

**Iowa Seat Belt Use Survey
2017 Data Collection
Methodology Report**

August 31, 2017

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Introduction

In an effort to achieve greater consistency and comparability in state-wide seat belt use reporting, the National Highway Traffic Safety Administration (NHTSA) issued new requirements in 2011 for observing and reporting future seat belt use. 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.

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 the new requirements of the NHTSA. 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 the Center for Survey Statistics and Methodology. The plan was approved by NHTSA on March 19, 2012 and implemented for five years, in the summers of 2012-2016.

As required by NHTSA, the Iowa plan was revised in the fall of 2016. Dr. Emily Berg, Assistant Professor of Statistics at Iowa State University, followed the protocol of the approved plan and redrew the counties and road segments to be used for future data collection. After examining current county data relating to fatalities, vehicle miles traveled, and other relevant factors, she sampled 15 counties (as in 2012) but increased the number of sampled road segments from 75 to 84. Six of the 15 counties used in 2012-2016 were also selected for the new plan; nine counties were different. As in Iowa's 2012 plan, five road segments were sampled from each county; however the new plan increased the number of sampled road segments from Polk County to 14 because of its significantly higher traffic levels. The revised plan was submitted in December of 2016 and approved in March of 2017.

2017 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 2017 is Mick Mulhern, Program Administrator/Compliance Officer. The primary contact at CSSM is Janice Larson, Survey Unit Director. The CSSM Seat Belt Survey Project Manager is Jody Fox. The CSSM statistician for the 2017 Seat Belt Survey is Emily Berg, PhD, Assistant Professor of Statistics at Iowa State University. This report describes the data collection process for obtaining 2017 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 2017 seat belt use data collection involved several components: verifying the usability of the sampled sites, revising materials for Data Collectors, and notifying 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, with 5 sites in each of 14 sampled counties and 14 sites in Polk County. The sites are identified by MSLINK numbers. CSSM has worked with staff from *InTrans*, the Iowa State University Institute of Transportation, to obtain data and photographic resources that allowed staff to examine each site remotely for accessibility, safety, and practicality. Because all 84 sites used in 2017 were newly sampled, CSSM staff examined their location carefully and determined that 10 to 12 of the sites were either definitely or possibly not observable. Staff visited several sites to examine possible observation options. Eventually ten of the sites were replaced with comparable road segments that were deemed to be accessible, safe, and practical to observe. These 84 road segments or sites served as the final sample selected for 2017 data collection.

Materials Preparation.

After the 84 sites were finalized, CSSM staff used online maps and Google Earth to identify observation points that would be safe and still provide the visibility necessary to observe seat belt use. The Project Manager checked road construction schedules and, although construction existed in some places, there were no sites that would require an alternate location for that reason. CSSM staff prepared a series of maps for Data Collectors to use as references when traveling to sites. Department of Transportation maps, Google maps, and city maps all served as effective resources.

Equipment was procured for use by the Data Collectors, including vests, hats, warning lights, signs, stop watches, and clickers. Data collection forms were printed. Data Collection schedules were prepared for each Data Collector and administrative procedures were documented.

Notification.

Prior to the data collection process, 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 people 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 utilized five data collectors in 2017, responsible for 3-4 counties each. Two new data collectors were hired for 2017 while the other three were experienced, having worked as data collectors for the project in the past. Quality Control functions were filled by the Project Manager and Survey Unit Director.

A two-day training was held at CSSM facilities on June 5 & 6, 2017, with field data collection beginning on June 7, 2017. 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 provided by David Veneziano, Iowa LTAP Safety Circuit Rider at Iowa State University's Institute for Transportation (*InTrans*). The 2017 training agenda is shown in Figure 1.

The new data collectors received some additional one-on-one training with the Project Manager to ensure that they were comfortable with project procedures and observation site identification.

The QC Monitors reviewed the specific duties of the position. Quality Control duties included conducting unannounced site visits to a minimum of two sites for each Data Collector (12% of the total sites) 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. The Project Manager visited the first site observed by the two new data collectors as part of the QC monitoring process.

