Iowa Seat Belt Use Survey
2018 Data Collection
Methodology Report

September 11, 2018

Prepared by
JM Larson, JR Fox, E Berg
Iowa State University
Center for Survey Statistics & Methodology

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY
AMES, IOWA

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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 original 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. This plan was implemented by CSSM in 2017 and again in 2018.

2018 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 2018 is Cinnamon Weigel, Occupant Protection Coordinator. 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 2018 Seat Belt Survey is Emily Berg, PhD, Assistant Professor of Statistics at Iowa State University. This report describes the data collection process for obtaining 2018 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 2018 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 allow staff to examine each site remotely for accessibility, safety, and practicality. The CSSM Project Manager re-examined the 84 sites for any changes since 2017 and checked with the Department of Transportation and other online sources for scheduled construction that could impact traffic patterns. No significant issues were discovered and the same 84 sites were verified as useable for 2018 data collection.

Materials Preparation.

After the 84 sites were finalized, CSSM staff used online maps and Google Earth as well as notes from 2017 observers to identify and recommend observation points that would be safe and still provide the visibility necessary to observe seat belt use. CSSM staff updated existing 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 prepared 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 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 utilized five primary data collectors in 2018, responsible for 10 to 20 sites each. In addition, the Project Manager collected data at 2 of the sites. Three new data collectors were hired for 2018 while the others were experienced, having worked as data collectors for the project in the past. Quality Control functions were filled by three individuals: the Project Manager, one of the 2018 experienced data collectors, and a past quality control/data collector from previous years.

A two-day training was held at CSSM facilities on June 4 & 5, 2018, with field data collection beginning on June 7, 2018. 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 2018 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 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 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
2018 Training Agenda

Monday, June 4, 2018

Seat Belt Survey Overview
- Study Design
- NHTSA Requirements
- Data Collection Requirements
- Definitions of terms

Safety Training (David Veneziano, Safety Circuit Rider)
- Signage and visibility
- Roadway safety

Data Collection Procedures
- Assignments & Rescheduling

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

Site Review on Google Earth

Tuesday, June 5, 2018

Quality Control and QC monitoring

Field Practice
- Setting up road work signs
- Highway observations
- Practice counts

Timesheets and expense reports

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 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 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 2018.

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 2018 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 were several days with rain, thunderstorms, and/or tornado warnings during the observation week; as a result, nine sites were postponed and rescheduled due to inclement weather. Sites were rescheduled for similar days/times of day to ensure that the established balance of days and times was appropriately observed throughout the data collection period.

Results

Data collection for 2018 occurred from Thursday, June 7 through Tuesday, June 19, 2018. The 2018 seat belt use data collection resulted in the observation of **13,244 passenger vehicles**, with a right front seat passenger in 5,212 of those vehicles, for a total of **18,456 potential observations** of belt use. Of these 18,456 potential observations, there were 12,469 drivers and 4,743 right front passengers who were observed to be wearing seat belts (total 17,212 seat belt users). Seat belts were not worn by 538 drivers and 346 right front passengers (total 884 unbelted). Data collectors were unable to observe the seat belt use of 237 drivers and 123 passengers (total 360 unknown use). The **unknown use, or "nonresponse rate," is .0195 or 1.95%**. This is well within the range allowed by federal regulations, which require the nonresponse rate to be below 10%.

The number of observations in 2018 is 635 fewer than in 2017, which represents a decrease of 3.3%. The number of observations varies from year to year in part because sites are intentionally observed on different days of the week and times of day as much as is practical. Federal regulations require a minimum of 7500 observations, and the 2018 total of 13,244 passenger vehicles with 18,456 observed occupants far exceeds the minimum requirement.

Ten quality control checks were completed in 2018. Each of the five primary data collectors was observed by a quality control monitor at two unannounced sites to ensure compliance with project protocols. This comprises 12% of the sites (10 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 2018 is 93.9%**, with an **estimated standard error of .59% (± 1%)**. Weighted seat belt use rates since 2012 are shown in Figure 3 below.

