Observational Survey of Seat Belt Use in Ohio

2024

Final Report

Prepared for:

Ohio Department of Public Safety

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OBSERVATIONAL SURVEY OF SEAT BELT USE IN OHIO - 2024

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September 2024

Prepared in cooperation with the Ohio Department of Public Safety
and the U.S. Department of Transportation, National Highway Traffic Safety Administration

ACKNOWLEDGEMENTS

The research team would like to thank the National Highway Traffic Safety Administration (NHTSA), Ohio Department of Public Safety (DPS), Ohio Traffic Safety Office (OTSO), and the Ohio State Highway Patrol (OSHP) for making this project possible and for their dedication and support in achieving Ohio's seat belt compliance goal. Additionally, the team would like to thank the retired OSHP troopers for helping collect data throughout this project.

This project is a demonstration of each agency's ongoing efforts to reduce traffic fatalities by increasing seat belt use. This work has a measurable, lasting impact on driver and passenger safety throughout the state of Ohio. The research team is honored to have the opportunity to work with a group of individuals that have such a passion for the work they do, and the chance to increase Ohioan safety in such a dramatic manner.

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CHAPTER I – INTRODUCTION

This study aims to provide the National Highway Traffic Safety Administration (NHTSA) and the Ohio Department of Public Safety (DPS) with standardized data on seat belt usage across Ohio. It is designed to evaluate the effectiveness of the annual Click It or Ticket (CIOT) campaign through pre- and post-campaign surveys. The findings will help identify geographic regions, vehicle types, and demographic factors associated with varying compliance rates, enabling targeted public information campaigns and enforcement strategies to enhance seat belt use and reduce fatalities.

The procedures detailed herein comply with federal standards and have been developed collaboratively with NHTSA and DPS to ensure comparability across states. The success of this study hinges on the quality of data collected and the rigorous analysis performed. The study not only aims to inform policy but also seeks to foster a culture of safety among Ohio drivers and passengers.

Report Structure

The report is organized into four chapters, supplemented by appendices containing additional information:

- **Chapter I – Introduction:** Outlines the study's scope, purpose, and organization.
- **Chapter II – Methodology:** Details the methodologies and statistical analyses employed to gather, process, and present the data.
- **Chapter III – Results:** Presents the collected data comprehensively.
- **Chapter IV – Conclusions & Recommendations:** Discusses the study's outcomes, highlighting key findings and offering recommendations for improving seat belt usage in Ohio.

The research team is confident that implementing the study’s conclusions will lead to higher seat belt usage rates in Ohio. Furthermore, this study serves as a vital resource for NHTSA and DPS in analyzing crash data and fatalities. By equipping policymakers with actionable insights, this research aims to significantly contribute to the ongoing efforts to improve road safety across the state.

CHAPTER II – METHODOLOGY

The methodology for this study was developed in accordance with NHTSA's "Uniform Criteria for State Observational Surveys of Seat Belt Use," along with insights from previous studies conducted in Ohio and similar research from other states. This methodology received approval from NHTSA and is detailed in the subsequent sections. Importantly, the approach used in this year's study aligns with past Ohio studies, facilitating meaningful comparisons of changes in compliance rates over time.

2.1 Sample Selection

2.1.1 Study Timeline

This study was conducted in two distinct phases to enable NHTSA and DPS to evaluate the effectiveness of the national Click It or Ticket (CIOT) campaign in improving seat belt compliance rates in Ohio. The first phase took place during the two weeks immediately preceding the CIOT campaign, and the data collected during this period were used to establish the baseline compliance rate for 2024. The second phase was conducted during the two weeks immediately following the CIOT campaign to determine the post-intervention compliance rate. The specific dates of these observations are provided in Table 1.

Table 1: Study Timeline

Start Date	End Date	Task
04/29/2024	05/12/2024	Baseline Observations
05/13/2024	06/02/2024	Click It or Ticket Campaign
06/03/2024	06/16/2024	Post-Intervention Observations

As seen in Table 1, this year's study ran from May 8 to June 18, 2024.

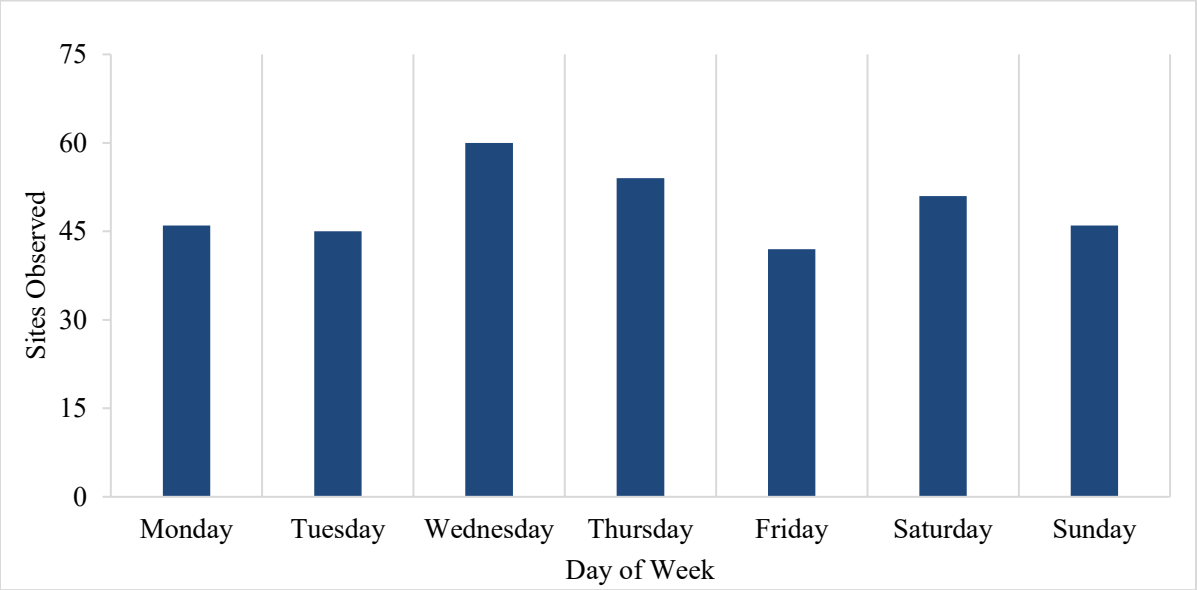
2.1.2 Site Selection

The site locations in Ohio were updated in 2020. OTSO in discussion with the University of Akron (UA) decided that it was important to sample in all counties in the state. In total this year the state sampled 344 locations.

2.1.3 Site Distributions

To ensure a representative sample of seat belt use across Ohio, the days of the week and times of day for each observation location were assigned randomly. This random selection was generated using a random number generator in *Microsoft Excel*, with the random numbers representing different days and start times. Sites that were geographically close to one another were clustered into groups to minimize travel and labor costs. Each site grouping was assigned a day and start time for the first site, with subsequent

sites following based on proximity. Figure 1 illustrates the distribution of observed sites by day of the week.

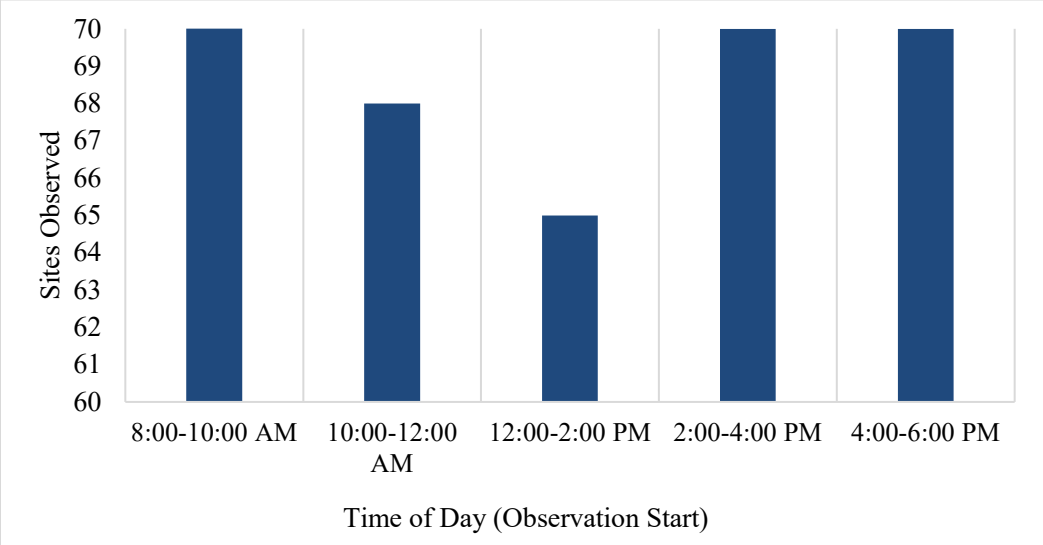


Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
46	45	60	54	42	51	46

Note: Observation days were randomly assigned.

Figure 1: Site Distribution per Day of Week

As seen in Figure 1, the sites observed per day of the week are generally uniform. Due to the aggregation of sites and random selection, there is some variability with specific days (i.e. Thursday) including a larger number of sites than (i.e. Sunday). Figure 2 shows the sites observed per time of day.



8:00-10:00 AM	10:00-12:00 AM	12:00-2:00 PM	2:00-4:00 PM	4:00-6:00 PM

71	68	65	70	70

Note: Observation start times were randomly assigned. Observations were conducted from 8:00 am to 6:00 pm with the last observation starting at 5:00 pm.

Figure 2: Site Distribution per Time of Day

As seen in Figure 2, the time allocations are consistent throughout the day. The difference between the least sampled site and the most sampled site is 6 sites.

2.2 Statistical Analysis

Seat belt use rates were estimated for each individual survey site, as well as at the county and statewide levels. Additionally, 95-percent confidence intervals for each use rate estimate were calculated. The methods employed for these estimations adhere to the approved protocol and align with NHTSA's "Uniform Criteria for State Observational Surveys of Seat Belt Use." Detailed explanations of the methods used to estimate seat belt use rates and variance are provided in this section.

2.2.1 Imputation

No imputation was done on missing data.

2.2.2 Sampling Weights

The following is a summary of the notation used in this section:

- g – Subscript for county
- h – Subscript for road segment type
- i – Subscript for road segment
- j – Subscript for directional of travel
- k – Subscript for lane of travel
- l – Subscript for vehicle

Under this stratified multistage sample design, the inclusion probability for each vehicle at a particular site is the product of the selection probabilities at each stage. The overall vehicle inclusion probability at a given site is shown in Equation 1.

$$\pi_{jkl} = \pi_j \, \pi_{k|j} \, \pi_{l|k} \qquad \text{Equation 1}$$

where:

π_j = direction,
$\pi_{k|j}$ = lane of travel, and
$\pi_{l|jk}$ = vehicle.

The sampling weight (design weight) for each vehicle at a particular site shown in Equation 2.

$$w_{jkl} = \frac{1}{\pi_{jkl}}$$ Equation 2

where:

w_{jkl} = sampling weight.

At the site-level, the number of segments sampled was small relative to the number of segments in the population for each county-road segment type stratum. Consequently, no finite population correction factors were applied. The sampling weights for each segment are simply equal to the reciprocal of the proportion of segments sampled in each county-road type stratum as displayed in Equation 3.

$$w_{ghi} = \frac{N_{gh}}{n_{gh}}$$ Equation 3

where:

w_{ghi}= sampling weight for segment *i* of road segment type *h* in county *g*,
n_{gh}= number of segments sampled from road segment type stratum *h* of county *g*; and
N_{ghi} = total number of segments among road segment type stratum *h* of county *g*.

Thus, the overall inclusion probability of an individual vehicle is $\pi_{ghijkl} = \pi_{ghi}\pi_{jkl|ghi}$ and the sampling weight is $w_{ghijkl} = w_{ghi}w_{jkl|ghi}$.

2.2.3 Non-Response Adjustment

There are two instances by which non-response may arise with respect to data collection for the seat belt use survey. First, a site may be unobservable due to issues such as the presence of a construction work zone. In most instances, an alternative site is provided, and this site may be included without needing to adjust the sampling weights. The data collection protocol in the approved plan also includes provisions for instances where both the primary and alternative observation site are unavailable for observation.