Data Collectors were provided with bright yellow vests and hats to wear for safety and protection from sun and light rain. Each Data Collector also had a flashing yellow light to put on his/her car and a clicker-counter and stop watch to use as needed. Each Data Collector was also provided with two "Survey Crew Ahead" signs and sandbag weights for use in high speed areas and other sites as appropriate.

Figure 1.

Seat Belt Data Collectors 2017 Training Agenda	
Seat Belt Survey Overview	
Study Design	
NHTSA Requirements	
Data Collection Requirements	
Definitions of terms	
Data Collection Procedures	
Assignments & Rescheduling	
Safety Training (David Veneziano, Safety Circuit Rider)	
Signage and visibility	
Roadway safety	
Site Locations	
Low/High volume roadways	
Locating assigned sites	
Site assignment sheets & maps	
Data Collection	
Data Collection & Observation forms	
Recording alternate site information	
Traffic Counts	
Recording observations	
Sites on Google Earth	
Quality Control and QC monitoring	
Timesheets and expense reports	
Field Practice	
Setting up road work signs	
Highway observations	
Practice counts	
Debriefing	

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 Appendix 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 three Data Collectors. A schedule of sites with observation start times was provided by the office 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 and continue for exactly 45 minutes.

Observations.

Data Collectors observed one lane and one direction of travel per observation site. The direction of travel was randomly assigned by the office; 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 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 at which data collectors could safely move their vehicles from the roadway. In some cases Data Collectors observed from their vehicle while, in many cases, observing from outside of the vehicle was most effective. At times Data Collectors found that sitting in the back of their pick-up truck 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 for 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 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. From 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 count continued

for 15 minutes, at which point 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 to adjust the seat belt usage observation data when observations were made away from the selected road segment at a rest stop or exit ramp. Five rest stop sites were used in 2017.

Alternate Sites.

If unexpected construction or difficulty in locating a useable and safe place to observe 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 2017 data collection, there were no new alternate sites needed unexpectedly.

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. There was very little rain during the observation week, and no observation periods were cancelled due to weather.

Results

Data collection for 2017 occurred from Wed, June 7 through Saturday, June 17, 2017. The 2017 seat belt use data collection resulted in the observation of **14,169 passenger vehicles**, with a right front seat passenger in 4,922 of those vehicles, for a total of **19,091 potential observations** of belt use. Of these 19,091 potential observations, there were 13,431 drivers and 4,524 right front passengers who were observed to be wearing seat belts (total 17,955 seat belt users). Seat belts were not worn by 568 drivers and 331 right front passengers (total 899 unbelted). Data collectors were unable to observe the seat belt use of 170 drivers and 67 passengers (total 237 unknown use). The unknown use, or **“nonresponse rate,” is .0124 or 1.24%**. This is well within the range allowed by federal regulations, which require the nonresponse rate to be below 10%.

The number of observations in 2017 is more than in previous years due to the increased number of sites observed. The 19,091 total observations this year constitute a 7% increase over the 17,785 observations in 2016. Federal regulations require a minimum of 7500 observations, and the 2017 total of 14,169 passenger vehicles with 19,091 observed occupants far exceeds the minimum.

Eleven quality control checks were completed in 2017. Four data collectors were observed by a quality control monitor at two unannounced sites and one data collector was observed at three unannounced sites, to ensure compliance with project protocols. This comprises 13% of the sites (11 out of 84), which exceeds the minimum of 5% required by federal regulations. No problems were identified through these quality control checks

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 2017 is 91.4%**, with an estimated standard error of 1.08% ($\pm 1\%$). By comparison, the weighted seat belt use rates for previous years were 93.8% in 2016, 93.0% in 2015, 92.8% in 2014, 91.9% in 2013, and 92.4% in 2012.

The decline in state-wide seat belt use could be attributable to the change in sampled site locations for the 2017 data collection. Additionally, the figure below shows that the decline in state-wide seat belt use occurred on local and secondary roads, not on primary roads.

Figure 3.

