DEPARTMENT OF TRANSPORTATION

Analysis of School Bus Stop-Arm Violation Reporting and Enforcement in Minnesota: Lessons Learned and Opportunities for Process Improvements

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Executive Summary

School bus stop-arm violations represent a serious safety risk to children boarding and exiting school buses. Mitigating these dangerous events with preventative measures and proactive enforcement requires a deep understanding of the circumstances in which they occur. However, violations are under-reported and under-enforced due to challenges in data collection, processing, tracking, and enforcement. The goal of this study is to better understand the school bus stop-arm violation reporting ecosystem and identify inefficiencies and potential improvements.

The research team investigated the entire lifecycle of a stop-arm violation report. This perspective was informed by task analyses, site visits, and interviews with school bus drivers and administrators, law enforcement, and prosecutors, as well as statistical analysis of existing data from Minnesota State Patrol, Minnesota court records, and the single-day survey conducted by the National Association of State Directors of Pupil Transportation Services (NASDPTS).

This work revealed under-reporting, under-enforcing, and numerous communication and efficiency issues throughout the reporting workflow. The existing data was found to be a poor representation of the reality of stop-arm violations, as uneven levels of engagement across the state resulted in large variations in the available data. Bloomington bus carriers alone account for approximately 30% of reports in the state, submitting nearly 15 times the reports of the next highest reporting community. This suggests under-reporting in the rest of the state, as the rates of reporting in Bloomington most closely match the estimated true rate of stop-arm violations based on the NASDPTS survey. Under-enforcement was also found across the state, with only a fraction of reports resulting in citations. Furthermore, the variation in existing rates for both reports and citations do not correlate with expected factors, including population density and injury crashes, suggesting the existing data does not accurately represent the true state of stop-arm violations.

The report and citation process workflow were found to have many barriers and inefficiencies across all stakeholder groups. The most challenging component of the workflow is the communication between bus agencies and police. Even in cases where both parties were invested in the effort, factors such as jurisdiction confusion, misaligned expectations, inefficient data transfer practices, and poor ability to track the result of a report result in a cumbersome workflow, placing unnecessary burden on those involved and hindering the documentation and enforcement process as a whole. Therefore, it is essential to consider the entire workflow when considering possible changes or improvements. Failing to do so could result in a proposed solution that fails to address the underlying issues, potentially even negatively impacting the rest of the system. For example, transitioning bus drivers to electronic data entry would likely provide limited benefits while adding logistical barriers to bus driver reporting including user acceptance and accessibility.

School bus cameras installed on Minnesota school buses in recent years have been associated with slight increases in citations issued by Minnesota law enforcement agencies. However, based on discussions with some law enforcement agencies, the increases may be short-lived and may have reached a ceiling effect due to limited capacity of law enforcement agencies to respond to increased reports. An

expansion of camera systems to more school buses in Minnesota is expected to add an administrative burden to school bus administrators but may not result in more responsive law enforcement action. In fact, it is possible that dramatically increased reporting volumes could overwhelm law enforcement agencies that had previously been active in citing drivers, resulting in agencies electing to instead issue warning letters to violating drivers or completely disengaging from the process.

With this in mind, the research team reached the conclusion that the best way to support stakeholders in the school bus stop-arm violation reporting ecosystem is through the implementation of a centralized statewide online portal. Such a system would allow all stakeholders to have efficient access to relevant data, streamline communication between agencies, simplify tasks such as filtering severity of violation events or determining jurisdiction, and standardize data statewide for analyses.

While a centralized statewide online portal is believed to be the most effective long-term solution, the development and implementation of a system to meet the process and user needs will take considerable planning and financial investment. In the interim, a list of short-term, implementable recommendations has been made. These short-term recommendations include suggestions for all stakeholders and system users, emphasizing the immediate needs for improvements across the entire system. While some of these recommendations serve as stopgaps until a statewide portal can be developed, some are recommended in addition to the statewide portal. Recommendations include but are not limited to:

- Improved training for bus drivers regarding stopping protocols
- Use of a standardized form developed by the research team
- Improved screening of reports to ensure police spend their time on the most severe cases
- Quicker and more complete sharing of evidence to cited drivers to prevent contesting
- Continued data collection of all reports through the Minnesota Department of Public Safety

Chapter 1: Introduction

School buses are among the safest forms of transportation. They are involved in only 2% of fatal crashes involving school-age children, offering a 70 times greater likelihood of safely delivering children to school than other transportation modes (National Conference of State Legislatures, 2024a; National Highway Traffic Safety Administration, 2024a; TRB, 2002). However, boarding, alighting, and approaching the bus heightens student risks, accounting for 23.8% of school-bus related injuries (McGeehan et al., 2006) that typically result from drivers improperly overtaking a stopped bus (National Highway Traffic Safety Administration, 2024a; Donoughe & Katz, 2015). Despite the relatively low prevalence of events resulting in injury, the nature of illegally passing school buses loading and unloading children is considered particularly unacceptable, often garnering national attention (Shafiq, 2023; Stunson, 2023), and local agencies are motivated to prevent these risky events and penalize drivers who violate the law.

Most states mandate that drivers stop and remain stopped for school buses with an extended stop-arm deployed with flashing red lights (National Conference of State Legislatures, 2024a). In recent years, states have increasingly legislated the use of bus stop-arm camera systems ranging from laws to limit their use to specific situations, to explicitly permit and govern their use, to requiring it on school buses (National Conference of State Legislatures, 2024b). Other states, including Minnesota, do not explicitly govern the use of bus stop-arm camera systems but incorporate their use into existing evidentiary processes that use video to support testimony from drivers (MN Statute 169.444, 1991 & rev. 2014).

Several initiatives across the country have attempted to hold violating drivers accountable, increase stop-arm law compliance, and improve safety near school buses. These measures include implementing camera systems to better capture evidence of violations, increasing driver awareness of the law and the risks of breaking it, and galvanizing enforcement measures (National Highway Traffic Safety Administration, 2024b). There are multiple interconnected components in the process of enforcing school bus stop-arm laws. As such, building and maintaining strong relationships and communication with law enforcement (LE) is crucial for any effort to increase the enforcement of stop-arm violation law (National Highway Traffic Safety Administration, 2024b; Cook & Tsai, 2013). In a study of three South Carolina school districts implementing stop-arm camera programs, cameras were found to be beneficial for documenting violations and gathering evidence; however, that may not necessarily translate to decreased violations (Katz et al., 2013).

While much effort has been put into improving the capture of evidence to prosecute violating drivers, there still exist issues within the process itself. Photographic evidence can be very useful in prosecution; however, video is often time-consuming to retrieve and pass along, universally increasing the burden on school bus carriers (Cook & Tsai, 2013). Some workflows may include especially cumbersome steps in the process of transferring photographic evidence, such as copying videos to CDs and mailing to LE and the District Attorney's Office (Cook & Tsai, 2013). Other criticisms of relying on video evidence for enforcement is that camera-enabled laws typically involve lower fines and exclude license point penalties compared to those that leverage in-person police enforcement, potentially contributing to the

worries that they are failing to achieve their intended goal of reducing driver overtaking (Henderson, 2024).

To understand the issues facing stop-arm violation reporting and enforcement, the research team conducted a multi-methods analysis, analyzing available quantitative data as well as interviews with system stakeholders. The factors that influence both outcomes are complex and making improvements would require multiple changes across the system. Supporting school bus drivers, who are tasked with ensuring the safety of the school children they transport, in the violation documentation process should remain a priority of future improvement initiatives. However, initial data collection is only the first step in a process that needs end-to-end improvement.

Chapter 2: Stop Arm Reporting and Citation Data Analysis

2.1 Background

Accurately assessing the efficacy of school bus cameras or other countermeasures in deterring drivers from illegally overtaking school buses and assisting enforcement is difficult without accurate and complete data on the frequency of the events. In addition to documenting overtaking base rates to better understand the scale at which violations occur, documentation is critical to identify patterns in violation characteristics to develop effective solutions. Finally, linking reports to enforcement activities is crucial to determining the extent to which drivers receive citations following reporting.

Some data on stop-arm violation occurrences is available through the National Association of State Directors of Pupil Transportation Service (NASDPTS) School Bus Illegal Passing Driver Survey (National Association of State Directors of Pupil Transportation Service, n.d.). The results of this single-day survey offer an astounding number of reported stop-arm violations. In 2018, 106,306 drivers from 38 states, including the District of Columbia (DC), reported 83,911 total illegal passes around their school buses on their respective, single surveyed day. A study of single day survey responses from 761 of the 1,243 public school districts and charter schools in Texas revealed approximately 13,000 reported violations on the surveyed day, an average of 0.47 violations per bus (Turner & Stanley, 2008). Estimating across the 180-day school year, the report concluded that 2.96 million stop-arm violations occur each year around Texas buses. While such extreme estimates may raise concerns about sampling and response bias, a follow up field study of two camera equipped Texas buses found each experienced 0.84 and 1 violation per day, respectively. The combined results suggest that the single day survey is a reasonable, not exaggerated, representation of the daily experiences of school buses on our roadways.

Successfully motivating drivers and administrators to document violation events on a single day each year does not reflect the challenges of maintaining this level of effort across the entire school year and raises questions about how frequently violations are reported to a law enforcement agency (LEA) and how often such reports result in the offending driver receiving a citation. Estimating the base rate of violations does not translate well to estimating reported violations to LE and thus does not help to determine the frequency and efficacy of police enforcement of stop-arm violations. This chapter aims to explore the available data regarding Minnesota stop-arm violations, reporting, and citations to understand the extent to which reporting and enforcement of violations occur.

2.2 Methods

2.2.1 Data Sources

2.2.1.1 School Bus Illegal Passing Driver Survey

The School Bus Illegal Passing Driver Survey by the National Association of State Directors of Pupil Transportation Services (NASDPTS) was used to estimate the stop-arm violation occurrence (NASDPTS, 2024). The NASDPTS annual single-day survey provides convenience sample data through voluntary reporting of bus arm violation experiences, both presence and absence of illegal passes. Categorical data is collected about each illegal pass including time of day, direction of pass, and side of pass.

2.2.1.2 Minnesota State Patrol's Stop-Arm Violation Online Report

The second source for estimating stop-arm violation occurrence is the Minnesota State Patrol's (MSP) Stop-Arm Violation Online Report, launched in 2021. Unlike the NASDPTS survey, this year-long violation form does not request reporting for non-events and requests more extensive details including violation location, bus travel direction, stop-arm and lighting system presence, violating vehicle details, presence/location of children, and status of local LE notification. Importantly, this report is for data collection purposes only and does not result in any LE action. A separate report/complaint to the local law enforcement agency (LEA) with jurisdiction in the area in which the violation occurred is needed for any LE response or action. Additionally, when carriers report only to local LE without also submitting the MSP report form, State Patrol has no record of the violation.