Secondly, non-response may arise at the vehicle level in instances where the belt use of vehicle occupants was unobservable due to issues such as glare, tinted windows, etc. In these instances, the sampling weight for that site is increased by multiplying by the reciprocal of the response rate at that site, r_{ghi}. Thus, the sampling weight for each individual site is now defined as shown in Equation 4.

$$w_{ghi} = \frac{N_{gh}}{n_{gh}r_{ghi}}$$ Equation 4

2.2.4 Estimators

For each front-seat occupant observed, their seat belt use status was defined as seen in Equation 5.

$$y_{jkl|ghi} = \begin{cases} 1, if\ belt\ used \\ 0, otherwise \end{cases} \quad \text{Equation 5}$$

As such, within an individual observation site *i* of road segment type *h* in county *g*, the seat belt use rate (proportion) is estimated as presented in Equation 6.

$$\hat{p}_{ghi} = \frac{\sum w_{jkl|ghi} y_{jkl|ghi}}{\sum w_{jkl|ghi}} \quad \text{Equation 6}$$

The use rate ($\hat{p}_{gh}$) for road segment type *h* in county *g* is then determined using Equation 7.

$$\hat{p}_{gh} = \frac{\sum w_{ghi} \hat{p}_{ghi}}{\sum w_{ghi}} \quad \text{Equation 7}$$

At the county level, use rates ($\hat{p}_g$) for each road segment type are weighted by stratum-level VMT. Equation 8 demonstrates this calculation.

$$\hat{p}_g = \frac{\sum_{\forall h} VMT_{gh} \hat{p}_{gh}}{\sum_{\forall h} VMT_{gh}} \quad \text{Equation 8}$$

where:

VMT_{gh}= total vehicle miles traveled for road segment type *h* in county *g*.

The use of the VMT-based estimator reduces a bias towards local road segments that is due to their relatively short length and low VMT as compared to primary and secondary roads. Similarly, the statewide use rates ($\hat{p}_{statewide}$) is simply an average of the county-level use rates, weighted by total county-level VMT among the three road segment classes as found in Equation 9.

$$\hat{p}_{statewide} = \frac{\sum_{\forall g} \sum_{\forall h} VMT_{gh} \hat{p}_{gh}}{\sum_{\forall g} \sum_{\forall h} VMT_{gh}} \quad \text{Equation 9}$$

2.2.5 Variance Estimation

The variance and standard error for each estimator was determined as detailed in this section. First, at the county-road segment class, the variance is calculated as displayed in Equation 10.

$$V(\hat{p}_{gh}) = \sum_{\forall h}\left[\frac{\left(N_{gh}/N_g\right)^2}{n_{gh}}\sum_{i=1}^{n_{gh}}\frac{(\hat{p}_{ghi}-\hat{p}_{gh})^2}{n_{gh}-1}\right] \quad \text{Equation 10}$$

where:

$V(\hat{p}_{gh})$ = Estimated variance within road segment class *h* of county *g*,
N_{gh}= Total number of road segments of type *h* in county *g,*
N_g= Total number of road segments of all types in county *g,*
n_{gh}= Number of locations sampled among road segment type *h* in county *g,*
$\hat{p}_{ghi}$ = Estimated belt use rate at location *i* in road segment type *h* in belt use group *g, and*
$\hat{p}_g$ = Estimated belt use rate in road segment type *h* in belt use group *g.*

When a road segment stratum includes less than two sites, it is aggregated with the adjacent stratum. Consequently, this aggregation involved either the local segments being combined with the secondary segments, or the primary segments being combined with the secondary segments. From here, the county-level variance is given by Equation 11.

$$V(\hat{p}_g) = \frac{\sum_{\forall h} VMT_{gh}^2 \times V(\hat{p}_{gh})}{\left(\sum_{\forall h} VMT_{gh}\right)^2} \quad \text{Equation 11}$$

Finally, the state-level variance is calculated similarly using Equation 12.

$$V(\hat{p}_{statewide}) = \frac{\sum_{\forall g\forall h} VMT_{gh}^2 \times V(\hat{p}_{gh})}{\left(\sum_{\forall g\forall h} VMT_{gh}\right)^2} \quad \text{Equation 12}$$

For each estimate, the standard error of use rate is found by simply taking the square root of the estimated variance. The 95-percent confidence interval of each use rate is equal to the weighted seat belt use rate plus/minus 1.96 (for the Z-test at alpha = 0.05) multiplied by the standard error.

2.2.6 Non-Response Rate

According to NHTSA guidelines, the non-response rate for the annual seat belt survey must not exceed 10%. In the context of this study, a non-response occurs when the observer is unable to determine the seat belt use of a front seat vehicle occupant. This may be due to various factors, such as tinted windows, sun glare, or high vehicle speeds. Observers in the field recorded these instances as "unknown belt use" to track non-responses. For the post-CIOT phase, there were a total of 137 non-response observations, representing less than 0.58% of the total observations. This non-response rate is well below the allowable maximum of 10% established by NHTSA.

2.3 Data Collection

The nature of this study necessitates the collection of a substantial amount of data within a short timeframe. To facilitate this, NHTSA, DPS, the University of Akron (UA), and the observers must operate and communicate effectively. A significant portion of the work for this study occurs prior to the start of observations, involving the preparation, organization, and distribution of the materials needed for data collection.

2.3.1 Observer Training

The success of this study relies heavily on the quality of the recorded data. Therefore, it is essential that observers receive thorough and comprehensive training on proper data collection procedures. A mandatory online training session was conducted by the UA principal investigator via Microsoft Teams in the week leading up to the first phase of observations. Observers unable to attend the training were trained separately by UA staff. It is important to note that the observers in this study are retired state patrol officers rather than students, which enhances the overall quality of the data collected due to their field experience.

2.3.2 Vehicle Classification

This study is designed to differentiate seat belt use across five distinct vehicle classes: passenger cars (PC), sport utility vehicles (SUV), vans/minivans (V), light trucks (LT), and heavy trucks (HT). Light trucks are defined as vehicles with an estimated GVWR of less than 6,000 pounds, including light-duty pickup trucks. Heavy trucks are classified as those with an estimated GVWR of 6,001 to 10,000 pounds, encompassing full-size pickup trucks, utility vans, and step vans; however, this category excludes walk-in trucks and delivery trucks.

2.3.3 Field Procedure

The field data collection procedures were communicated to the observers during the mandatory training session, along with a set of printed instructions. For each observation site, the observer prepared by reviewing the provided imagery. Upon arrival, the observer identified a safe location to set up and began data collection. Traffic counts were recorded throughout the hour-long observation period, while seat belt compliance observations focused on vehicles in the lane closest to the observer. The forms used for data

collection can be found in Appendix A. Observers conducted site observations in safe areas adjacent to the study site.

CHAPTER III – RESULTS

This chapter includes the results of the 2024 Ohio Seat Belt Study. Each type of dataset that was collected is broken into an individual section. Each section typically contains a chart and table to visualize the data. There are thirteen sections in this chapter as follows:

- Section 3.1: Statewide Compliance
- Section 3.2: Historical Compliance
- Section 3.3: Compliance per District
- Section 3.4: Compliance per County
- Section 3.5: Compliance per Day of Week
- Section 3.6: Compliance per Time of Day
- Section 3.7: Compliance per Road Class
- Section 3.8: Compliance per Vehicle Type
- Section 3.9: Compliance per Gender
- Section 3.10: Compliance per Age
- Section 3.11: Compliance per Race
- Section 3.12: Compliance per Demographics
- Section 3.13: Cell Phone Usage

There are a few key terms that the research team would like to define that will be used throughout this chapter. These key terms include:

- Compliance: Compliance refers to the percentage of observable occupants that were wearing a seat belt.
- Standard Error: The standard error refers to the standard deviation of the compliance rate. A 95-percent confidence interval for each compliance rate can be determined by adding (subtracting) 1.96 times the standard error to (from) the compliance rate.
- Count: The count refers to the total number of observable occupants that data was collected on.

The following sections include more information regarding the results of this year's study.

3.1 Statewide Compliance

The "Observational Survey of Seat Belt Use in Ohio – 2024" collected a total of 46,840 occupant observations, which includes 40,096 drivers and 6,119 passengers. The reported pre-intervention results consist of 23,175 observations, comprising 19,945 drivers and 3,230 passengers. In contrast, the post-intervention results include 23,665 observations, with 20,151 drivers and 3,514 passengers. Additionally, there were 137 instances of unknown seat belt use among drivers and passengers in the post-intervention survey. A total of 344 sites across all 88 counties were included in the study. Figure 3 illustrates the statewide compliance results for Ohio in 2024.

Survey	Compliance (%)	Standard Error (%)	Count
Baseline	82.9%	0.0034	23,175
Post-Intervention	85.2%	0.0034	23,665
Difference	2.3%		

Note: Reported numbers are weighted.

Figure 3: Statewide Compliance Rate

As shown in Figure 3, Ohio observed a statewide compliance rate of 85.2%. The Click It or Ticket (CIOT) campaign positively impacted this rate, resulting in a 2.3% increase. The statewide results were weighted using the methodology outlined in Chapter II of this report. These results encompass all observations made during the post-intervention survey, excluding the 137 unknown observations.

It is important to note that the statewide compliance rate is the only data in this report that includes baseline (pre-CIOT) figures. All subsequent data reported pertains solely to the post-intervention survey (post-CIOT). Furthermore, only the statewide and historical compliance results are weighted; all other reported figures are unweighted.

3.2 Historical Compliance

Historically, Ohio has lagged the national average compliance rate. Since 2000, Ohio has maintained an average compliance rate that is 4.5% lower than the national average. In 2024, Ohio's compliance rate stands at 85.2%, which is 7.0% lower than the national average of 91.2% for 2023, the most recent year for which national data is available. Notably, there was no official compliance figure reported for Ohio in 2020. Figure 4 illustrates the comparison between Ohio's and the national compliance rates. These trends highlight the ongoing challenge for Ohio to improve its seat belt use and align more closely with national standards.

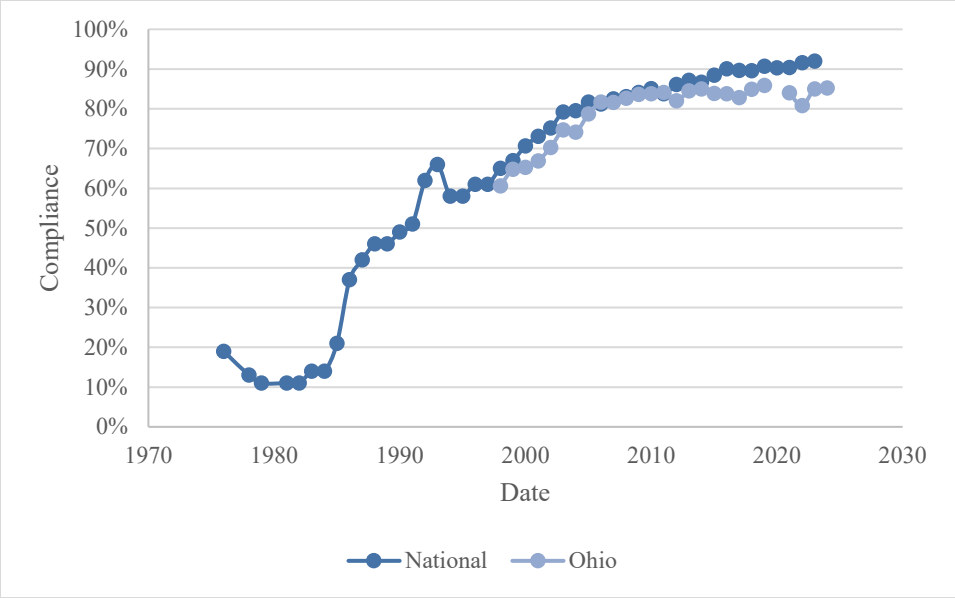
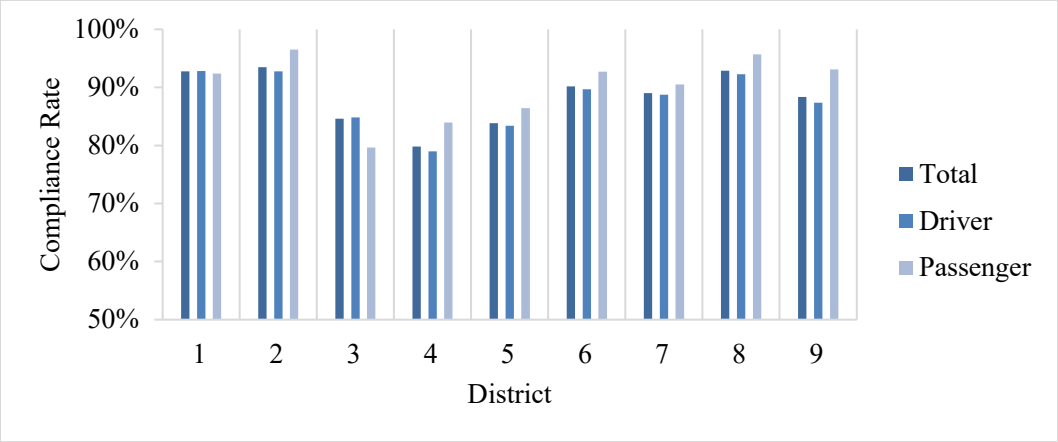


Figure 4: Historical Compliance Rate

While national data for 2024 has not been released at the time of this report, data from 1976 through 2022 was included. Data from Ohio from 1998 through 2024 has also been included. For the past decade, the compliance rate in Ohio has varied between 81% and 86.0%. The 85.2% result from 2024 is consistent with the range of previous year's studies.

