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The 23 U.S.C. 148 note of the “Bipartisan Infrastructure Law” (BIL) (Public Law 117-58), enacted as the Infrastructure Investment and Jobs Act (Act) (Pub. L. 117-58) on November 15, 2021, requires the USDOT to update the HRRR Study, Report and Best Practices Manual first completed under MAP-21 (Section 1112(b)). This is a request for Office of Management and Budget (OMB) emergency clearance for a new information collection request (ICR) to enable the Department of Transportation (DOT) Federal Highway Administration (FHWA) to perform the national survey required.

Critical Nature of the Information Collection Request

Not later than two years after the date of enactment of this Act, the Secretary shall update the study under section 1112(b)(1) of MAP-21 (23 U.S.C. 148 note; Pub. L. 112-141). In carrying out the study, FHWA is required to conduct a nationwide survey of the current practices of various agencies. Consistent with the first survey completed under MAP-21, respondent agencies will include departments of transportation for 50 States, the District of Columbia and Puerto Rico, in addition to a selection of 100 appropriate local agencies, including municipal, county, and Tribal highway departments and municipal public works agencies.

The results of the survey are to be used in conjunction with a literature review to prepare a report to be published on the Department of Transportation website for the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives.

Need for Emergency Approval

The report is due by November 15, 2023. Due to the Administration’s tight deadline for the update, FHWA has already conducted the 5 CFR 1320.8 60-day notice, which was published in the [Federal Register on March 15, 2022, in Vol. 87, No. 50, on pp. 14611-1461](#). The FHWA has worked diligently since the enactment of BIL to develop the updated survey and identify appropriate responding State and local agency representatives. The use of normal clearance procedures for ICR approval will prevent the Department from meeting Congress’ deadline. If the Department does not receive emergency approval for this ICR, submitting the Report to Congress will be delayed.

If you have any questions regarding this request, please contact Charles Meyer at charles.meyer@dot.gov or myself at kelly.morton@dot.gov.

Sincerely,

Kelly Morton
Implementation Team Leader, Office of Safety
Federal Highway Administration

Attachments

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Supporting Statement

Introduction: This is a request for the Office of Management and Budget's (OMB) approval for new information collection to issue a survey that will result in an update to the High-Risk Rural Roads (HRRR) Study, Report to Congress and Best Practices Manual Update.

PART A. JUSTIFICATION.

1. Circumstances that make collection of information necessary:

The 23 U.S.C. 148 note of the "Bipartisan Infrastructure Law" (BIL) (Public Law 117-58) requires the USDOT to update the HRRR Study, Report and Best Practices Manual first completed under MAP-21 (Section 1112(b)(1)).

In carrying out the study, FHWA is required to conduct a nationwide survey of the current practices of various agencies. Consistent with the first survey completed under MAP-21, respondent agencies will include departments of transportation for 50 States, the District of Columbia and Puerto Rico, in addition to appropriate officials from local agencies, including municipal, county, and Tribal highway departments and municipal public works agencies from across the country.

2. How, by whom, and for what purpose is the information used:

Contractors, on behalf of FHWA, will lead the information collection which will include an electronic survey. The purpose of the information collection will be to identify and gather information necessary to address the BIL-required elements and update the noteworthy practices manual, specifically collecting information on:

- a) noteworthy program and treatment practices for improving rural road safety,
- b) cost-effective roadway safety infrastructure improvements, and
- c) the effectiveness of cost-effective roadway safety treatments.

The project team will use the results of the survey in conjunction with a literature research to update a report to be published on the U.S. Department of Transportation website as required by BIL. The report is required to include: (1) A summary of cost-effective roadway safety infrastructure improvements; (2) a summary of the latest research on the financial savings and reductions in fatalities and serious bodily injury crashes from the implementation of cost-effective roadway safety infrastructure improvements; and (3) and recommendations for State and local governments on best practice methods to install cost-effective roadway safety infrastructure on high-risk rural roads. The legislation also requires the results of the survey and the report to be used to update a noteworthy practices manual to support Federal, State, and local efforts to reduce fatalities and serious injuries on high-risk rural roads. The report and updated noteworthy practices manual will be used by both FHWA and State DOTs to improve safety on high-risk rural roads.