Figure 3. Iowa's Annual Weighted Seat Belt Use Rate, 2012-2018.

2018	2017	2016	2015	2014	2013	2012
93.9%,	91.4%	93.8%	93.0%	92.8%	91.9%	92.4%

Figure 4 below shows that the highest rate of seat belt use in 2018 is on primary roads, i.e., interstates, while the lowest rate is on local roads.

Figure 4. Iowa's 2018 Seat Belt Use Rate and Standard Error.

Road Type	Iowa 2018 Estimated Seat Belt Use	Iowa 2018 Estimated Standard Error (%)
Local	92.4%	1.25
Secondary	93.7%	0.88
Primary	95.4%	0.56
State-level	**93.9%**	**0.59**

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. 2018 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	Friday	11:28 AM	19	16	3	2
2	Allamakee	3960	IOWA 9	Secondary	Friday	1:28 PM	57	50	13	12
3	Allamakee	3913	Iowa 9/Rossville Rd	Secondary	Friday	2:40 PM	112	99	33	26
4	Allamakee	4521	Forest Mills Rd	Secondary	Friday	3:47 PM	18	15	7	6
5	Allamakee	4246	HWY 364/X52	Secondary	Friday	5:14 PM	62	56	26	23
6	Black Hawk	19383	W Airline Hwy	Local	Sun	10:00 AM	80	76	38	35
7	Black Hawk	20322	Lafayette St.	Local	Sun	11:10 AM	11	10	4	4
8	Black Hawk	14933	US 20	Secondary	Sun	12:20 PM	322	303	186	172
9	Black Hawk	14762	I 380	Primary	Sun	1:50 PM	232	220	130	116
10	Black Hawk	15023	Hudson Rd.	Secondary	Sun	3:30 PM	103	93	50	45
11	Cerro Gordo	46024	190TH ST	Secondary	Thurs	8:30 AM	8	5	2	2
12	Cerro Gordo	45722	S Federal Ave.	Secondary	Thurs	9:45 AM	89	80	15	13
13	Cerro Gordo	47140	1ST ST NW	Local	Thurs	10:50 AM	97	90	19	14
14	Cerro Gordo	45427	I 35	Primary	Thurs	12:30 PM	280	275	131	119
15	Cerro Gordo	45409	I 35	Primary	Thurs	1:45 PM	239	222	107	94
16	Clayton	57598	US 18	Secondary	Sat	8:13 AM	114	103	47	42
17	Clayton	57848	IOWA 13	Secondary	Sat	9:35 AM	62	58	22	20
18	Clayton	57842	IOWA 13	Secondary	Sat	10:41 AM	118	110	69	66
19	Clayton	58386	Littleport Rd	Secondary	Sat	12:42 PM	12	12	5	4
20	Clayton	57789	IOWA 13/Elkader St	Secondary	Sat	2:00 PM	84	73	38	35
21	Franklin	97664	I 35	Primary	Fri	7:30 AM	145	138	56	54
22	Franklin	97666	I 35	Primary	Fri	8:55 AM	225	224	130	118
23	Franklin	97686	I 35	Primary	Fri	10:30 AM	230	228	126	118
24	Franklin	97753	US 65	Secondary	Fri	12:00 PM	70	64	27	22
25	Franklin	97955	Vine Ave	Secondary	Fri	1:15 PM	6	6	0	0
26	Harrison	331806	I 29	Primary	Sat	7:45 AM	24	21	13	11
27	Harrison	116865	I 29	Primary	Sat	9:20 AM	265	244	158	145
28	Harrison	116946	I 29	Primary	Sat	10:45 AM	280	267	197	174
29	Harrison	118343	Locust St	Secondary	Sat	12:45 PM	11	7	5	4
30	Harrison	117168	IOWA 44	Secondary	Sat	2:20 PM	15	14	5	5
31	Jefferson	138811	Packwood Rd	Secondary	Mon	10:36 AM	19	17	8	8
32	Jefferson	138218	IOWA 1	Secondary	Mon	11:50 AM	34	30	10	8
33	Jefferson	138095	W Burlington Ave.	Secondary	Mon	2:52 PM	331	299	75	66
34	Jefferson	139125	W STONE AVE	Local	Mon	1:55 PM	21	18	3	3
35	Jefferson	323114	US 34	Secondary	Mon	4:11 PM	157	145	42	41
36	Johnson	140987	US 218	Secondary	Tues	8:55 AM	284	275	119	112
37	Johnson	141286	Oak Crest Hill Rd NE	Secondary	Tues	10:10 AM	79	78	28	28