2.2.1.3 Minnesota Citations for School Bus Violations

The third major data source for estimating enforcement of stop-arm violations in Minnesota is the Minnesota Court Citation Data for school bus arm violations. Minnesota Statute 169.44 (United States Bureau of Labor Statistics, 2024) outlines seven charges, ranging from petty misdemeanor to gross misdemeanor, that may be brought against a driver based on their specific offense. The Minnesota Department of Public Safety provided the requested citation data by year, charge, and issuing LEA.

2.2.1.4 Reporting and Citation Workflow Information

The research team conducted a series of interviews and site visits with bus agencies and LEAs, including First Student Inc, NorthStar Bus Lines, and Saint Paul Schools Transportation Department, Minnesota State Patrol, Brooklyn Park Police Department, and Saint Paul Police Department, to understand the process of documenting, reporting, receiving, reviewing, citing, and tracking reporting outcomes.

2.2.2 Descriptive Analysis

2.2.2.1 School Bus Illegal Passing Driver Survey

National survey results were analyzed from 2016 to 2024. State participation varied each year; however, Minnesota data was available in all reports (NASDPTS, 2024). Survey results for all states were

unavailable for 2020 and 2021 due to COVID school closures. In 2024, the NASDPTS survey obtained 98,065 driver responses from 36 states, a significant proportion of the 371,530 U.S. school bus drivers estimated by the U.S. Bureau of Labor Statistics (BLS) (United States Bureau of Labor Statistics, 2024). Participating drivers collectively reported 66,322 illegal passes on their single surveyed day. However, response rates and potential response bias appeared to vary across states. Using BLS estimates, response estimates ranged between <1% and 100% of employed school bus drivers, with a median response rate of 30% (excluding the D.C. which could not be assessed). The median rate of violations was 0.33 violations per respondent; however, the range of average violation rates across states, i.e., 0.05 - 5.17 violations per respondent, suggests extreme state-by state variability or suggests some response bias within some samples (i.e., greater responses among drivers experiencing a pass). In contrast, the three states with the highest violation rates (CA-5.17, NY-2.21, AZ-1.84) were among the states with the lowest estimated driver response rates (14%, 3%, and 17%, respectively).

An analysis of 2016-2024 survey results from Minnesota found an average participation of 3,127 (*SD* = 681.4) Minnesota bus drivers each year (United States Bureau of Labor Statistics, 2024). Using BLS estimates for Minnesota school bus drivers, response rates are estimated to average at 27% (*SD* = 10.8%) of employed school bus drivers, slightly lower than the national median (Table 2.1). An average of 630 (*SD* = 166.1) illegal passes were reported on the single survey day each year. The average estimated pass rate was .20 passes per driver (*SD* = .03), lower than the national median estimated pass rate and suggesting fewer instances of stop-arm violations or less response bias than most other participating states.

Table 2.1 Minnesota stop-arm violation reports to NASDPTS Single Day Survey from 2016-2024

Primary Survey Date	Drivers (n)	MN Bus Drivers	Estimated Response Rate	Illegal Passes Observed				Passed from		Passed on	
				Total	AM	Midday	PM	Front	Rear	Left	Right
4/20/2016	2,621	15,720	17%	530	250	10	270	454	75	520	9
4/19/2017	3,659	15,230	24%	703	327	6	370	590	113	686	17
4/18/2018	2,802	15,300	18%	583	285	11	287	449	133	566	17
4/17/2019	2,360	— *	15% **	625	277	7	341	513	112	617	8
4/13/2022	4,343	9,090	48%	967	450	27	490	809	185	969	25
4/13/2023	3,231	9,510	34%	527	226	16	285	422	105	514	13
4/10/2024	2,875	— *	30% ‡	473	210	5	261	385	91	466	10
Average	**3,127**	**12,393**	**27%**	**630**	**303**	**13**	**341**	**459**	**101**	**547**	**14**

** Labor statistics for 2019 and 2024 not available (United States Bureau of Labor Statistics, 2024)*

† 2019 response rates estimated using MN bus driver numbers averaged over 2016 – 2018

‡ 2024 response rate estimated using MN bus driver numbers from 2023

In 2022 and 2023, the NASDPTS survey administered by MSP included an additional request for information about the number of violations reported to police and reasons for not reporting. The feedback regarding reasons for non-reported violations to LE included drivers unable to obtain the

license plate, complicated multi-vehicle events, and history of a lack of follow-through by LE or prosecution.

2.2.2.2 Minnesota State Patrol Stop-Arm Violation Reporting Form

Reported violation data was provided for the period from Jan 3, 2021 to February 16, 2024 which contained a total of 10,034 violation reports (Table 2.2). Total reports and participating communities increased from 2021-2024; however, community participation was inconsistent year-to-year and 561 of the 855 Minnesota incorporated cities submitted no reports. At least one report was found from 100% of urban communities (50,000+ residents), 86% of large towns (10,000-49,999 residents), 73% of small towns (2,500-9,999 residents), and 20% of remote, rural communities (<2,500 residents).

Table 2.2 Minnesota stop-arm violation reports to Minnesota State Patrol Form 2016-2024

Violation event details		Count	% of Total	Number Reported to LE	Percent Reported to LE
Year	2021	1,194	11.9%	611	51.2%
	2022	3,507	35.0%	1,635	46.6%
	2023	4,813	48.0%	2,950	61.3%
	2024 *	5,20	5.2%	263	50.6%
Month	January	1,056	10.5%	563	53.3%
	February	850	8.5%	475	55.9%
	March	887	8.8%	559	63.0%
	April	839	8.4%	532	63.4%
	May	923	9.2%	593	64.2%
	June	141	1.4%	94	66.7%
	July	51	0.5%	31	60.8%
	August	72	0.7%	34	47.2%
	September	1,793	17.9%	818	45.6%
	October	1,539	15.3%	732	47.6%
	November	1,152	11.5%	603	52.3%
	December	731	7.3%	425	58.1%
Time of Day	AM	4,240	42.3%	2,229	52.6%
	PM	5,795	57.7%	3,231	55.8%
Event Details	Camera System: Yes	6,532	65.1%	3,799	58.2%
	Supplemental Warning: Yes	745	7.4%	573	76.9%
	Child Outside of Bus: Yes	7,113	70.9%	3,734	52.5%
	Opposite Direction of Travel	8,373	83.4%	4,561	54.5%
	Same Direction of Travel	1,662	16.6%	899	54.1%
	Right Side Pass	150	1.5%	85	56.7%
	License was Captured: Yes	7,281	72.6%	4,583	62.9%

** 2024 is a partial year of data collection*

Approximately half, 54.4%, of all reported violations were listed as also reported to local LE. However, the patterns for circumstances in which violations were reported are not clear. For example, 65.1% of violations were captured via camera system, but only 58% of those were reported to LE. Similarly, 72.6% of violations captured the vehicle's license plate (a requirement of LE action), but only 62.9% of those were reported to LE. Interestingly, 70.9% of the violations included a child outside of the bus (a criterion for a gross misdemeanor), but only 52.5% of those were reported to LE.

2.2.2.3 Minnesota Citations for School Bus Violations

Citation data was provided for the period from Jan 1, 2016 to February 27, 2024. Yearly citations (excluding 2024) averaged to 1,063 (*SD* = 387.65) (Table 2.3). Citations from 2020-2021 fell significantly, likely due to limited student busing during COVID-19-related distance learning but rebounded in 2022 and 2023. The two most frequent offense citations issued were misdemeanors 169.444.1 and

169.444.2(a). The least frequent citation was the gross misdemeanor charge 169.444.2(b)(2) for passing on the right side. All 87 counties were found to have completed at least one citation from 2016 to 2024, but citations were not found for all counties in each year. Hennepin County, the state's most populous county, led the state with a total of 2,306 citations across the examined years.

Table 2.3 Minnesota stop-arm citations by statue charge type from 2016-2024

Citation Type	2016	2017	2018	2019	2020	2021	2022	2023	2024 *	Total
169.444.1: Misdemeanor Children getting on/off bus – fail to stop	371	388	454	518	251	368	413	559	120	**3442**
169.444.1a: Misdemeanor Passing on right – amber lights	33	31	37	30	8	16	8	22	4	**189**
169.444.2(a): Misdemeanor Fail to stop – amber lights	377	332	236	228	106	181	230	384	80	**2154**
169.444.2(b): Gross misdemeanor Fail to stop – pass bus	21	15	13	11	3	16	20	20	8	**127**
169.444.2(b)(1): Gross misdemeanor Pass on right	7	7	7	6	3	7	8	6	0	**51**
169.444.2(b)(2): Gross misdemeanor Children outside bus	132	125	120	144	94	96	123	197	56	**1087**
169.444.6(a): Petty misdemeanor Owner of vehicle held liable	41	217	207	237	46	88	212	674	132	**1854**
Yearly Totals	**982**	**1115**	**1074**	**1174**	**511**	**772**	**1014**	**1862**	**400**	**8904**

** 2024 is a partial year of data collection*

2.2.3 Inferential Analysis

Determining the extent to which stop-arm violations occur and are enforced by LE in Minnesota is difficult, given that the available data does not afford precise estimates of the base rate of violations or formal reporting to appropriate LEAs. The following analyses estimate the probable occurrence of violations across the state and allow some comparison to the known citations issued across each LEA.

2.2.3.1 Estimating Illegal Passing Occurrences in Minnesota

The illegal passes reported in the NASDPTS single day survey can be extrapolated following a number of assumptions. The first assumption is that the sampled day of the NASDPTS survey is representative of most school days throughout the year. Based on MSP Report data, violations in April are reported less frequently than other school months. This suggests that the April-based NASDPTS survey results may be a conservative representation of the expected violations each day throughout the year. Next, choosing to assume a strong response bias among those who respond to the NASDPTS survey, the average reported daily passes (i.e., 630) may simply be multiplied across the 180 school days in a year, resulting in a conservative estimate of 113,426 illegal passes around Minnesota school buses each year. Alternatively, choosing to assume a representative sample of drivers (i.e., no strong response bias), the average

violation rate (i.e., .201) of the NASDPTS survey can be applied to the average number of school bus drivers in the state (i.e., 12,393) and multiplied across 180 school days, resulting in an expanded estimate of 473,112 illegal passes around Minnesota school buses each year.

The limited number of violations reported through the MSP Report form in 2023 (i.e., 4,813) represented a fraction (~1-4%) of the estimated statewide violations each year. Furthermore, the number of actual citations issued in Minnesota in 2023 (i.e., 1,862) represent only 0.4%-1.6% of the expanded and conservative estimates of violations each year, respectively. However, without considering community level reporting and citations rates, comparing the overall number of reported violations to MSP in 2023 to the total citations issued that year may incorrectly suggest a more responsive level of enforcement to reported violations. Determining where and to what extent under-reporting and under-enforcement may be occurring can be estimated by considering other community risk exposures.

Twenty-two Minnesota communities were selected for analysis by selection of those that were among the top ten ranked communities in the state based on U.S. Census population data (U. S. Census Bureau, 2024), number of reports into the MSP report from 2021-2024, and number of citations issued by local LE from 2021-2024 (see Table 2.4). Other hypothesized predictive factors included the number of 2023 injury crashes (MN DPS, 2022) (considering that many large police departments no longer report property damage only crashes), and number of law enforcement officers (Police Scorecard, 2024). Two communities, Shoreview and Monticello, no longer have local police departments and are instead served by their county sheriff's department.