3. Extent of automated information collection:

The proposed method of data collection uses a web-based survey tool called Qualtrics. This tool allows users to take the survey at any location with internet access and to save data as they go, enabling them to continue the survey at a later time.

Emails will be sent to 50 State department of transportation representatives, the District of Columbia and Puerto Rico (those most responsible for implementing high risk rural road safety projects in their agency), and 100 local agency representatives (i.e. local agencies such as municipal, county, or tribal public works departments). An email will be sent to the State and local representatives providing background information on the study and instructions for responding to the survey.

4. Efforts to identify duplication:

Other noteworthy practice information has been studied for various types of safety improvements, but no up-to-date, national, comprehensive data set is available for only those improvements used on HRRRs.

5. Efforts to minimize the burden on small businesses:

N/A. No small businesses will be surveyed for this collection.

6. Impact of less frequent collection of information:

N/A. This will only be a one-time collection.

7. Special circumstances:

N/A. No special circumstances apply.

8. Compliance with 5 CFR 1320.8:

The 60-day notice was published in the Federal Register on March 15, 2022, in Vol. 87, No. 50, on pp. 14611-1461. Three comments were received in response to the 60-day Notice. Commenters included the Department of Transportation from one State and two individuals. There were no comments submitted that expressed disagreement with the proposed information collection. As a result, no changes to the planned information collection have been made by FHWA in response to these comments.

9. Payments or gifts to respondents:

N/A. No payments or gifts will be given to respondents.

10. Assurance of confidentiality:

N/A. The information being collected is not confidential. This information will be used in a report that will be available to the public. No personally identifiable information will be required. The name, title, agency, and email address of the respondent will be collected; however, this information will not be shared.

11. Justification for collection of sensitive information:

N/A. No collection of sensitive information is anticipated.

12. Estimate of burden hours for information requested:

The estimated number of burden hours per response is 4 hours. The respondents include 52 departments of transportation (all 50 States plus the District of Columbia and Puerto Rico) and

100 local agencies such as municipal, county, or tribal public works departments. The total of 152 respondents \times 4 hours per response equals a total burden time of 608 hours. The total cost for each respondent based on 4 hours at \$102 per hour is \$408.00. The estimated cost of \$102 per hour for a local agency employee was the rate used for the original study done in 2012 (\$80) adjusted for inflation using the Consumer Price Index from the U.S. Bureau of Labor Statistics. This rate was checked for reasonableness considering a wide range of salaries of state and local agency professionals expected to be responding to the survey and typical overhead rates of local agency governments. The collective cost to respondents for the information collection is calculated as 608 hours \times \$102 per hour for a total of \$62,016.

13. Estimate of total annual costs to respondents:

There are no annual costs to respondents.

14. Estimate of cost to the Federal government:

FHWA has hired a contractor for this information collection task. The total cost for the survey development and collection efforts is estimated by the contractor to be \$40,500.00 based on a cost of \$39,240 for the contractor and \$1,250 for FHWA staff hours. The contractor estimate is based on 332 hours of contractor employees at various classifications to complete this work. Each rate is the agreed-upon billing rate in the IDIQ Contract. The FHWA staff hours cost is based on an estimate of 10 hours of labor. Note that this task is part of a larger contract to complete the study, report, and manual.

15. Explanation of program changes or adjustments:

N/A. This is a new Information Collection. There are no program changes or adjustments.

16. Publication of results of data collection:

The results will be published on the website of the Department of Transportation in a report for the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives. The report is due by November 15, 2023.

17. Approval for not displaying the expiration date of OMB approval:

N/A. Expiration date of OMB approval will be displayed.