38	Johnson	333258	I 380	Primary	Tues	11:55 AM	398	377	105	102
39	Johnson	140631	I 80	Primary	Tues	1:55 PM	419	395	107	103
40	Johnson	143520	S Madison St.	Local	Tues	3:08 PM	99	96	25	22
41	Linn	159181	IOWA 13	Secondary	Thurs	9:19 AM	145	140	42	42
42	Linn	159157	IOWA 13	Secondary	Tues	11:33 AM	126	121	31	30
43	Linn	163355	Normandy Dr NE	Local	Tues	1:30 PM	4	4	0	0
44	Linn	341551	I 380	Primary	Tues	2:45 PM	317	307	103	98
45	Linn	160653	Wright Brothers SW	Local	Tues	4:10 PM	224	211	32	30
46	Marshall	183837	Zeller Ave	Secondary	Mon	10:45 AM	23	23	6	5
47	Marshall	185108	E State St.	Local	Mon	12:07 PM	52	45	11	7
48	Marshall	183738	S Center St.	Secondary	Mon	2:05 PM	181	176	47	41
49	Marshall	183538	240TH ST	Secondary	Mon	3:40 PM	309	302	88	82
50	Marshall	336356	240TH ST	Secondary	Mon	4:47 PM	162	158	43	38
51	Polk	218613	NE 12th Ave	Secondary	Sun	7:25 AM	15	14	4	4
52	Polk	215189	I 35	Primary	Sat	5:00 PM	15	15	7	7
53	Polk	319250	I 35	Primary	Sun	10:35 AM	400	391	206	185
54	Polk	216270	NE 14TH ST	Secondary	Wed	2:12 PM	192	187	36	36
55	Polk	223763	6TH AVE	Local	Sat	3:43 PM	247	224	105	97
56	Polk	220551	E Hartford Ave	Local	Wed	1:05 PM	109	104	18	14
57	Polk	216087	NE 14TH ST	Secondary	Wed	7:42 AM	266	246	32	27
58	Polk	216414	E Army Post Rd	Local	Wed	8:43 AM	217	195	37	33
59	Polk	220874	Greenwood Dr	Local	Wed	9:55 AM	5	4	2	2
60	Polk	222431	58TH ST	Local	Wed	10:55 AM	3	3	0	0
61	Polk	318107	I 35	Primary	Wed	12:04 PM	515	484	135	127
62	Polk	214995	I 35	Primary	Sun	9:43 AM	384	376	182	165
63	Polk	317872	I 35	Primary	Sun	11:15 AM	474	466	245	227
64	Polk	317252	IOWA 141	Secondary	Sun	12:43 PM	260	254	148	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	Fri	10:35 AM	15	13	9	8
66	Pottawattamie	229263	I 80	Primary	Fri	12:40 PM	210	186	77	59
67	Pottawattamie	229243	I 80	Primary	Fri	2:15 PM	40	36	20	17
68	Pottawattamie	230312	Railroad Hwy	Secondary	Fri	3:25 PM	70	58	23	19
69	Pottawattamie	233270	S 1ST ST	Local	Fri	4:45 PM	240	209	58	44
70	Scott	242997	I 80	Primary	Thurs	8:07 AM	246	227	88	85
71	Scott	243110	I 80	Primary	Thurs	9:31 AM	56	51	30	29
72	Scott	245937	W Locust St	Local	Thurs	11:00 AM	243	223	69	61
73	Scott	246372	E 42ND ST	Local	Thurs	1:04 PM	45	42	8	8
74	Scott	243558	US 61	Secondary	Thurs	2:37 PM	354	334	81	78
75	Woodbury	294873	Florence Ave	Local	Sat	8:55 AM	20	17	6	5
76	Woodbury	296162	Fairmount St	Local	Sat	11:00 AM	112	106	37	34
77	Woodbury	292360	Gordon Dr.	Secondary	Sat	12:00 PM	245	224	105	96
78	Woodbury	292173	Singing Hills Blvd	Secondary	Sat	2:00 PM	188	175	91	81
79	Woodbury	317734	I 29	Primary	Sat	3:10 PM	248	201	116	92
80	Worth	298621	Thrush Ave	Secondary	Sat	9:45 AM	28	26	12	11
81	Worth	298440	I 35	Primary	Sat	11:15 AM	329	315	208	189
82	Worth	298465	I 35	Primary	Sat	1:15 PM	281	276	178	163
83	Worth	298467	I 35	Primary	Sat	2:35 PM	395	388	251	230
84	Worth	299696	Mallard Ave	Secondary	Sat	3:55 PM	3	3	1	1
	TOTALS						**13244**	**12469**	**5212**	**4743**