Table 2.4 Violation reports to Minnesota State Patrol Form from 2021-2024

Location	Population Rank	Population	Population Density (people/mi²)	2023 Injury Crashes	Number of Police	2021-24 Counts		2021-24 Rankings	
						Report Totals	Citation Totals	Report Ranking	Citation Ranking
Minneapolis	1	425,096	7,962	2,007	565	147	3	13 *	187 *
Saint Paul	2	303,176	5,994	548	575	93	11	26	76 *
Rochester	3	121,878	2,184	338	150	21	54	74 *	10
Bloomington	4	89,298	2,593	188	116	3046	569	1	1
Duluth	5	87,797	1,210	107	158	140	30	14	22
Brooklyn Park	6	86,619	3,316	341	107	65	3	30	187 *
Plymouth	7	78,683	2,477	116	81	221	26	5	27 *
Woodbury	8	78,561	2,152	180	68	274	77	2 *	6
Lakeville	9	74,553	1,899	190	61	168	17	10 *	42 *
Blaine	10	71,739	2,134	143	74	1	36	24 *	15
Maple Grove	11	70,582	2,157	178	69	39	4	42	158 *
Saint Cloud	12	69,568	1,715	125	113	172	62	7 *	9
Eden Prairie	16	62,476	1,976	88	67	1	95	243 *	4
Apple Valley	17	55,416	3,341	200	52	228	24	4	30 *
Edina	19	52,437	3,461	63	57	8	429	138 *	2
Mankato	22	45,140	2,290	125	57	105	73	21	8
Cottage Grove	24	41,033	1,155	54	44	274	37	2 *	14
Shoreview	39	26,632	2,500	—	—	220	—	6	—
Ramsey Co.	—	543,257	—	120	384	—	7	—	102 *
New Brighton	49	22,413	3,611	31	26	171	0	8	346 **
Willmar	56	21,282	1,477	80	35	26	75	62	7
Monticello	74	14,804	1,606			171	—	9	—
Wright Co.	—	144,845		227	157	—	195	—	3
Worthington	82	13,743	1,757	26	23	9	79	127	5
Minnesota Total	**—**	**5,737,915**	**66**	**17,229**	**—**	**10,034**	**4,048**	**—**	**—**

Note: Green-to-red coloring indicates high-to-low in counts or ranking
Note: 2024 is a partial year of data collection; green-to-red indicates high-to-low
** Indicates tied ranking*
*** Indicates tied ranking among agencies writing no citations during period*

2.2.3.2 Predicting Violation Reporting

In examining population and MSP reporting rankings among these communities, it was found that the top ten most populous cities in Minnesota are not consistently among the top cities for reported bus arm violations to the MSP Report form. Notably, the three most populous cities, Minneapolis, Saint Paul, and Rochester are ranked 13th, 26th, and 74th statewide, respectively, in the number of reported violations. Conversely, Bloomington, the fourth most populous city, ranked 1st for reports submitted and accounts for 30% of the total statewide reports. Other smaller communities, such as Cottage Grove, New Brighton, and Monticello, ranked in the top 10 for the most reported violations despite being far less populous.

A linear regression was run to predict the number of reported violations to the MSP Report from 2021-2024 based on community population, population density, number of police in the representing LEA, and number of injury crashes in 2023. The model found that none of the predictors were statistically

significant (i.e., p values > .05). A correlation analysis of population and total MSP reports for was found to be negligible ($r < 0.01$). Similarly, a negligible negative correlation was found between total number of reports and population density ($r = -0.01$), the number of police ($r = -0.02$), and injury crashes ($r = -.03$).

2.2.3.3 Predicting Violation Enforcement

Similar to findings of violation reporting, an examination of violation enforcement rankings also found few of the top ten most populous cities in Minnesota to be among the top cities for issued citations from 2021-2024. Minneapolis, the most populous city and highest number of injury crashes in 2023, was found to be ranked 187th in 2021-2024 statewide citations, with only 3 total citations issued. Saint Paul, the second most populous city, had previously led statewide enforcement rankings from 2016-2020 with 547 citations issued in that period. However, Saint Paul's rankings plummeted to tied 76th place from 2021-2024, issuing only 11 total citations during that time. Just as Bloomington led 2021-2024 reporting rankings, they also led in citation rankings during that period with 569 citations issued to drivers, more than double the total citations of all the other top 10 most populous communities in Minnesota combined and approximately 14% of all statewide citations, while having a relatively smaller police force. Despite being 19th in state population rankings, Edina was ranked second in the state with 429 citations, accounting for 10.6% of the state's total citations. Wright County Sheriff's Department ranked third statewide in issued citations, far outnumbering the citations issued by Ramsey County Sheriff's Department which is a significantly larger agency representing a significantly larger population than Wright County. While these citations Ramsey and Wright County Sheriff's Departments are associated in this analysis with Shoreview and Monticello, respectively, it is uncertain if these citations correspond with these communities or others with their counties.

A linear regression was run to predict the number of citations from 2021-2024 based on community population, population density, number of police in the representing LEA, number of injury crashes in 2023, and number of reported violations to MSP. Only the number of reported violations to MSP was found to be statistically significant, ($B = 0.721$ ($SE = .037$), $p < .001$). A correlation analysis of citations from 2021-2024 and community population found a weak negative association ($r = -0.18$) and population density had a negligible negative association ($r = -0.08$). Similarly, a weak negative relationship was found between citations and the number of police ($r = -0.17$) and number of 2023 injury crashes ($r = -0.16$).

While a moderate relationship between reported violations and citations was found ($r = 0.74$), notable misalignments persist. Remarkably, the second leading community for citations, Edina, was ranked 138th in reports to MSP, indicating direct communication to Edina Police Department about violations which is not being duplicated into the MSP Report form, thus not included in total violation estimates through this dataset. Conversely, the community of New Brighton was ranked 8th in the number of reported violations in the MSP Report. However, the New Brighton Police Department ranked last among LEAs that issued no citations from 2016-2024, despite the reports to MSP indicating that 97% of their violations were reported to local LE.

2.2.4 Internal Agency Data Documentation and Review

The incomplete and inconsistent data on violations and enforcement activities not only introduces difficulties for analysis on a statewide scale, but also on a local scale. Without quality data tracking, it becomes difficult for local agencies to assess the impact of certain interventions. On the bus agency side, reporting drivers often receive little feedback on their reports, leaving them not only discouraged, as they may be unaware of any analyses or action taken based on data they generated, but also potentially unsure of how to improve their reporting. While internal data storage and analysis does exist within bus agencies, there is no guidance on proper and efficient data storage and analysis methods, forcing many agencies to develop their own means of doing so or not do so at all. As such, requests for in-person enforcement from local police may often be based on requests from individual bus drivers, without the ability to suggest enforcement based on data trends. Providing guidance on data storage and analysis has significant potential to improve both local and statewide data management and therefore analysis. On the enforcement side, in some cases data is stored in such a way that discovering repeat offenders is difficult if not impossible. Additionally, warning letters may be poorly tracked, resulting in letter writing campaigns being completed with little evidence or data to demonstrate their effectiveness.

2.3 Conclusion

Tracking the locations and circumstances of these violations, as well as determining the extent to which funded efforts, such as camera systems or public education campaigns, result in a reduction in illegal passing, is difficult due to the inconsistent nature of the data. The analysis described in this report highlights current shortcomings in reporting and enforcement in Minnesota.

The analysis of violation reporting to the Minnesota State Patrol survey by community reveals uneven levels of engagement across the state. Violation reporting volumes did not match expected community factors, such as population size or density. Approximately 30% of all reports statewide stem from Bloomington bus carriers, who were observed to have submitted 3046 violation reports to MSP in the periods observed. Based on the NASDPTS survey estimates of expected daily violations in Minnesota, it is expected that the reports from Bloomington are the closest representation of true violation frequencies and may still slightly underestimate the occurrence of illegal passes. Concerningly, no other communities were comparable to these reporting volumes, with the next highest communities submitting a small fraction of the reports as those from Bloomington, suggesting gross under-reporting in most Minnesota communities.

The analysis of citations in Minnesota similarly demonstrated uneven responsiveness by law enforcement agencies to act upon violation reports. Contrary to expectation of the relationship between citation rates and law enforcement agency size, higher counts of citations were found among relatively smaller law enforcement agencies, such as Wright County Sheriff's Department, and few to no citations were found by large agencies, such as Minneapolis Police Department. Furthermore, the relationship between violation reports and citations was moderate, but inconsistencies in the relationship were found. The analysis of violation reporting data found concentrated reporting in communities where enforcement was relatively robust, such as Bloomington, as well as where enforcement was not existent,

such as New Brighton. These findings suggest that reported violations are under-enforced and furthermore that all violations (whether reported or unreported) are grossly under-enforced.

Overall, these results indicate that patterns of stop arm violations in Minnesota and prevention efforts cannot be adequately assessed because documentation is insufficient in most communities. Further, the results suggest that enforcement of stop arm violations is limited, lacking, or in some communities, non-existent.

Chapter 3: Violation Report Workflow Analysis

3.1 Introduction

The research team engaged with project stakeholders to investigate the school bus stop arm violation reporting process, beginning from when an incident occurs and reported by a driver to when the data is received and acted upon by law enforcement. Interviews were conducted with those interacting with the system such as bus drivers, bus carrier administrators, law enforcement officers and administrators, and public safety officials. This work created a detailed accounting of the current state of the workflow from multiple perspectives, pain points, and inefficiencies.

3.2 Report Lifecycle

The research team conducted a series of interviews and site visits with bus agencies and law enforcement agencies in order to understand the entire lifecycle of a violation report, from the initial processes of documenting and reporting the event to receiving and reviewing reports, citing drivers, and tracking reporting outcomes (see Figure 3.1). The interviews included First Student Inc, NorthStar Bus Lines, and Saint Paul Schools Transportation Department, Minnesota State Patrol, Brooklyn Park Police Department, Saint Paul Police Department, Bloomington Police Department, and the Bloomington City Attorney's office. The semi-structured interviews were conducted via a mix of methods including onsite and remote interviews via Zoom. Moderators led the interviews and note-takers recorded the discussion for later analysis. Key and recurring themes were extracted and summarized below.

