

July 2023

Safety Performance Target Setting:

STATE OF THE PRACTICE REPORT



U.S. Department of Transportation
Federal Highway Administration

FHWA-SA-23-016

ZERO IS OUR GOAL
A SAFE SYSTEM IS HOW WE GET THERE



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SI* (MODERN METRIC) CONVERSION FACTORS				
APPROXIMATE CONVERSIONS TO SI UNITS				
Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
AREA				
in ²	square inches	645.2	square millimeters	mm ²
ft ²	square feet	0.093	square meters	m ²
yd ²	square yard	0.836	square meters	m ²
ac	acres	0.405	hectares	ha
mi ²	square miles	2.59	square kilometers	km ²
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft ³	cubic feet	0.028	cubic meters	m ³
yd ³	cubic yards	0.765	cubic meters	m ³
NOTE: volumes greater than 1000 L shall be shown in m ³				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
TEMPERATURE (exact degrees)				
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C
ILLUMINATION				
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m ²	cd/m ²
FORCE and PRESSURE or STRESS				
lbf	poundforce	4.45	newtons	N
lbf/in ²	poundforce per square inch	6.89	kilopascals	kPa
APPROXIMATE CONVERSIONS FROM SI UNITS				
Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
AREA				
mm ²	square millimeters	0.0016	square inches	in ²
m ²	square meters	10.764	square feet	ft ²
m ²	square meters	1.195	square yards	yd ²
ha	hectares	2.47	acres	ac
km ²	square kilometers	0.386	square miles	mi ²
VOLUME				
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m ³	cubic meters	35.314	cubic feet	ft ³
m ³	cubic meters	1.307	cubic yards	yd ³
MASS				
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
TEMPERATURE (exact degrees)				
°C	Celsius	1.8C+32	Fahrenheit	°F
ILLUMINATION				
lx	lux	0.0929	foot-candles	fc
cd/m ²	candela/m ²	0.2919	foot-Lamberts	fl
FORCE and PRESSURE or STRESS				
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in ²

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380. (Revised March 2003)



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ACRONYMS

CFR	Code of Federal Regulation
DOT	department of transportation
FHWA	Federal Highway Administration
HSIP	Highway Safety Improvement Program
HSO	Highway Safety Office
HSP	Highway Safety Plan
MPO	metropolitan planning organization
OMB	Office of Management and Budget
SHSP	Strategic Highway Safety Plan
VMT	vehicle miles traveled
VRU	vulnerable road user



Executive Summary

The Highway Safety Improvement Program (HSIP) is a State-administered, Federal-aid Highway Program that is codified under section 148 of title 23 of the United States Code (U.S.C.) with the purpose of achieving a significant reduction in traffic fatalities and serious injuries on all public roads (23 U.S.C. 148(b)(2)). Under 23 U.S.C. 148 and its implementing regulations at Part 924 of title 23 of the Code of Federal Regulations (CFR), the HSIP requires a data-driven, strategic approach to managing highway safety on all public roads, focusing on performance. As part of the HSIP evaluation process, States must analyze and assess the attainment of safety performance targets established pursuant to 23 U.S.C. 150 (23 CFR 924.13(a)(1)). States are required to establish annual safety performance targets for five performance measures: 1) Number of fatalities; 2) Rate of fatalities per 100 million vehicle miles traveled (VMT); 3) Number of serious injuries; 4) Rate of serious injuries per 100 million VMT; and 5) Number of non-motorized fatalities and serious injuries (23 CFR 490.207).

Over the past several years, States have gained more experience with safety performance target setting. As such, the Federal Highway Administration (FHWA) wanted to learn more about how States set targets, how targets influence project planning and programming decisions, and how others can learn from States' successes and challenges. The FHWA conducted a survey of all 50 States, the District of Columbia, and Puerto Rico¹ to develop a state-of-the-practice report on safety performance target setting. This report summarizes the information collected, details the methodology for how State agencies set and apply safety performance targets, shares States' future plans for target-setting practices, presents how target setting informs investment decisions, and identifies example State practices.

The key themes from the survey responses included:

- **Communication is key.** States shared that increased communication and interest among highway safety stakeholders (e.g., metropolitan planning organizations [MPOs]) led to support for their safety performance targets. Communication should occur at all levels—from executive leadership to gain their support, to diverse stakeholders to help establish and adopt safety performance targets, to other States to learn what they are doing and to share current challenges and practices.
- **Embrace a multidisciplinary approach.** States acknowledged that infrastructure is one factor that affects safety performance targets (and certain infrastructure projects can be

¹ The definition of "State" as used in 23 U.S.C. 148 and 150 refers to any of the 50 States, the District of Columbia, or Puerto Rico (23 U.S.C. 101(a)(28)). Accordingly, FHWA will use that definition of "State" for the purpose of this document.



funded using HSIP funds), but States identified the need for a multidisciplinary approach to address non-infrastructure and behavioral factors.

- **Staffing and timeline challenges persist.** States described challenges related to a lack of staff resources (staffing and staff training) and the timeline between setting the safety performance targets and completing an HSIP Implementation Plan. States expressed the need for additional guidance, training, or examples on safety performance target setting. States also expressed the need for more time to establish targets and complete an HSIP Implementation Plan.
- **Concerns regarding safety performance target-setting process.** States noted that the relationship between target-setting practices and project selection is relatively weak. States shared that they tend to not use their targets to guide project selection but instead choose projects based on data that address the greatest safety concerns.

Information from this research will benefit several agencies. State departments of transportation (DOTs), State Highway Safety Offices (HSOs), MPOs, and other local agencies can use the information highlighted throughout the report to enhance inter-agency communication, support short-term actions and progress toward zero fatalities and serious injuries, and use HSIP Implementation Plans to better understand their HSIP program, projects, and where investments can be made to make the greatest impact.



Chapter 1—Introduction



Performance management is the process of establishing and assessing safety performance measures and targets related to the lives lost and serious injuries incurred on the Nation's roadways. States use safety performance measures to assess progress toward safety performance targets, which can lead to better accountability and program agility. For instance, if a State does not meet targets while working toward a longer-term goal, then the performance management process can help the State to identify challenges in meeting the targets and opportunities to improve (e.g., data collection and analysis procedures, funding allocations, project types).

The Highway Safety Improvement Program (HSIP) requires a data-driven, strategic approach to managing highway safety on all public roads, focusing on performance (see 23 CFR Part 490). The regulations in 23 CFR Part 490 establish safety performance targets that assess fatalities and serious injuries on all public roads. States are required to establish safety performance targets for five measures (23 CFR 490.207) and report those targets in the State's HSIP annual report (23 CFR 490.209(a)(4)). For the first three measures, targets must match those included in the Highway Safety Plan (HSP) submitted to the National Highway Traffic Safety Administration (23 CFR 490.209(a)(1); 23 CFR 1300.11(b)(3)(ii)(C)):

- Number of fatalities.
- Rate of fatalities per 100 million vehicle miles traveled (VMT).
- Number of serious injuries.
- Rate of serious injuries per 100 million VMT.
- Number of non-motorized fatalities and serious injuries.

Each performance measure is based on a five-year rolling average (23 CFR 490.207(b)). A State is considered to have "met" a target if the five-year average of the actual performance is equal to or less than the target (23 CFR 490.211(c)(2)(i)). A State can also be considered to have "made significant progress" if the five-year average for the target year is equal to or less than the baseline performance, which is the five-year average for the actual performance the year prior to the establishment of the State's target (two years prior to the target year) (23 CFR 490.211(c)(2)(ii)). For example, an agency's safety performance for 2024 is calculated as the five-year average of 2020-2024. This is assessed against the 2024 actual performance, as well as the 2018-2022 five-year average baseline performance.

There are many approaches States can use when setting safety performance targets, ranging from using a flat rate reduction to considering safety, traffic, and other external factors to forecast future safety performance. Ultimately, States have the flexibility to determine their own methodology for setting safety performance targets. As such, some States consider data-driven targets based on what the State expects to happen given recent safety performance trends, while others set goal-driven targets based on what the State aspires to achieve.

MPOs are also required to establish safety performance targets within 180 days of the establishment and reporting in the State HSIP annual report of the State DOT safety performance targets (23 CFR 490.209(c)). Each MPO can either adopt the State target by agreeing to plan and program projects to contribute toward the accomplishment of the State DOT safety target for a



safety performance measure or commit to a quantifiable target for a safety performance measure for the metropolitan planning area (23 CFR 490.209(c)(4)).

If a State does not meet or make significant progress toward at least four out of its five annual safety performance targets (i.e., meeting the targets or the actual performance for the target is better than the baseline performance), the State must use obligation authority equal to its HSIP apportionment for the prior year only for highway safety improvement projects and submit an HSIP Implementation Plan that describes the steps the State will take to meet or make progress toward meeting its subsequent targets (23 U.S.C. 148(i)). State DOTs must also use their obligation authority equal to the HSIP apportionment for the fiscal year prior to the year for which the overall performance targets were not met or significant progress was not made only for HSIP projects. Under 23 U.S.C 148(i), the HSIP Implementation Plan must:

- Identify roadway features that constitute a hazard to road users;
- Identify highway safety improvement projects on the basis of crash experience, crash potential, or other data-supported means;
- Describe how HSIP funds will be allocated, including projects, activities, and strategies to be implemented;
- Describe how the proposed projects, activities, and strategies funded under the State HSIP will allow the State to make progress toward achieving the safety performance targets; and
- Describe the actions the State will undertake to achieve the performance targets.

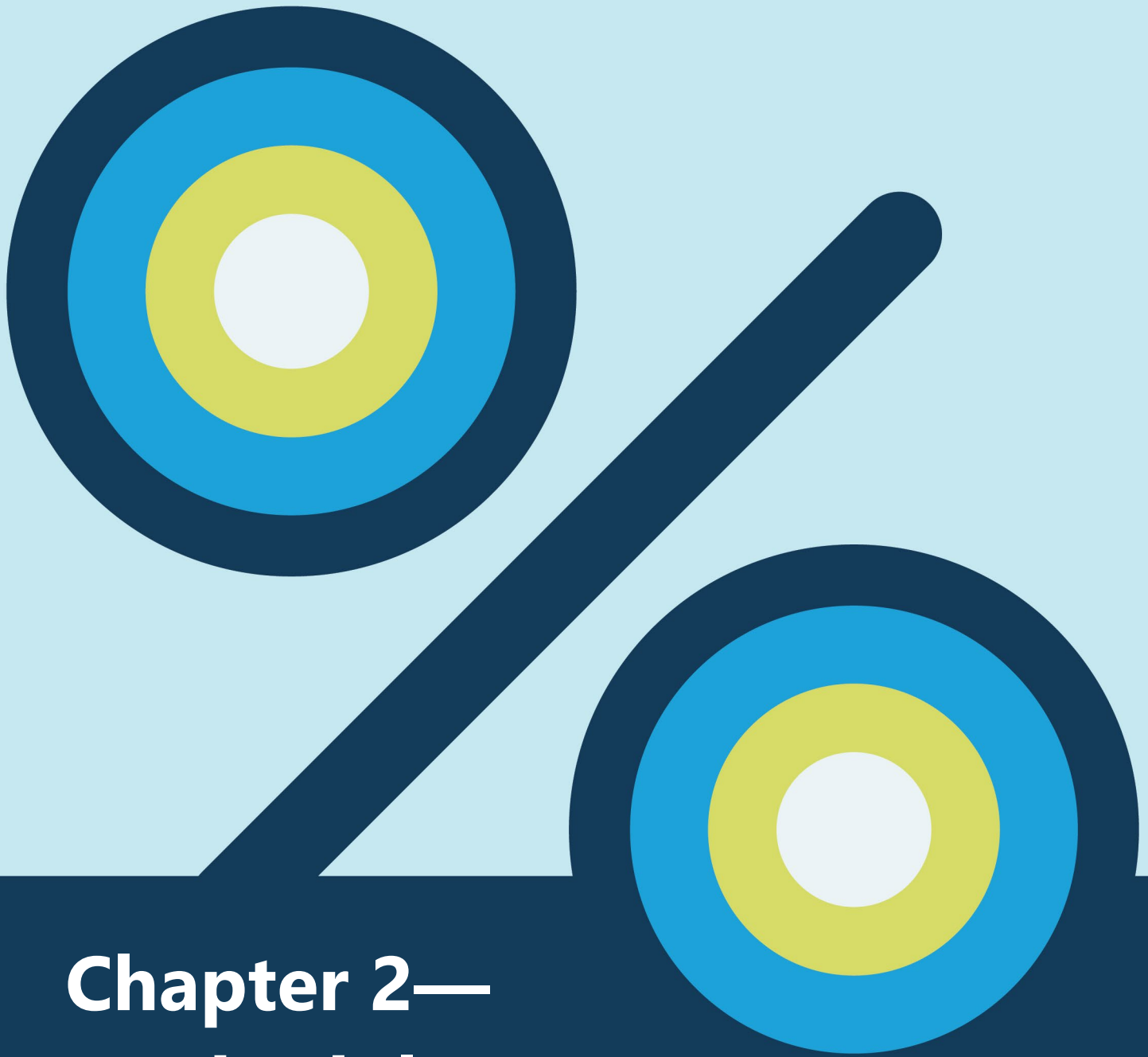
While the HSIP Implementation Plan has specific requirements as listed above, the State must meet all HSIP planning requirements (23 U.S.C. 148(c)(2)(B), (E), and 23 CFR Part 924.9) and consider those requirements as part of the HSIP Implementation Plan efforts. While HSIP Implementation Plans vary from State to State, some of these variations include how a State plans to change their safety performance target-setting process, program, policies, or practices and how a State plans and selects projects to achieve future safety performance targets.

