	NP
57	Y	N	U	Y	N	U	NP
58	Y	N	U	Y	N	U	NP
59	Y	N	U	Y	N	U	NP
60	Y	N	U	Y	N	U	NP
61	Y	N	U	Y	N	U	NP
62	Y	N	U	Y	N	U	NP
63	Y	N	U	Y	N	U	NP
64	Y	N	U	Y	N	U	NP
65	Y	N	U	Y	N	U	NP
66	Y	N	U	Y	N	U	NP
67	Y	N	U	Y	N	U	NP
68	Y	N	U	Y	N	U	NP
69	Y	N	U	Y	N	U	NP
70	Y	N	U	Y	N	U	NP
71	Y	N	U	Y	N	U	NP
72	Y	N	U	Y	N	U	NP
73	Y	N	U	Y	N	U	NP
74	Y	N	U	Y	N	U	NP
75	Y	N	U	Y	N	U	NP
76	Y	N	U	Y	N	U	NP
77	Y	N	U	Y	N	U	NP
78	Y	N	U	Y	N	U	NP
79	Y	N	U	Y	N	U	NP
80	Y	N	U	Y	N	U	NP