3.3 Compliance per District

The observations were grouped by the nine Ohio State Highway Patrol (OSHP) districts, allowing for an analysis of compliance rates across different geographical regions. District 4 recorded the lowest compliance rate at 79.8%, while six other districts reported non-weighted compliance rates exceeding 85%. District 4 encompasses the counties of Ashtabula, Columbiana, Geauga, Lake, Mahoning, Portage, and Trumbull. Figure 5 provides a detailed breakdown of compliance rates by district.



District	Occupant	Compliance	Count
1	All	92.7%	2413
	Driver	92.8%	2059
	Passenger	92.4%	354
2	All	93.5%	2246
	Driver	92.8%	1677
	Passenger	96.5%	401
3	All	84.6%	3329
	Driver	84.8%	3390
	Passenger	79.7%	172
4	All	79.8%	2764
	Driver	79.0%	2106
	Passenger	84.0%	430
5	All	83.9%	2945
	Driver	83.4%	3440
	Passenger	86.4%	604
6	All	90.2%	3261
	Driver	89.7%	2509
	Passenger	92.7%	520
7	All	89.0%	1603
	Driver	88.7%	1391
	Passenger	90.5%	285
8	All	92.9%	2864
	Driver	92.3%	2361
	Passenger	95.7%	487
9	All	88.4%	1506
	Driver	87.4%	1218
	Passenger	93.1%	261

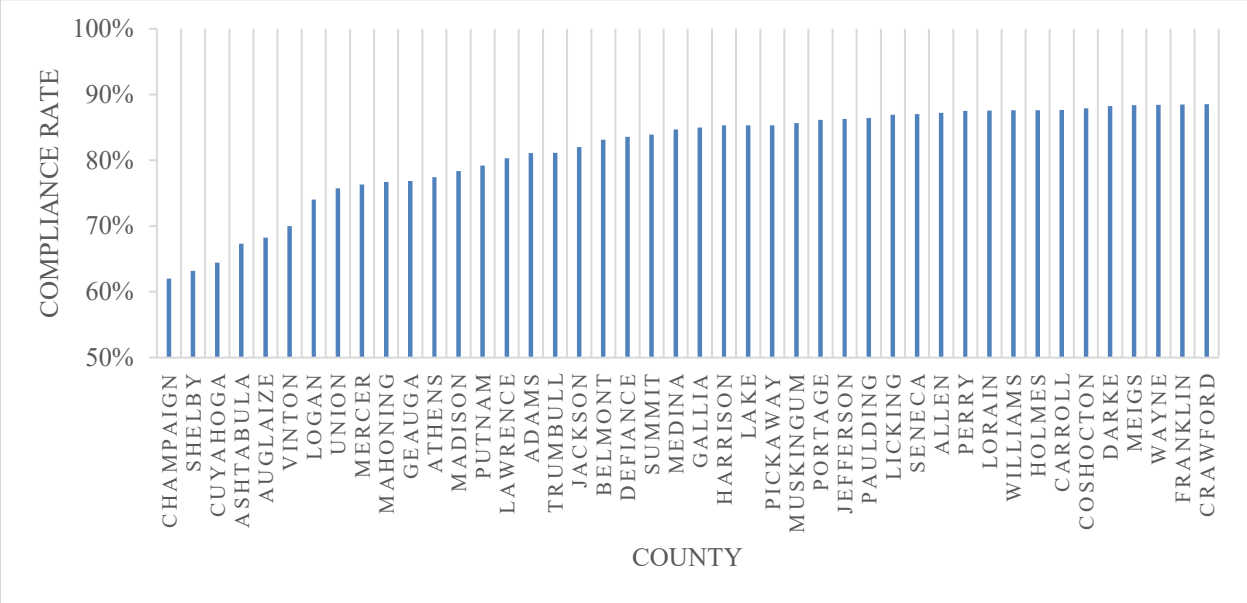
Note: District refers to OSHP, refer to Figure 5 for locations. Reported numbers are unweighted.

Figure 5: Compliance Rate per District

As seen in Figure 5, Districts 7 and 9, 1,603 and 1,506 respectively, had significantly fewer observations than the other districts. The greatest number of observations occurred in District 3, 3,329.

3.4 Compliance per County

The observations were further analyzed by the county in which they were conducted. This year's study included all 88 Ohio counties. As shown in Figures 6 and 7, seven counties had compliance rates lower than 75%, specifically Champaign, Shelby, Cuyahoga, Ashtabula, Auglaize, Vinton, and Logan, with Champaign reporting the lowest overall compliance at 62.0%. In contrast, 65 counties achieved an unweighted compliance rate greater than 85%, and 40 counties exceeded a rate of 90%. Note that 44 of the 88 observed counties are displayed in Figure 6, while the remaining 44 counties are shown in Figure 7. All reported numbers are unweighted.

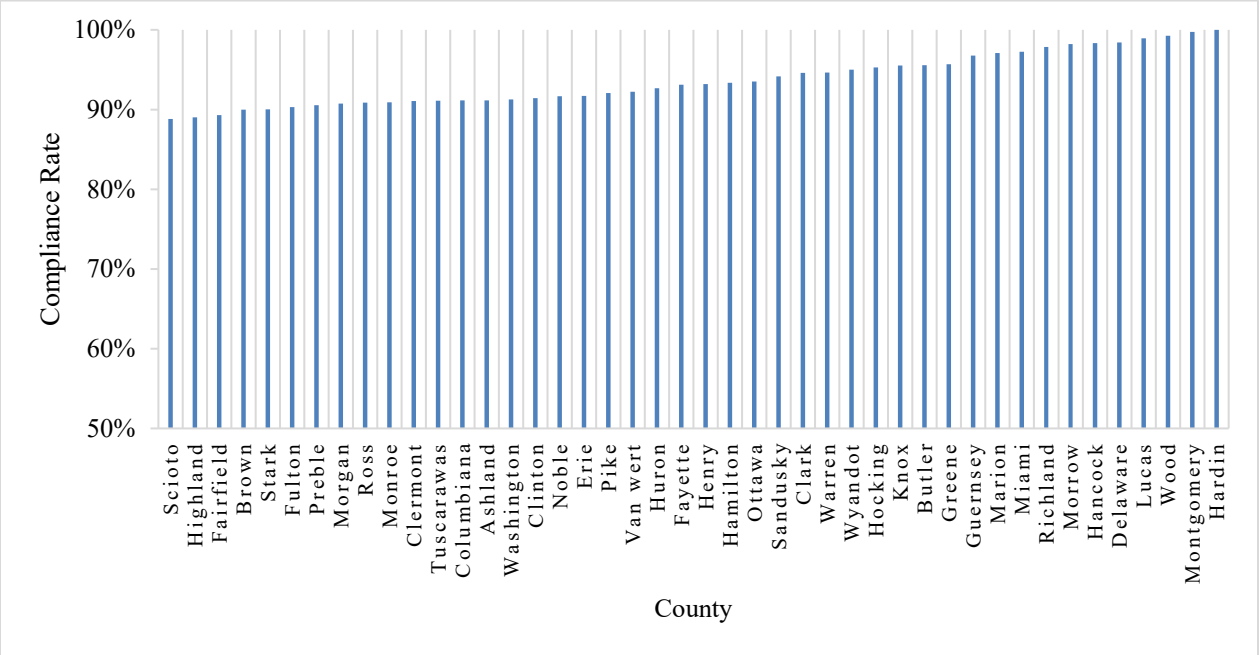


County	Compliance	Count
Champaign	62.0%	287
Shelby	63.2%	345
Cuyahoga	64.4%	402
Ashtabula	67.3%	318
Auglaize	68.2%	192
Vinton	70.0%	10
Logan	74.0%	458

Union	75.7%	367
Mercer	76.3%	249
Mahoning	76.7%	670
Geauga	76.9%	242
Athens	77.4%	124
Madison	78.3%	337
Putnam	79.2%	149
Lawrence	80.3%	61
Adams	81.1%	37
Trumbull	81.1%	435
Jackson	82.0%	128
Belmont	83.1%	178
Defiance	83.6%	225
Summit	83.9%	572
Medina	84.7%	548
Gallia	85.0%	60
Harrison	85.3%	34
Lake	85.3%	340
Pickaway	85.3%	225
Muskingum	85.7%	314
Portage	86.1%	339
Jefferson	86.3%	102
Paulding	86.4%	118
Licking	86.9%	344
Seneca	87.0%	154
Allen	87.2%	188
Perry	87.5%	88
Lorain	87.5%	730
Williams	87.6%	137
Holmes	87.6%	218
Carroll	87.6%	89
Coshocton	87.9%	66
Darke	88.2%	153
Meigs	88.4%	86
Wayne	88.5%	381
Franklin	88.5%	539
Crawford	88.5%	253

Figure 6: Compliance Rate per County (Champaign – Franklin)

Figure 7 shown below is the second part of the statewide county compliance. Figure 7 shows the counties that are in the top half of the state.



County	Compliance	Count
Scioto	88.8%	206
Highland	89.0%	182
Fairfield	89.3%	467
Brown	90.0%	150
Stark	90.0%	462
Fulton	90.3%	124
Preble	90.6%	265
Morgan	90.8%	119
Ross	90.9%	339
Monroe	90.9%	11
Clermont	91.1%	380
Tuscarawas	91.1%	124
Columbiana	91.1%	192
Ashland	91.2%	249
Washington	91.3%	526
Clinton	91.4%	257
Noble	91.7%	108
Erie	91.7%	193
Pike	92.1%	177
Van wert	92.2%	129
Huron	92.7%	301

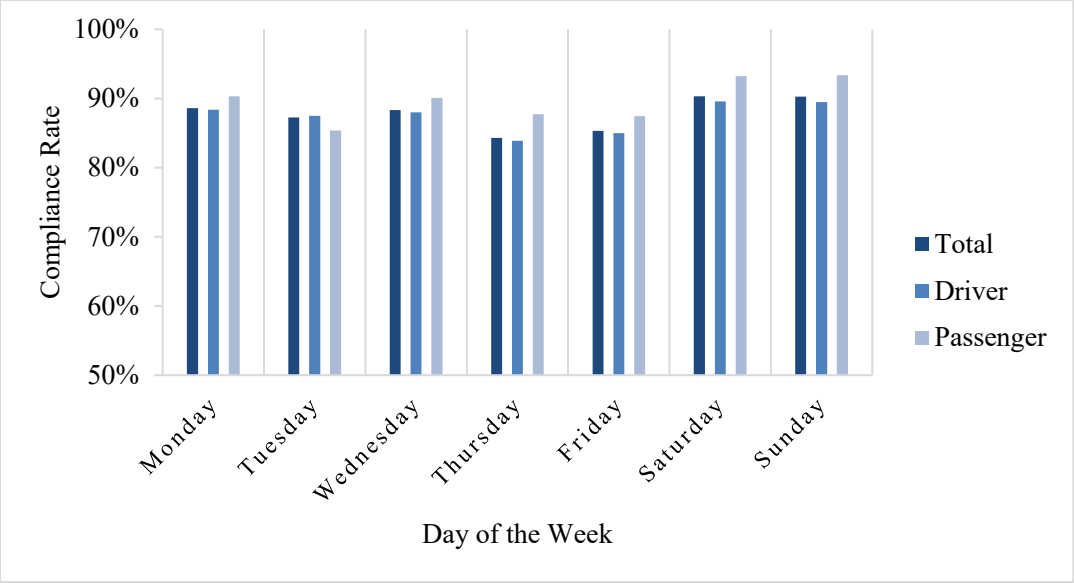
Fayette	93.1%	204
Henry	93.2%	235
Hamilton	93.4%	633
Ottawa	93.5%	277
Sandusky	94.2%	171
Clark	94.6%	463
Warren	94.7%	486
Wyandot	95.0%	100
Hocking	95.3%	169
Knox	95.5%	201
Butler	95.6%	519
Greene	95.7%	302
Guernsey	96.8%	124
Marion	97.1%	206
Miami	97.2%	218
Richland	97.9%	423
Morrow	98.2%	453
Hancock	98.3%	300
Delaware	98.4%	375
Lucas	98.9%	464
Wood	99.2%	265
Montgomery	99.7%	745
Hardin	100.0%	79

Figure 7: Compliance Rate per County (Scioto – Hardin)

As seen in Figures 6 and 7, county sample sizes ranged from 10 to 745 observations. On average, each county accounted for approximately 269 observations. Counties with higher populations and larger number of crashes had more observations than rural counties.