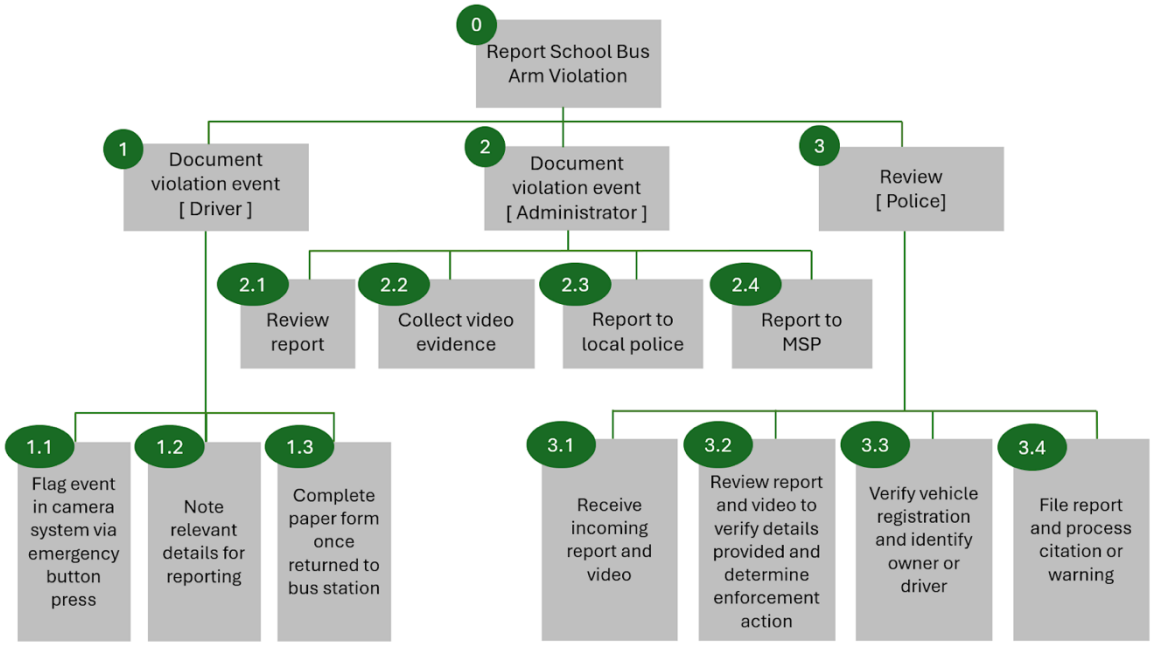

Figure 3.1 Abridged hierarchical task analysis of violation reporting and review process

3.2.1 Bus Drivers

The first step in a report's lifecycle is the bus driver documentation, done using a paper form. During a violation event, the bus drivers must recognize and remember key information about the violator, including make, model, color, license plate, and driver demographics, as well as manage the safety and position of students entering or exiting the bus. The driver's memory is often aided with paper notes. If available, bus drivers also may press a button linked to the camera system which creates a digital flag in the video for easier location by administrators who edit the video.

Later, bus drivers must fill out a paper reporting form with the information they recall and/or recorded from the violation event after they complete their route and return to dispatch. This process was estimated in interviews to take approximately 5 minutes to complete. Notably, bus drivers do not have the ability to consult the video while they are filling out the report form and must complete the form using only their memory and any notes they took. Further, the paper forms that bus drivers fill out may vary from police jurisdiction to police jurisdiction, meaning no statewide consistency in forms was found.

3.2.2 Bus Administrators

The paper report is then reviewed by bus administrators, who are responsible for gathering video data and transmitting the violation details to the appropriate law enforcement agencies. The administrator reviews the paper form completed by the bus driver and determines if the details indicate a violation which should be reported. In order to collect the video evidence of the violation, the administrator must first collect the data, for which it may be necessary to walk out to the bus itself and retrieve the hard drive containing the video if their system lacks Wi-Fi download capabilities.

Then, the administrator must complete the often-time-consuming process of finding the violation in the hours-long video and edit it into appropriate video clips and images. The research team's time assessment of this process determined that approximately half of the time required to process a violation report was related to bus camera video processing, as shown in Figure 3.2. During this process the administrator also reviews the footage to ensure that a stop-arm violation did in fact occur and proper protocols were used by the bus driver prior to the violation. Notably, a number of different camera vendors and software are in use throughout the state, meaning each bus company may be using different editing software with slightly different editing processes which may impact their processing times considerably.

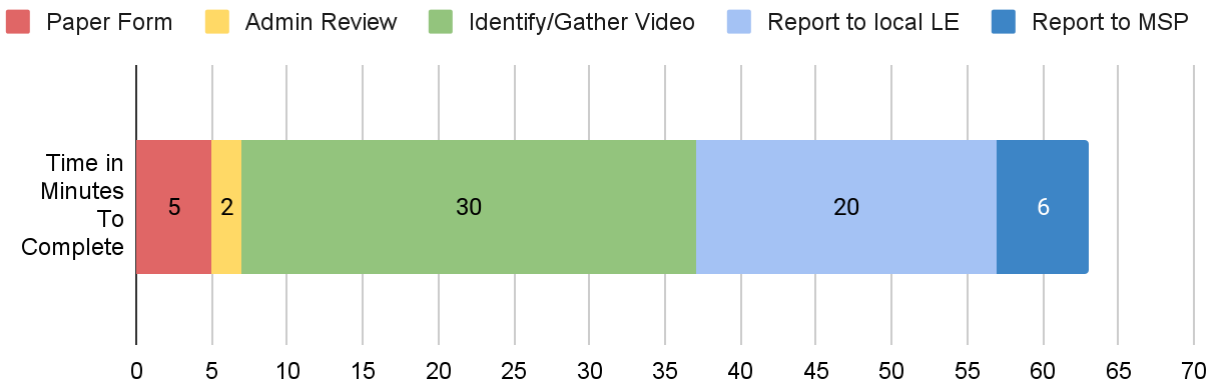

Figure 3.2 Graphical representation of time spent reporting a violation

Next, the administrator must send the report to the appropriate police department (PD). For bus companies that service multiple municipalities and/or counties, this may require the administrator to determine which PD has jurisdiction over the violation, which in some cases may be confusing for bus administrators. This can result in a situation where a violation report is sent to a PD that does not have jurisdiction in the area where the violation occurred, and a new reporting process must be initiated. Another complicating factor is identifying the appropriate point of contact within each law enforcement agency to send the violation report. This information is often not available, time-consuming to determine, or out of date with responsibilities being reassigned within PDs or staffing changes.

The manner in which reports and videos are shared with a PD is dependent on the system that PD has in place. The most efficient process observed was among police agencies that provide a shared cloud Dropbox for all digital copies of the forms, videos, and images to be shared. However, bus carriers often shared information with police through less efficient and more fractured processes including initially emailing or faxing the report form and, following police review and feedback, later sending video evidence through other means. Video and image files could be transmitted via email, Dropbox, or in more extreme examples, stored on a compact disc or USB drive and physically mailed to the police department.

Finally, administrators must also transcribe the information from the paper report into the online Minnesota State Patrol (MSP) report survey, which contains more questions than contained in the bus driver paper reports. This creates both additional and redundant work and, given the inordinate amount of time spent and cumbersome steps in reporting to police, administrators may forget to fill out the second report thus leaving the violations unaccounted for among the MSP dataset. Alternatively, there may be some confusion about the purpose and capabilities of the online MSP report. Some administrators may not realize that the MSP survey is different from reporting their local PD, incorrectly believing that because they entered the report into the MSP form, their local PD has been notified of the violation, or believing that a copy of the MSP survey should be submitted to their local PD.

3.2.3 Local Law Enforcement

After receiving a new stop-arm violation report, law enforcement must first review the violation report and video and determine whether or not to issue a citation. It appeared that the standard for issuing a citation was not consistent among different agencies and was often found to be more restrictive than described in the language of the statute. At this stage, the reviewing officer will often investigate the violating vehicle and the vehicle's registered owner, checking if the vehicle registration matches the vehicle shown in the video, and identifying the driver or the owner of the violating vehicle. Even though Minnesota statute states that the owner of the vehicle is responsible for stop-arm violations regardless of the driver (i.e., owner liability), it was observed that many PDs will not pursue a reported violation if the school bus driver cannot or will not identify an individual driver or the violating driver's likeness is not clear from the video evidence. Further, the reviewing officer may determine a violation does not merit a citation if the offense is not sufficiently egregious, e.g., did not pose a risk to students, or they sympathize with the driver's frustration with the stopped school bus, e.g., a bus stopped for 5 minutes on a busy corridor. If the report and evidence meet the officer's or agency's standard for continued effort, a citation is mailed to the violator, after which the violator can either decide to pay the fine or contest the citation.

The citation letter sent to violators may be confusing to violators, making them more likely to contest the citation, requiring court resources. In some cases, the citation itself has an incorrect date attached, as the date listed may be the citation issue date, as opposed to the date of the violation itself or the citation issue date is confused by the violator as the violation date. In some cases, this may be due to a lengthy delay between the citation being processed and the citation letter being sent. Understandably, drivers may vigorously contest the citation if the erroneous or confused date coincides with a day that they were out of town or otherwise they know they could not have been driving in the stated area of which they have been charged. Additionally, no photographic evidence is included in the mailed citation to demonstrate to the driver that their vehicle was captured by the bus's camera system. Therefore, some violators may not realize there is video evidence of their involvement in the violation until later in the contesting process with the courts.

If the violator contests the citation, they must meet first with a hearing officer, at which point many cases are resolved. If the case is not resolved with the hearing officer, the violator will meet with the prosecutor and a clerk, who will again attempt to resolve the citation without going to trial. If the case is still not resolved, it will go to trial where the citing police officer and the bus drivers often testify. The volume of contested citations may put significant strain on the courts and appears to influence police officers' decision making in which violations to pursue for citation as well as influence the overall number of citations they are willing to issue.

3.3 Additional Challenges

3.3.1 Bus Driver Level

3.3.1.1 Driver Technology Literacy and Access

A barrier to transitioning violation reporting to digital entry or other technological formats is that many bus drivers may have limited experience with technology and may be reluctant to learn and engage with any online portal. For example, some drivers still have flip phones or refuse to set up their own email. For those that are technologically savvy, requesting drivers to use their personal smartphones presents organizational complications. Furthermore, providing access to a digital form may create bottlenecks in data entry at the bus station, e.g., if only one tablet computer is available, and the excess time in interacting with the electronic device, among those who struggle with technology, would result in additional costs that bus carriers must cover in their hourly pay structure or help troubleshooting technical issues.

3.3.1.2 Audio Recording Opportunities

Many bus cameras record both the interior of the bus and audio in addition to the exterior of the bus. While this is not a detriment, it presents an opportunity for a bus driver to verbally note details that may be difficult to remember or things outside the camera's field of view, as opposed to verbally venting the frustration they feel toward the violator. Utilizing such an opportunity could strengthen the evidence supporting any report they complete and serve as a backup for any information that the driver may forget over the course of their entire bus route.

3.3.1.3 Reporter Motivation

Many drivers and administrators may feel a lack of motivation to report due to a perceived lack of law enforcement action taken based on those reports. Following a report submission, bus drivers often inquire about the outcome of law enforcement action but are often frustrated to receive no information or resolution and overtime begin to suspect that no enforcement is occurring.

3.3.2 Bus Administrator Level

3.3.2.1 Internal Tracking of Reports

The data and patterns of violations that buses experience would be valuable for bus carriers in terms of training, route evaluations, and considering new safety measures (such as enhanced lighting or extended stop arms). However, it was found that the organization and storage of violation reports by administrators was often limited to a folder containing the original paper reports. This is because the digital data entry into the MSP survey is not accessible to administrators once it is submitted nor are any other databases created by corresponding law enforcement agencies. Creating an internal digital copy of the violation details for internal use would often require triplicate data entry, adding to an already hour-long process. Allowing administrators access to the violation reports they have submitted through the

MSP system or sharing reports back with them quarterly could be a way of providing this data to bus companies.