Research Objective

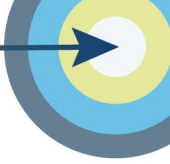
The objective of this research was to collect data from every State to better understand practices for setting safety performance targets and integrating those targets into project planning and programming. This report anonymizes and summarizes those results; explains how agencies set safety performance targets; and identifies State examples.

The structure of the report is as follows:

- Chapter 2 describes the methodology used to inquire about States' safety performance target-setting practices.
- Chapter 3 summarizes the state of safety performance target-setting practices and highlights State examples.
- Chapter 4 provides several conclusions.



Chapter 2— Methodology



The project team worked with the Federal Highway Administration (FHWA) to identify the contacts for each State and to develop the survey and interview questions. Appendix A and appendix B include the questions that were used for the survey and the interview instrument. The project team administered the voluntary survey and supplemented responses with voluntary, targeted interviews (appendix C). The target audience for the survey were those involved in a States' safety performance target-setting practices. This often was the State DOT Safety Engineer but also included representatives from the State Highway Safety Office (HSO). The focus of the survey was to understand current safety performance target-setting processes and obtain consistent information regarding State practices. Based on survey responses, the project team conducted follow-up interviews with select State DOTs. Some interviews included representatives from FHWA and the State HSO. The follow-up interviews allowed the project team to collect additional information and learn more about how States integrate the safety performance targets into their HSIP and collaborate with other agencies in the State.

Prior to distribution of the survey, the project team submitted the data collection plan to, and received approval from, the Office of Management and Budget (OMB) as part of the Paperwork Reduction Act (OMB Control #2125-0002).

Survey

The survey was distributed online through Survey Monkey (<https://www.surveymonkey.com/>) to State DOTs in each State. The survey was completed by those responsible for reporting safety performance targets—which included responses from 51 of the 52 State agencies (50 State DOTs and one 1 State HSO). The survey was categorized into four topic areas: (1) Current Process for Safety Performance Target Setting, (2) Future Process for Safety Performance Target Setting, (3) Interaction between Safety Performance Targets and the HSIP, and (4) Coordination and the Safety Performance Target-Setting Process. The survey primarily consisted of multiple-choice questions to gather consistent information across respondents. Following the multiple-choice questions, there were opportunities for the respondents to provide additional detail in open-ended questions. Appendix A includes the survey instrument. The results of the survey were anonymized for the purposes of this report.

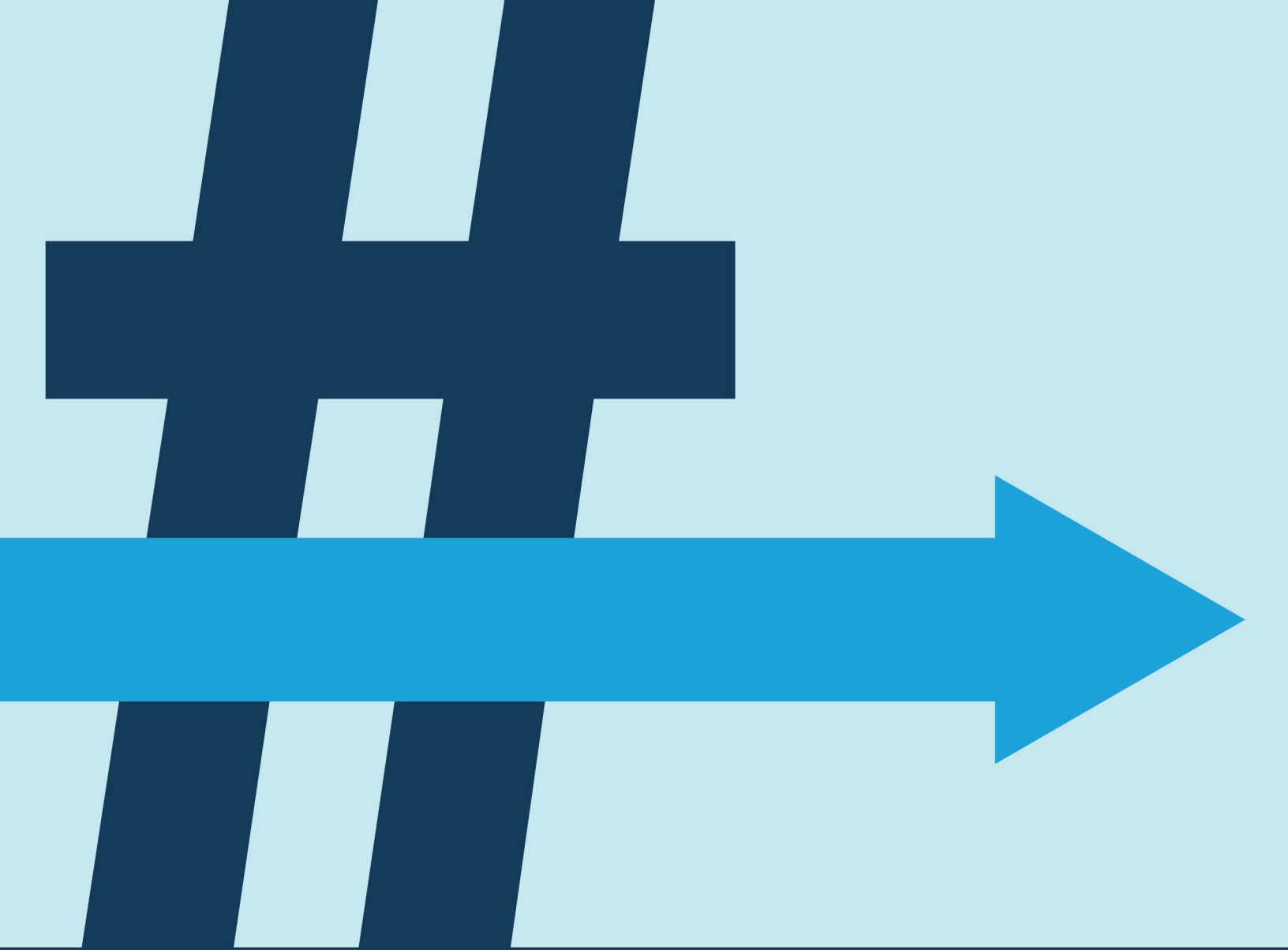


Interviews

The project team analyzed the survey results and identified a list of 15 States for follow-up interviews. The project team then conducted individual subsequent interviews with the selected participants based on any of the following conditions:

- Respondent did not provide a sufficient level of detail in their original survey response.
- Respondent noted significant challenges that warranted further discussion.
- There was an example practice of interest that would benefit from further investigation.

The project team used a list of questions, of which States were only asked a selected few based on the answers provided in their survey. The interview questions are included in appendix B.



Chapter 3—State of the Practice



This chapter describes and summarizes the results of the survey and subsequent interviews. The survey organized questions into four topic areas: (1) Current Process for Safety Performance Target Setting, (2) Future Process for Safety Performance Target Setting, (3) Interaction between Safety Performance Targets and the HSIP, and (4) Coordination and the Safety Performance Target-Setting Process.

Current Process for Safety Performance Target Setting

The survey began by assessing the current state of practice with respect to safety performance target setting. The questions in this section of the survey reflected States' use of data to determine safety performance targets (i.e., data-driven safety performance targets based on recent or forecasted trends versus goal-driven safety performance targets based on what a State aspires to achieve).

Figure 1 describes the methods States currently use for safety performance target setting. The survey included three different safety performance target-setting approaches:

- Goal-driven: Safety performance targets are based on future goals, whether for fixed annual percent reductions or a future safety performance target.
- Data-driven: Safety performance targets are based on expected outcomes given recent trends, model projections, programmed projects, and other safety efforts.
- Hybrid: The State considered both recent data trends and future goals when setting safety performance targets.

The most common approach is a hybrid approach. Of the respondents, 41 percent reported using a combination of goal-driven and data-driven methodologies. States shared that they used a hybrid approach because it includes the overarching goal of reaching zero fatalities and serious injuries but is still data-driven and achievable. Other States shared they selected the hybrid approach because it offers flexibility and aligns with Vision Zero and Strategic Highway Safety Plan (SHSP) goals. One State shared they selected the hybrid approach due to stakeholder input. Another State selected the hybrid approach because of a lack of data and resources to set their safety performance targets solely based on available data.

The second most common approach is an exclusively data-driven approach, which 37 percent of respondents reported using. States who use a data-driven approach most-commonly selected this approach because they want to set safety performance targets their State could achieve. Other States noted they align their goals with other stakeholder groups (e.g., State HSO). Finally, 16 percent of respondents reported using exclusively a goal-driven approach. States who use a goal-driven approach do so because they believe zero is the only acceptable safety performance target. Three States also shared they selected the goal-driven approach to align with their SHSP. Only 6

percent reported other responses, including one States' response of using autoregressive integrated moving average models to provide forecasts combined with a data-driven method that analyzes the influence of multi-sectoral factors and safety programmed projects. Another State noted that they used both a goal-driven and data-driven approach and incorporated multi-sectoral factors and projects specifically programmed with expected safety outcomes. A third State shared they set their approach based on political factors and reasonableness.

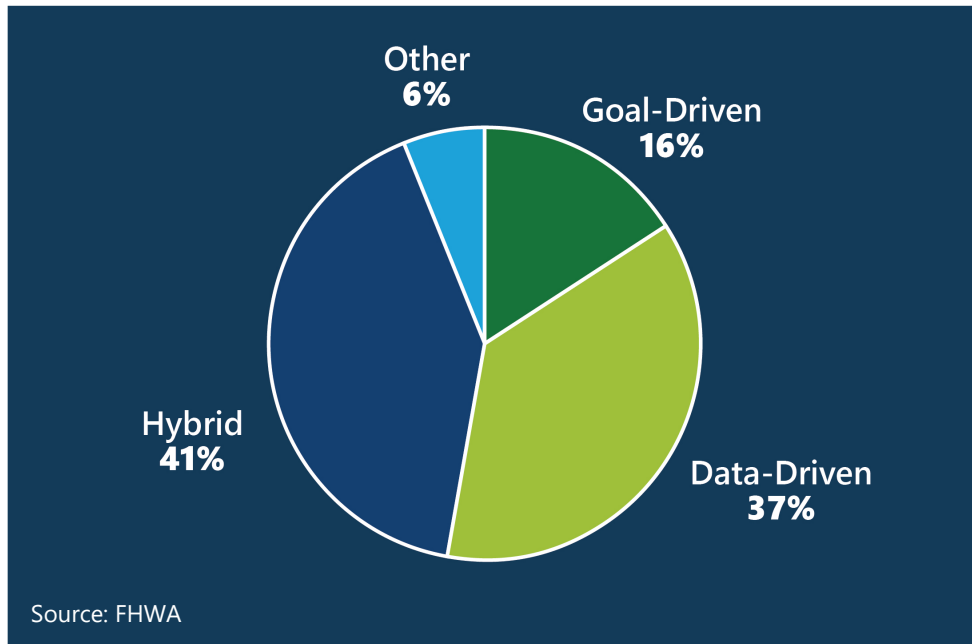


Figure 1. Chart. States' current approaches to safety performance target setting.