Table 2. 2018 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	268	236	19	13	82	69	4	9	350	305	23	22
Black Hawk	748	702	34	12	408	372	30	6	1,156	1,074	64	18
Cerro Gordo	713	672	33	8	274	242	30	2	987	914	63	10
Clayton	390	356	17	17	181	167	4	10	571	523	21	27
Franklin	676	660	16	0	339	312	23	4	1015	972	39	4
Harrison	595	553	30	12	378	339	29	10	973	892	59	22
Jefferson	562	509	46	7	138	126	12	0	700	635	58	7
Johnson	1279	1221	38	20	384	367	15	2	1663	1588	53	22
Linn	816	783	27	6	208	200	8	0	1024	983	35	6
Marshall	727	704	22	1	195	173	19	3	922	877	41	4
Polk	3102	2963	79	60	1157	1066	62	29	4259	4,029	141	89
Pottawattamie	575	502	55	18	187	147	23	17	762	649	78	35
Scott	944	877	50	17	276	261	11	4	1220	1138	61	21
Woodbury	813	723	49	41	355	308	28	19	1168	1031	77	60
Worth	1036	1008	23	5	650	594	48	8	1686	1602	71	13
Total	**13,244**	**12,469**	**538**	**237**	**5,212**	**4,743**	**346**	**123**	**18,456**	**17,212**	**884**	**360**

Table 3. 2018 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	88.1%	92.5%	84.1%	94.5%	87.1%	93.0%
Black Hawk	93.9%	95.4%	91.2%	92.5%	92.9%	94.4%
Cerro Gordo	94.2%	95.3%	88.3%	89.0%	92.6%	93.6%
Clayton	91.3%	95.4%	92.3%	97.7%	91.6%	96.1%
Franklin	97.6%	97.6%	92.0%	93.1%	95.8%	96.1%
Harrison	92.9%	94.9%	89.7%	92.1%	91.7%	93.8%
Jefferson	90.6%	91.7%	91.3%	91.3%	90.7%	91.6%
Johnson	95.5%	97.0%	95.6%	96.1%	95.5%	96.8%
Linn	96.0%	96.7%	96.2%	96.2%	96.0%	96.6%
Marshall	96.8%	97.0%	88.7%	90.1%	95.1%	95.5%
Polk	95.5%	97.4%	92.1%	94.5%	94.6%	96.6%
Pottawattamie	87.3%	90.1%	78.6%	86.5%	85.2%	89.3%
Scott	92.9%	94.6%	94.6%	96.0%	93.3%	94.9%
Woodbury	88.9%	93.7%	86.8%	91.7%	88.3%	93.1%
Worth	97.3%	97.8%	91.4%	92.5%	95.0%	95.8%
Total	**94.1%**	**95.9%**	**91.0%**	**93.2%**	**93.3%**	**95.1%**