18. Exceptions to certification statement:

N/A. There are no exceptions to the certification statement for this information collection.

PART B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

While the goal of consultation required in MAP21 is not to select a sample representing any particular demographics, such as population, road mileage, or fatalities distribution, a conscientious process using screening criteria was used to select enough appropriate respondents that will provide FHWA with a thorough knowledge of noteworthy practices data and

experiences in implementing cost-effective roadway safety infrastructure improvements on high-risk rural roads in order to deliver the required study, report, and manual update.

Taking direction from MAP21 1112(b)(1), FHWA is to survey current best practices for implementing cost-effective roadway safety infrastructure improvements on high risk rural roads. A survey will be conducted of current practices of State departments of transportation and local units of government, as appropriate, by consulting with various State department officials, county engineers, public works officials, local officials, and private sector experts. In order to achieve appropriate consultation, FHWA will survey 50 State department of transportation representatives, District of Columbia and Puerto Rico representatives (those most responsible for implementing high risk rural road safety projects in their agency), and 100 local agency representatives (i.e. local agencies such as municipal, county, or tribal public works departments). One hundred local agency representatives have been selected using several screening factors in order to gather a variety of local agency practices and approaches to implementing cost effective high risk rural road safety improvements.

The process used to select the 100 units of government combined quantitative (using U.S. Census Bureau rural and urban population and roadway fatalities data) and qualitative (using project staff and oversight group members' expertise) factors. Using the rural and urban designations defined by the U.S. Census Bureau using percent of rural population data, an initial list of rural counties was created for each State. The list was further narrowed by reviewing rural fatality data from the National Highway Traffic Safety Administration. The candidate list from each State was presented to the Technical Oversight Working Group (TOWG) that selected up to three (3) counties considering the size of the state, its rural population, rural fatality, and rural vehicle miles traveled data, implementation of noteworthy practices in the field of rural road safety, how actively that agency has participated in previous agency exchanges, and anticipated ability of the agency to participate in the survey. As a confirmation, States have been consulted as appropriate for best local agency representation. In some states, no roads are designated as high risk rural roads or State agencies are designated as responsible for all high risk rural roads, and therefore, no local agencies will be surveyed.

In order to maximize the response rate, two approaches were used. Survey invitees were selected based on their likelihood to participate as determined by current relationships with the state and federal agency in their state and the local agency's activity in the industry. FHWA will be conducting a survey overview webinar for all invitees to further encourage participation by giving the invitees the purpose of the survey and other background and preparation information.

FHWA's contractor will conduct the survey, holding it open for 35 days and monitoring response rates during that time, and will compile and analyze the results with guidance from FHWA and the TOWG for incorporation into the report update to Congress and update of the practitioners' manual. The survey will gather information on agencies' use of rural road safety infrastructure strategies and their costs and effectiveness as well as rural road safety program practices. Information gathered will not be used to conduct statistical analysis, such as calculating patterns, trends, or prevalence of use of certain countermeasures. This information will be used to summarize and highlight cost-effective roadway safety strategy practices and used to compile and feature effective strategies and general cost and benefit information for updating the current FHWA manual for agencies' future reference. Between the existing literature research, continued useful information in the existing manual, and a pool of 150 survey

respondents from across the country, FHWA is confident in gathering adequate data and information to provide an updated pertinent report to Congress and effective manual update.

High Risk Rural Roads Study Purpose and Need

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA) (Public Law 117-58, also known as the “Bipartisan Infrastructure Law”) into law. The Bipartisan Infrastructure Law is the largest long-term investment in our infrastructure and economy in the Nation’s history. It provides \$550 billion over fiscal years 2022 through 2026 in new Federal investment in infrastructure, including in roads, bridges, and mass transit, water infrastructure, resilience, and broadband.

The 23 U.S.C. 148 note (Public Law 117-58) requires the USDOT to update the HRRR Study, report and Best Practices Manual first completed under MAP-21.