3.5 Compliance per Day of Week

The compliance rate was also calculated by day of week to determine if there was any difference based on day, weekday, or weekend. The study was conducted every day of the week. The results of the compliance rate per day of week may be found in Figure 8.



Day	Occupant	Compliance	Count
Monday	All	88.6%	3206
	Driver	88.4%	2793
	Passenger	90.3%	413
Tuesday	All	87.3%	2404
	Driver	87.5%	2158
	Passenger	85.4%	246
Wednesday	All	88.3%	4011
	Driver	88.0%	3436
	Passenger	90.1%	575
Thursday	All	84.3%	4214
	Driver	83.9%	3766
	Passenger	87.7%	448
Friday	All	85.3%	2501
	Driver	85.0%	2159
	Passenger	87.4%	342
Saturday	All	90.3%	3817
	Driver	89.6%	3035
	Passenger	93.2%	782
Sunday	All	90.3%	3512
	Driver	89.5%	2804
	Passenger	93.4%	708

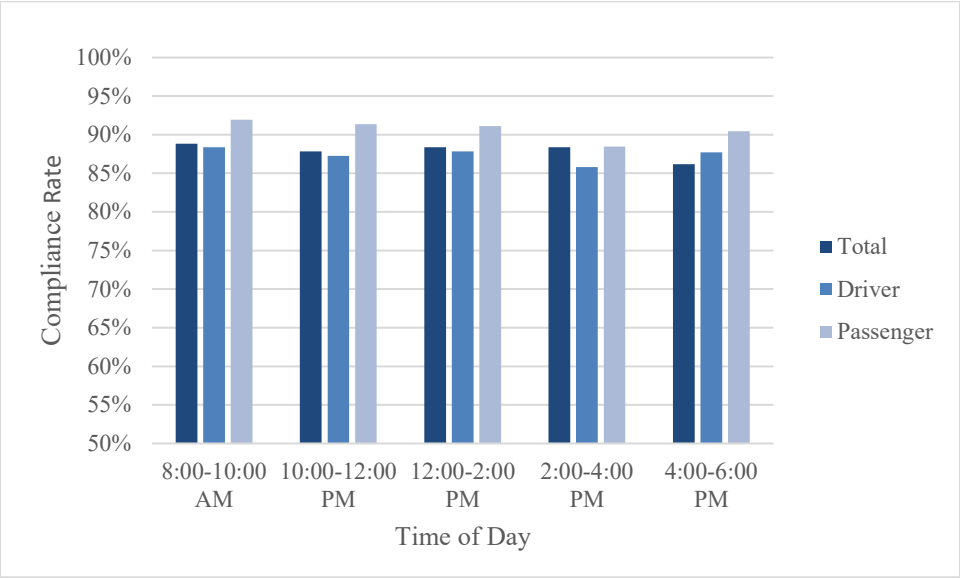
Note: Reported numbers are unweighted.

Figure 8: Compliance Rate per Day of Week

As seen in Figure 8, the day of week does not have a significant impact on the compliance. The days with the highest compliance are Saturday and Sunday, 90.3%, while Thursday was the lowest at 84.3%. The number of observations ranged from a low of 2,404 on Tuesday to a high of 4,214 on a Thursday.

3.6 Compliance per Time of Day

The compliance rate per time of day was considered to conclude if peak travel times had an impact on the compliance rate. The study was conducted from 8:00 AM to 6:00 PM with 6:00 PM being that last time observations would begin. The results of the compliance rate per time of day may be found in Figure 9.



Time	Occupant	Compliance	Count
8:00-10:00 AM	All	88.8%	4292
	Driver	88.4%	3747
	Passenger	91.9%	545
10:00-12:00 PM	All	87.9%	4948
	Driver	87.3%	4242
	Passenger	91.4%	706
12:00-2:00 PM	All	88.4%	4189
	Driver	87.8%	3481
	Passenger	91.1%	708
2:00-4:00 PM	All	88.4%	5116
	Driver	85.8%	4388
	Passenger	88.5%	728
4:00-6:00 PM	All	86.2%	5120

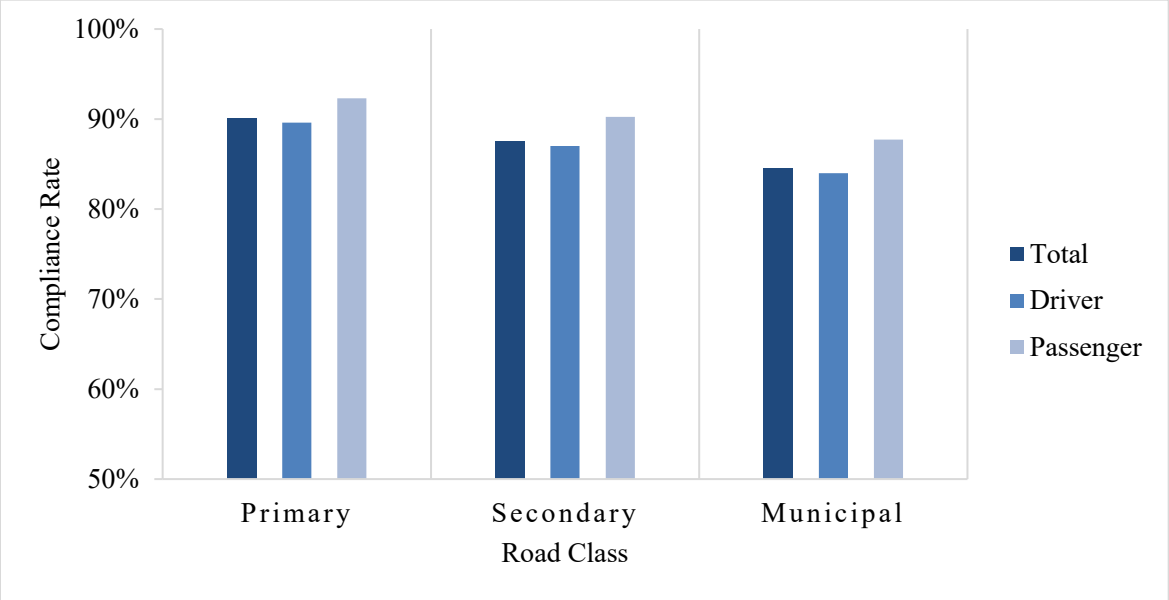
	Driver	87.7%	4293
	Passenger	90.4%	827

Figure 9: Compliance Rate per Time of Day

As seen in Figure 9, the time of day that the observations were made had little to no impact on the compliance rate of the vehicle occupants.

3.7 Compliance per Road Class

The compliance rate per road class was determined to see if there was any correlation between type of road and seat belt use. There are three types of road classes based on MAF/TIGER Feature Class Code Definitions (MTFCC), primary, secondary, and local. Figure 10 shows the results of the compliance rate per road class.



Road Type	Occupant	Compliance	Sample Size
Primary	All	90.0%	6400
	Driver	89.6%	5735
	Passenger	92.3%	1157
Secondary	All	87.5%	10503
	Driver	87.0%	9139
	Passenger	90.2%	1885
Municipal	All	84.5%	3248
	Driver	84.0%	2728
	Passenger	87.7%	472

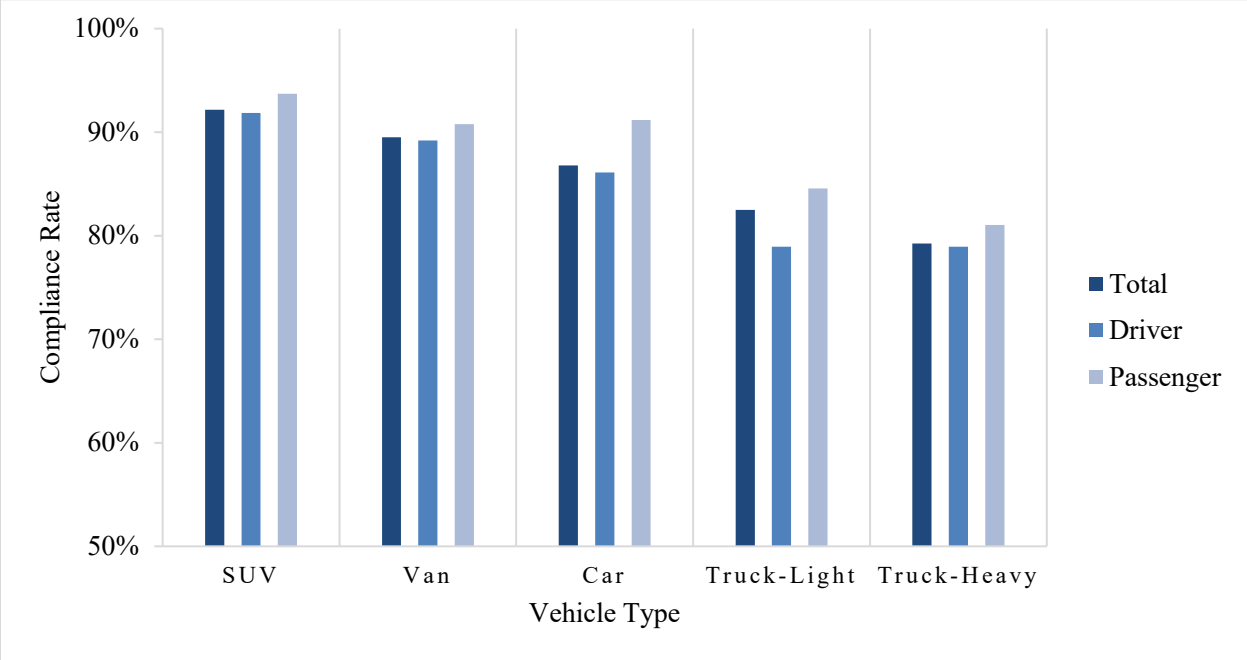
Note: Road classifications were procured using the MAF/TIGER Feature Class Code Definitions. Reported numbers are unweighted. Reported numbers are unweighted.

Figure 10: Compliance Rate per Road Class

As seen in Figure 10, local roads had the lowest compliance rate of any road class at a total of 84.5%. Next, secondary roads, which consist mainly of state and local highways, were observed to have a compliance rate of 87.5%. Finally, primary roads, which consist mainly of interstate and limited access highways had the highest compliance rates at 90%.

3.8 Compliance per Vehicle Type

The compliance rate per vehicle type was observed to identify if the type of vehicle had an impact on the occupant compliance rate. There were five types of vehicles observed: SUV, Van, Car, Truck-Light and Truck-Heavy. More information on the types of vehicles observed may be found in Chapter II of this report. The results of the compliance rate per vehicle type may be found in Figure 11.