3.3.2.2 External Tracking of Reports

Administrators described their difficulties and frustrations in tracking any outcomes from the reports they share with law enforcement agencies. Bus agencies who received state grants to purchase their camera systems are required to formally report on the violations they captured through the cameras and reported to police, as well as the outcomes of those reports, in terms of whether or not drivers received a citation. Administrators typically seek this information through clerks at the police department. However, without any knowledge of the case number, administrators often cannot provide clerks with the requisite information they need to find the information about a violation report or any corresponding law enforcement action. Communication between administrators and clerks can cycle through multiple rounds of requests, often without any information obtained to populate the reports required by the camera grants.

3.3.3 Local Law Enforcement Level

3.3.3.1 Large Report Volume

While collecting the reports of all violations is incredibly helpful for later data analysis, it is not as useful for efficient enforcement. Each violation report must be carefully reviewed by an officer before a citation or warning can be issued. With an estimated 113,000 reports occurring in Minnesota annually, reviewing all the violations reported is unfortunately unrealistic for most PDs. Police department staffing is often stretched thin, with insufficient funding and time to pursue all violations captured by drivers and camera systems, and as the number of reports coming in continues to increase, this will only be exacerbated. Therefore, ensuring the time spent reviewing these reports is an effective use of that time is a priority for PDs.

3.3.3.2 Report Filtration

The team learned that some reported violations may not be appropriate to issue a citation because the bus driver did not follow proper protocols. In rare cases, bus drivers engage in a practice which is termed “throw the arm”. This sometimes occurs when drivers are quickly approaching school buses, attempting to race past the bus when the bus has just stopped, has activated their pre-warning amber lights, but have not yet activated their flashing red signals nor extended their stop arm. Bus drivers are sometimes observed to “throw the arm” out just before the vehicle passes which will capture the vehicle passing the stop arm on camera.

While bus administrators themselves often filter out false positive violations and engage in retraining with the bus driver, such violations may slip through to police due to high volumes or inconsistent reviewing practices. Filtering reports of events that do not follow protocols to reduce the likelihood that they reach police could help reduce volumes and bolster trust between agencies that reported violations are valid and will be pursued. Additionally, police could benefit from a system that is able to highlight the

most egregious cases or provide a severity ranking, so that they may direct their resources where it is most impactful.

3.3.3.3 Police Resources

In many cases police resources are simply not being allocated to school bus violation enforcement. Historically, police departments have allocated school bus stop arm violation enforcement to school resource officers. However, with the removal of school resource officers from some school districts, some larger PDs no longer have dedicated officers to handle stop arm citations. Furthermore, since school resource officers' time was paid for by the school district, police departments would have to not only reassign the responsibility to other officers but would also be responsible for covering the time from their own budgets. Ultimately, some agencies have elected not to reassign this responsibility to other officers in the police department.

3.4 Conclusion

When considering potential improvements to this system, it is important to take a holistic view. Without considering the whole system, a proposed enhancement could result in unintended consequences upon others who interact with downstream components of the system and ultimately result in no substantial improvement. Therefore, it is essential to keep the entire workflow in mind when working to improve stop-arm reporting and enforcement.

Chapter 4: Human-Centered Redesign of Violation Reporting Form

4.1 Introduction

There is some standardization among forms used to collect school bus stop arm violation data such as the National Association of State Directors of Pupil Transportation Services' one-day survey (Appendix A) as well as the data collected by the Minnesota State Patrol's online form (Appendix B). However, the paper forms used on a day-to-day basis by bus drivers lack statewide standardization with different police agencies providing their own unique paper forms to bus companies.

Without standardization, the datasets collected by different bus agencies are different and sometimes incompatible with each other. Additionally, bus drivers may even be asked to complete different forms based on the jurisdiction in which the violation occurred. Further, when school bus administrators enter the data from the paper forms into the Minnesota State Patrol form, the data collected on paper does not match the questions asked in the Minnesota State Patrol form, requiring administrators to infer or gather additional data or leave fields blank.

With a standardized form, every bus driver in the state could use the same form, regardless of carrier or law enforcement jurisdiction. This would also allow for easier data tracking and aggregation, as administrators could transcribe this data into a matching state-wide digital form that matched the paper. A standardized form could also ensure the questions being asked are relevant and user-friendly. Finally, a standardized form would represent a scaffolding for future improvements to the stop-arm violation reporting system. For example, a standardized report would give future projects a head start on aggregating and streamlining the flow of data statewide, as stakeholders across the state would "speak the same language" in their data.

Many police departments and bus agencies have data storage and analysis measures that can be cumbersome to use and excessively time-consuming to analyze. If all stop arm violation data was standardized or at least similar across the state, providing guidance on how to store, retrieve, and analyze stop-arm violation data would become much easier, as each bus company and police department would no longer require a unique system. Additionally, the continued use of a statewide digital form similar to the Minnesota State Patrol form would allow researchers and stakeholders at the MN Department of Public Safety to see the patterns of stop-arm violations across the state, without having to query every bus company or police department. Such data has been essential to this project and will continue to be essential to future research and intervention.

4.2 Stakeholder Needs

4.2.1 Bus Company User Needs

First and foremost, the form bus drivers use to report violations must be developed with usability in mind. Ensuring that the task of reporting is as easy and intuitive as possible is essential to collecting data effectively and efficiently. It is also worth noting that many bus drivers may infrequently use or have limited access to technology such as smartphones or tablets, with some not even having personal email addresses. This means that electronic reporting systems, such as those that could be completed using communal computers or tablets must be considered with extreme care, as exclusively relying on electronic data entry could discourage a significant number of drivers from reporting violations or complicate the process with a multi-method data collection approach (e.g., paper and electronic data collection).

With that in mind, bus administrations are expected to continue to transcribe paper forms into electronic forms to reach digital databases. As such, the goal of ensuring reporting is easy and intuitive also extends to that transcription process, a process that may be hindered by mismatched elements across the paper forms and the digital form. Creating a transcription workflow in which both the questions asked and the order in which they are asked match between the paper and digital form would result in a significantly more usable, efficient, and streamlined data entry process. Facilitating the transcription of the data into a digital format through user-centered design principles is expected to encourage the documentation of this valuable data to be used for future analyses.

4.2.2 Law Enforcement User Needs

While ideally police departments would be able to take action on every stop-arm violation reported, in reality, police departments may be overwhelmed by the volume of incoming reports and not have officers assigned or available to review incoming reports and determine which can be prioritized for action based on available resources and staffing. When deciding which violations to follow up on, officers often look at two factors: severity and driver identification. Unsurprisingly, officers are more willing to prosecute violations in which a child was outside the bus during the event, or when the child was nearly hit. Additionally, driver identification information is very relevant to any investigation, as despite MN Statute 169.444 including owner liability (Sudb. 6. (a): If a motor vehicle is operated in violation of subdivision 1 or 1a, the owner of the vehicle, or for a leased motor vehicle the lessee of the vehicle, is guilty of a petty misdemeanor), prosecuting the owner is much more difficult than prosecuting the driver. As such, a bus driver's description of a violator can be essential in determining whether a violation is pursued. Notably, while the bus cameras may in some cases be able to obtain footage of the violating driver, glare on the windows of the violating vehicle often obscures any individuals inside the vehicle, making the bus driver's first-hand account even more relevant. In some jurisdictions, police departments may not even review violation reports that lack a driver description.

4.2.3 Data Needs

While collecting violation data with the goal of enforcement is a key motivation for drivers and administrators, it is important to highlight the value of violation data collection in the absence of enforcement review or action. Ongoing and expanded data collection of violations is expected to support researchers, practitioners, and policy makers to make informed decisions and identify effective recommendations and practices. Integrating standardized data collection procedures, through both paper and digital forms, which account for end user needs is essential to support statewide aggregation of violation reports and is recommended as a practice to maintain long-term. Historically Minnesota State Patrol has collected data for these system-level purposes and helped to identify the next steps for these data collection practices. It is recommended that Minnesota State Patrol maintain their role in facilitating this data collection or that responsibility of the data collection be transferred to the Minnesota Department of Public Safety more broadly. Shifting the focus of stop-arm reporting from an intent to support enforcement to a broader vision that includes large-scale data analysis may be a useful step to encourage data collection in the absence of robust enforcement practices.

4.3 Analysis

The research team reviewed a sample of forms currently in use at First Student (Appendix C), Northstar (Appendix D), and Bloomington Public Schools (Appendix E), as well as the State Patrol Online Survey Form, in an effort to understand the similarities and differences of existing paper forms used by Minnesota school bus drivers. The research team compared these forms, noting both what questions were asked and how they were asked (i.e., text entry, multiple choice, diagram. etc.). While a number of questions were shared across all forms, unique questions were also found within the forms. Further, the exact wording and the method of data entry within the consistently asked questions contained variation. For a breakdown of this analysis, see Table 4.1. For a more detailed overview, see Appendix F.

Table 4.1 Data collected in violation report forms

Data Query	State Patrol	First Student	Northstar	Bloomington	Recommended Paper Form	Recommended Digital Form
Date	✓	✓	✓	✓	✓	✓
Time	✓	✓	✓	✓	✓	✓
AM / PM	✓	✓	✗	✓	✓	✓
Student Stop Location	✓	✓	✓	✓	✓	✓
Bus Driver Name	✓	✓	✓	✓	✓	✓
Bus Driver Date of Birth	✓	✗	✗	✗	✗	✗
Reported by	✓	✗	✗	✗	✗	✓
Company/District	✓	✗	✓	✗	✓	✓
City/Township	✓	✓	✗	✗	✗	✓
County	✓	✗	✓	✗	✗	✓
Route	✗	✓	✓	✗	✓	✗
Bus Number	✓	✓	✓	✓	✓	✓
Bus Driver Phone Number	✓	✗	✓	✗	✓	✗
Child Outside	✓	✓	✓	✓	✓	✓
Child Action	✗	✗	✓	✗	✗	✗
Right Side Pass	✓	✓	✓	✗	✓	✓
Close Call	✗	✗	✗	✗	✓	✓
Bus Direction	✓	✓	✓	✓	✓	✗
Violator Direction	✓	✓	✓	✓	✓	✗
License Plate	✓	✓	✓	✓	✓	✓
License Plate State	✓	✓	✓	✗	✓	✓
Vehicle Type	✓	✓	✗	✗	✓	✓
Make	✓	✓	✓	✓	✓	✓
Model	✓	✓	✓	✓	✓	✓
Color	✓	✓	✓	✓	✓	✓
Violator Number of Doors	✗	✗	✓	✗	✗	✗
Other Vehicle Features	✗	✗	✓	✗	✗	✗
Comments	✓	✓	✓	✗	✓	✗
Light Conditions	✗	✓	✗	✗	✗	✗
Weather Conditions	✗	✓	✗	✗	✗	✗
Road Condition	✗	✓	✗	✗	✗	✗
Supplemental Warning System	✓	✗	✗	✗	✗	✓
Stop Arm Cam	✓	✗	✗	✗	✗	✓
Reported to Law Enforcement	✓	✗	✗	✗	✗	✓
Turn Before Violation	✗	✓	✗	✗	✓	✗
Additional Violator Info	✓	✓	✓	✓	✓	✗
Violator Race	✗	✓	✗	✗	✗	✗
Violator Gender	✗	✓	✗	✗	✗	✗
Violator Age	✗	✓	✗	✗	✗	✗
Number of Occupants	✓	✗	✓	✗	✗	✗
Witness	✓	✗	✓	✗	✗	✗

4.4 Synthesis and Recommendation

4.4.1 Paper Form

After reviewing the existing report forms, interviewing stakeholders, and analyzing gathered data, the research team synthesized this knowledge into a single form that would best meet the needs across user groups. The generated form is shown in Figure 4.1. The developed form includes all questions deemed essential and was iteratively designed and user tested by both expert and novice end users to support intuitive and efficient data entry. The form was revised based on user and stakeholder feedback, which

included recommendations for improvements to the diagram, notes on redundant or irrelevant questions, and the request for an open text entry to describe violators in greater detail.