States were asked whether they are willing to set goal-driven safety performance targets. As shown in figure 2, 75 percent of respondents indicated they are willing to set a goal-driven safety performance target (as opposed to 16 percent of respondents that indicated they do so currently, as summarized in figure 1). States noted they were willing to set a goal-driven safety performance target if there was leadership support. Several States also shared they were willing to set a goal-driven safety performance target if FHWA released guidelines on how to set the safety performance target. States also were willing to set a longer-term goal-driven safety performance target of zero with interim data-driven targets. States who were not willing to set a goal-driven safety performance target emphasized the approach serves the overarching goal of reaching zero fatalities and serious injuries but does not address the progress that States must make to reach that goal. States also noted they have more support from their safety stakeholders and leadership when the State can demonstrate they are meeting their safety performance targets.

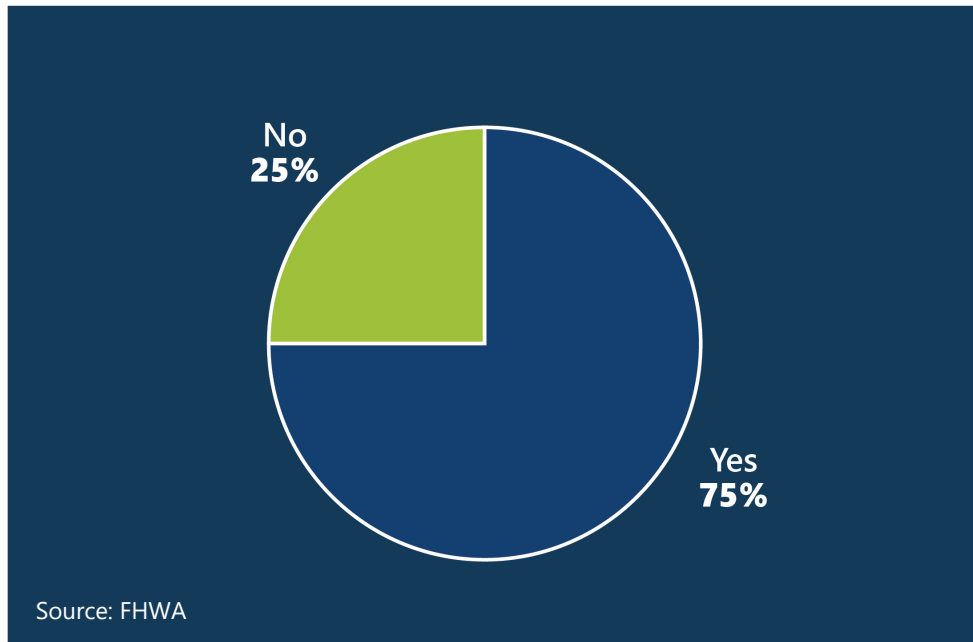


Figure 2. Chart. States' willingness to set goal-driven safety performance targets.

Safety performance targets are assessed based on two possible metrics: 1) the State's safety performance targets compared to the actual performance and 2) the State's actual performance compared to the baseline performance (23 CFR 490.211(c)(2)). The baseline performance, for these purposes, is the five-year rolling average for the safety performance measure ending the year prior to the establishment of the target being evaluated (23 CFR 490.211(c)(2)(ii)). The survey asked States if they consider their baseline performance with respect to safety performance target setting. Of the responding States, 63 percent noted the baseline performance is considered for safety performance target setting, though not as the only factor (figure 3). More notably, 18 percent of respondents noted that baseline performance is directly considered for safety performance target setting. Likewise, 17 percent do not consider the baseline performance when setting safety performance targets.

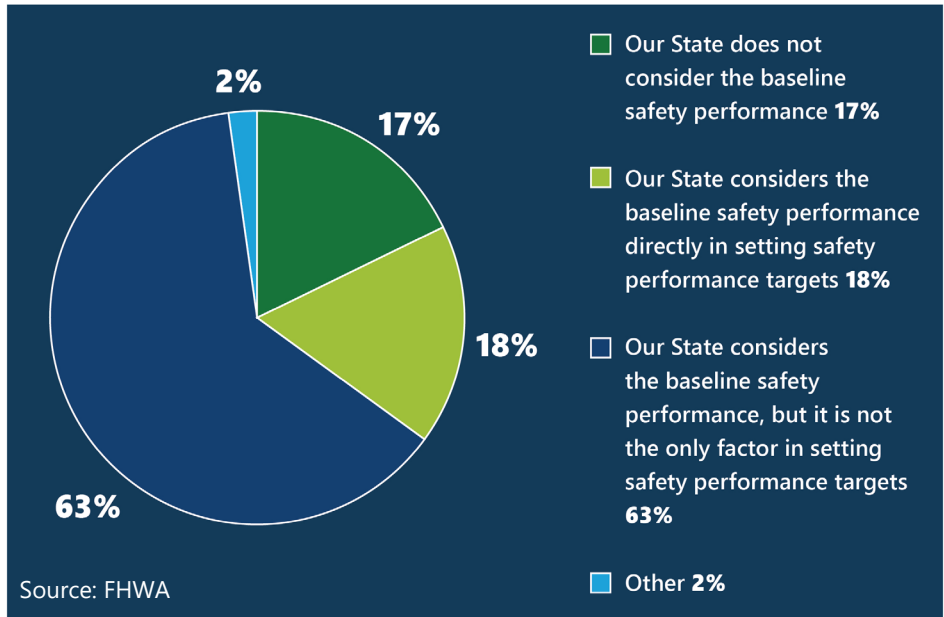


Figure 3. Chart. States’ consideration of baseline safety performance when setting safety performance targets.

Additionally, Figure 4 shows the relative position of States’ safety performance targets with respect to their baseline performance. Of the responding States, 51 percent noted the safety performance targets are lower than the baseline, 18 percent are equal to the baseline, and 16 percent of safety performance targets are higher than the baseline.

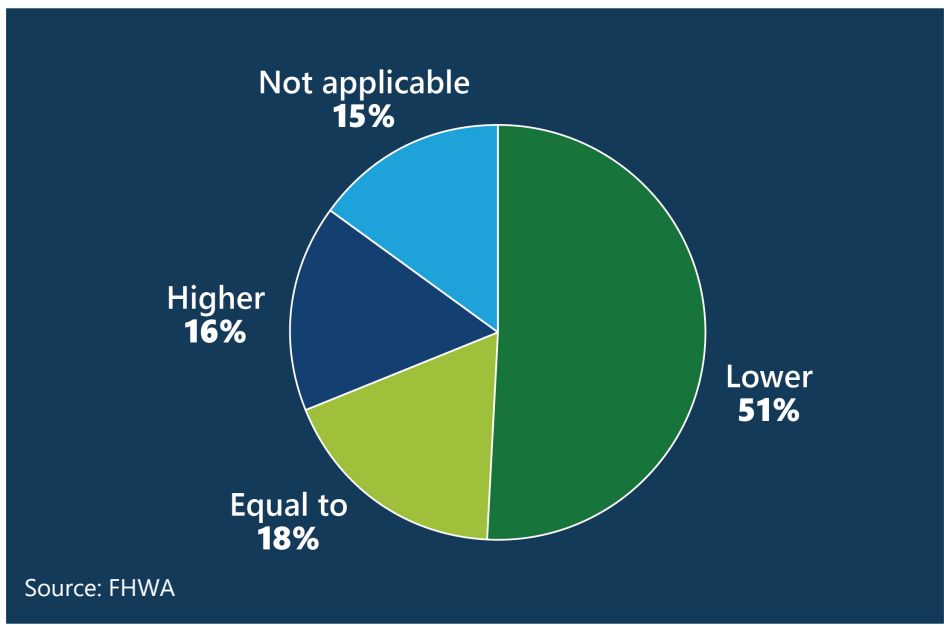


Figure 4. Chart. States’ safety performance targets with respect to the baseline.



States who did not meet or make significant progress toward any of their safety performance targets were asked what factors they believed contributed to missing their targets.² States identified the following, grouped by type:

- Engineering:
 - Resources (e.g., engineering support for projects at the local level).
 - Roadway design (e.g., lack of shoulders, narrow roadways, clear zones).
 - Workforce capacity (e.g., time to execute projects, contractor availability).
 - Funding constraints.
 - Lack of legislative and public support for proven safety countermeasures.
- Behavioral:
 - Speeding and aggressive driving.
 - Impaired (alcohol and drug) driving.
 - Unbelted drivers.
 - Increased pedestrian activity.
 - Drowsy driving.
 - Lack of policy to support safety for road users (e.g., primary seat belt law, helmet law).
 - Enforcement capacity (i.e., limited staff resources to enforce traffic laws).
- Safety performance target-setting related:
 - Increase in crashes that was not accounted for in the baseline.
 - Change in VMT and travel patterns.
 - Current safety-performance target-setting process does not account for recent data availability. Annual safety performance targets would account for changes in the data.
 - Goal-driven approach with an increasing trendline makes it difficult to meet or make progress towards goals.
- Other:
 - Lag in crash data processing.
 - Fluctuations due to natural variation in the data and changes in the economy.
 - Weather events (e.g., hurricane).

² States could select more than one factor in the survey.

States that apply data-driven analysis to determine future safety performance targets typically focus on crash and traffic trends. However, some States consider multiple data sources³ besides crash and traffic data when setting safety performance targets (figure 5). Although 55 percent of States do not consider additional data beyond crash and traffic data, 29 percent of States consider behavioral data (e.g., alcohol sales, seat belt surveys); 29 percent consider other factors such as policy and legislative changes, tourism, and behavioral program spending; 24 percent consider travel demand (significant changes in traffic patterns, increases or decreases in non-motorist travel); 20 percent consider economic data (employment data, commuting data, freight data, gas prices); 18 percent consider demographic data (census data, population changes); and 14 percent consider weather data (annual snowfall, severe weather events).

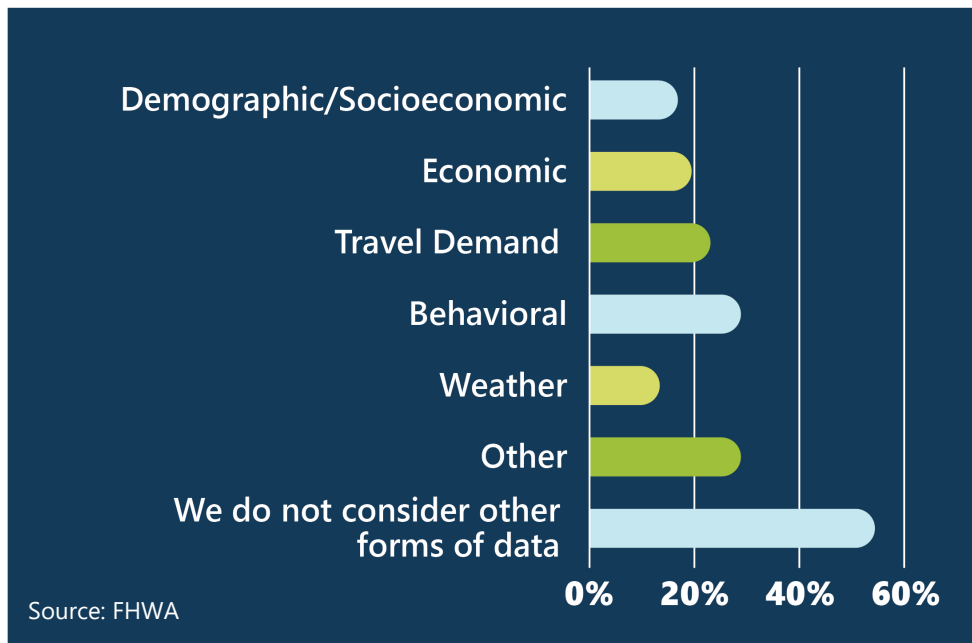


Figure 5. Graph. Other forms of data considered when setting safety performance targets.