Vehicle Type	Occupant	Compliance	Sample Size
SUV	All	92.2%	9242
	Driver	91.9%	7763
	Passenger	93.7%	1479
Van	All	89.5%	1885
	Driver	89.2%	1527
	Passenger	90.8%	358
Car	All	86.8%	7330
	Driver	86.1%	6343
	Passenger	91.2%	987
Truck-Light	All	82.5%	2872
	Driver	78.9%	2509

	Passenger	84.6%	363
Truck-Heavy	All	79.2%	2336
	Driver	78.9%	2009
	Passenger	81.0%	327

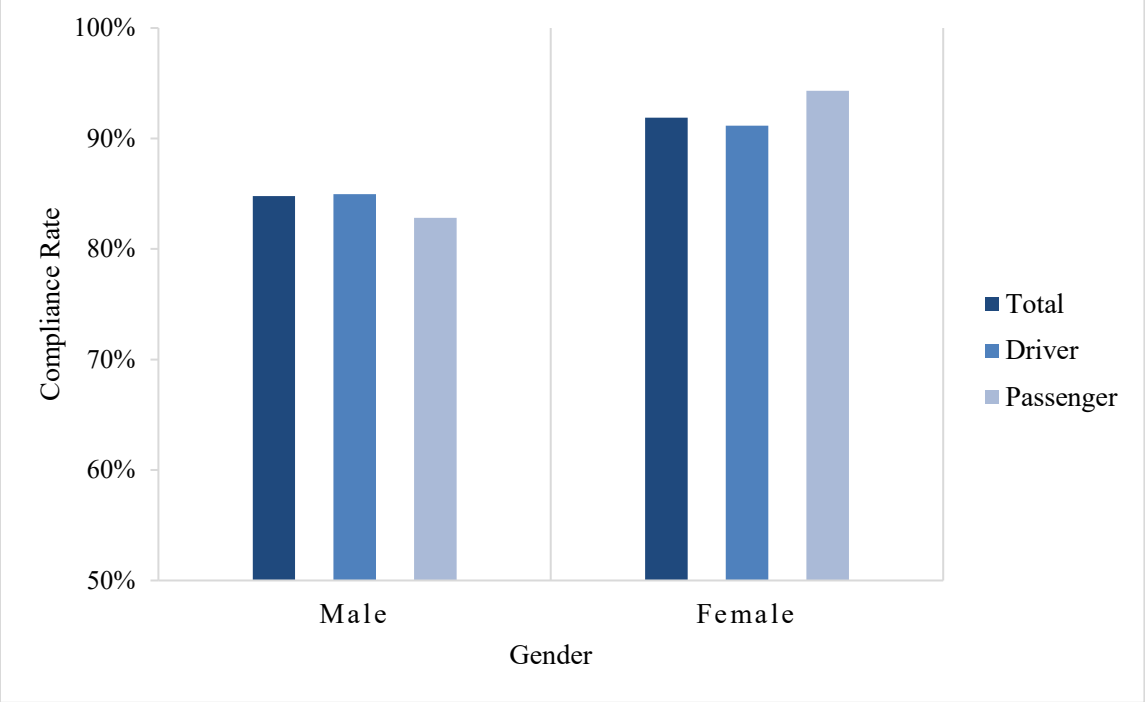
Note: Vehicle information was obtained from the U.S. Department of Energy and Federal Highway Administration. Reported numbers are unweighted.

Figure 11: Compliance Rate per Vehicle Type

As seen in Figure 11, both types of trucks had the lowest compliance rates seen with truck-heavy at 79.2% and truck-light at 82.5%. Next, cars had a compliance rate of 86.8% cars, vans at 89.5% and the most compliant vehicle type observed was the SUV at 92.2%.

3.9 Compliance per Gender

The compliance rate per gender was obtained to determine if there was a difference in compliance between male and female occupants. Figure 12 shows the results of the compliance rate per gender.



Sex	Occupant	Compliance	Sample Size
Female	All	91.9%	10128
	Driver	91.2%	7754
	Passenger	94.3%	2374
Male	All	84.8%	13537
	Driver	85.0%	12397
	Passenger	82.8%	1140

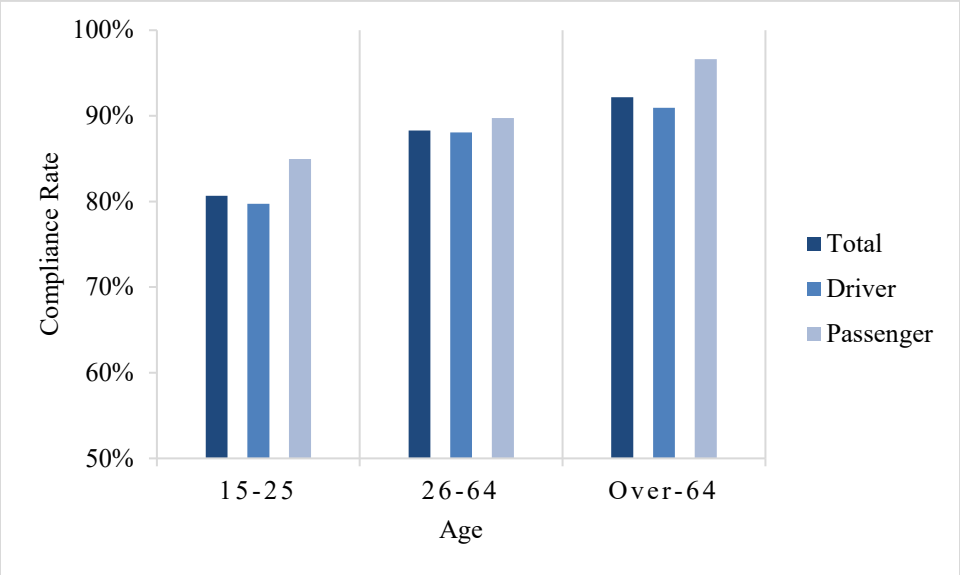
Note: Reported numbers are unweighted.

Figure 12: Compliance Rate per Gender

As seen in Figure 12, the compliance of female occupants is significantly higher than that of males. Female occupants had a compliance rate of 91.9% while males were over 7.1% less compliant at 84.8%. In addition, it was seen that there were more male than female drivers while there were more female than male passengers.

3.10 Compliance per Age

The compliance rate by age was analyzed to assess any potential relationship between occupant age and seat belt use. Drivers were categorized into three age groups: 15-25 years, 26-64 years, and over 64 years. Additionally, passengers were divided into two further age groups: 0-4 years and 5-14 years. Figure 13 illustrates the compliance rates for each age group.



Age	Occupant	Compliance	Sample Size
0-4	All	33.3%	3
	Driver	N/A	
	Passenger	33.3%	3
5-14	All	90.7%	247
	Driver	N/A	
	Passenger	90.7%	247
15-25	All	80.7%	3382
	Driver	79.7%	2784
	Passenger	84.9%	598
26-64	All	88.3%	16224
	Driver	88.1%	14388

	Passenger	89.8%	1836
Over-64	All	92.2%	3809
	Driver	90.9%	2979
	Passenger	96.6%	830

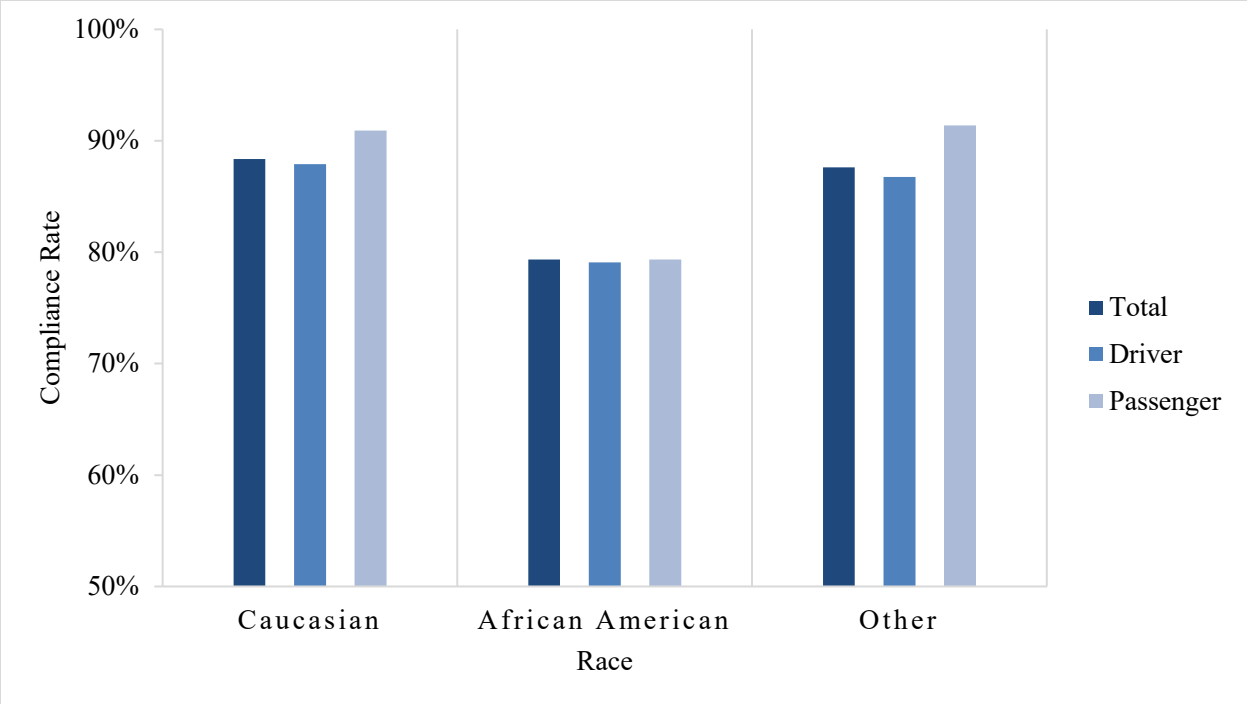
Note: Passengers younger than the age of 15 were omitted from the graph. Reported numbers are unweighted.

Figure 13: Compliance Rate per Age

As shown in Figure 13, younger occupants exhibited significantly lower compliance rates compared to middle-aged and older occupants. Those aged 15-25 years had the lowest compliance rate at 80.7%. In contrast, occupants aged 26-64 years had a compliance rate of 88.3%, while those over 64 years achieved a rate of 92.2%. It is noteworthy that occupants under the age of 15 had the highest compliance rate; however, this group also had the smallest sample size and may not have control over whether they are buckled in.

3.11 Compliance per Race

The compliance rate per race was observed to see if there was a difference in compliance between races. Occupant race was broken into three categories: Caucasian, African American and Other. The results of the compliance rate per race may be found in Figure 14.



Race	Occupant	Compliance	Sample Size
Caucasian	All	88.4%	21997

	Driver	87.9%	18673
	Passenger	90.9%	3324
African American	All	79.4%	1361
	Driver	79.1%	1229
	Passenger	79.4%	132
Other	All	87.6%	307
	Driver	86.7%	249
	Passenger	91.4%	58

Note: Reported numbers are unweighted

Figure 14: Compliance Rate per Race

As seen in Figure 14, Caucasian compliance was 88.4%, Other was 87.6%, while African American occupants was the lowest at 79.4%.

3.12 Compliance per Demographics

The compliance rate per demographic characteristics for drivers was compiled into a single table to determine which subgroups were most at risk of being noncompliant. To keep the sample sizes large enough to be statistically relevant only three demographic factors were looked at: gender, age and vehicle type. Table 2 shows the results of at-risk subgroups.

Table 2: Compliance Rate per Demographics

Driver Sample Distribution				
Driver Gender	**Driver Age**	**Vehicle**	**Count**	**Compliance**
Male	15-25	Car	638	72.6%
		SUV	308	80.8%
		Truck-Heavy	82	64.6%
		Truck-Light	178	66.3%
		Van	41	73.2%
	26-64	Car	2497	86.1%
		SUV	2745	90.9%
		Truck-Heavy	1508	78.6%
		Truck-Light	1739	82.5%
		Van	670	86.6%
	Over-64	Car	533	90.2%
		SUV	704	93.3%
		Truck-Heavy	277	84.1%
		Truck-Light	337	82.8%
		Van	140	87.9%
Female	15-25	Car	713	82.5%
		SUV	686	87.3%

	Truck-Heavy	18	83.3%
	Truck-Light	50	90.0%
	Van	70	85.7%
26-64	Car	1615	89.7%
	SUV	2788	94.1%
	Truck-Heavy	110	81.8%
	Truck-Light	178	88.8%
	Van	538	93.7%
Over-64	Car	347	94.8%
	SUV	532	95.1%
	Truck-Heavy	14	64.3%
	Truck-Light	27	100.0%
	Van	68	95.6%

As seen in Table 2, the subgroups that are most at-risk of being noncompliant include most occupants of trucks, especially young males. Additionally, young males in cars also were observed to have a low compliance rate. Higher compliance rates are found with females older than 25 driving SUVs and Cars. Note that some sample sizes are too small to have statistical relevance, such as young females driving Vans.