(b) HIGH-RISK RURAL ROADS.—

(1) STUDY.—Not later than 2 years after the date of enactment of this Act, the Secretary shall update the study under section 1112(b)(1) of MAP–21 (23 U.S.C. 148 note; Public Law 112–141).

(2) PUBLICATION OF REPORT.—Not later than 2 years after the date of enactment of this Act, the Secretary shall publish on the website of the Department of Transportation an update to the report described in section 1112(b)(2) of MAP–21 (23 U.S.C. 148 note; Public Law 112–141).

(3) BEST PRACTICES MANUAL.—Not later than 180 days after the date on which the report is published under paragraph (2), the Secretary shall update the best practices manual described in section 1112(b)(3) of MAP–21 (23 U.S.C. 148 note; Public Law 112–141).¹

Survey Respondent Selection and Process

Consistent with the original study conducted under MAP-21, an updated survey will be sent to all State DOTs including Puerto Rico and District of Columbia to conduct the required study and complete the Report to Congress and update the “Best Practices Manual”. In addition to all States, the survey will be sent to 100 local units of government.. The local units of government have been selected using several screening factors in order to gather a variety of local agency practices and approaches to implementing cost effective high risk rural road safety improvements.

The process used to select the 100 units of government combined quantitative (using U.S. Census Bureau rural and urban population and roadway fatalities data) and qualitative (using project staff and oversight group members’ expertise) factors. Using the rural and urban designations defined by the U.S. Census Bureau using percent of rural population data, an initial list of rural counties was created for each State. The list was further narrowed by reviewing rural fatality data from the National Highway Traffic Safety Administration. The candidate list from each State was presented to the Technical Oversight Working Group (TOWG) that selected up to three (3) counties considering the size of the state, its rural population, rural fatality, and rural vehicle miles traveled data, agency implementation of noteworthy practices in the field of rural

¹ https://safety.fhwa.dot.gov/hsip/hrrr/manual/hrrr_2014.pdf

road safety, how actively that agency has participated in previous agency exchanges, and anticipated ability of the agency to participate in the survey. As a confirmation, States have been consulted as appropriate for best local agency representation. In some states, no roads are designated as high risk rural roads or State agencies are designated as responsible for all high risk rural roads, and therefore, no local agencies will be surveyed.

In order to maximize the response rate, two approaches were used. Survey invitees were selected based on their likelihood to participate as determined by current relationships with the state and federal agency in their state and the local agency's activity in the industry. FHWA will be conducting a survey overview webinar for all invitees to further encourage participation by giving the invitees the purpose of the survey and other background and preparation information.

FHWA's contractor will conduct the survey, holding it open for 35 days and monitoring response rates during that time, and will compile and analyze the results with guidance from FHWA and the TOWG for incorporation into the report update to Congress and update of the practitioners' manual. The team will use Qualtrics as the updated survey mechanism. Qualtrics is a powerful online feedback program capable of presenting high quality, professional questionnaires and collecting needed data. The system includes security safeguards that will be used to protect the data during and after collection and is 508 compliant. The survey will be open for a total of 35 days, with the final five days being a buffer. At the 30-day, "soft deadline" date, we will issue a final, targeted email reminder to encourage those agencies that have not yet done so to participate in the survey. The estimated number of burden hours per response is four hours, which includes time for internal agency collaboration and information gathering.

The survey will gather information on agencies' use of rural road safety infrastructure strategies and their costs and effectiveness as well as rural road safety program practices. Information gathered will not be used to conduct statistical analysis, such as calculating patterns, trends, or prevalence of use of certain countermeasures. This information will be used to summarize and highlight cost-effective roadway safety strategy practices and used to compile and feature effective strategies and general cost and benefit information for updating the current FHWA manual for agencies' future reference. The survey results will be anonymized and summarized to produce the updated Report to Congress. However, some noteworthy practices may be attributed to specific agencies, with their permission, in the updated "Best Practices Manual". Between the existing literature research, continued useful information in the existing manual, and a pool of 150 survey respondents from across the country, FHWA is confident in gathering adequate data and information to provide an updated pertinent report to Congress and effective manual update.