The final question posed in the *Current Process for Safety Performance Target Setting* section asked if States found safety performance target setting to be an effective mechanism in assisting with making more informed decisions on safety investments. Figure 6 shows that less than half of respondents (45 percent) find safety performance target setting effective at making more informed safety investments decisions.

³ States could select more than one data source in the survey.

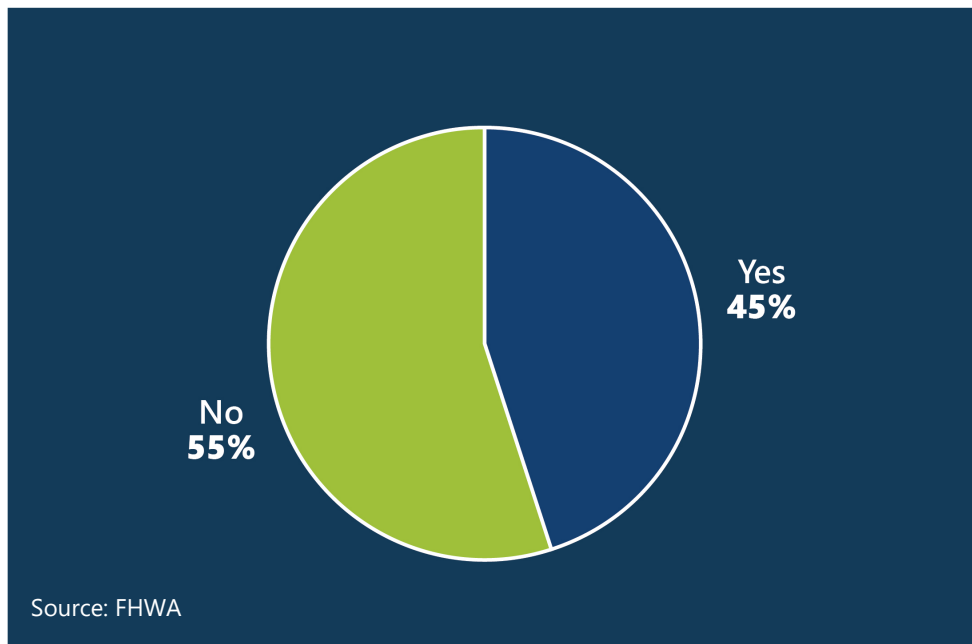


Figure 6. Chart. States finding safety performance target setting to be an effective mechanism in assisting with making more informed decisions on safety investments.

For the States that indicated performance targeting setting is effective in making more informed safety investment decisions, some common reasons emerged and included the following:

- Increased collaboration between Federal, State, Tribal (if applicable), regional, and local safety stakeholders, especially in States where local agencies own a larger proportion of the roads or where a larger proportion of fatalities and serious injuries are occurring on locally-owned roads.
- Heightened awareness throughout a department or agency to consider safety in all aspects of project planning, scoping, and design, including beyond HSIP projects. This is especially true when safety performance targets are not met.
- Informed policy- and decision-makers regarding annual performance. This helped refocus discussion toward maintaining safety as a top priority, leading to increased accountability for program administration (i.e., policy and decision makers hold staff more accountable).
- Increased dialogue regarding systemic projects. In analyzing the systemic approach, States showed safety performance benefits across many projects on the system rather than a fewer number of larger-scale site-specific projects.



Example State Practice:

One State found safety performance target setting to be an effective way to:

- Inform policy- and decision-makers regarding crash trends (a way to benchmark annual performance by emphasis areas) and help refocus discussion toward maintaining safety as a top priority.
- Support short-term actions and progress toward the ultimate goal of zero fatal and serious injury crashes by the target year.
- Encourage discussion with local jurisdictions regarding how they can contribute to achieving their goals (50 percent of fatal and serious injury crashes in this State occur on local roads).

The following are a sampling of reasons that States indicated for safety performance target setting not being effective in making safety investment decisions:

- Timing of the safety performance target-setting process—data from the previous year (e.g., VMT, crash)—may not be finalized when setting safety performance targets.
- Smaller States with a lower sample size of fatal and serious injury crashes are more impacted by year-to-year fluctuations in the five-year rolling average.
- Factors outside of engineering infrastructure improvements (e.g., road user behavior, economic, societal trends) cannot be controlled.
- Many States have a long-established, data-driven safety program in place to decrease fatalities and serious injuries, so the safety performance target-setting process does not influence decisions.
- States would prefer setting a safety performance target on a two- to five-year basis instead of annually.
- Programming and constructing projects can take five to seven years, and then evaluating the effectiveness of projects takes years to compile after-installation data.



Future Process for Safety Performance Target Setting

Since 2017, States have gained experience with safety performance target setting. Based on this experience, the survey asked States about their willingness to adjust their safety performance target-setting approach. Figure 7 shows that 31 percent of respondents are considering changing their methodology for setting safety performance targets based on recent fatality and serious injury trends.

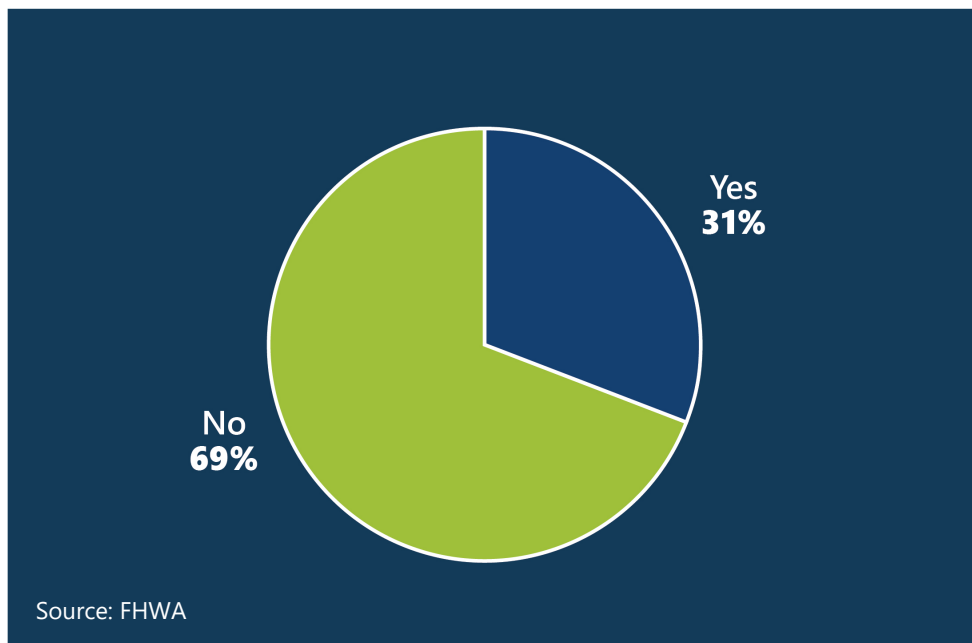


Figure 7. Chart. States considering a change in methodology for setting safety performance targets based on recent fatality and serious injury trends.

Reasons States provided for considering changes in their safety performance target-setting methodology include:

- The rise of fatalities and serious injuries might reflect riskier driver behavior resulting in more fatal crashes, such as driving at higher speeds, which should be factored into safety performance target setting.
- With the increasing fatal and serious injury trends, a data-driven approach utilized currently by some States may mean increasing safety performance targets. Increasing safety performance targets are contrary to many States' goals, so they are considering a change in methodology. Many States have adopted either Toward Zero Deaths, Vision Zero, or use similar zero-based language in their SHSP.



- States desire to add other factors in safety performance target setting, such as driver behavior, considering homeless individuals, equity considerations, and the Safe System approach.
- Some States not meeting or making significant progress toward their annual safety performance targets are considering reevaluating their safety performance target-setting methodology.

Figure 8 describes the methods States are planning to use for safety performance target setting in the future, which is inclusive of the approach they are currently using. The most selected approach is a hybrid approach of goal-driven and data-driven methodologies (47 percent). The second most selected approach is a data-driven approach, which 33 percent of respondents plan to use. Next, 14 percent plan to use a goal-driven approach. Finally, 6 percent are not considering using a goal-driven, data-driven, or hybrid approach (which aligns with the results in figure 1). This shows a slight shift of States toward a hybrid approach (increase of 6 percent) for safety performance target setting and away from a goal-driven (decrease of 2 percent) and data-driven approach (decrease of 4 percent) compared to figure 1.

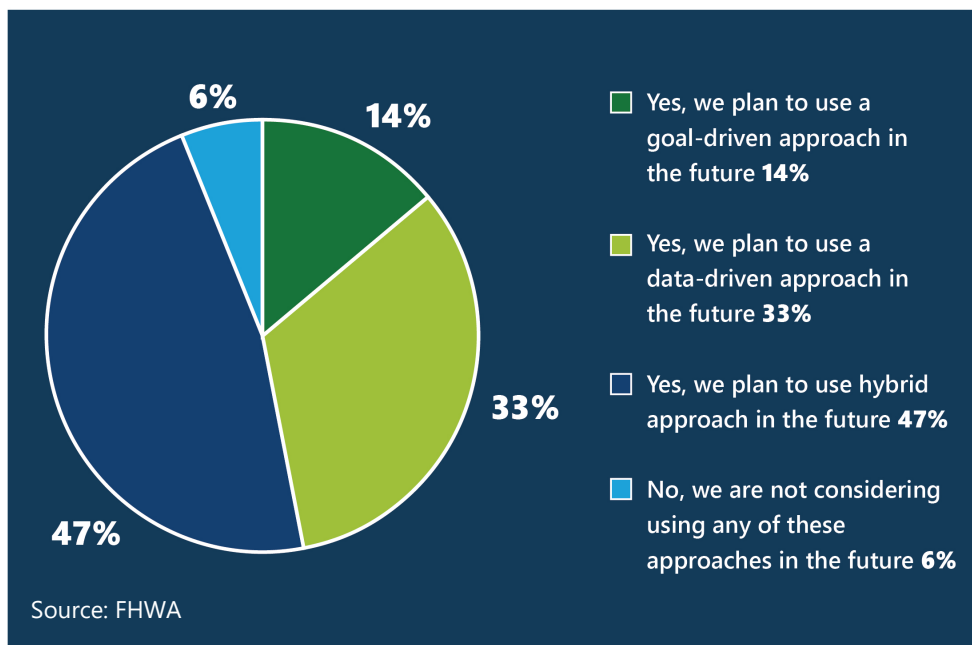


Figure 8. Chart. States' planned approach for safety performance target setting in the future.

Many States planning to use a hybrid approach for safety performance target setting shared similar views that the hybrid approach combines quantitative data and qualitative considerations, as well as being logical and defensible. Other States indicated that their current process for safety performance target setting is working well and do not plan to change their current methodology. These States feel that their current approach is a collaborative process with different agencies and is easy to communicate to stakeholders.



Almost all respondents (90 percent) indicated that their State plans to continue with its current safety performance target-setting practices (figure 9). States planned to continue with their current approach due to executive and stakeholder support, because they were meeting or making significant progress towards their safety performance targets, and to keep their analysis consistent to realize the benefits of implemented projects. Though almost a third of States (31 percent) indicated that they were considering a change in their methodology (figure 7), only 10 percent of States have committed to changing their methodology. Those States that have committed to making a change to their methodology are doing so to either align with the SHSP goal, to address recent increases in fatalities, to incorporate the Safe System approach and equity, or to consider additional datasets outside of crash data.