Road Type	2016 Estimated Seat Belt Use	2016 Estimated Standard Error (%)	2017 Estimated Seat Belt Use	2017 Estimated Standard Error (%)
Local	93%	1.85	90%	2.62
Secondary	94%	0.68	91%	2.21
Primary	95%	1.39	96%	0.68
State-level	93.8%	0.58	91.4%	1.08

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 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 required the new 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 seat belt use of drivers and passengers by time of day and road type. The percentages included in the table are unweighted.

Table 8 contains sample weights for each observation site as well as seat belt use for drivers and passengers (number or count). This information is used for Part B reporting purposes.

Appendix A. Observation Site Form

Appendix B. Observation Tally Form

Table 1. 2017 Seat Belt Usage

No	County	MSLINK	Location	Road Type	Day	Start Time	Vehicle Count	Drivers Belted	Right Front Passenger Count	Right Front Passenger Belted
1	Allamakee	4235	IOWA 76	Secondary	Sun	8:57 AM	20	17	12	7
2	Allamakee	3960	IOWA 9	Secondary	Sun	10:30 AM	52	43	26	20
3	Allamakee	3913	Iowa 9/Rossville Rd	Secondary	Sun	11:43 AM	105	91	51	49
4	Allamakee	4521	Forest Mills Rd	Secondary	Sun	1:43 PM	14	11	5	5
5	Allamakee	4246	HWY 364/X52	Secondary	Sun	3:10 PM	50	45	30	26
6	Black Hawk	19383	W Airline Hwy	Local	Tues	9:45 AM	62	59	16	13
7	Black Hawk	20322	Lafayette St.	Local	Tues	10:50 AM	10	7	5	4
8	Black Hawk	14933	US 20	Secondary	Tues	12:15 PM	414	398	121	112
9	Black Hawk	14762	I 380	Primary	Tues	2:15 PM	206	203	112	109
10	Black Hawk	15023	Hudson Rd.	Secondary	Tues	3:50 PM	110	106	31	28
11	Cerro Gordo	46024	190TH ST	Secondary	Fri	7:26 AM	17	12	0	0
12	Cerro Gordo	45722	S Federal Ave.	Secondary	Fri	8:38 AM	163	150	27	25
13	Cerro Gordo	47140	1ST ST NW	Local	Fri	9:44 AM	104	93	25	21
14	Cerro Gordo	45427	I 35	Primary	Fri	11:18 AM	291	277	130	125
15	Cerro Gordo	45409	I 35	Primary	Fri	12:35 PM	280	275	126	120
16	Clayton	57598	US 18	Secondary	Mon	7:43 AM	64	57	17	16
17	Clayton	57848	IOWA 13	Secondary	Mon	9:20 AM	68	60	16	16
18	Clayton	57842	IOWA 13	Secondary	Mon	10:14 AM	61	53	22	18
19	Clayton	58386	Littleport Rd	Secondary	Mon	12:11 PM	7	3	0	0
20	Clayton	57789	IOWA 13/Elkader St	Secondary	Mon	1:34 PM	55	49	18	15
21	Franklin	97664	I 35	Primary	Fri	10:40 AM	255	241	122	110
22	Franklin	97666	I 35	Primary	Fri	12:42 PM	341	324	57	54
23	Franklin	97686	I 35	Primary	Fri	2:05 PM	277	265	129	125
24	Franklin	97753	US 65	Secondary	Fri	3:15 PM	87	73	22	16
25	Franklin	97955	Vine Ave	Secondary	Fri	4:30 PM	9	6	1	1
26	Harrison	331806	I 29	Primary	Thurs	8:45 AM	26	25	7	6
27	Harrison	116865	I 29	Primary	Thurs	10:15 AM	343	308	124	99
28	Harrison	116946	I 29	Primary	Thurs	12:15 PM	201	187	55	47
29	Harrison	118343	Locust St	Secondary	Thurs	2:30 PM	10	7	2	1
30	Harrison	117168	IOWA 44	Secondary	Thurs	3:50 PM	14	10	3	0
31	Jefferson	138811	Packwood Rd	Secondary	Thurs	11:30 AM	34	32	4	4
32	Jefferson	138218	IOWA 1	Secondary	Thurs	12:40 PM	35	32	7	6
33	Jefferson	138095	W Burlington Ave.	Secondary	Thurs	4:00 PM	320	302	69	61
34	Jefferson	139125	W STONE AVE	Local	Thurs	2:30 PM	25	20	1	1
35	Jefferson	323114	US 34	Secondary	Thurs	5:10 PM	141	138	56	52
36	Johnson	140987	US 218	Secondary	Sun	8:30 AM	213	211	117	107
37	Johnson	141286	Oak Crest Hill Rd NE	Secondary	Sun	9:30 AM	64	63	31	30
38	Johnson	333258	I 380	Primary	Sun	11:00 AM	544	539	290	281
39	Johnson	140631	I 80	Primary	Sun	12:20 PM	535	529	289	266
40	Johnson	143520	S Madison St.	Local	Sun	2:10 PM	29	27	12	11
41	Linn	159181	IOWA 13	Secondary	Mon	9:00 AM	114	111	31	30
42	Linn	159157	IOWA 13	Secondary	Mon	10:10 AM	135	132	43	42
43	Linn	163355	Normandy Dr NE	Local	Mon	11:15 AM	6	6	1	1
44	Linn	341551	I 380	Primary	Mon	1:18 PM	259	259	90	84
45	Linn	160653	Wright Brothers SW	Local	Mon	2:50 PM	129	123	30	27
46	Marshall	183837	Zeller Ave	Secondary	Sat	8:30 AM	50	47	18	17
47	Marshall	185108	E State St.	Local	Sat	10:00 AM	35	34	18	15
48	Marshall	183738	S Center St.	Secondary	Sat	11:00 AM	231	223	112	109
49	Marshall	183538	240TH ST	Secondary	Sat	1:05 PM	261	252	119	118
50	Marshall	336356	240TH ST	Secondary	Sat	2:30 PM	160	151	102	91
51	Polk	218613	NE 12 th Ave	Secondary	Wed	8:30 AM	27	25	4	4
52	Polk	215189	I 35	Primary	Wed	12:51 PM	24	21	9	7
53	Polk	319250	I 35	Primary	Wed	9:55 AM	438	432	80	71
54	Polk	216270	NE 14TH ST	Primary	Sat	7:00 AM	99	94	33	27
55	Polk	223763	6TH AVE	Local	Wed	2:24 PM	247	230	60	51
56	Polk	220551	E Hartford Ave	Local	Sat	8:02 AM	404	399	198	192
57	Polk	216087	NE 14TH ST	Secondary	Tues	9:30 AM	309	272	70	59
58	Polk	216414	E Army Post Rd	Local	Tues	10:35 AM	162	148	41	33
59	Polk	220874	Greenwood Dr	Local	Tues	11:50 AM	4	3	0	0
60	Polk	222431	58TH ST	Local	Tues	1:45 PM	2	1	0	0
61	Polk	318107	I 35	Primary	Tues	2:45 PM	426	399	84	75
62	Polk	214995	I 35	Primary	Fri	12:44 PM	493	466	102	98
63	Polk	317872	I 35	Primary	Fri	2:00 PM	648	627	158	144
64	Polk	317252	IOWA 141	Secondary	Fri	3:30 PM	391	385	143	142