Table 4. 2018 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	1,829	1,677	130	22	472	413	42	17	2,301	2,090	172	39
Primary	6,662	6,343	187	132	3,115	2,835	212	68	9,777	9,178	399	200
Secondary	4,753	4,449	221	83	1,625	1,495	92	38	6,378	5,944	313	121
TOTAL	**13,244**	**12,469**	**538**	**237**	**5,212**	**4,743**	**346**	**123**	**18,456**	**17,212**	**884**	**360**

Table 5. 2018 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	91.7%	92.8%	87.5%	90.8%	90.8%	92.4%
Primary	95.2%	97.1%	91.0%	93.0%	93.9%	95.8%
Secondary	93.6%	95.3%	92.0%	94.2%	93.2%	95.0%
TOTAL	94.1%	95.9%	91.0%	93.2%	93.3%	95.1%

Table 6. 2018 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	**2594**	**2679**	**1326**	**1445**	**96.83%**	**91.76%**
Local	86	91	39	42	94.51%	92.86%
Primary	1841	1885	923	1014	97.67%	91.03%
Secondary	667	703	364	389	94.88%	93.57%
Monday	**1213**	**1289**	**299**	**333**	**94.10%**	**89.79%**
Local	63	73	10	14	86.30%	71.43%
Primary	0	0	0	0	0.00%	0.00%
Secondary	1150	1216	289	319	94.57%	90.60%
Tuesday	**1864**	**1950**	**525**	**550**	**95.59%**	**95.45%**
Local	311	327	52	57	95.11%	91.23%
Primary	1079	1134	303	315	95.15%	96.19%
Secondary	474	489	170	178	96.93%	95.51%
Wednesday	**1223**	**1307**	**239**	**260**	**93.57%**	**91.92%**
Local	306	334	49	57	91.62%	85.96%
Primary	484	515	127	135	93.98%	94.07%
Secondary	433	458	63	68	94.54%	92.65%
Thursday	**1689**	**1802**	**545**	**592**	**93.73%**	**92.06%**
Local	355	385	83	96	92.21%	86.46%
Primary	775	821	327	356	94.40%	91.85%
Secondary	559	596	135	140	93.79%	96.43%
Friday	**1398**	**1519**	**528**	**608**	**92.03%**	**86.84%**
Local	209	240	44	58	87.08%	75.86%
Primary	825	865	374	418	95.38%	89.47%
Secondary	364	414	110	132	87.92%	83.33%
Saturday	**2488**	**2698**	**1281**	**1424**	**92.22%**	**89.96%**
Local	347	379	136	148	91.56%	91.89%
Primary	1339	1442	781	877	92.86%	89.05%
Secondary	802	877	364	399	91.45%	91.23%
Total	**12469**	**13244**	**4743**	**5212**	**94.15%**	**91.00%**