Survey Questions

Welcome. Thank you for your time.

Survey participation is voluntary. The information collected will be used by the Federal Highway Administration to update the “High Risk Rural Roads Study, Report to Congress, and Best Practices Manual” that is required under the 23 U.S.C. 148 note of the “Bipartisan Infrastructure Law” (BIL) (Public Law 117-58). Public reporting burden is estimated to average four (4) hours per response, including the time for reviewing instructions, gathering data if needed, and completing and reviewing the collection of information. The OMB control number for this collection is XXXXX. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, Federal Highway Administration, 1200 New Jersey Avenue, SE, Washington, DC 20590.

Survey Information.

This questionnaire is designed to help identify roadway safety infrastructure improvements for State and local high risk rural roads and the levels of effectiveness, associated costs, and typical life cycles of these improvements.

High risk rural roads are defined in 23 USC 148(a)(1) as “any roadway functionally classified as a rural major or minor collector or a rural local road with significant safety risks, as defined by a State in accordance with an updated State strategic highway safety plan.”

For the purposes of this questionnaire, please consider, high risk rural roads where safety treatments have been implemented by your agency, regardless of the funding sources for those treatments. Each State defines “high risk,” but the treatment must occur on rural major or minor collectors or rural local roads.

For the questions in the survey, please answer them to the best of your ability, with the following timeframe in mind: calendar years 2013-2022.

Survey Instructions.

The survey does not have to be completed in one session. The survey automatically saves your answers, so you can complete the survey over multiple days. All questions require an answer to move to the next question. You are also able to return to previous questions to review and/or update answers. Please take your time completing this survey and consult your agency subject matter experts as appropriate, so we collect the best information for updating the “High Risk Rural Roads Study, Report to Congress, and Best Practices Manual.” (Link to Manual:

https://safety.fhwa.dot.gov/hsip/hrrr/manual/hrrr_2014.pdf)

QUESTIONS

1. What type of agency do you represent?

- State transportation agency
- Local transportation agency
- Other à Explain: _____

If the respondent indicated they are affiliated with a local agency, they will be presented with question a. and b.

a. Does your agency have a dedicated safety improvement program (e.g., roadway safety plan, roadway safety related policies, dedicated safety funding)?

- Yes
- No

[Note to reviewers: The purpose of this question is to determine if the agency has a formal safety program (and thus is likely to have more exposure to a wide array of treatments) or if funding for safety improvements is minimal, as this could influence the cost effectiveness assessments for such agencies.]

b. Does your agency have a staff member or members primarily responsible for the oversight of safety improvements and/or maintenance of the improvements?

- Yes
- No

2. Please list the name and location (e.g., City, State) of the agency that you represent.

Agency Name: _____

Location: _____

3. FHWA's Proven Safety Countermeasure initiative promotes 28 countermeasures and strategies effective in reducing roadway fatalities and serious injuries on our Nation's highways. What proven safety countermeasures has your agency used for high risk rural road locations? (check all that apply)

If you are unsure of what these countermeasures are, please review the FHWA Proven Safety Countermeasure website at: <https://highways.dot.gov/safety/proven-safety-countermeasures>. The list below is presented in the same order as shown on the website, organized into the following focus area categories: Speed Management, Pedestrian/Bicyclist, Roadway Departure, Intersections, and Crosscutting.