3.13 Cell Phone Usage

In addition to observing seat belt compliance, data regarding cell phone usage was also collected. An overall statewide estimate of phone use by drivers was determined. Observers were instructed to consider drivers to be using a cell phone if they could clearly be seen talking on it. Table 3 presents the statewide phone usage.

Table 3: Statewide Phone Usage

Phone Use	Sample Size
3.1%	20,151

Note: Phone usage applies only to drivers. Reported number is unweighted.

As seen in Table 3, Ohio had a statewide driver phone use rate of 3.1%. In addition to the statewide phone use, the compliance rate per phone usage was also determined to see if phone users were likely to wear a seat belt. Table 4 shows the compliance rate per phone usage.

Table 4: Compliance Rate per Phone Usage

Phone	Baseline		Post-Intervention	
	Compliance	Sample Size	Compliance	Sample Size
No	84.2%	16,216	87.5%	17,090

Yes	82.6%	575	81.3%	512

As seen in Table 4, the baseline study saw almost no difference in the compliance rate between phone users and non-phone users. However, in the post-intervention survey, there was a 3.3% increase in compliance for drivers who did not use a phone. Additional investigation is necessary to better understand the relationship between cell phone usage and seat belt compliance.

CHAPTER IV – RECOMMENDATIONS & CONCLUSIONS

The "Observational Survey of Seat Belt Use in Ohio – 2024" provides valuable insights into seat belt usage among Ohioans. As demonstrated in Chapter III, the Click It or Ticket (CIOT) campaign and enforcement efforts successfully increased seat belt usage statewide, with the compliance rate rising from 84.8% (2023) to 85.2%, reflecting a net increase of 0.4%. The research team identified several key trends in this year's study:

- Local roads exhibited lower compliance rates compared to primary and secondary roads.
- Heavy and light trucks showed lower compliance rates than other vehicle types.
- Male occupants had lower compliance rates compared to female occupants.
- Young occupants displayed lower compliance rates compared to older occupants.
- The subgroup of young males in trucks, particularly heavy trucks, exhibited the lowest compliance rates among all demographic subgroups with sufficient sample sizes.

These trends highlight ongoing challenges in improving seat belt compliance among specific populations.

4.1 Recommendations

This year's study provided some additional insights that may be helpful for NHTSA and DPS to recognize as key areas for improvement. These recommendations mirror the trends that were observed in the previous section:

4.1.1 Local Roads

Local roads had by far the lowest rate of compliance in the state. When compared to secondary, 87.5%, and primary, 90.0%, roads, local roads, 84.5%, had on average a 3.0% lower compliance rate.

4.1.2 Heavy & Light Trucks

Consistent with previous studies, heavy trucks (79.2%) and light trucks (82.5%) demonstrate significantly lower compliance rates compared to cars (86.8%), vans (89.5%), and SUVs (92.2%). As noted earlier, trucks are often observed in greater numbers on local roads than on secondary and primary roads. This combination creates a challenging situation that limits the potential for significantly increasing the compliance rates for either group.

4.1.3 Male Occupants

When compared to female occupants, 91.9%, male occupants, 84.8%, have historically had a lower compliance rate. Again, as seen in how trucks and local roads combine to depress compliance, so does the male occupants and truck groups. Truck occupants are typically male, see Table 2, which creates another grouping that limits the ability to raise the compliance rate.

4.1.2 Young Occupants

Traditionally, young occupants (15-25 years old), 80.7%, have a lower compliance rate than both mid-age, 88.3%, and older, 92.2%, occupants. The 2024 study is consistent with previous studies. The young occupants are a prime target for campaigns that attempt to increase seat belt compliance since they may be reached in large numbers during driving training and school.

4.2 Conclusions

Using the information presented in this report, particularly the recommendations, both NHTSA and DPS can develop new strategies to enhance seat belt compliance rates in Ohio and nationwide. The combination of enforcement efforts and media campaigns is crucial for maintaining Ohio's successes and further increasing the statewide compliance rate. Each occupant that NHTSA and DPS reach and persuade to wear a seat belt has the potential to save a life. Improving seat belt compliance is one of the most effective ways to reduce the number of annual fatalities on Ohio roads. Therefore, the results and recommendations from this study are vital in helping to achieve this shared goal.

APPENDIX

Appendix A Data Collection Forms

PHASE I
SITE NUMBER: SITE DESCRIPTION FORM

Observer Information			
1a) Scheduled Observer:		1b) Actual Observer:	
Schedule Information			
2a) Scheduled Day:		2b) Observed Day:	
3a) Scheduled Date:		3b) Observed Date:	
4a) Scheduled Time:		4b) Observed Time:	
Site Information			
5) Site Choice: If "Alternate" or "Other" complete 6b, 7b, 8b & 9b.	Primary	Alternate	Other
6a) Primary Site Type:		6b) Alternate Site Type:	
7a) Primary Site:		7b) Alternate Site:	
8a) Primary Direction:		8b) Alternate Direction:	
9a) Primary Cross Street:		9b) Alternate Cross Street:	
10) OSHP District:			
11) County:			
12) Nearest City:			
Traffic Information			
13a) Directions Available:		13b) Directions Observed:	
14a) Lanes Available:		14b) Lanes Counted:	
15) Traffic Count:			
Weather Information			
16) Precipitation:	Sunny	Cloudy	Light Rain	Heavy Rain	Snow
17) Visibility:	Excellent	Satisfactory	Poor
Additional Information			
18) Interruptions:	_____ minutes; caused by:		
19) Total SSF pages:			
20) Notes:			

Figure 15: Site Description Form

PAGE NUMBER:
SITE NUMBER:

SITE SURVEY FORM

VEHICLE	CAR VAN SUV TRUCK-LIGHT TRUCK-HEAVY	CAR VAN SUV TRUCK-LIGHT TRUCK-HEAVY	CAR VAN SUV TRUCK-LIGHT TRUCK-HEAVY	CAR VAN SUV TRUCK-LIGHT TRUCK-HEAVY	CAR VAN SUV TRUCK-LIGHT TRUCK-HEAVY
DRIVER BELT	YES NO UNKNOWN	YES NO UNKNOWN	YES NO UNKNOWN	YES NO UNKNOWN	YES NO UNKNOWN
DRIVER SEX	MALE FEMALE	MALE FEMALE	MALE FEMALE	MALE FEMALE	MALE FEMALE
DRIVER AGE	15-25 26-64 OVER-64	15-25 26-64 OVER-64	15-25 26-64 OVER-64	15-25 26-64 OVER-64	15-25 26-64 OVER-64
DRIVER RACE	CAUCASIAN AFRICAN-AMERICAN OTHER.	CAUCASIAN AFRICAN-AMERICAN OTHER	CAUCASIAN AFRICAN-AMERICAN OTHER	CAUCASIAN AFRICAN-AMERICAN OTHER	CAUCASIAN AFRICAN-AMERICAN OTHER
DRIVER PHONE	YES NO	YES NO	YES NO	YES NO	YES NO
PASSENGER BELT	YES NO UNKNOWN NO-PASSENGER	YES NO UNKNOWN NO-PASSENGER	YES NO UNKNOWN NO-PASSENGER	YES NO UNKNOWN NO-PASSENGER	YES NO UNKNOWN NO-PASSENGER
PASSENGER SEX	MALE FEMALE	MALE FEMALE	MALE FEMALE	MALE FEMALE	MALE FEMALE
PASSENGER AGE	0-4 5-14 15-25 26-64 OVER-64	0-4 5-14 15-25 26-64 OVER-64	0-4 5-14 15-25 26-64 OVER-64	0-4 5-14 15-25 26-64 OVER-64	0-4 5-14 15-25 26-64 OVER-64
PASSENGER RACE	CAUCASIAN AFRICAN-AMERICAN OTHER	CAUCASIAN AFRICAN-AMERICAN OTHER	CAUCASIAN AFRICAN-AMERICAN OTHER	CAUCASIAN AFRICAN-AMERICAN OTHER	CAUCASIAN AFRICAN-AMERICAN OTHER

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DEPARTMENT OF CIVIL ENGINEERING

OHIO DEPARTMENT OF PUBLIC SAFETY

Figure 16: Site Survey Form

Appendix B Site List

Table 5: 2024 Site List

Site Num	District	Primary Site	Cross Street	Latitude	Longitude
1	8	State Route 781	Jacksonville Road	38.90806	-83.440409
2	8	State Route 348	Lester Abbott Lane	38.8316	-83.333094
3	8	Paul Copas Road	State Route 247	38.88233	-83.560839
4	1	I-75	Napoleon Road	40.82637	-83.975771
5	1	St Johns Road	E Hanthorn Road	40.70222	-84.089813
6	1	US Highway 30	Ottawa Road/State Route 65	40.82278	-84.094836
7	1	Leatherwood Road	US-30	40.83794	-84.230954
8	4	I-71	US-250	40.85724	-82.255545
9	4	SR 603	US30	40.78106	-82.377082
10	4	County Road 175	US-250/Front Street	40.85841	-82.152953
11	4	State Route 11 Exit 98	East 21st Street	41.88878	-80.781968
12	4	State Route 11 Exit 78	US-6	41.60676	-80.711655
13	4	US-322/E Main Street	Staley Road	41.5352	-80.843699
14	4	West Prospect Road (20)	Station Ave	41.86871	-80.786607
15	4	E Windsor Road/County Highway 6	SR 46	41.55741	-80.770203
16	4	Creek Road	Marcy Road	41.75247	-80.563708
17	9	US Highway 33	Happy Hollow Road/County Road 78	39.44423	-82.204688
18	9	US 50	Washington Road/Meadowbrook Road	39.236	-82.194415
19	9	Old State Rte	SR 56	39.32729	-82.204519
20	5	US Route 33	Willipie St.	40.55437	-84.193341
21	5	E Spring St (29)	N Spruce Road	40.5449	-84.383904
22	7	Ohio River Secnic Byway	W 26th Street/E 26th Street	40.00998	-80.743062
23	7	Somerton Highway/800	Flat Rock Road	39.93414	-81.156788
24	7	Glencoe Stewartsville Road/ State Ro	Tar Run Road/Township Highway 723	40.00258	-80.877185
25	7	Colerain Pike	Ohio Ave	40.11529	-80.794147
26	8	State Route 756	State Route 505/State Route 756	38.86729	-84.012183
27	8	Appalachian Highway	US-62	38.96709	-83.726962
28	8	Lake Grant Road	Oakland-Locust Ridge Road/County Hig	38.99452	-83.934059
29	8	Beacon Hill Dr	US Rte 68	39.02082	-83.919601
30	8	I-75 Exit 24	Liberty Way	39.36944	-84.367333
31	8	I-75 Exit 21	Cincinnati Dayton Road	39.34276	-84.395876
32	8	State Route 122/Roosevelt Blvd	S Breiel Blvd	39.49952	-84.355469
33	8	Butler County Veterans Highway Exit	State Route 4	39.385	-84.506493
34	8	Hayes Ave	River Road	39.36295	-84.562147
35	8	Civic Centre	Uninon Center	39.3203	-84.420799
36	7	E Canal St	N Reed Ave	40.6917	-81.180805
37	7	Bay Rd SE	Carnation Rd SE	40.5262	-80.93439
38	5	US Highway 68	W County Line Road	40.02738	-83.80773
39	5	E Bennet St	South Main St	40.173302	-83.513901
40	5	SR 296	US 68	40.15534	-83.745847
41	5	Black Road	State Route 296	40.18141	-83.636933
42	5	I-70 Exit 38	Brandt Pike/State Route 201	39.86816	-84.0999886
43	5	I-70 Exit 48	Enon Road	39.88881	-83.9356800
44	5	West Sparrow	SR 72	39.85191	-83.8150440
45	5	State Route 571/N Medway Rd	W National Rd	39.91131	-84.0094830