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	**208**	**223**	**54**	**58**	**93.3%**	**93.1%**
Local	0	0	0	0	--	--
Primary	99	105	40	42	94.3%	95.2%
Secondary	109	118	14	16	92.4%	87.5%
8AM to 859AM	**675**	**733**	**209**	**226**	**92.1%**	**92.5%**
Local	75	84	13	14	89.3%	92.9%
Primary	312	335	123	130	93.1%	94.6%
Secondary	288	314	73	82	91.7%	89.0%
9AM to 959AM	**1294**	**1359**	**553**	**599**	**95.2%**	**92.3%**
Local	137	154	25	28	89.0%	89.3%
Primary	716	744	370	405	96.2%	91.4%
Secondary	441	461	158	166	95.7%	95.2%
10AM to 1059AM	**1075**	**1121**	**482**	**526**	**95.9%**	**91.6%**
Local	206	218	74	81	94.5%	91.4%
Primary	619	638	318	350	97.0%	90.9%
Secondary	250	265	90	95	94.3%	94.7%
11AM to 1159AM	**1964**	**2061**	**907**	**997**	**95.3%**	**91.0%**
Local	306	332	76	88	92.2%	86.4%
Primary	1256	1295	669	733	97.0%	91.3%
Secondary	402	434	162	176	92.6%	92.0%
12PM to 1259PM	**1643**	**1746**	**580**	**634**	**94.1%**	**91.5%**
Local	45	52	7	11	86.5%	63.6%
Primary	1085	1149	323	350	94.4%	92.3%
Secondary	513	545	250	273	94.1%	91.6%
1PM to 159PM	**1209**	**1275**	**528**	**586**	**94.8%**	**90.1%**
Local	151	159	22	26	95.0%	84.6%
Primary	638	669	304	341	95.4%	89.1%
Secondary	420	447	202	219	94.0%	92.2%
2PM to 259PM	**1930**	**2068**	**680**	**753**	**93.3%**	**90.3%**
Local	17	20	3	3	85.0%	100.0%
Primary	1181	1270	493	551	93.0%	89.5%
Secondary	732	778	184	199	94.1%	92.5%
3PM to 359PM	**1313**	**1407**	**437**	**483**	**93.3%**	**90.5%**
Local	181	192	59	65	94.3%	90.8%
Primary	422	442	188	206	95.5%	91.3%
Secondary	710	773	190	212	91.8%	89.6%
4PM to 459PM	**836**	**899**	**227**	**248**	**93.0%**	**91.5%**
Local	420	458	105	117	91.7%	89.7%
Primary	0	0	0	0	--	--
Secondary	416	441	122	131	94.3%	93.1%
5PM to 559PM	**322**	**352**	**86**	**102**	**91.5%**	**84.3%**
Local	139	160	29	39	86.9%	74.4%
Primary	15	15	7	7	100.0%	100.0%
Secondary	168	177	50	56	94.9%	89.3%
Total	**12,469**	**13,244**	**4743**	**5212**	**94.1%**	**91.0%**

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	6/08/2018	2330.68	19	3	18	2	2
202	Original	6/08/2018	1719.89	57	13	62	4	4
203	Original	6/08/2018	282.03	112	33	125	10	10
204	Original	6/08/2018	3423.12	18	7	21	3	1
205	Original	6/08/2018	8343.15	62	26	79	4	5
206	Original	6/17/2018	307.13	80	38	111	5	2
207	Original	6/17/2018	4732.98	11	4	14	1	0
208	Original	6/17/2018	33.41	322	186	475	24	9
209	Original	6/17/2018	34.02	232	130	336	22	4
210	Original	6/17/2018	547.53	103	50	138	12	3
211	Original	6/14/2018	2990.25	8	2	7	3	0
212	Original	6/14/2018	263.27	89	15	93	9	2
213	Original	6/14/2018	8379.34	97	19	104	12	0
214	Original	6/14/2018	45.81	280	131	394	16	1
215	Original	6/14/2018	46.15	239	107	316	23	7
216	Original	6/09/2018	1650.21	114	47	145	7	9
217	Original	6/09/2018	1007.35	62	22	78	4	2
218	Original	6/09/2018	697.67	118	69	176	2	9
219	Original	6/09/2018	1391.32	12	5	16	1	0
220	Original	6/09/2018	715.92	84	38	108	7	7
221	Original	6/15/2018	77.27	145	56	192	9	0
222	Original	6/15/2018	57.98	225	130	342	12	1
223	Original	6/15/2018	60.93	230	126	346	8	2
224	Original	6/15/2018	394.09	70	27	86	10	1
225	Original	6/15/2018	6893.71	6	0	6	0	0
226	Original	6/09/2018	275.10	24	13	32	3	2
227	Original	6/09/2018	510.90	265	158	389	23	11
228	Original	6/09/2018	46.89	280	197	441	28	8
229	Original	6/09/2018	19412.42	11	5	11	4	1
230	Original	6/09/2018	2050.40	15	5	19	1	0
231	Original	6/11/2018	768.51	19	8	25	2	0
232	Original	6/11/2018	781.49	34	10	38	5	1
233	Original	6/11/2018	1946.22	21	3	21	3	0
234	Original	6/11/2018	1014.59	331	75	365	38	3
235	Original	6/11/2018	144.92	157	42	186	10	3
236	Original	6/12/2018	47.35	284	119	387	13	3
237	Original	6/12/2018	2339.39	79	28	106	1	0
238	Original	6/12/2018	62.27	398	105	479	15	9
239	Original	6/12/2018	217.27	419	107	498	18	10
240	Original	6/12/2018	1473.39	99	25	118	6	0
241	Original	6/14/2018	352.56	145	42	182	3	2
242	Original	6/19/2018	292.44	126	31	151	5	1