In this effort the team considered multiple aspects, including the burden placed on the driver to recall the information, the method of entry, the importance of the data collected, and the frequency of a given question's relevance. For example, the data point "Weather Conditions" was determined to be non-essential, as often camera systems and video evidence captured this information, and so it is unnecessary to require drivers to enter it. Alternatively, the open entry "Driver Description" is essential as the data captured is incredibly relevant and, in many areas, necessary for police departments, thus the additional effort required by the open entry text is deemed acceptable. Additionally, "Number of Occupants" and questions about witnesses were not recommended due to both the limited applicability and the difficulty in recalling these factors.

4.4.1.1 Notable Inclusions

The proposed form includes multiple open text entry options for the driver to describe both the event and describe the violating driver. While this data is not easily quantified and analyzed, it can be essential to law enforcement, who may use these detailed descriptions to build a stronger case or determine which violations should be prioritized for enforcement.

One unique aspect of the form is the format of the diagram section. Inspired by First Student's form, the research team created a diagram that was as simple as possible while still answering essential questions about the nature of the violation and the location of the child. This completed diagram would provide details regarding the position of children during the violation (whether the child was outside the bus), what side of the bus the violator passed on, the direction of the violator relative to the bus, and whether the violator turned before the violation. The bus, centerline, and curb being aspects of the diagram allow for the bus driver to input the fewest markings possible while still collecting the relevant data which can be extracted.

Additionally, in order to aid the tracking of a report after it is shared outside the bus agency, a Report ID field is available for administrators to enter. This creates a baseline identification for the report, allowing bus agencies a reference when investigating the outcome of said report, and allowing data analysts a way to connect a single report across different agencies.

Stop Arm Violation Report

Print Name: _____ Bus #: _____ Route: _____

Contact Number: _____ Company / District: _____

Date: _____ Time of Day: _____ A.M. ☐ P.M. ☐

Location / Intersection: _____

Draw an arrow (~~~►) for where the violator drove.

Draw an X for where the child was at the time.

Bus Direction of Travel:

North: ☐ East: ☐

West: ☐ South: ☐

License Plate: _____

License Plate State: _____

Vehicle Type: _____

Make: _____

Model: _____

Color: _____

Close Call: ☐

Describe Violation/Additional Information:

_____

_____

_____

Violating Driver Description: (*Note: any descriptors of driver are useful for citation purposes*)

_____

Administrator Use Only

Video Evidence: ☐ *Report ID:* _____

Figure 4.1 Recommended standardized paper form

4.4.2 Statewide Digital Form

Alongside proposed updates to paper reporting, the research team also developed recommendations for a digital statewide form for the purpose of continued data collection, see Figure 4.2. As discussed above, the first recommendation is to ensure the digital form mirrors the paper form in terms of both questions asked and the order in which they are asked. This is essential for a smooth workflow uninterrupted by investigative work or the need to jump around the page. While all data may not be exactly the same across the two forms, any improvement in mirroring would allow administrators to transcribe more efficiently.

A second key recommendation is to provide an option which would allow bus company administrators to retrieve or extract data from the digital form. Currently the digital Minnesota State Patrol form only receives data which requires duplicate data entry from administrators to create a local digital file or request data from Minnesota State Patrol. It is recommended that the digital form continues to provide an option to enter an email to receive a copy of the submission but also adds options to download the results of the current entry as a CSV file. Additionally, some administrators may prefer receiving aggregated data files at regular intervals without needing to explicitly request it each time. The research team also recommends that any digital form reduce the number of questions asked about the incident itself so that the number is less than the number of questions on paper forms. While more data is always appealing, the value in data collection must be weighed against the human cost of collecting this data. Excessive questions within the digital form could turn what ought to be a straightforward transcription process into a potentially lengthy investigative process.

Historically, the Minnesota State Patrol form has provided an initial method for researchers and policymakers to receive data regarding stop-arm violations. While the initial intent of the data collection survey was not to be a permanent process, the research team recommends the practice of collecting data at a state level to continue. This data collection could continue under the Minnesota State Patrol or alternatively, it is recommended that the responsibility of the digital form be assumed by the MN Department of Public Safety. A benefit of this transfer is that it may clarify any jurisdictional confusion and better protect against mistaken beliefs that the Minnesota State Patrol data directly alerted local law enforcement. A change in ownership alone could clarify to administrators that they must also report to local law enforcement if they hope to see enforcement action. Reports submitted through an online portal could even be aggregated and sent to local police by the MN Department of Public Safety, providing disengaged or overwhelmed police departments an opportunity to receive a large-scale overview of bus arm violations in their jurisdiction to help guide future decision making, planning, and resource allocation. A digital form being administered by the MN Department of Public Safety would also signal the value of the data for analytical purposes. Finally, the MN Department of Public Safety' experience in managing crash and other traffic safety data may help enhance the analysis and methods in which the data is used and shared.

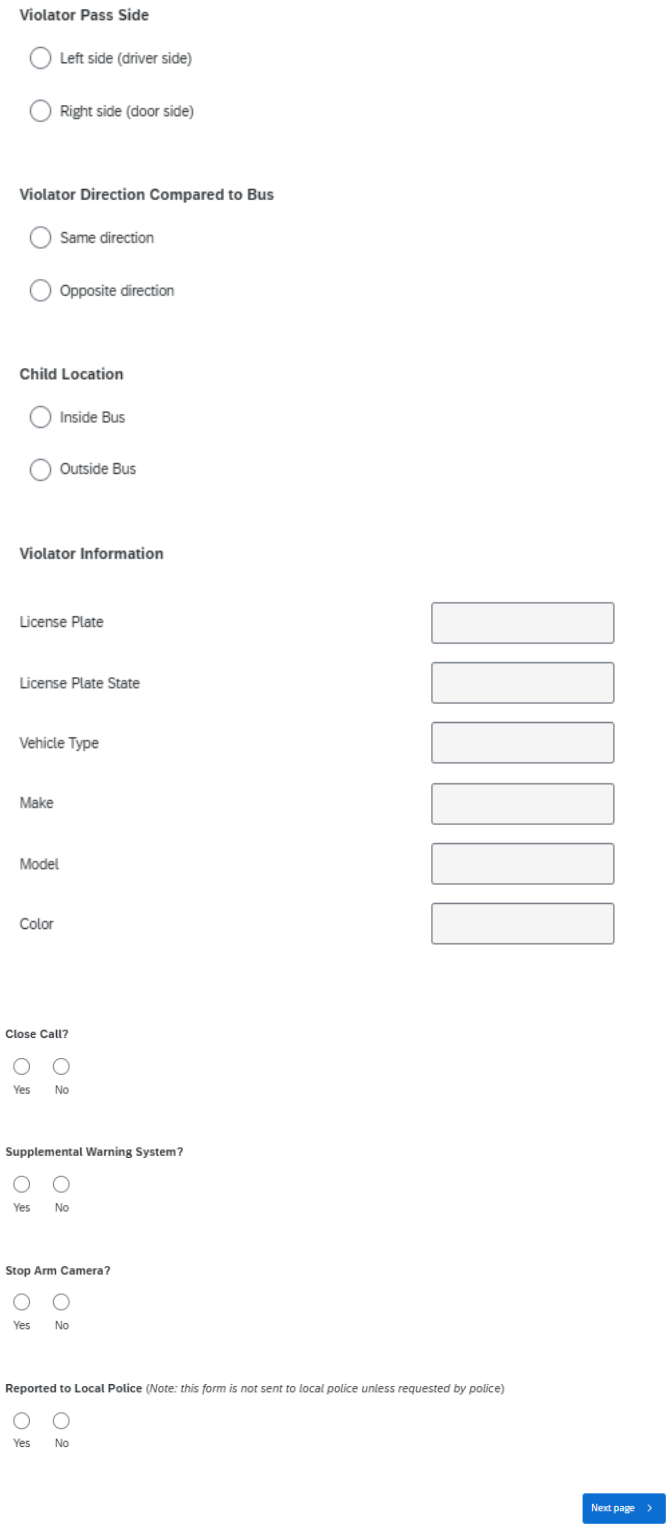

Figure 4.2 Recommended standardized digital form

4.5 Conclusion

The variety of paper forms used to document school bus arm violations in Minnesota adds to the complexity and confusion experienced by school bus administrators and bus drivers. Bus agencies that provide services to multiple cities often must translate their internal form data into different versions to become compatible with the forms requested by different police agencies. Furthermore, the data sets generated using these disparate forms present a disconnect making it more challenging to input data into Minnesota State Patrol's form and to perform statewide analyses of the data. Differences across these forms may require a reordering of the data during translation, increasing the risk of transcription errors, may result in data capture that is not ultimately used, or may require administrators to investigate an incident to supplement data not originally asked of drivers.

The research team developed a standardized paper form to meet the needs of bus drivers, bus administrators, and law enforcement. This form was developed through numerous discussions with stakeholders, analyses of processes, and iteration to ensure stop arm violation data is collected effectively and efficiently. It is recommended that all bus agencies and law enforcement agencies adopt this form to improve their processes and support statewide cohesion in documentation and enforcement of stop arm violations. Alongside this paper form, the team recommends continued implementation of a digital form to ensure that stop-arm violation data is continuously collected. The usability improvements made to that form to ensure that both forms match and transcription is as seamless as possible. These recommendations present improvements to stop-arm violation reporting, improving usability for both bus drivers and administrators. If implemented, a standardized form could also allow for standardized data storage recommendations for local law enforcement agencies. Additionally, these improvements provide a strong basis for future statewide systems, as standardized data collection is the first step towards such a system.