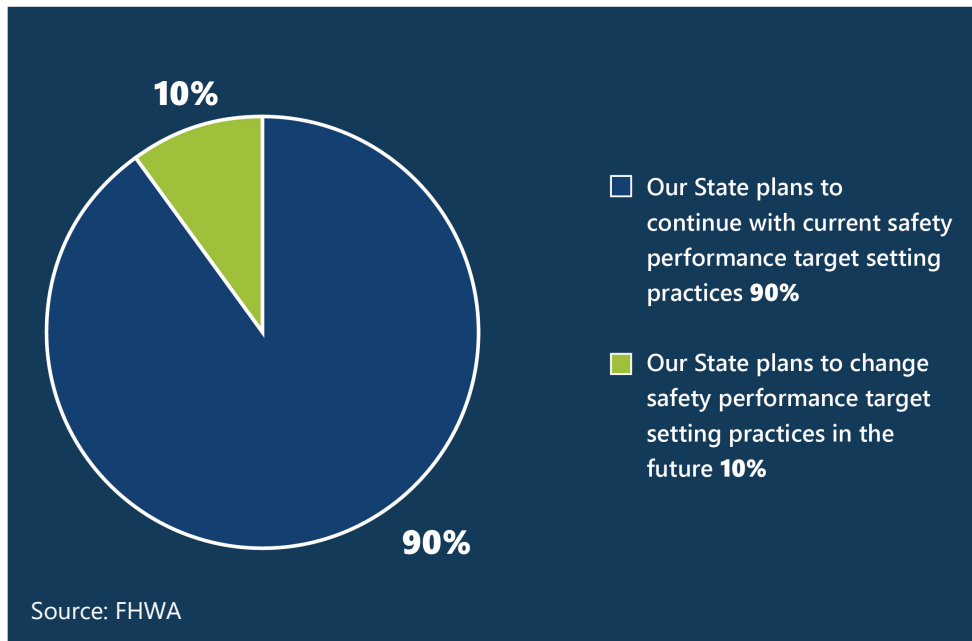


Figure 9. Chart. States planning on continuing current safety performance target-setting practices.



Interaction Between Safety Performance Targets and the HSIP

States were asked if they have a method for aligning their planned or targeted reductions from their safety performance targets with their highway safety program plans and projects. As shown in figure 10⁴, the majority of States (69 percent) have a method to align planned or targeted fatal and serious injury reductions with their SHSP, 51 percent align with their HSP, 25 percent align with their State Transportation Improvement Program, and 20 percent align with another plan (e.g., MPO and Regional Transportation Planning Organization plans, Transportation Asset Management Plans, Commercial Vehicle Safety Plan). Many States indicated that the collaborative nature of their safety performance target-setting process aligned with the SHSP because the SHSP is informed by numerous safety stakeholders representing multidisciplinary agencies (e.g., law enforcement, departments of health, State HSOs).

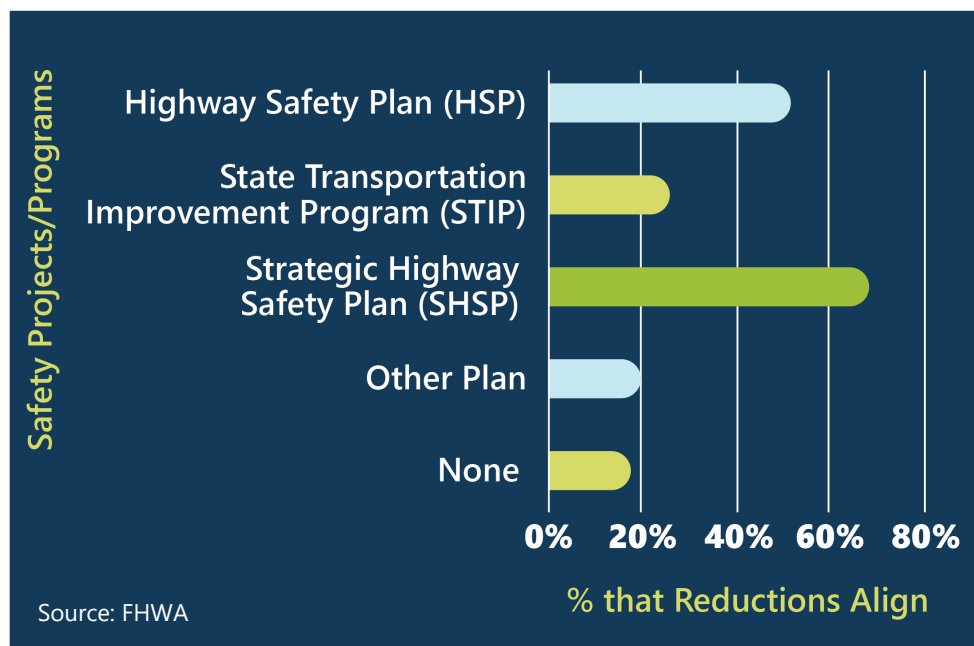


Figure 10. Graph. States that have a method to align planned or targeted fatal and serious-injury reductions with safety performance targets in their highway safety program plans and projects.

⁴ States could select more than one safety project/program in the survey.



Figure 11 shows States' responses to whether safety performance targets impact or affect the types of projects funded under its HSIP.

For the majority of States (51 percent), safety performance targets do not impact or affect the types of projects that are funded under the States' HSIP. Some common responses from States in this area included the following:

- The SHSP is the mechanism for tracking fatal and serious injury crashes categorized by emphasis areas. Many States have emphasis area action plans, which use crash data and contributing factors to determine the types of projects and funding allocation.
- Another State shared that they make decisions based on the SHSP, network screening, and available funding.
- States indicated that safety plans, like the SHSP, already aim to maximize safety impact through project selection and prioritization.
- States indicated that the HSIP Implementation Plan helps to drive project selection.

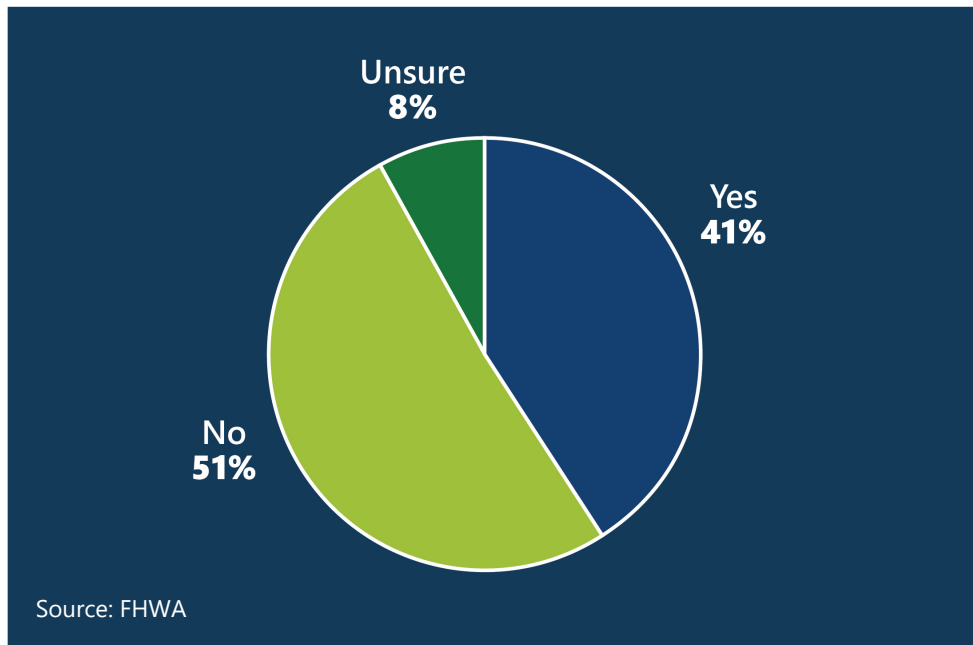
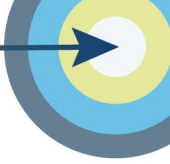


Figure 11. Chart. States' response to whether safety performance targets impact or affect the types of projects funded by States' HSIP.



Furthermore, States had mixed perspectives on the role of safety performance target setting and the broader HSIP Implementation Plan requirement for States not meeting or making significant progress toward their safety performance targets.

- Some States feel the HSIP Implementation Plan can be a burden annually if they do not meet or make significant progress toward their safety performance targets, which can take time and resources away from creating project statements and implementing projects, especially for States with a smaller safety staff. One State noted that the timeline for setting safety performance targets and an HSIP Implementation Plan can be challenging with limited staff resources.
- Some States think the HSIP Implementation Plan is the more effective tool for reflecting on investments and how they can be modified to achieve safety performance targets and goals. For example, developing an HSIP Implementation Plan made one State realize it had overinvested in intersection projects and underinvested in vulnerable user and roadway departure projects, resulting in a change in their HSIP funding allocation.

Example State Practices:

One State used their HSIP Implementation Plan to consider data from different perspectives. After comparing their distribution of spending to the distribution of fatal and serious injury crashes, the State realized they were overspending in areas where crashes were not occurring as highly as others. The State revised their funding model to align with the distribution of fatal and serious injury crashes. This State has found the HSIP Implementation Plan to be such a useful tool that they will continue the process of completing a Plan, even if they are not required to do so. Similarly, another State realized through the HSIP Implementation Plan process how to better program and spend their funding allocations.



To prioritize safety projects for programming and implementation, Figure 12⁵ shows that the vast majority of States (84 percent) use benefit-cost ratios, followed by lives saved and injuries prevented (49 percent); then crash modification factor score (45 percent); other (e.g., safety performance functions, SHSP emphasis areas, systemic approach, proven safety countermeasures, and equity) (44 percent); and finally, net-present value (10 percent). States shared that they selected the criteria to influence safety performance targets because the criteria help to prioritize projects that focus on reducing fatalities and serious injuries, are consistent with SHSP emphasis areas, provide the most benefit related to cost, and help the State achieve their safety performance targets.

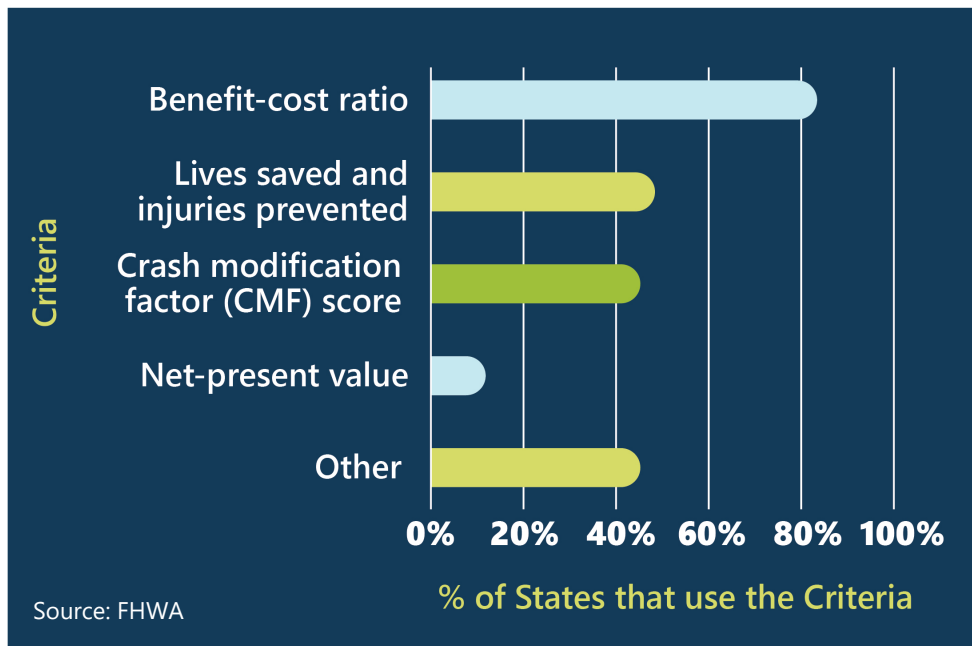


Figure 12. Graph. Criteria that States use to prioritize safety projects for programming and implementation.