Speed Management:

- Appropriate speed limits for all road users

- Speed safety cameras
- Variable speed limits

Pedestrian/Bicyclist:

- Bicycle lanes
- Crosswalk visibility enhancements
- Leading pedestrian interval
- Medians and pedestrian refuge islands
- Pedestrian hybrid beacons
- Rectangular rapid flashing beacons
- Road diets (roadway configuration)
- Walkways

Roadway Departure:

- Enhanced delineation for horizontal curves (e.g., pavement markings, chevrons, delineators, etc.)
- Longitudinal rumble strips and stripes on two-lane roads
- Median barriers
- Roadside design improvements at curves (e.g., clear zone, slope flattening, shoulders, roadside barriers, etc.)
- SafetyEdgeSM
- Wider edge lines

Intersections:

- Traffic signal backplates with retroreflective borders
- Corridor access management
- Dedicated left- and right-turn lanes at intersections
- Reduced left-turn conflict intersections
- Roundabouts
- Systemic application of multiple low-cost countermeasures at stop-controlled intersections
- Traffic signal yellow change intervals

Crosscutting:

- Lighting
- Local road safety plans
- Pavement friction management
- Road safety audit

The next set of questions will ask you to identify individual safety infrastructure treatments used by your agency. Multiple treatments will be listed in each question, and you will be able to check all that apply. The 6 categories that individual treatments are listed under are shown below and correspond to the next set of questions.

- Signing and pavement marking safety infrastructure treatment
- Intersection-specific safety improvement infrastructure treatments

- Pavement and shoulder resurfacing and widening safety infrastructure treatments
 - Roadside safety infrastructure treatments
 - Pedestrian and bicyclist safety infrastructure treatments
 - Other safety infrastructure treatments
4. Please identify the individual **signing and pavement marking safety infrastructure treatments** used by your agency at high risk rural road locations. (check all that apply)
- Install advance curve warning and advisory speed signs at horizontal curve locations
 - Install chevron signs at horizontal curve locations
 - Install large arrow signs at horizontal curve locations
 - Install post-mounted delineators at horizontal curve locations
 - Enhance warning signs (increase size, improve sheeting conspicuity, or double signs)
 - Install variable speed limits signs
 - Install dynamic speed feedback signs
 - Install standard edge line markings where previously not present
 - Convert standard edge line markings to wide (greater than 4”) edge line markings
 - Install center line markings where previously not present
 - Convert center line markings to wide (greater than 4”) center line markings
 - Install raised pavement markers along the center line exclusively at horizontal curve locations
 - Install raised pavement markers along the length of the center line for an entire segment or corridor
 - Install edge line longitudinal rumble stripes (Note: rumble strips will be included in a later question) (<https://highways.dot.gov/safety/proven-safety-countermeasures/longitudinal-rumble-strips-and-stripes-two-lane-roads>)
 - Install center line longitudinal rumble stripes
 - Others →List: _____

- a. For the safety infrastructure improvements you previously selected (listed below), identify a minimum of one (1) and up to five (5) of the most effective treatments your agency has deployed since 2013. Note that for each treatment selected, you will be asked about approximate quantity installed, initial investment, projected life, maintenance and cost, and safety effectiveness.

Respondent will be presented with all of the ones they selected in the previous question.

- Selected option from previous question
- Selected option from previous question

(and so on)

The following questions 4b-h will loop for each of the options the respondent selected in question 4a.

- b. Select the unit of measurement that best fits this treatment: {selected option from question 4a}. (Note: the unit selected will correspond to the upcoming questions.)
- Linear foot
 - Linear mile
 - Square foot
 - Each
 - Lump sum
 - Other _____
- c. Approximate quantity installed of this treatment on high risk rural roads since 2013 (e.g., 5 roundabouts, 100 miles of rumble strips):
- _____
- d. Indicate initial investment of this treatment per the unit of measurement selected in 4b:
- _____
- e. Projected life of this treatment for the initial installation:
- Less than 1 year
 - 1-3 years
 - 3-5 years
 - 5-10 years
 - 10-15 years
 - 15-20 years
 - Greater than 20 years
 - Do not know
- f. Required maintenance timeframe of this treatment:
- None
 - Every 1 year
 - Every 2 years
 - Every 5 years
 - Every 10 years
 - Every 20 years
 - Do not know
- g. Maintenance cost per period per unit (refer to timeframe selected in 4f):