46	5	Olive Street	E Cassilly Street	39.93486	-83.8001760
47	5	Bischoff Road	New Carlisle Pike	39.94181	-83.9789520
48	8	I-275	State Route 28	39.18715	-84.261574
49	8	State Route 132	Chapel Road	39.03526	-84.197252
50	8	State Route 222	State Route 222/Mt Olive Point Isabel R	38.89595	-84.127583
51	8	Lindal Nicholsville	Lindale-Mt Holly	38.99056	-84.207613
52	8	Bartlow Road/Center Street	US-52/Ohio River Scenic Byway	38.77616	-84.057268
53	8	State Route 73	US Route 68	39.46412	-83.836633
54	8	State Route 73	Mitchell Road	39.46371	-83.869294
55	8	State Route 133	Rhude Road/James Road/Township Hig	39.32934	-83.96916
56	8	Shawnee T	SR 123	39.26843	-83.970565
57	4	US Highway 30	OH 267	40.6821	-80.6362620
58	4	Salem Alliance Rd US 62	SR 45	40.90098	-80.8812560
59	7	State Route 60	County Road 82	40.3258	-82.014357
60	7	State Route 715	County Road 20	40.35549	-82.10676
61	7	Wakatomica Road	State Route 229	40.33575	-82.190803
62	2	US Hwy 30	Old Lincoln Highway	40.81248	-82.932076
63	2	Harding Way	N East Street	40.73367	-82.778163
64	10	I-77 Exit 159B	Independence Road	41.45724	-81.657725
65	10	I-77 Exit 155	Rockside Road	41.39711	-81.653687
66	10	Shaker Blvd/State Route 87	Lee Road	41.48095	-81.565193
67	10	State Route/Northfield Rd	Emery Road	41.43534	-81.526516
68	10	Lomond Blvd	Stoer Rd	41.46203	-81.544596
69	10	Industrial Parkway/East Parkway	W 150th Street	41.42536	-81.801221
70	5	State Route 47	US-127	40.22376	-84.575683
71	5	Union City Road/State Route 571	Coletown-Lightsville Road/County High	40.14366	-84.708063
72	5	Willowdell Road/County Highway 102	Foote Road	40.3065	-84.453714
73	5	Greenville-Pallestine Road	County Highway 57	40.07758	-84.693274
74	1	US Hwy 24	Baltomore Street	41.27525	-84.411771
75	1	Ottawa Ave	Logan Street	41.27188	-84.349466
76	6	Sawmill Parkway	US-42	40.27179	-83.106637
77	6	US Highway 23	State Route 229/Norton Road	40.43381	-83.072211
78	6	S Galena Road/County Road 34	Cheshire Road/County Road 72 and Ro	40.24653	-82.910329
79	6	Hickory Rock Blvd	Steitz Rd	40.19433	-83.11011
80	6	Dustin Road/Township Highway 104	Rome Corners Road	40.21677	-82.912951
81	2	I-80	State Route 4/Columbus-Sandusky Roa	41.34186	-82.758675
82	2	N Washington Street	Main Street	41.40003	-82.808417
83	2	Garfield Rd	SR 60	41.32148	-82.364152
84	6	I-70 Exit 112	Baltimore-Reynoldsburg Road	39.93457	-82.789225
85	6	US-33	Coonpath Road NW	39.77233	-82.690203
86	6	Lancaster Neward Rd	SR 204	39.89989	-82.562605
87	6	Lancaster Strret	Main Street	39.89651	-82.535113
88	6	Purvis Ave	Walnut Stree	39.7038	-82.430715
89	6	Beck Road	Revenge Road	39.62294	-82.619543
90	8	US 35	US 41	39.51386	-83.4434580
91	8	State Route 38	State Route 734	39.6482	-83.4333060
92	8	State Route 41	East High Street	39.65404	-83.5632460
93	8	West Lancaster Road/County Highwa	State Route 734	39.65107	-83.6089030
94	6	James L Wagner Memorial Highway	S High Street/US-23	39.91748	-82.995217
95	6	I-270/Jack Nicklaus Freeway Exit 15	Tuttle Crossing Blvd	40.07577	-83.134125
96	6	E Main Street/US 40	Noe Bixby Road	39.95465	-82.851671
97	6	W Dublin Granville Road	Evening Street	40.08898	-83.022276
98	6	North Selby Blvd	Andover St	40.0776	-83.005898
99	6	W Campus Road	New Albany Road	40.10434	-82.815992
100	1	I- 80	Ohio 109	41.59413	-84.044643

101	1	N Main St	Church Street	41.59049	-83.892082
102	1	Co Rd 3	Township Road H	41.58876	-83.921311
103	9	US Hwy 35	Ohio 325	38.89224	-82.382541
104	9	State Rte 14	Waterloo Cemetery Rd	38.70032	-82.462944
105	4	US Highway 422	State Route 306/Chillicothe Road	41.38835	-81.339128
106	4	Old State Road/ State Route 608	US-6/Crand Army of the Republic High	41.6043	-81.146443
107	4	Hayes Road/Township Road 121	Nauvoo Road/ Township Road 123	41.47914	-81.022066
108	8	US-35 Exit 55	N Bickett Road	39.69154	-83.8831310
109	8	US-35 Exit 62	Old US 35	39.66869	-83.7673450
110	8	US-42	W Spring Valley Paintersville Road	39.6109	-84.0010530
111	8	State Route 380	E Kreppds Road	39.63336	-83.9429190
112	8	Vanniman Rd	SR 57	39.55235	-83.6899870
113	8	McPherson Road	Lower Bellbrook Road	39.64538	-83.9921090
114	7	I- 70	State Route 513	40.05316	-81.32522
115	7	E Pike Rd	Sundew Rd	40.03355	-81.491936
116	8	I- 74 Off	New Haven Road	39.26051	-84.797591
117	8	I-74 Exit 17	Montana Ave	39.15855	-84.567016
118	8	Riverside Drive/US-52	Collins Ave	39.12343	-84.46955
119	8	State Route 3/Montgomery Road	Pfeiffer Road/Padabaugh Drive	39.24898	-84.344635
120	8	E Galbraith Road	Blue Ash Road	39.20771	-84.391208
121	8	Burlington Road	Springdale Road	39.26011	-84.556062
122	1	I-75	State Route 613	41.13801	-83.657993
123	1	State Route 235/Mc Comb Road	East Main Street	41.00545	-83.787332
124	1	US Highway 68	US Highway 68	40.98862	-83.650809
125	1	N Blanchard Street	E Main Street	41.03964	-83.641295
126	1	State Rte 292	Township Road 180	40.5959	-83.593723
127	7	Smyrna Rd	Campbell Road	40.19247	-81.247319
128	1	Highway 24	State Route 109	41.42996	-84.008727
129	1	State Route 281	State Route 65	41.28385	-83.940633
130	1	State Route 108	County Road V	41.47153	-84.134147
131	1	Twp Rd S3	County Road 3	41.45092	-83.92195
132	8	US Highway 62/S High Street	Muntz Street	39.19699	-83.612814
133	8	State Rte 124	Main Street	39.15209	-83.485057
134	8	South Baker Road	Hereford Road	39.10642	-83.831572
135	9	US Hwy 33	S Mulberry Street	39.53553	-82.407279
136	9	State Rte 56	Amerine Road	39.39554	-82.551293
137	9	Bremen Rd	State Route 93	39.56535	-82.385589
138	3	State Route 60	Wooster St	40.59662	-82.113429
139	3	State Route 39 (W. Main Street)	Mill Street (93)	40.51116	-81.653354
140	3	TR 82	SR 60	40.46148	-81.965991
141	2	US-20	US-250/State Route 13	41.22166	-82.598406
142	2	Milan Ave/US-250	Gallup Ave	41.25982	-82.611952
143	2	US-20	Monroe Street/Milan Ave	41.24387	-82.694685
144	2	E Townline Road 12	Rome Greenwich Road	41.06648	-82.534436
145	9	US-35	State Route 93	39.07315	-82.627769
146	9	State Route 788	State Route 788/Fairgreens Road	39.07358	-82.601045
147	9	State Route 279	Township Highway 318/McCoy Road	38.88647	-82.687986
148	9	Monroe Chapel Church	State Route 140	38.85993	-82.626395
149	9	Township Highway 242/Pleasant Grov	Jisco West Road/County Road 82	39.04984	-82.664033
150	7	Ohio River S	Cool Spring Road	40.31603	-80.615279

151	7	State Route 152	Walnut Ridge Road	40.42553	-80.780561
152	7	Twp Hwy 102	Union Street	40.17604	-80.805703
153	6	Millersburg Road	SR 226	40.38138	-82.28226
154	6	New Guilford Rd	McLarnan	40.28456	-82.28392
155	6	State Route 205/Danville-Jelloway R	Township Highway 327/State Route 205	40.48859	-82.2803
156	6	SR 114	CR 19	40.29466	-82.625496
157	6	Tullos	Morgan Center	40.2997	-82.447304
158	4	I-90	State Route 306/Broadmoor Road	41.6396	-81.373442
159	4	Mentor Ave	Jackson Street/Little Mountain Rode	41.67247	-81.327347
160	4	Colburn Road	State Route 44	41.64112	-81.241494
161	9	State Route 775	Bear Creek-Indian Guyan Road	38.48136	-82.390227
162	9	Etna-Waterlo	SR 93	38.62315	-82.658716
163	6	I-70 Exit 132	Jacksontown Road	39.9452	-82.408792
164	6	I-70 Exit 118	State Route 310	39.95016	-82.682571
165	6	State Route 13	County Road 73/County Road 2/County	39.9158	-82.49047
166	6	Pleasant Valley Road	State Route 79/Fallsburg Road	40.20299	-82.236131
167	6	Kaiser Drive	Hebron Road	40.01225	-82.458411
168	6	Downing Rd	Johnstown-Alexandria (37)	40.18111	-82.742408
169	5	US Highway 33	County Road 10	40.34196	-83.692728
170	5	S Main Street/State Route 235	W Lake Street	40.48432	-83.923988
171	5	SR 274	US Rte 33	40.44579	-83.820261
172	5	C-13	County Hwy 32	40.38513	-83.789787
173	5	County Highway 31 S	State Route 508	40.27921	-83.863404
174	3	I-90 Exit 153	Center Road	41.46568	-82.021726
175	3	State Route 10 Exit 3	Alternate State Route 83	41.35172	-82.024716
176	3	State Route 511/State Street/Vermilio	Oberlin-Norwalk Road/US-20/Kipton E	41.2584	-82.302802
177	3	Hwy 57	E Broad Street	41.36407	-82.076029
178	3	Oberlin Ave	W 21th Street	41.45085	-82.185183
179	3	Kansas Ave	Colorado Ave	41.46563	-82.156992
180	1	US-24/Anthony Wayne Trail	Fallen Timbers Lane	41.54146	-83.704317
181	1	I-75 Exit 210	E Alexis Road	41.72107	-83.500494
182	1	Miami Street/State Route 65	Oakdale Ave	41.62358	-83.53182
183	1	Airport Highway/State Route 2	S Crissey Road	41.60747	-83.761322
184	1	Brown Ave	Nebraska Ave	41.6456	-83.587054
185	1	Bowen Road	Grantwood Drive	41.6966	-83.610577
186	6	I-70	NE Plain City-Georgesville Road/State I	39.9799	-83.26125
187	6	SR 142	US 40	39.94452	-83.27386
188	6	SR 29	US 42	39.96653	-83.362547
189	6	Old Xenia Road	Washington-London Road/State Route 3	39.84974	-83.465873
190	4	I-680 Exit 3C	Wellington Ave	41.10745	-80.6852430
191	4	I-680 Exit 11	Boardman Poland Road/US-224	41.02415	-80.6246650
192	4	US-62/Madison Ave Expressway	Albert Street	41.10596	-80.6315790
193	4	State Route 7/Market Street	SR 165	40.94396	-80.6577540
194	4	Saint Andrews Drive	Tyler Drive	41.02835	-80.7203920
195	4	E Boston Ave	Market Street	41.06845	-80.6598150
196	2	US Highway 23	State Route 98	40.46224	-83.076752
197	2	SR 98	SR 195	40.6659	-83.015198
198	2	SR 100	SR 309	40.6704	-82.861
199	2	Larue-Green Camp Road	Guthery Road/Larue-Green Camp Road	40.55819	-83.330327
200	2	Township Highway 142/Gearhiser Ro	State Route 229	40.4345	-83.049946