No	County	MSLINK	Location	Road Type	Day	Start Time	Vehicle Count	Drivers Belted	Right Front Passenger Count	Right Front Passenger Belted
65	Pottawattamie	229510	HWY 680	Primary	Wed	10:45 AM	31	27	9	8
66	Pottawattamie	229263	I 80	Primary	Wed	12:55 PM	305	291	81	65
67	Pottawattamie	229243	I 80	Primary	Wed	2:20 PM	27	27	9	7
68	Pottawattamie	230312	Railroad Hwy	Secondary	Wed	3:50 PM	85	67	23	18
69	Pottawattamie	233270	S 1ST ST	Local	Wed	4:50 PM	249	222	61	50
70	Scott	242997	I 80	Primary	Sat	10:00 AM	339	333	126	123
71	Scott	243110	I 80	Primary	Sat	11:25 AM	16	16	10	10
72	Scott	245937	W Locust St	Local	Sat	1:30 PM	196	185	66	63
73	Scott	246372	E 42ND ST	Local	Sat	2:35 PM	75	75	32	30
74	Scott	243558	US 61	Secondary	Sat	4:10 PM	306	300	185	176
75	Woodbury	294873	Florence Ave	Local	Thurs	10:00 AM	20	16	4	3
76	Woodbury	296162	Fairmount St	Local	Thurs	11:20 AM	320	288	86	78
77	Woodbury	292360	Gordon Dr.	Secondary	Thurs	1:30 PM	201	177	53	46
78	Woodbury	292173	Singing Hills Blvd	Secondary	Thurs	2:30 PM	191	167	60	52
79	Woodbury	317734	I 29	Primary	Thurs	3:25 PM	292	276	96	75
80	Worth	298621	Thrush Ave	Secondary	Thurs	9:38 AM	22	20	2	2
81	Worth	298440	I 35	Primary	Thurs	10:59 AM	209	199	60	59
82	Worth	298465	I 35	Primary	Thurs	12:12 PM	301	293	137	131
83	Worth	298467	I 35	Primary	Thurs	1:28 PM	264	255	88	84
84	Worth	299696	Mallard Ave	Secondary	Thurs	2:40 PM	10	9	0	0
TOTALS							14169	13431	4922	4524