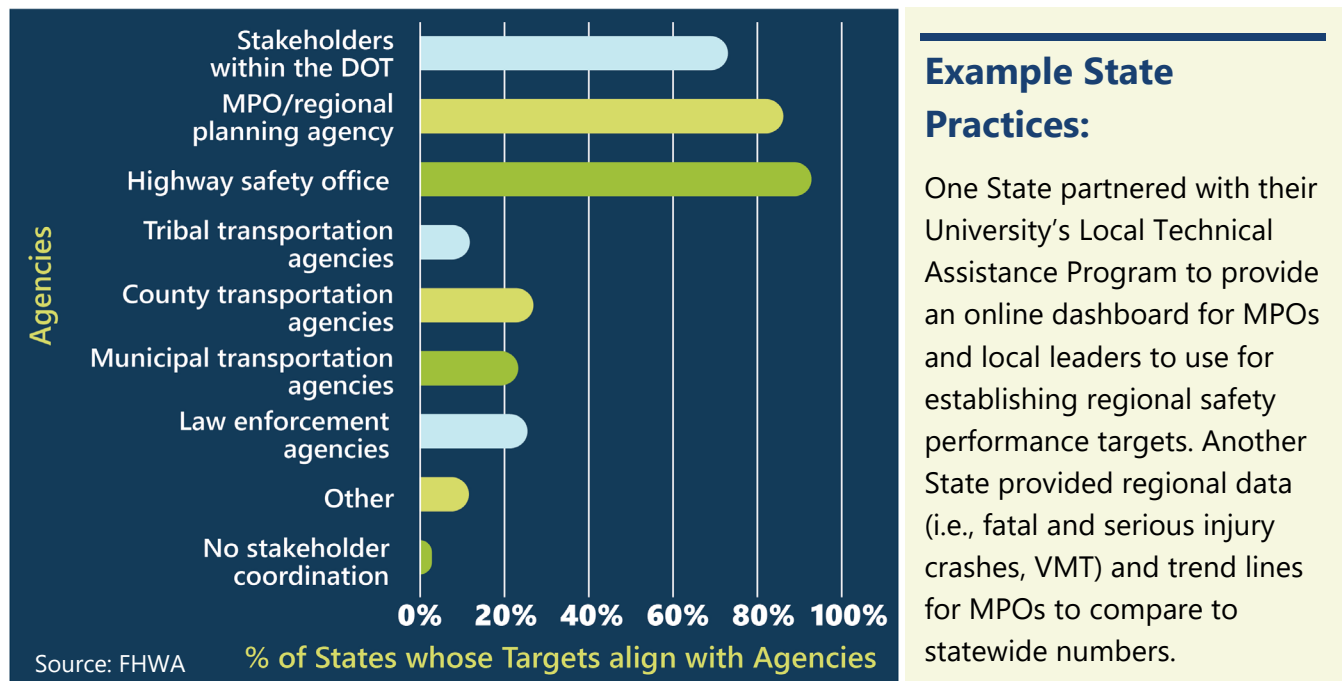
⁵ States could select more than one method in the survey.



Coordination and the Safety Performance Target-Setting Process

States were asked in the survey how they aligned with other agencies plans during the safety performance target-setting process. Figure 13⁶ shows the most commonly reported stakeholders in the safety performance target-setting process are the State HSO or equivalent (92 percent) and MPOs (86 percent). In addition to the State requirement to set annual safety performance targets, MPOs also establish safety performance targets in accordance with 23 CFR 490.209(c). Some States included the MPOs in the safety performance target-setting process while other States provided the MPOs with the State safety performance targets, which the MPOs could either adopt or choose to set their own targets for their metropolitan planning area.

Additionally, 73 percent of States reported working with other stakeholders within their State DOT for safety performance target setting. Notably, a small proportion of agencies reported working with local agencies, including counties (27 percent), municipalities (24 percent), and Tribal agencies (12 percent). States noted that they include other agencies to make them aware of and align safety performance targets and to perform additional data trend analyses.

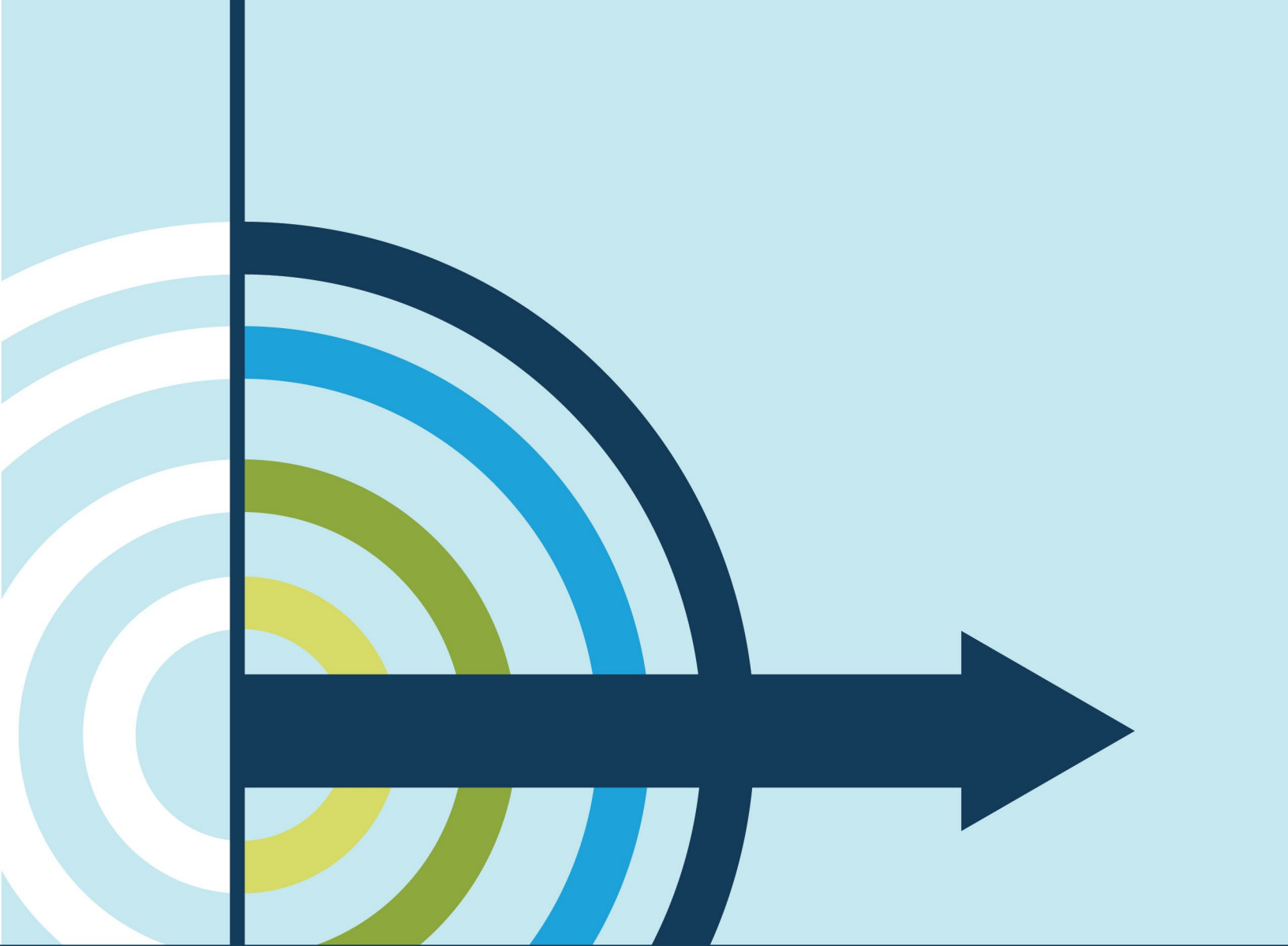


Example State Practices:

One State partnered with their University's Local Technical Assistance Program to provide an online dashboard for MPOs and local leaders to use for establishing regional safety performance targets. Another State provided regional data (i.e., fatal and serious injury crashes, VMT) and trend lines for MPOs to compare to statewide numbers.

Figure 13. Graph. States' safety performance targets alignment with partner agencies.

⁶ States could select more than one partner agency in the survey.



Chapter 4—Conclusions



The research survey and subsequent interviews provided an opportunity for FHWA to learn more about States' safety performance target-setting practices. The survey responses showed an array of methodologies, from the selection of goal-driven targets to sophisticated data-driven models forecasting future safety performance; the inclusion of various unique stakeholders; and reactions to the implications of not meeting or making significant progress toward safety performance targets. Survey respondents noted the following benefits of the safety performance target-setting process:

- Safety performance target setting **increases communication and interest among highway safety stakeholders**. One State noted several examples of this, including increased MPO interest and requests for data, cooperation with partner agencies to improve data and strategic planning, and communication with leadership about safety plans and safety performance targets.
- Safety performance target setting **promotes awareness of safety across the State DOT**. This is particularly effective for communicating the need to include safety in all projects, not just those funded through the HSIP and during early project programming and scoping phases.
- Safety performance target setting **reinforces the need for a systemic approach to safety**, one that lowers risk across multiple sites rather than individual larger-scale site-specific projects.

In addition, States reported some common concerns:

- **Annual safety performance targets have limited applicability to project selection**. Projects are programmed several years in advance and the project safety impacts are not evaluated until years after project completion. For example, one State noted the time scale for safety performance target setting does not match up with the project delivery process, so safety projects and programs do not have an immediate impact on targets.
- **Data challenges with recent annual data**. Although States must use data from the prior five years as the baseline against its safety performance targets, they frequently lack the most recent year(s) of data during the safety performance target-setting process. As a result, States often need to estimate or interpolate recent trends. These estimates make it challenging for agencies to have confidence in their forecasts when setting safety performance targets.

There were several State practices identified in this survey that could support future safety performance target-setting policy and guidance. These include:

- **Crash Prediction Models for Forecasting**. One State used projections for VMT, population, gas prices, and other factors when forecasting safety performance targets. This same State, for the purposes of safety performance targets, revises the forecast to account for expected reductions due to the HSIP and behavioral safety programs. Models can also



be used to help account for uncertainty in future conditions (i.e., sensitivity analysis and scenario planning), while visualizing necessary conditions to achieve safety goals.

- **Leadership Support.** One State's approach to safety performance target setting is driven from the Governor. Each year the State sets safety performance targets—the magnitude of which is determined based on planned improvements and policy changes. Highlighting political motivations shows how a strong safety culture can influence safety performance target setting. Another State has a similar example where they created a program to include a safety checklist in all projects (i.e., including those not funded through HSIP). The State has top-down support from the Governor's office, which is involved in their SHSP and safety performance target-setting process.
- **Alignment with the SHSP Process.** Some States noted a strong connection between safety performance target setting, the HSIP, and the SHSP process. The collaborative nature of many States' safety performance target-setting approach is similar to the planning process that informs the SHSP. Although safety performance target setting is an annual requirement, the data and timelines considered during the SHSP update process can help inform broader trends and targets; these can be revisited annually as data become available.
- **States indicated that the HSIP Implementation Plan is a useful requirement to help drive project selection.** Plan development encourages agencies to review and compare historical safety performance and HSIP investments to identify how they can best improve their HSIP. Several States reported their intention to complete an HSIP Implementation Plan annually, regardless of whether they met or made significant progress toward their safety performance targets. Several States noted the effectiveness of the HSIP Implementation Plan process as a mechanism for re-evaluating near-term program needs and allocation.
- **Stakeholder Engagement in Safety Performance Target Setting.** One State noted that stakeholder engagement meetings for safety performance target setting have led to further safety discussions and interest in safety trends, which ultimately led to promoting safety culture. Two States have programs in place to incorporate local agencies in the safety performance target-setting process. These programs help local agencies to analyze their data, provide feedback on the safety performance targets, and apply for HSIP funds. Another State noted that stakeholder feedback alerted the State to an increase in vulnerable road user (VRU) crashes, which ultimately resulted in programming more VRU safety projects.