201	3	I-76 Exit 7	Highway 57	41.03218	-81.760614
202	3	I-71 Exit 218	State Route 18/Medina Road	41.13611	-81.793214
203	3	State Route 18/Medina Road	Windfall Road	41.13636	-81.78508
204	3	Lafayette (421)	Lodi Road	41.02698	-82.030764
205	3	Substation Road/County Highway 38	Grafton Road	41.2608	-81.860741
206	3	Mud Lake Road	Route 3	41.00152	-81.887092
207	9	Appalachian Highway/State Route 32	Old State Route 346/County Highway 5	39.18186	-82.276233
208	9	US Route 33	Peachfork Road/C-19	39.0961	-82.013044
209	9	Brooks Rd	SR 681	39.16801	-81.829319
210	9	County Highway 11/Carpenter Dyesv	Township Highway 405/Harmon Road	39.12794	-82.229846
211	5	US Rte 127	SR 219	40.48348	-84.571369
212	5	State Route 117	US-127	40.7134	-84.580682
213	5	Clune Stuck Road	SR 274	40.43696	-84.512503
214	5	Palmer Road	State Route 707	40.66961	-84.561348
215	5	I-75	W Market Street/State Route 55	40.02573	-84.2292100
216	5	State Route 589	Troy Urbana Road/County Highway 19	40.08322	-84.1170440
217	5	State Route 55	S Range Line Road	39.9952	-84.3709780
218	5	Perry Road	N McMaken Rd	40.14239	-84.3362770
219	7	State Route 260	Merrill Ridge Road	39.58512	-81.214408
220	5	I-75 Exit 75	E National Road/US-40	39.89175	-84.1863190
221	5	I-70 Exit 29	S Main Street	39.85972	-84.2813030
222	5	State Route 48/Far Hills Avenue	E David Road	39.68138	-84.1666180
223	5	Dayton Germantown Pike/State Route	Manning Road	39.65822	-84.3277650
224	5	W Nottingham Road	Philadelphia Drive	39.80772	-84.2349980
225	5	W Stroop Road	N Springboro Pike	39.69738	-84.2186310
226	7	Main St	Smithville Road	39.70711	-81.882146
227	2	I-71	State Route 95	40.49729	-82.718365
228	2	State Route 97	State Route 314/Chesterville-Shelby	40.70542	-82.665574
229	2	State Rte 61	St Rte 229	40.40068	-82.826887
230	2	Cardington East Road	Worthington-New Haven Road/County	40.49631	-82.83773
231	7	I-70 Exit 153A	State Street	39.94831	-82.018052
232	7	State Route 146/Chandlersville Road	Carrie Circle	39.92542	-81.943841
233	7	State Route 60/S River Road	Henderson Street/Water Street	39.80196	-81.892517
234	7	Homestead Drive	E Pike/US-22	39.98984	-81.762917
235	7	Boggs Road/County Highway 108	Sonora Road/County Highway 52	39.9702	-81.904769
236	8	I- 77	State Route 78	39.73814	-81.528447
237	8	Lashley Rd	Churchman Lane	39.90258	-81.350909
238	2	State Route 2	State Route 163	41.51524	-82.907528
239	2	W Harbor Road/State Route 163	State Route 163/N Camp Road	41.5173	-83.020672
240	2	E Bayshore Road/County Road 135	S Danbury Road	41.50319	-82.828981
241	1	US Hwy 24 Webtound Ramp	State Route 127	41.22065	-84.582419
242	1	State Route 613	US 127	41.09162	-84.573513
243	6	State Route 93	State Route 37	39.703	-82.116019
244	6	Township Highway 195	Township Highway 210 NE	39.72154	-82.146007
245	6	I-71 Exit 84	State Route 56/London-Circleville Road	39.759	-83.30459
246	6	SR 316	SR 56	39.67425	-83.180388
247	6	State Route 207	US-22	39.56878	-83.201648
248	6	Ashville Pike	Duvall Rd	39.77168	-82.949419
249	6	Tarlton Road	Main Street/Harrison Street	39.55494	-82.783782
250	9	State Route 32/Appalachian Highway	Laurel Ridge Road/County Road 27	39.04222	-83.165052

251	9	State Route 32/Appalachian Highway	Shyville Road	39.05197	-82.995594
252	9	Hay Hollow Road	Hickson Run Road	39.13922	-82.807327
253	4	I-76	State Route 43	41.10869	-81.3475030
254	4	State Route 59/Haymaker Parkway	Middlebury Road/S Chestnut Street	41.15079	-81.3686870
255	4	Diagonal Road	Ravenna Road	41.18385	-81.3430800
256	5	I-70 Exit 10	US-127	39.83413	-84.629502
257	5	State Route 503	Pyrmont Road	39.80258	-84.534827
258	5	State Route 503//W Elkton Rd	W Elton Gifford Road/Somerville West	39.58229	-84.554449
259	5	Bantas Creek Rd	Eaton Lewisburg Rd	39.77336	-84.617618
260	5	Enterprise Rd	SR 503	39.65652	-84.529516
261	1	US Route 30	Lincoln Highway	40.84689	-84.305399
262	1	State Route 190	Township 24	40.88991	-84.320582
263	2	I-71 Exit 165	State Route 97	40.64921	-82.544628
264	2	Park Ave	S. Home Road	40.75962	-82.57108
265	2	SR 603	SR 113	40.91201	-82.499351
266	2	Divelbiss Road	State Route 95	40.56825	-82.450676
267	2	Cairns Road	Bowman Street	40.8059	-82.539091
268	9	US Highway 35	State Route 138	39.44838	-83.215484
269	9	US Hwy 35 off ramp	SR 159	39.35046	-82.9764
270	9	S Bridge Street/State Route 104	US-23	39.29279	-82.946495
271	9	State Route 138	Lyndon Road/County Highway 55	39.39409	-83.323416
272	9	Westfall Road	Broadway Street/Lower Twin Road	39.33751	-83.299294
273	9	Egypt Pike/County Highway 127	Westfall Road	39.44507	-83.120455
274	2	Bypass Highway/US-20	Oak Harbor Road	41.36673	-83.134651
275	2	West Main Street/US-20	Pemberville Road	41.45348	-83.370619
276	2	Sugar Creek Road/ County Road 93	Bringe Road/County Road 38	41.41004	-83.348023
277	9	US-52/Ohio River Scenic Byway	State Route 253	38.64793	-82.851225
278	9	US-52/Ohio River Scenic Byway	Township Highway 97/Lower Twin Cre	38.63141	-83.254517
279	9	State Route 125	State Forest Road 1	38.70869	-83.135929
280	9	Carver Ridge Road/Township Highwa	Woods Ridge Road	38.80266	-82.943168
281	9	Country Club Drive	State Route 104	38.80964	-83.008132
282	2	State Route 18	E County Road 24	41.16116	-82.984395
283	2	State Route 53	County Road 6	41.02907	-83.232506
284	2	Tr 0164	N Township Road 169	41.22734	-83.073999
285	2	County Road 43	State Route 18	41.12409	-83.053793
286	5	I-75	N County Road 25A	40.16615	-84.224947
287	5	N Main Street/State Route 65	W Pike Street/State Route 274	40.43984	-84.040216
288	5	State Rte 705	S. Main Street	40.34995	-84.375434
289	5	Reineke-Schipper Road	State Route 274	40.4394	-84.107131
290	3	US-62/Atlantic Blvd	West State Street/US-62/State Route 17	40.90204	-81.168528
291	3	I-77 Exit 99	Fohl Street SW	40.72941	-81.420004
292	3	Mahoning Road/State Route 153	Belden Ave/Harrisburg Road	40.80911	-81.349815
293	3	US-62/Navarre Road	Pigeon Run Avenue/Justus Avenue	40.70629	-81.572625
294	3	E Canal Street	Market Street/Blough Avenue	40.72223	-81.518343
295	3	12th Street	Perry Drive	40.81166	-81.447804
296	3	I-77 Exit 123A/Coventry Street	E Waterloo Road	41.02918	-81.5057440
297	3	US-224/I-76 Exit 14	S Cleveland Massillon Road	41.03869	-81.6380680
298	3	Canton Road/State Route 91	Albrecht Avenue	41.04568	-81.4369980
299	3	E Aurora Road	State Route 82/Ravenna Road	41.30383	-81.4208630
300	3	Hampton Ridge Drive	Smith Road	41.14076	-81.5779870

301	3	Canterbury Drive	E Streetsboro Street/State Route 303	41.23979	-81.4127650
302	4	State Route 11	Tibbetts Wick Road/County Highway 28	41.18468	-80.6893810
303	4	State Route 7/Youngstown Conneaut	Merwin Chase Road/County Highway 1	41.25034	-80.5683210
304	4	State Route 88/Greenville Road	SR 7	41.38647	-80.5685300
305	4	TR 888 Copeland Ave NM	Champion	41.29133	-80.8610230
306	4	Olive	Belmont Ave	41.1731	-80.7504770
307	7	I-77	S Bridge Street	40.39464	-81.556752
308	7	State Route 93/ Mill Street SW	Hickory Drive	40.4998	-81.660901
309	7	State Route 258	Gilmore Road	40.22786	-81.42785
310	7	Tremont Street	E 13th Street	40.53455	-81.47951
311	6	US Route 33	Scottslawn Road	40.21357	-83.308687
312	6	State Route 37	State Route 739/State Route 37	40.48232	-83.320001
313	6	State Route 31	Treaty Line Road/State Route 739	40.45366	-83.455507
314	6	Tawa Road	State Route 37/S Franklin Street	40.41831	-83.29259
315	1	US Highway 30	State Route 66	40.87429	-84.350286
316	1	State Route 116	Gamble Road	40.83722	-84.504719
317	9	State Route 324	Main Street	39.16211	-82.434793
318	8	I-71 Exit 32	State Route 123	39.41418	-84.153641
319	8	I-71 Exit 25	State Route 741/Kings Mill Road	39.3579	-84.264986
320	8	State Route 3/Montgomery Road	Fields Ertel Road	39.2909	-84.29898
321	8	State Route 132	Lundy-Whitacre Road	39.33216	-84.063619
322	8	Old Stage Road	Preston Drive	39.53953	-84.083303
323	8	Kings Water Drive	Waterstone Blvd	39.29724	-84.301929
324	7	I-77 Exit 16	Township Road 301	39.62849	-81.461571
325	7	US-50/Ohio Scenic Byway	State Route 339	39.28655	-81.657635
326	7	State Route 60	A E Miller Road	39.48276	-81.457272
327	7	Green Street	Ohio River Scenic Byway/State Route 7	39.38883	-81.229281
328	7	Tick Ridge Road	Township Road 239	39.37669	-81.721985
329	3	Conneaut Cincinnati Highway Exit 19(	State Route 301	40.93433	-82.109318
330	3	State Route 94/N Church Street	Alt US-30/W Main Street	40.79885	-81.698727
331	3	W Lincoln Way/US-30	SR 60	40.78638	-82.26234
332	3	Creamery Rd	South Main St	40.67559	-81.869522
333	3	N. Summit	W Main St	40.86224	-81.861625
334	1	I-80	State Route 49	41.63079	-84.766082
335	1	State Route 49	County Road M-50	41.60959	-84.76925
336	1	East Lawrence St	S Harrison Street	41.58247	-84.604724
337	1	I-75 off ramp	State Route 6	41.35097	-83.625521
338	1	State Route 582/Middleton Pike	State Route 64/Haskins Road	41.45925	-83.703413
339	1	State Route 25/N Dixie Highway	Five Point Road/Township Highway 102	41.50721	-83.640831
340	1	Cloverdale Road	Bowling Green Road/County Road 237/	41.36292	-83.571682
341	1	Hockenberry Road	Hoytville Road/Township Highway 123	41.19005	-83.832411
342	2	State Route 53	State Route 699/County Highway 95	40.80314	-83.419247
343	2	State Route 294	Township Highway 108	40.73786	-83.3239
344	2	County Highway 95	State Route 294	40.73752	-83.419865