Table 2. 2017 Driver and Passenger Seat Belt Use by County (n)

County	Drivers				Right Front Passengers				TOTAL			
	Total	Belted	Not Belted	Un-known	Total	Belted	Not Belted	Un-known	Total	Belted	Not Belted	Un-known
Allamakee	241	207	24	10	124	107	10	7	365	314	34	17
Black Hawk	802	773	27	2	285	266	17	2	1,087	1,039	44	4
Cerro Gordo	855	807	40	8	308	291	10	7	1,163	1,098	50	15
Clayton	255	222	24	9	73	65	5	3	328	287	29	12
Franklin	969	909	25	35	331	306	14	11	1,300	1,215	39	46
Harrison	594	537	47	10	191	153	37	1	785	690	84	11
Jefferson	555	524	24	7	137	124	11	2	692	648	35	9
Johnson	1,385	1,369	10	6	739	695	32	12	2,124	2,064	42	18
Linn	643	631	9	3	195	184	4	7	838	815	13	10
Marshall	737	707	28	2	369	350	19	0	1,106	1,057	47	2
Polk	3,674	3,502	145	27	982	903	76	3	4,656	4,405	221	30
Pottawattamie	697	634	51	12	183	148	34	1	880	782	85	13
Scott	932	909	16	7	419	402	14	3	1,351	1,311	30	10
Woodbury	1,024	924	86	14	299	254	44	1	1,323	1,178	130	15
Worth	806	776	12	18	287	276	4	7	1,093	1,052	16	25
Total	14,169	13,431	568	170	4,922	4,524	331	67	19,091	17,955	899	237

Table 3. 2017 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
Allamakee	85.9%	89.6%	86.3%	91.5%	86.0%	90.2%
Black Hawk	96.4%	96.6%	93.3%	94.0%	95.6%	95.9%
Cerro Gordo	94.4%	95.3%	94.5%	96.7%	94.4%	95.6%
Clayton	87.1%	90.2%	89.0%	92.9%	87.5%	90.8%
Franklin	93.8%	97.3%	92.4%	95.6%	93.5%	96.9%
Harrison	90.4%	92.0%	80.1%	80.5%	87.9%	89.1%
Jefferson	94.4%	95.6%	90.5%	91.9%	93.6%	94.9%
Johnson	98.8%	99.3%	94.0%	95.6%	97.2%	98.0%
Linn	98.1%	98.6%	94.4%	97.9%	97.3%	98.4%
Marshall	95.9%	96.2%	94.9%	94.9%	95.6%	95.7%
Polk	95.3%	96.0%	92.0%	92.2%	94.6%	95.2%
Pottawattamie	91.0%	92.6%	80.9%	81.3%	88.9%	90.2%
Scott	97.5%	98.3%	95.9%	96.6%	97.0%	97.8%
Woodbury	90.2%	91.5%	84.9%	85.2%	89.0%	90.1%
Worth	96.3%	98.5%	96.2%	98.6%	96.2%	98.5%
Total	94.8%	95.9%	91.9%	93.2%	94.0%	95.2%