Chapter 5: Recommendations

5.1 Recommendations for Near-Term Improvements

After many informative discussions with a wide range of stakeholders, the research team has developed a list of recommendations, addressing inefficiencies, barriers, and poor practices across the lifecycle of a violation report. The recommendations discussed below represent incremental improvements to various aspects of the reporting system.

5.1.1 Recommendations for School Bus Drivers

- Training bus drivers to:
    - Verbalize violating driver description (e.g. gender, age, race, appearance, etc.) in real time so that the video captures their verbal description (rather than honking and screaming)
    - Keep a notepad in the bus to take notes of driver description and vehicle license plate number
    - Ensure proper stop procedure, including:
        - coming to a complete stop,
        - activating 8-way lights
        - ensure approaching vehicles have the time and distance to safely stop, based on the roadway surface conditions, before extending the stop-arm
    - Document all violations via the standardized paper form without the expectation that all will be acted upon by law enforcement

5.1.2 Recommendations for School Bus Administrators

- Utilize standardized report form
- Create a unique report number for each report
- Increase screening efforts to increase the quality of reports passed onto law enforcement and filter out lower quality reports
    - Provide additional training for bus drivers observed failing to follow protocols for stop arm extension
- Prioritize reports by severity
- Do not include MN State Patrol Form in paperwork submitted to local law enforcement unless local agency has confirmed it should be included
- Internally record violations to track patterns
    - Evaluate stops with high pass rates and explore alternative stop locations
        - Request in-person enforcement at high-pass locations
    - Provide feedback to drivers about the outcomes of their reports including:
        - Recognizing the contributions of drivers for submitting reports (even those that result in no enforcement)

        - Any activities of law enforcement based on the reports
        - Information regarding internal analyses or enhancements

5.1.3 Recommendations for Law Enforcement Agencies

- Adopt and accept the recommended paper form for bus agencies to report violations to support cohesion and simplicity in reporting across jurisdictions
- Improve processes to aid reporting and tracking of reports with bus agencies
    - Establish and use a secure file share service such as Dropbox, OneDrive, etc. to receive reports and supporting files such as videos
    - Improve data storage for easier retrospective review
    - Provide feedback and resolution to administrators (i.e., corresponding case numbers with report numbers, outcomes of reports)
- Improve citation processes to discourage drivers from contesting citations
    - Include photo evidence in citation
    - Clarify date of citation and date of offense
    - Increase frequency of citations processed each month to shorten delay between violation and citation or letter received
- Explore the efficacy and processes of issuing letters in place of citations
    - Collaborate with researchers, state agencies, or bus agencies to determine if violations at high-pass locations decrease following letter campaigns
    - Track drivers to determine if repeat offenders should be escalated to citations

5.1.4 Recommendations for Minnesota Courts

- Support law enforcement agencies to provide photo evidence sooner, e.g., in citation letter, prior to a suspect contesting the citation
- Clarify language on citation to avoid confusion around the date of the violation
- Provide the guidance detailed in this report to police and bus agencies regarding barriers and best practices for successful prosecution of stop arm violations
- Request additional resources to support administrative demands processing citations rather than discouraging them

5.1.5 Recommendations for MN Department of Public Safety

- Continue collecting data from bus agencies on stop arm violations, independent of their reporting to local law enforcement
    - Consider shifting data collection to fall more broadly under MN DPS rather than Minnesota State Patrol to decrease potential for confusion regarding intent of data collection
    - Update digital form to match standardized paper form
    - Share data back with bus agencies to facilitate their internal tracking

    - Provide reports to local law enforcement agencies of documented violations in their jurisdiction
- Provide special funding to support law enforcement's time in processing citations
- Create a centralized reporting system to pass report to law enforcement agencies and track the status of reporting (more details below)

5.2 Development of a Centralized Reporting System

Creating a streamlined system for reporting stop arm violations and tracking citations is essential if Minnesota aims to effectively enforce school bus stop arm violations and, in turn, discourage drivers from violating school bus arms across the state. Centralizing statewide school bus stop-arm violation reporting to law enforcement and tracking law enforcement action through a single online portal would best serve the safety interests of Minnesota children riding buses to and from school. Such a system would make the act of reporting a violation easier, quicker, and more reliable, as well as make tracking violations far more consistent, allowing those reporting these incidents to know their effort matters. Finally, reliably identifying when and where violations occur offers the best opportunity to develop preventative solutions or targeted enforcement activities to prevent violations from occurring in the future.

It is recommended that a centralized system is developed for school bus stop-arm violation reporting and enforcement. The unified system should allow a single, user-friendly reporting platform for bus agencies to report violation events, upload video and image files, and automatically route reports to the appropriate law enforcement agencies. The system should, in turn, provide the event details in a format to speed officer review and aid administrative work in issuing citations. Further, the system would track law enforcement activity and provide a standardized database to update report files when enforcement and prosecution occur. Including information regarding the activities of the city and county attorney's offices in dismissing or pursuing charges may better support law enforcement engagement and add insight into places in which enforcement processes break down after citations are issued.

Additionally, a statewide, centralized reporting system could also enable the Minnesota Department of Safety to directly issue letters to drivers about the violation event in instances where local law enforcement is not engaged in writing citations for stop arm violations or when the violation does not rise to the level of severity needed to warrant a citation from law enforcement. A centralized letter notification system could help to reinforce bus drivers and bus agencies that every report they submit will be reviewed and acted upon and reduce the burdens of local law enforcement agencies to instead direct their efforts to issue citations for more serious violations.

The ability of the system to collect, manage, and analyze violation events would meet the critical needs of communities and agencies to track, enforce, and better understand stop-arm violation events to in turn, develop countermeasures to discourage drivers from engaging in this unsafe behavior. Such a system would make the act of reporting a violation easier, quicker, and more reliable. It would streamline the process to enable more consistent, predictable, and transparent communication between bus carriers and law enforcement agencies. Importantly, it would also provide better feedback to bus drivers

and administrators about how reports resulted in enforcement, allowing those reporting these incidents to know that their effort matters. Lastly, aggregating the data in this way would increase the effectiveness with which it could be analyzed to identify patterns and develop preventative solutions. Working towards a well-designed violation reporting system that addresses the identified issues would best serve the safety of children riding school buses and is expected to be a national model.

5.3 Conclusion

In order to improve both reporting and enforcement of school bus stop arm violations, multiple changes across the system are required due to the complexity of factors that influence both of these outcomes. Usability difficulties and numerous pitfalls have been identified throughout the stop-arm violation reporting system. Compiling each report, sending it to law enforcement, and law enforcement review and action all take significant time and resources, and in many cases presents a barrier to reporting, enforcement, and analysis. Increasing the number of violations reported without addressing broader systemic issues is expected to further exacerbate existing issues within the system, potentially wasting bus administrator time and disengaging police from enforcement due to high report volumes.

The research team has compiled a list of immediately actionable recommendations within this chapter. These recommendations address a wide range of tasks and processes, as there are inefficiencies and challenges at each level. Each of the recommendations has the potential to impact the overall state of stop-arm reporting and enforcing. However, in order to address all the issues identified as concisely as possible, the research team also recommends investment into a statewide system capable of documenting reports, assisting file transfer and communication, and providing a centralized hub accessible by all stakeholders. Such a hub would allow easy and efficient data transfer and collection, present usability improvements for both police and bus companies, and allow for a statewide standard. Nonetheless, the research team expects any of the recommendations that are adopted to be beneficial.

Chapter 6: Conclusions

While school buses remain one of the safest modes of transportation for students, the estimated frequency at which Minnesota drivers unlawfully pass extended stop arms while students board and alight school buses is a serious concern. Due to the egregious nature of this type of violation, efforts are being made to reduce these violations and increase enforcement. Significantly, $14,700,000 has been spent on bus camera grants, intended to improve documentation and provide evidence against violators (MN DPS, 2023). However, this project has revealed that documentation increases alone are insufficient to reduce violations. Rather, issues exist at each level of the system, from the event to the citation letter.

Initial review of the existing data shows massive under-reporting, with approximately 96-99% of estimated violations going unreported in 2023. Continued investigation shows that violations are not only being under-reported, but they are also under-enforced, with only 0.4%-1.6% of estimated violators receiving citations. However, further investigation reveals that the existing data is full of inconsistencies, with neither reporting nor citation trends correlating as expected with community population, population density, number of local police, or injury crashes. This suggests that the reliability of reporting and citing stop-arm violations varies widely across the state.

Additionally, the existing data has the potential for significant blind spots, due to the fact that MSP reporting and reporting to local PDs are not inherently linked. To accurately assess whether an intervention is effective in reducing violations or increasing reporting, the metric on which that assessment is based must be representative of reality. In this case, inconsistency results in a dataset that is difficult to analyze and limits valid conclusions.

To fully understand the human aspects of the reporting and enforcement process, the research team interviewed stakeholders at all stages of the process. This process resulted in the identification of numerous inefficiencies and disconnects in communication between different stakeholders. Such issues existed at the bus driver level all the way to the citation letter. The research team found that with no standardized means of communication or reporting, bus administrators often spend excessive amounts of time gathering evidence and determining the correct contact to report to, among other things. Beyond the challenges of reporting, bus agencies also encounter difficulties when inquiring about the outcomes of reports made. On the police side, limited resources and nonexistent guidance on data management leaves many police departments overwhelmed.

After reviewing both the existing data and the workflows of all involved, it is clear that no single change can be made to improve the system. Challenges exist throughout the violation reporting workflow, and efforts that target only a single issue, or even a falsely perceived issue, have the potential to do more harm than good without first considering the entire system. Rather, the research team suggests the development and implementation of a statewide web-based portal connecting all stakeholders, eliminating the need for report duplication and any jurisdiction confusion, and streamlining the workflow of its users. However, the research team has also developed a wide range of individual recommendations for each stakeholder group, some of which only serve as short-term solutions until a statewide system can be implemented.

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Appendix A
National One-Day Passing Survey

SCHOOL BUS ILLEGAL PASSING DRIVER SURVEY (Wednesday, xx/xx/20XX)

DEAR SCHOOL BUS DRIVER: Our state is participating in a national survey of vehicles that illegally pass stopped school buses that are loading and unloading students. Please observe the vehicles that illegally pass your school bus while it is stopped with STOP ARM(s) extended on (insert day/date) and put an X in the appropriate blanks. Please report any vehicles observed illegally passing your stopped school bus. REMEMBER: Please take extreme caution when completing the form - YOUR MAIN RESPONSIBILITY IS TO THE SAFETY OF YOUR STUDENTS. Time permitting, please complete as much information as possible and submit to your supervisor by/within (specify deadline). This form should be completed by each driver on the day of the illegal passing count. Please turn in this form to your supervisor EVEN IF THERE ARE NO VIOLATIONS TO REPORT.

School/District/Employer:

(insert district or company)

Driver (your) Name: ____________________

Bus #: ______________

INSTRUCTIONS: FILL OUT ONE ROW FOR EACH VEHICLE THAT PASSES YOUR BUS.

Example: If three vehicles pass at the same bus stop, use three rows. If there were no pass-bys of your bus on the day of the survey, leave all rows blank.