Finally, the following are summaries of feedback from the surveys and subsequent interviews:

- States repeatedly reference the benefit of **peer exchanges** – both in learning what other States are doing and in sharing current practices with others. In the open-ended question about resource needs to help the States, nine States explicitly mentioned the need for examples, with one State noting they were specifically interested in hearing about how



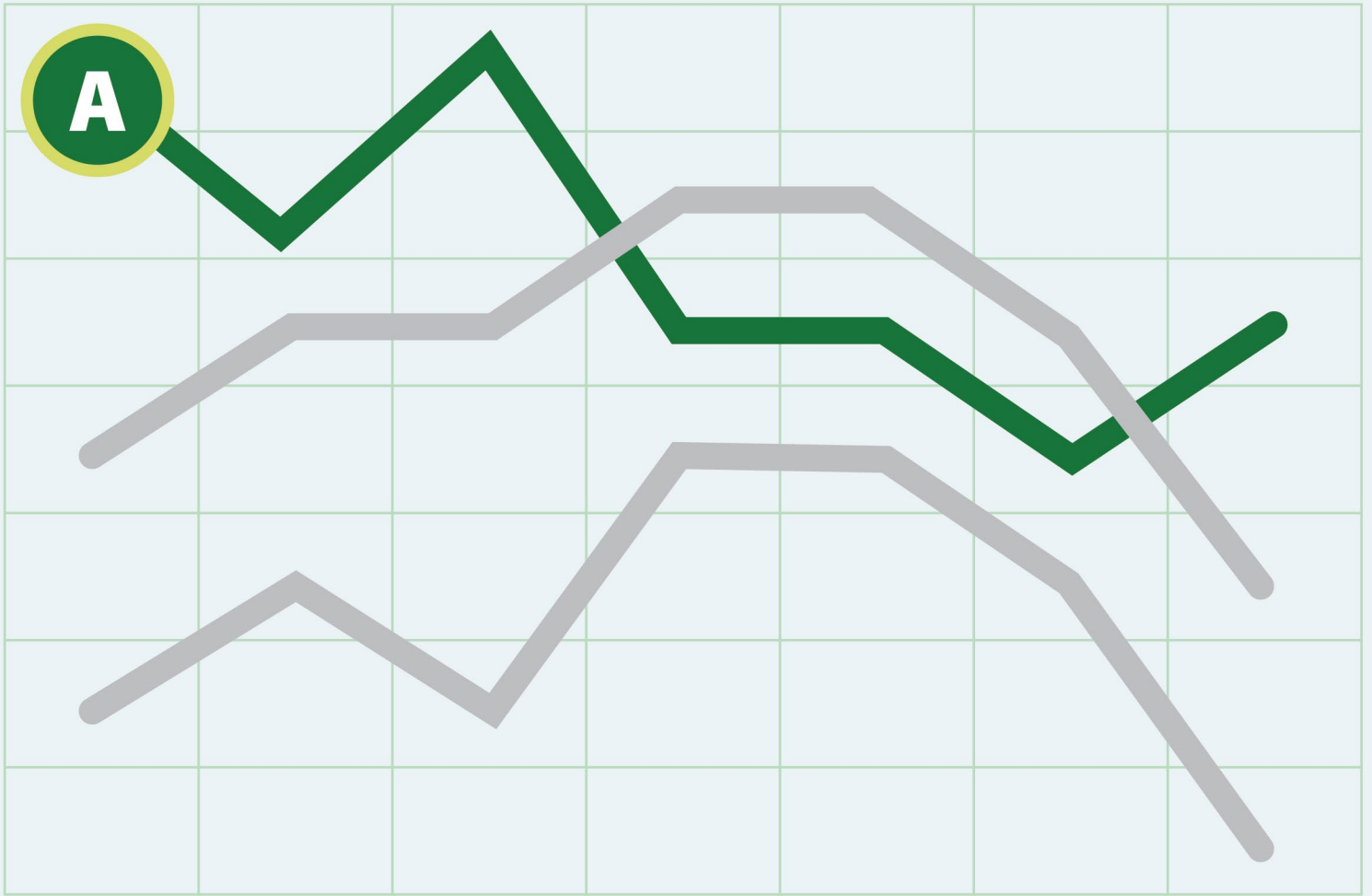
other States set safety performance targets and encouraged ongoing webinars and peer exchanges. Other States noted the need to learn about specific aspects of a State's efforts, such as one State noting the need for more information on State practices and approaches for working with law enforcement to obtain electronic crash data. One State also stated a need for more information on technology other States use to process and manage crash data. Other States offered to share information on their safety performance target-setting practices or how they evaluate behavioral strategies.

- Several States included statements that reflect they are embracing a **multidisciplinary approach**. One State referenced limitations of engineering given the increasing behavioral trends in fatalities. Others explicitly mentioned the need for more support and more capacity for the 4Es (education, enforcement, engineering, and emergency medical services). Similarly, one State identified a challenge related to executive leadership not embracing a multidisciplinary approach and noted that executives may focus more on the infrastructure-related planning and programming rather than on non-infrastructure-related and behavioral approaches.
- The importance of **communication** was a theme across the States, including communicating to executive leadership to gain their support (including their support for the 4Es), communicating to executive leadership if the safety performance targets were not achieved, and communicating with diverse stakeholders. One State identified the lack of executive leadership support as a challenge to implementing a performance-based approach. This State noted that noteworthy practices on approaches to gaining stakeholder support could help them with their safety performance target-setting practices. Related to this, another State identified a need for resources to help with messaging to executives regarding the impacts if safety performance targets are not met. One State discussed the value of the safety performance target-setting process in opening the lines of communications with stakeholders and noted that an open dialogue with stakeholders can simplify the safety process and increase the audience for safety messaging. This State emphasized that the safety performance target-setting process should be multidisciplinary as the different agencies in the State are working toward the same goal of eliminating fatalities and serious injuries on the roadways.
- Eight States provided similar responses about the challenges of the various factors that may affect a State's ability to meet safety performance targets, noting that **there are factors outside of their ability to affect the outcome**. One State succinctly shared that fatalities occur due to many factors and another State shared that behavioral issues (such as not wearing a seat belt, driving while impaired, and lack of adjudication) work against safety. Similarly, a State referenced that operational capacity improvement projects do not always complement the safety performance targets. Related to this, several States expressed concerns about the continued missed safety performance targets corresponding with national rises in fatality rates, increasing trends in fatalities and injuries, and uncontrollable spikes in crashes related to behavioral issues.



- When asked about both resources needed and challenges in setting the safety performance targets, States mentioned a **lack of staff resources**. One State mentioned staffing shortages and that FHWA has underestimated the time to establish the targets. Another explicitly identified that more staff are needed (e.g., data analysts and engineers) to help with the safety performance target-setting process. Related to staffing shortages, many States mentioned the need for increased analysis capabilities. This could be for a lack of staff (as noted by one State) or a lack of staff training. States expressed the need for additional guidance, training, or examples.
- The current relationship between safety performance target-setting practices and project selection is **relatively weak** (i.e., some States tend not to use their targets to guide project selection). States noted that they chose projects based on data to address safety concerns, not based on the safety performance targets. Another State shared that they use the SHSP, network screening, and funding availability to make project decisions. Other States noted that the incorporation of data trends beyond crash and traffic data in safety performance target setting can support a more holistic review of conditions and anticipated safety outcomes.

While some States experienced challenges with the safety performance target-setting process, other States expressed positive responses and identified additional resources that can help them in the future. Primarily, States suggested they would like to hear from their peers and FHWA regarding how other States set safety performance targets. This could be in the form of peer exchanges, published resources (i.e., reports, noteworthy practices, or case studies), or examples of different safety performance target-setting procedures. States also noted the need for additional guidance, specifically related to how to adjust and adapt for years with large fatal and serious injury increases, how to communicate about safety performance targets with leadership and safety stakeholders, and information on data analysis methodologies for setting and achieving goal-driven safety performance targets.



Appendix A—Survey Instrument



Survey Questions

General

1. Please provide the following information:
 - a. Name
 - b. Title
 - c. Agency
2. Following this survey, would you be willing to participate in a 30-minute virtual interview with the project team, if additional information is needed?
 - a. Yes
 - b. No

Current Process for Safety Performance Target Setting

3. Which of the following best describes your State's current approach to safety performance target setting?
 - a. **Goal-Driven** – your State's targets are based on future goals, whether for fixed annual percent reductions or a future performance measure target. This could also be considered an "aspirational" approach.
 - b. **Data-Driven** – your State's targets are based on expected outcomes given recent trends, model projections, programmed projects, and other safety efforts. This could also be considered a "realistic" approach.
 - c. **Hybrid** – your State considers both recent data trends and future goals when setting targets.
 - d. **Other** – please describe.
4. Why did your State select this approach?

Is your State willing to set aspirational safety performance targets in the future?

 - a. Yes (*logic applied, goes to question 6*)
 - b. No (*logic applied, goes to question 7*)
5. Please describe situations where your State has/would set an aspirational safety performance target.
6. Please describe why your State will not set an aspirational safety performance target.
7. What role does the baseline safety performance play when setting safety performance targets in your State?



Note: The baseline safety performance is the latest five-year rolling average for the performance measures. For example, for a CY 2022 target submitted as part of the HSIP annual report in 2021, the baseline safety performance would be the five-year rolling average ending in CY 2020.

- a. Our State does not consider the baseline safety performance. (*logic applied, skip to question 10*)
 - b. Our State considers the baseline safety performance directly in setting safety performance targets. (*logic applied, skip to question 9*)
 - c. Our State considers the baseline safety performance, but it is not the only factor in setting safety performance targets. (*logic applied, skip to question 9*)
 - d. Other (please describe). (*logic applied, skip to question 10*)
8. What is the relative position of your State's safety performance target with respect to the baseline?
- a. Lower.
 - b. Equal to.
 - c. Higher.
9. Has your State found safety performance target setting to be an effective mechanism to assist your State in making more informed decisions on safety investments?
- a. Yes (*logic applied, skip to question 11*)
 - b. No (*logic applied, skip to question 12*)
10. Please describe why your State has found safety performance target setting to be an effective mechanism.
11. Please describe why your State has found safety performance target setting to not be an effective mechanism.
12. If your State did not meet or make significant progress toward any of your safety performance targets, what factors do you think contributed to missing the target(s)? Provide responses to the items that apply.
- a. Engineering factors such as (*short answer*)
 - b. Behavioral factors such as (*short answer*)
 - c. Target-setting factors such as (*short answer*)
 - d. Other factors such as (*short answer*)



13. Other than crash and traffic data, what types of data does your State consider when setting safety performance targets? For those that apply, describe how the data are incorporated.
 - a. Demographic/Socioeconomic (census data, population changes, etc.) *(short answer)*
 - b. Economic (employment data, commuting data, freight data, gas prices, etc.) *(short answer)*
 - c. Travel Demand (significant changes in traffic patterns, increases or decreases in non-motorist travel, etc.) *(short answer)*
 - d. Behavioral (alcohol sales, seat belt surveys, etc.) *(short answer)*
 - e. Weather (annual snowfall, severe weather events, etc.) *(short answer)*
 - f. Other (please describe) *(short answer)*
 - g. We do not consider other forms of data *(short answer)*

Future Process for Safety Performance Target Setting

14. Have recent fatality and serious injury trends changed your State's method for setting safety performance targets or is your State considering a change?
 - a. Yes *(logic applied, skip to question 16)*
 - b. No *(logic applied, skip to question 17)*
15. Please describe why the recent fatality and serious injury trends changed your State's method for setting safety performance targets.
16. Please describe why the recent fatality and serious injury trends have not changed your State's method for setting safety performance targets.
17. Is your State planning to use one of the following approaches to safety performance target setting in the future?
 - a. Yes, we plan to use a goal-driven approach in the future.
 - b. Yes, we plan to use a data-driven approach in the future.
 - c. Yes, we plan to use hybrid approach in the future.
 - d. No, we are not considering using any of these approaches in the future (please describe why).



18. Does your State anticipate continuing with current safety performance target-setting practices or is your State planning to change safety performance target-setting practices in the future.
 - a. Our State plans to continue with current safety performance target-setting practices. *(logic applied, skip to question 20)*
 - b. Our State plans to change safety performance target-setting practices in the future. *(logic applied, skip to question 21)*
19. Please describe why your State is planning to continue current safety performance target-setting practices.
20. Please describe why your State is planning to change safety performance target-setting practices in the future.