Table 4. 2017 Seat Belt Use by Road Type (n)

Road Type	Drivers				Right Front Passengers				Total			
	Total	Belted	Not Belted	Un-Known	Total	Belted	Not Belted	Un-Known	Total	Belted	Not Belted	Un-Known
Local	2,079	1,936	123	20	656	593	56	7	2,735	2,529	179	27
Primary	7,470	7,188	181	101	2,613	2,410	162	41	10,083	9,598	343	142
Secondary	4,620	4,307	264	49	1,653	1,521	113	19	6,273	5,828	377	68
TOTAL	14,169	13,431	568	170	4,922	4,524	331	67	19,091	17,955	899	237

Table 5. 2017 Seat Belt Use by Road Type (unweighted percentages)

Road Type	Drivers		Right Front Passengers		TOTAL	
	% of Total Belted	% of Known Belted	% of Total Belted	% of Known Belted	% of Total Belted	% of Known Belted
Local	93.1%	94.0%	90.4%	91.4%	92.5%	93.4%
Primary	96.2%	97.5%	92.2%	93.7%	95.2%	96.5%
Secondary	93.2%	94.2%	92.0%	93.1%	92.9%	93.9%
TOTAL	94.8%	95.9%	91.9%	93.2%	94.0%	95.2%

Table 6. 2017 Driver and Passenger Seat Belt Use by Day of Week and Road Type (n & unweighted %)

	Drivers Belted	Total Drivers	Passengers Belted	Total Passengers	% Drivers Belted	% Passengers Belted
Sunday	1576	1626	802	863	96.9%	92.9%
Local	27	29	11	12	93.1%	91.7%
Primary	1068	1079	547	579	99.0%	94.5%
Secondary	481	518	244	272	92.9%	89.7%
Monday	853	898	249	268	95.0%	92.9%
Local	129	135	28	31	95.6%	90.3%
Primary	259	259	84	90	100.0%	93.3%
Secondary	465	504	137	147	92.3%	93.2%
Tuesday	1596	1705	433	480	93.6%	90.2%
Local	218	240	50	62	90.8%	80.6%
Primary	602	632	184	196	95.3%	93.9%
Secondary	776	833	199	222	93.2%	89.6%
Wednesday	1342	1433	281	336	93.6%	83.6%
Local	452	496	101	121	91.1%	83.5%
Primary	798	825	158	188	96.7%	84.0%
Secondary	92	112	22	27	82.2%	81.5%
Thursday	2761	2979	807	914	92.7%	88.3%
Local	324	365	82	91	88.8%	90.1%
Primary	1543	1636	501	567	94.3%	88.4%
Secondary	894	978	224	256	91.4%	87.5%
Friday	3194	3356	981	1042	95.2%	94.1%
Local	93	104	21	25	89.4%	84.0%
Primary	2475	2585	776	824	95.7%	94.2%
Secondary	626	667	184	193	93.9%	95.3%
Saturday	2109	2172	971	1019	97.1%	95.3%
Local	693	710	300	314	97.6%	95.5%
Primary	443	454	160	169	97.6%	94.7%
Secondary	973	1008	511	536	96.5%	95.3%
Total	13431	14169	4524	4922	94.8%	91.9%

Table 7. Driver and Passenger Seat Belt Use by Time of Day and Road Type (n & unweighted %)