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	6/19/2018	3411.28	4	0	4	0	0
244	Original	6/19/2018	185.60	317	103	405	14	1
245	Original	6/19/2018	391.09	224	32	241	13	2
246	Original	6/11/2018	1223.51	23	6	28	1	0
247	Original	6/11/2018	2265.63	52	11	52	8	3
248	Original	6/11/2018	1101.32	181	47	217	11	0
249	Original	6/11/2018	395.13	309	88	384	13	0
250	Original	6/11/2018	166.31	162	43	196	8	1
251	Original	6/10/2018	4252.12	15	4	18	0	1
252	Original	6/16/2018	23.19	15	7	22	0	0
253	Original	6/10/2018	94.06	400	206	576	23	7
254	Original	6/13/2018	2014.13	192	36	223	1	4
255	Original	6/16/2018	118.61	247	105	321	19	12
256	Original	6/13/2018	309.42	109	18	118	5	4
257	Original	6/13/2018	965.18	266	32	273	14	11
258	Original	6/13/2018	1121.58	217	37	228	20	6
259	Original	6/13/2018	3940.02	5	2	6	1	0
260	Original	6/13/2018	3037.10	3	0	3	0	0
261	Original	6/13/2018	164.94	515	135	611	11	28
262	Original	6/10/2018	97.69	384	182	541	21	4
263	Original	6/17/2018	18.43	474	245	693	23	3
264	Original	6/10/2018	533.84	260	148	396	3	9
265	Original	6/08/2018	437.53	15	9	21	2	1
266	Original	6/08/2018	141.92	210	77	245	20	22
267	Original	6/08/2018	485.35	40	20	53	5	2
268	Original	6/08/2018	1212.31	70	23	77	11	5
269	Original	6/08/2018	200.35	240	58	253	40	5
270	Original	6/07/2018	28.17	246	88	312	16	6
271	Original	6/07/2018	241.30	56	30	80	4	2
272	Original	6/07/2018	149.50	243	69	284	24	4
273	Original	6/07/2018	4563.28	45	8	50	2	1
274	Original	6/07/2018	79.69	354	81	412	15	8
275	Original	6/16/2018	3041.10	20	6	22	4	0
276	Original	6/16/2018	1403.80	112	37	140	9	0
277	Original	6/16/2018	1305.55	245	105	320	30	0
278	Original	6/16/2018	439.23	188	91	256	19	4
279	Original	6/16/2018	311.79	248	116	293	15	56
280	Original	6/09/2018	996.36	28	12	37	3	0
281	Original	6/09/2018	235.00	329	208	504	31	2
282	Original	6/09/2018	103.50	281	178	439	14	6
283	Original	6/10/2018	114.38	395	251	618	23	5
284	Original	6/10/2018	3718.52	3	1	4	0	0
			TOTALS	**13,244**	**5,212**	**17212**	**884**	**360**

Appendix A. Observation Site Form 2018

Iowa Seat Belt Survey

Observation Site Form

Data Collector ID# _____ **Date:** _____ / _____ **2018**

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 2018

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