Interaction Between Targets and the HSIP

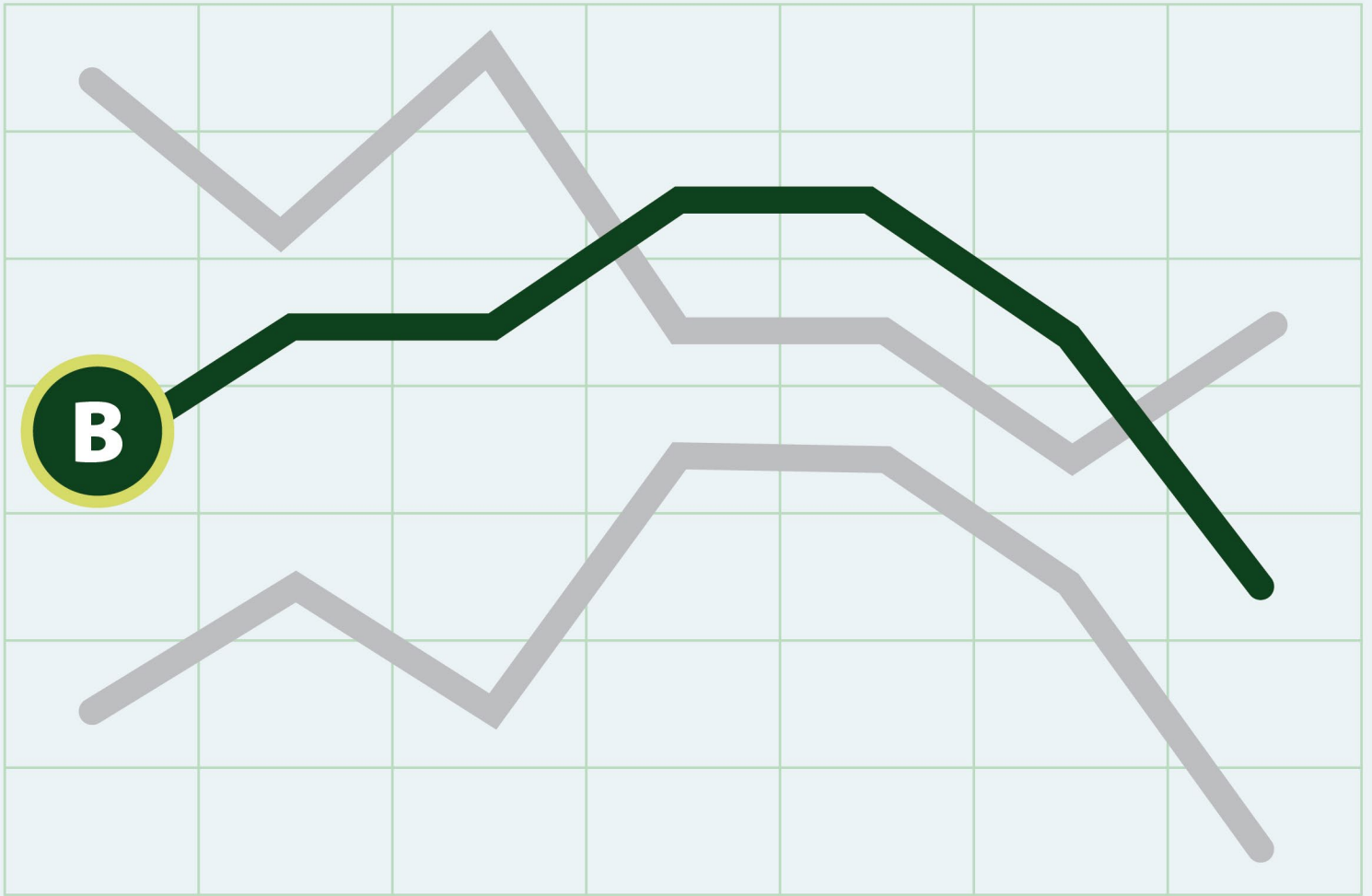
21. Does your State have a method to align planned or targeted reductions in highway safety plans and projects/programs with safety performance targets? *Select all that apply.*
 - a. Yes, as part of the State's Highway Safety Plan.
 - b. Yes, as part of the State Transportation Improvement Program.
 - c. Yes, as part of the Strategic Highway Safety Plan.
 - d. Yes, as part of another plan (please describe).
 - e. No.
22. Do safety performance targets impact or affect the types of projects that are funded under your State's HSIP?
 - a. Yes *(logic applied, skip to question 24)*
 - b. No *(logic applied, skip to question 25)*
 - c. Unsure *(logic applied, skip to question 26)*
23. If yes, please describe how safety performance targets impact or affect the types of projects funded under your State's HSIP.
24. If no, please describe why safety performance targets do not impact or affect the types of projects funded under your State's HSIP.



25. Select which criteria your State uses to prioritize safety projects for programming and implementation. *Select all that apply.*
- a. Benefit-cost ratio.
 - b. Lives saved and injuries prevented.
 - c. Crash modification factor score.
 - d. Net-present value.
 - e. Other (please describe).
26. How do the selected criteria influence the safety performance targets?

Coordination and the Safety Performance Target-Setting Process

27. Are your State's safety performance targets aligned with any plans from the following agencies? *Select all that apply.*
- a. Stakeholders within the DOT (*logic applied, skip to question 29*)
 - b. Metropolitan planning organizations or other regional planning agencies (*logic applied, skip to question 29*)
 - c. Highway safety office (*logic applied, skip to question 29*)
 - d. Tribal transportation agencies (*logic applied, skip to question 29*)
 - e. County transportation agencies (*logic applied, skip to question 29*)
 - f. Municipal transportation agencies (*logic applied, skip to question 29*)
 - g. Law enforcement agencies (*logic applied, skip to question 29*)
 - h. Other not listed (please describe) (*logic applied, skip to question 29*)
 - i. We do not coordinate with other stakeholders (*logic applied, skip to question 30*)
28. How are these agencies involved in the safety performance target-setting process?
29. What challenges, if any, does your State face when implementing a performance-based approach in the safety performance target-setting process?
30. What resources, if any, would help your State improve safety performance target-setting practices?
31. Is there anything else you would like to share with FHWA and/or other State DOTs regarding your State's safety performance target-setting practices?



Appendix B—Interview Instrument



Interview Questions

Note: not all questions applied to all participants. The participants were only asked those questions that pertained to specific follow-up to survey responses during the interview.

Interaction Between Safety Performance Targets and the HSIP

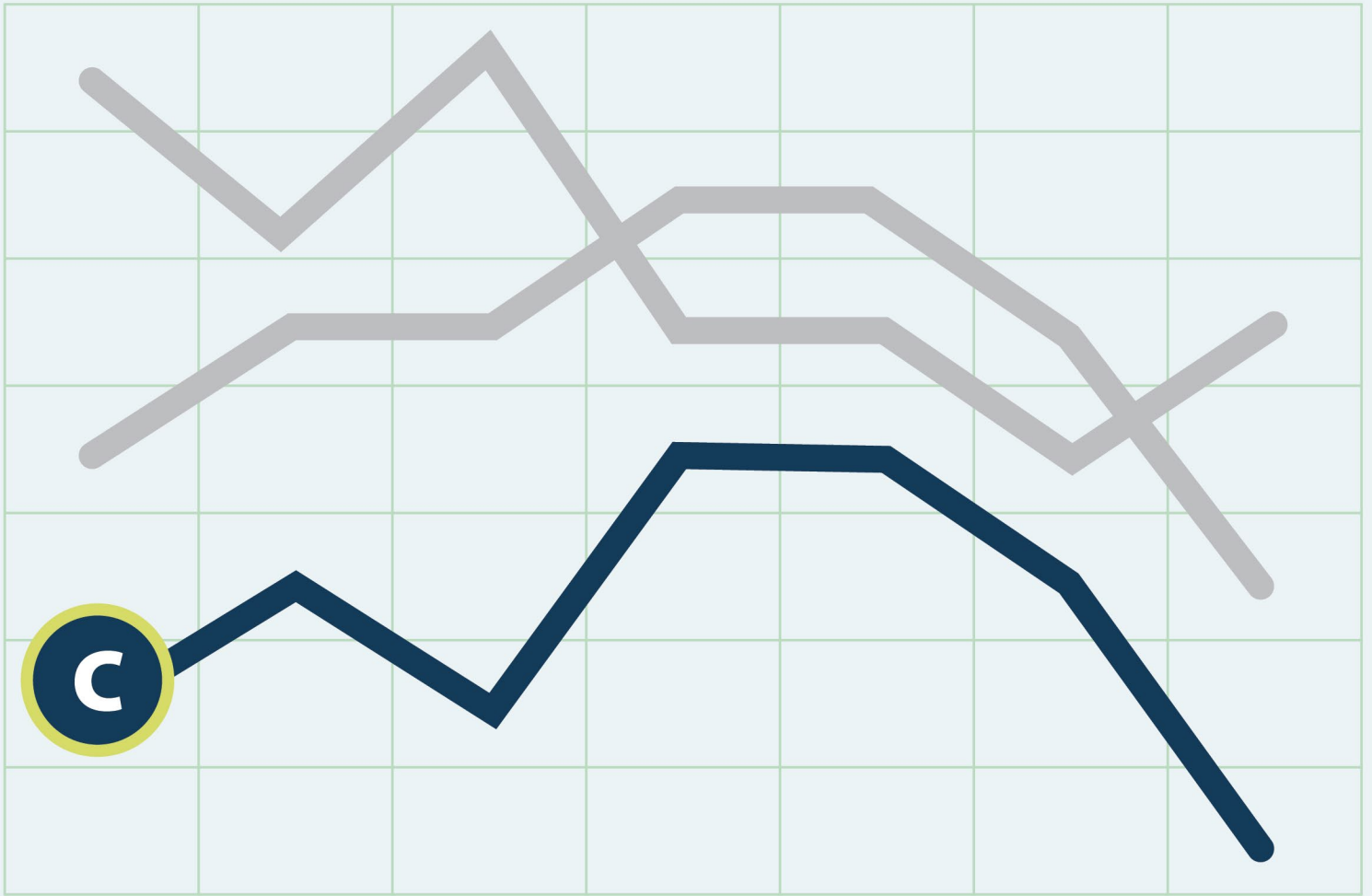
- How do your State's annual safety performance targets support the multi-year goals described in your State's SHSP?
- Do your State's HSIP before-after evaluation results inform your safety targets?
- For program-level evaluations, how does your State evaluate the program? How do you use the results in target setting?
- How does your State account for expected reductions in fatalities and serious injuries from planned HSIP projects in the safety performance target-setting process?
- Do safety performance targets influence decisions outside of HSIP-funded projects? If so, how?
- How does the State Transportation Improvement Program help your State tie HSIP project selection to your safety performance targets?

Safety Program Coordination and the Safety Performance Target-Setting Process

- How does your State coordinate with other agencies to set State safety performance targets?
- How does your State account for potential safety benefits from planned educational, enforcement, and other non-infrastructure safety programs in the safety performance target-setting process?
- How has safety performance target setting helped to improve safety management in your State (e.g., better communication or coordination with partners, better use of evaluation results to inform project decisions, better project selection methods to prioritize projects with greatest potential to achieve targets, etc.)?

Data-Driven Safety Performance Target Setting

- If your State uses a data-driven approach, how are the data modeled?



Appendix C—List of Agencies Interviewed



The following agencies were selected for an interview based on presenting an example practice, expressing challenges that warranted further investigation, or needed to provide additional clarifications/explanations as part of their survey responses.

- Arkansas DOT
- California DOT
- Indiana DOT
- Indiana FHWA
- Louisiana DOT
- Louisiana FHWA
- Missouri DOT
- Missouri FHWA
- New Jersey DOT
- New Jersey FHWA
- New Mexico DOT
- North Carolina DOT
- North Dakota DOT
- North Dakota Highway Safety Division (Highway Safety Office)
- North Dakota FHWA
- Ohio DOT
- Rhode Island DOT
- South Carolina DOT
- South Carolina Department of Public Safety
- South Carolina FHWA
- South Carolina Office of Highway Safety
- Virginia DOT



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