	Drivers Belted	Total Drivers	Passengers Belted	Total Passengers	% Drivers Belted	% Passengers Belted
7AM to 759AM	120	131	32	38	91.6%	84.2%
Primary	94	99	27	33	94.9%	81.8%
Secondary	26	32	5	5	81.3%	100.0%
8AM to 859AM	729	755	309	329	96.6%	93.9%
Local	399	404	192	198	98.8%	97.0%
Primary	8	9	2	2	88.9%	100.0%
Secondary	322	342	115	129	94.2%	89.1%
9AM to 959AM	683	735	184	202	92.9%	91.1%
Local	50	55	11	13	90.9%	84.6%
Primary	60	61	11	13	98.4%	84.6%
Secondary	573	619	162	176	92.6%	92.0%
10AM to 1059AM	1724	1832	507	575	94.1%	88.2%
Local	228	250	58	71	91.2%	81.7%
Primary	1159	1214	344	386	95.5%	89.1%
Secondary	337	368	105	118	91.6%	89.0%
11AM to 1159AM	1815	1911	767	806	95.0%	95.2%
Local	345	383	91	103	90.1%	88.3%
Primary	1166	1204	533	554	96.8%	96.2%
Secondary	304	324	143	149	93.8%	96.0%
12PM to 1259PM	1980	2062	708	763	96.0%	92.8%
Local	31	35	8	9	88.6%	88.9%
Primary	1475	1525	559	603	96.7%	92.7%
Secondary	474	502	141	151	94.4%	93.4%
1PM to 159PM	1882	1971	574	617	95.5%	93.0%
Local	122	130	42	43	93.8%	97.7%
Primary	1342	1392	370	404	96.4%	91.6%
Secondary	418	449	162	170	93.1%	95.3%
2PM to 259PM	2000	2110	654	709	94.8%	92.2%
Local	356	381	96	107	93.4%	89.7%
Primary	1338	1386	438	465	96.5%	94.2%
Secondary	306	343	120	137	89.2%	87.6%
3PM to 359PM	1179	1259	345	391	93.6%	88.2%
Local	183	192	46	51	95.3%	90.2%
Primary	463	492	103	124	94.1%	83.1%
Secondary	533	575	196	216	92.7%	90.7%
4PM to 459PM	1013	1072	355	390	94.5%	91.0%
Local	56	62	12	15	90.3%	80.0%
Primary	83	88	23	29	94.3%	79.3%
Secondary	874	922	320	346	94.8%	92.5%
5PM to 559PM	306	331	89	102	92.4%	87.3%
Local	166	187	37	46	88.8%	80.4%
Secondary	140	144	52	56	97.2%	92.9%
Total	13431	14169	4524	4922	94.8%	91.9%

Table 8. 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
201	Original	6/11/2017	2330.68	20	12	24	4	4
202	Original	6/11/2017	1719.89	52	26	63	12	3
203	Original	6/11/2017	282.03	105	51	140	11	5
204	Original	6/11/2017	3423.12	14	5	16	2	1
205	Original	6/11/2017	8343.15	50	30	71	5	4
206	Original	6/13/2017	307.13	62	16	72	6	0
207	Original	6/13/2017	4732.98	10	5	11	4	0
208	Original	6/13/2017	33.41	414	121	510	22	3
209	Original	6/13/2017	34.02	206	112	312	5	1
210	Original	6/13/2017	547.53	110	31	134	7	0
211	Original	6/16/2017	2990.25	17	0	12	4	1
212	Original	6/16/2017	263.27	163	27	175	14	1
213	Original	6/16/2017	8379.34	104	25	114	13	2
214	Original	6/16/2017	45.81	291	130	402	16	3
215	Original	6/16/2017	46.15	280	126	395	3	8
216	Original	6/12/2017	1650.21	64	17	73	6	2
217	Original	6/12/2017	1007.35	68	16	76	5	3
218	Original	6/12/2017	697.67	61	22	71	8	4
219	Original	6/12/2017	1391.32	7	0	3	4	0
220	Original	6/12/2017	715.92	55	18	64	6	3
221	Original	6/16/2017	77.27	255	122	351	12	14
222	Original	6/16/2017	57.98	341	57	378	3	17
223	Original	6/16/2017	60.93	277	129	390	5	11
224	Original	6/16/2017	394.09	87	22	89	16	4
225	Original	6/16/2017	6893.71	9	1	7	3	0
226	Original	6/8/2017	275.10	26	7	31	2	0
227	Original	6/8/2017	510.90	343	124	407	52	8
228	Original	6/8/2017	46.89	201	55	234	19	3
229	Original	6/8/2017	19412.4	10	2	8	4	0
230	Original	6/8/2017	2050.40	14	3	10	7	0
231	Original	6/8/2017	768.51	34	4	36	1	1
232	Original	6/8/2017	781.49	35	7	38	1	3
233	Original	6/8/2017	1946.22	25	1	21	5	0
234	Original	6/8/2017	1014.59	320	69	363	24	2
235	Original	6/8/2017	144.92	141	56	190	4	3
236	Original	6/11/2017	47.35	213	117	318	10	2
237	Original	6/11/2017	2339.39	64	31	93	2	0
238	Original	6/11/2017	62.27	544	290	820	11	3
239	Original	6/11/2017	217.27	535	289	795	18	11
240	Original	6/11/2017	1473.39	29	12	38	1	2
241	Original	6/12/2017	352.56	114	31	141	3	1
242	Original	6/12/2017	292.44	135	43	174	2	2