____ **I had no pass-by's during today's survey** *(turn in form with rows below blank).*

WHEN did the vehicle illegally pass your stopped school bus? *(insert "X")*	**Vehicle Passed from WHAT DIRECTION?:** *(insert "X")*	**Vehicles Passed on WHICH SIDE of the Bus?** *(insert "X")*
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)
_____ *AM* *Mid-day* *PM*	______ Front (opposite direction) Rear (same direction)	______ Left (driver side) Right (door side)

Please report only violations that meet the following criteria:

(1) BUS IS COMPLETELY STOPPED

(2) BUS RED LIGHTS ARE FLASHING AND STOP SIGN(S) EXTENDED

(3) VEHICLE(S) ILLEGALLY PASS BY THE RIGHT OR LEFT SIDE OF BUS DURING STOP

This data collection form should be completed by each bus driver on the day of the illegal passing count and should be turned in to a supervisor EVEN IF THERE ARE NO VIOLATIONS TO REPORT. Use more than one page if needed.

Appendix B
Minnesota State Patrol Online Form

Stop-Arm Violation Report

SCHOOL DISTRICT/SCHOOL BUS CONTRACTOR USE ONLY The general public should report stop-arm violations through their local, county, or state law enforcement agency.

Preliminary Information

Date *

Time of Incident *

Separate hours & minutes with a colon. (i.e. 08:00, 09:15, 2:20)

AM/PM *

- ◯ AM
- ◯ PM

Student Stop Location *

*Select 'House Address' if route sheet designates a mailing address. *Selection 'Intersection' if route sheet does not designate a mailing address.

- ◯ House address
- ◯ Intersection

City/Twsp *

Select

County *

Select

Violator Information

License Plate

State

Select

Vehicle Type

*Passenger car: a pickup or smaller. *Truck: larger than a pickup, up to a semi *Bus: other than a school bus.

Select

Make

Model

Color

# of Occupants?

This includes the driver.

○ 1 ○ 2 ○ 3 ○ 4 or more

Violator Direction of Travel *

In relation to school buses direction of travel

○ Opposite ○ Same

Right Side Pass? *

○ Yes ○ No

Child Outside of Bus? *

○ Yes ○ No

Child Outside of Bus? *

○ Yes ○ No

Additional Violator Information

Enter additional information if not already contained within the violator section.

School Bus Information

Company/District *

Select

Bus # *

The bus number is not the route number. Do not include the route number.

School Bus Direction of Travel *

The direction your bus is facing at the time of the student stop.

Select

Bus Driver's Name *

Include FIRST, MIDDLE, AND LAST name.

Date of Birth (Bus Driver)

Include if possible. Will be used by law enforcement.

Bus Driver's Contact # *

Reported by

If different than bus driver's name

Witness(s)? *

○ Yes ○ No

Supplemental Warning? *

It's additional warning lights that are positioned on the front grill and rear of the bus near the bumpers. This lighting activates with the 8-way system. If lighting is absent in this area, your bus does not have supplemental warning lights.

○ Yes ○ No

Stop-arm Camera System? *

A stop-arm camera is one that is mounted on the side of the bus near the stop-arm.

○ Yes ○ No

Reported to L.E.? *

If 'Yes' is selected, check the "send me a copy of my response" at the bottom of this form. Enter your email address or school bus company email address so it can be sent to the proper law enforcement agency.

○ Yes ○ No

Comments

Additional info that is not contained above (i.e: Driver description, vehicle damage, best time to be contacted if required, or if the student stop is a certain distance/direction away from a given address/intersection.

File Attachments

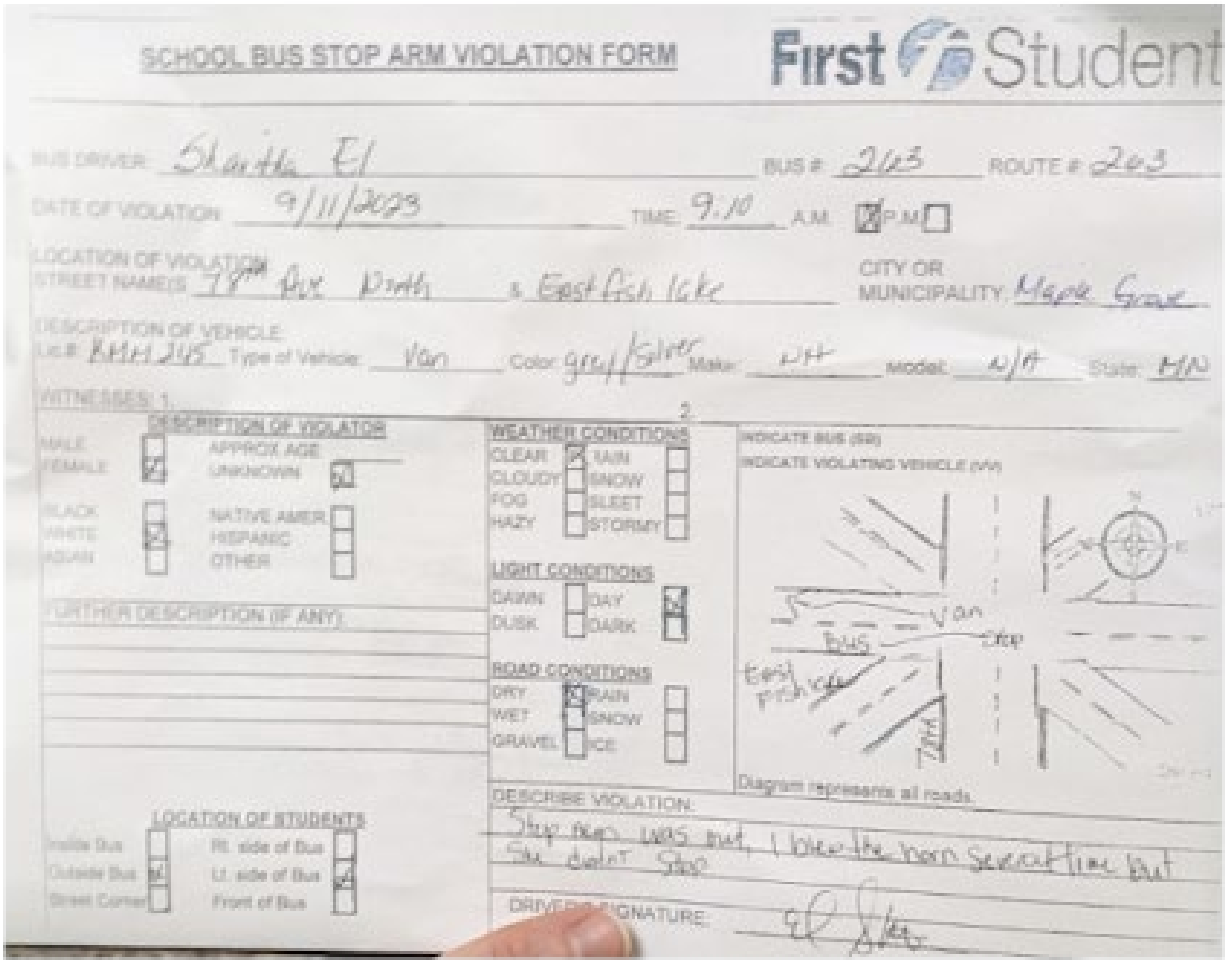
Drag and drop files here or browse files

☐ Send me a copy of my responses

Submit

Privacy Notice | Report Abuse

Appendix C
First Student Paper Form



SCHOOL BUS STOP ARM VIOLATION FORM

First Student

BUS DRIVER: Martha El BUS #: 203 ROUTE #: 203

DATE OF VIOLATION: 9/11/2023 TIME: 9:10 A.M. ☒ P.M. ☐

LOCATION OF VIOLATION STREET NAME(S): 78th Ave North & East Fish Lake CITY OR MUNICIPALITY: Maple Grove

DESCRIPTION OF VEHICLE Lic.#: RMH 245 Type of Vehicle: Van Color: grey/silver Make: unk Model: n/a State: MN

WITNESSES: 1. 2.

DESCRIPTION OF VIOLATOR

MALE ☒ FEMALE ☐ APPROX AGE: 50 UNKNOWN ☐

BLACK ☐ WHITE ☒ ASIAN ☐ NATIVE AMER. ☐ HISPANIC ☐ OTHER ☐

FURTHER DESCRIPTION (IF ANY):

WEATHER CONDITIONS

CLEAR ☒ CLOUDY ☐ FOG ☐ HAZY ☐ RAIN ☐ SNOW ☐ SLEET ☐ STORMY ☐

LIGHT CONDITIONS

DAWN ☐ DUSK ☐ DAY ☒ DARK ☐

ROAD CONDITIONS

DRY ☒ WET ☐ GRAVEL ☐ RAIN ☐ SNOW ☐ ICE ☐

INDICATE BUS (BB)
INDICATE VIOLATING VEHICLE (VV)

Diagram represents all roads.

LOCATION OF STUDENTS

Inside Bus ☐ Outside Bus ☒ Street Corner ☐ Rt. side of Bus ☐ Lt. side of Bus ☒ Front of Bus ☐

DESCRIBE VIOLATION:
Stop arm was out, I blew the horn several times but she didn't stop

DRIVER'S SIGNATURE: [signature]

Appendix D
Northstar Paper Form

MINNESOTA STATE PATROL

SCHOOL BUS STOP ARM VIOLATION REPORT

Date of incident ____________ Time of incident ____________ County ______________

Location ____

VIOLATOR INFORMATION:

License Plate Number_________________ State (if other than MN) ______________

Vehicle Color __________ Make _________ Model _____________ # of Doors _______

Other Vehicle Features ____

Violator direction of travel ______; Passed on what side of bus L or R ; Between Bus and Child Y or N

Description of Driver ____

Number of Passengers in Vehicle (if any) _____ Comments ___________________________

____

SCHOOL BUS INFORMATION:

ISD # __________ Bus or Route # _________ Direction of Travel for Bus ______________

Driver's Name ___________________________________ Home/Cell Phone _____________

School Bus Owner __________________________________ Phone _______________

Were students outside of bus? Y N LOADING ____ UNLOADING ____ CROSSING ____

Name Other Known Witness (if any) ____

Comments ____

PERSON MAKING THIS REPORT (If other than the driver)

Name _______________________________________ Phone Number ________________

= =

(FOR PATROL USE): *Trooper* _______ *Event Number* P ________________

Appendix E
Bloomington Paper Form

*Driver's Name Printed [redacted]
(Witness)

*Bus # 168 *Date 7/19/24 *Time of Incident 2 : 18 AM or PM

*Students' Stop Location: Lyndale Ave S. At Lyndale Cir.

*School Bus Direction: N S W E

[redacted]

*Vehicles Direction to Bus: Opposite Same

*Child Outside of the Bus? Yes No

Number of Vehicles: 1

Vehicle's Information: (If available) License Plate Color

Make	Model	
Dodge	Van	Silver

Any additional information if not already contained within the violator section.

Submitted to State Patrol 7/30/24 Submitted to Bloomington Police 7/30 Bus Patrol # 2934209