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
243	Original	6/12/2017	3411.28	6	1	7	0	0
244	Original	6/12/2017	185.60	259	90	343	2	4
245	Original	6/12/2017	391.09	129	30	150	6	3
246	Original	6/10/2017	1223.51	50	18	64	4	0
247	Original	6/10/2017	2265.63	35	18	49	4	0
248	Original	6/10/2017	1101.32	231	112	332	10	1
249	Original	6/10/2017	395.13	261	119	370	9	1
250	Original	6/10/2017	166.31	160	102	242	20	0
251	Original	6/7/2017	4252.12	27	4	29	2	0
252	Original	6/14/2017	23.19	24	9	28	4	1
253	Original	6/7/2017	94.06	438	80	503	15	0
254	Original	6/17/2017	2014.13	99	33	121	9	2
255	Original	6/14/2017	118.61	247	60	281	18	8
256	Original	6/17/2017	309.42	404	198	591	10	1
257	Original	6/13/2017	965.18	309	70	331	47	1
258	Original	6/13/2017	1121.58	162	41	181	21	1
259	Original	6/13/2017	3940.02	4	0	3	1	0
260	Original	6/13/2017	3037.10	2	0	1	1	0
261	Original	6/13/2017	164.94	426	84	474	26	10
262	Original	6/9/2017	97.69	493	102	564	28	3
263	Original	6/9/2017	18.43	648	158	771	34	1
264	Original	6/9/2017	533.84	391	143	527	5	2
265	Original	6/7/2017	437.53	31	9	35	3	2
266	Original	6/7/2017	141.92	305	81	356	20	10
267	Original	6/7/2017	485.35	27	9	34	2	0
268	Original	6/7/2017	1212.31	85	23	85	22	1
269	Original	6/7/2017	200.35	249	61	272	38	0
270	Original	6/10/2017	28.17	339	126	456	5	4
271	Original	6/10/2017	241.30	16	10	26	0	0
272	Original	6/10/2017	149.50	196	66	248	13	1
273	Original	6/10/2017	4563.28	75	32	105	1	1
274	Original	6/10/2017	79.69	306	185	476	11	4
275	Original	6/15/2017	3041.10	20	4	19	5	0
276	Original	6/15/2017	1403.80	320	86	366	32	8
277	Original	6/15/2017	1305.55	201	53	223	29	2
278	Original	6/15/2017	439.23	191	60	219	29	3
279	Original	6/15/2017	311.79	292	96	351	35	2
280	Original	6/15/2017	996.36	22	2	22	1	1
281	Original	6/15/2017	235.00	209	60	258	6	5
282	Original	6/15/2017	103.50	301	137	424	7	7
283	Original	6/15/2017	114.38	264	88	339	1	12
284	Original	6/15/2017	3718.52	10	0	9	1	0
TOTALS				14,169	4,922	17,955	899	237

Appendix A. Observation Site Form 2017

Iowa Seat Belt Survey
Observation Site Form

Data Collector ID# _____

Date: ____ / ____ 2017

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 2017

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			
	Y	N	U	Y	N	U	NP
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			
	Y	N	U	Y	N	U	NP
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