- Integrated into maintenance program, so unknown
- \$1,000 to \$5,000
- \$5,000 to \$10,000
- \$10,000 to \$25,000
- \$25,000 to \$50,000
- \$50,000 to \$75,000
- \$75,000 to \$100,000
- Greater than \$100,000
- Do not know

- h. Evaluation/assessment results of this treatment, measured in reduction of "fatal injury" and "suspected serious injury" crashes:

A fatal injury is an injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

A suspected serious injury is an injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissue/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second or third degree burns over 10 percent or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

- Treatment has not been evaluated/assessed
- Greater than 30% reduction
- 21-30% reduction
- 11-20% reduction
- 10% or less reduction
- No change
- Do not know

5. Please identify the individual **intersection-specific safety infrastructure treatments** used by your agency at high risk rural road locations. (check all that apply)

- Construct left-turn lanes where none currently exist
- Modify existing left-turn lanes to be offset left-turn lanes
- Construct offset left-turn lanes where left-turn lanes currently do not exist
- Construct two-way left turn lanes (TWLTL) on two lane roads.

- Construct right-turn lanes
- Construct bypass lanes on two-lane roadways (lane that allows traffic to move around a vehicle waiting in the through lane to make a left turn)
- Construct acceleration lanes
- Install advance intersection warning signage where it currently does not exist
- Improve existing advance intersection warning signage
- Provide flashing beacons at intersection approaches
- Add dynamic advanced warning sign systems at intersection approaches
- Convert two-way STOP control intersection to four-way STOP control intersection
- Construct mini-roundabout
- Convert STOP control intersection to signalized intersection
- Improve traffic signal visibility (larger diameter lens or install signal backplate)
- Install signal backplates with retroreflective borders
- Install priority control systems for emergency vehicles
- Install or improve intersection lighting
- Install transverse rumble strips on stop-controlled approaches
- Convert a traditional intersection (stop-controlled or signalized) into a roundabout
- Convert a traditional intersection (stop-controlled or signalized) into a reduced left-turn conflict intersection (<https://highways.dot.gov/safety/proven-safety-countermeasures/reduced-left-turn-conflict-intersections>)
- Reconstruct a skewed intersection
- Convert an at-grade intersection into a grade-separated interchange
- Install railroad crossing hardware and warning systems where they currently do not exist
- Upgrade existing railroad crossing hardware and warning systems
- Remove an existing railroad crossing
- Convert an at-grade railroad crossing to a grade-separated railroad crossing
- Others → List: _____

- a. For the safety infrastructure improvements you previously selected (listed below), identify a minimum of one (1) and up to five (5) of the most effective treatments your agency has deployed since 2013. Note that for each treatment selected, you will be asked about approximate quantity installed, initial investment, projected life, maintenance and cost, and safety effectiveness.

Respondent will be presented with all of the ones they selected in the previous question.

- Selected option from previous question
- Selected option from previous question
(and so on)

The following questions 5b-h will loop for each of the options the respondent selected in question 5a.

- b. Select the unit of measurement that best fits this treatment: {selected option from question 5a}. (Note: the unit selected will correspond to the upcoming questions.)
- Linear foot
 - Linear mile
 - Square foot
 - Each
 - Lump sum
 - Other _____
- c. Approximate quantity installed of this treatment on high risk rural roads since 2013 (e.g., 5 roundabouts, 100 miles of rumble strips):
- _____
- d. Indicate initial investment of this treatment per the unit of measurement selected in 5b:
- _____
- e. Projected life of this treatment for the initial installation:
- Less than 1 year
 - 1-3 years
 - 3-5 years
 - 5-10 years
 - 10-15 years
 - 15-20 years
 - Greater than 20 years
 - Do not know
- f. Required maintenance timeframe of this treatment:
- None
 - Every 1 year
 - Every 2 years
 - Every 5 years
 - Every 10 years
 - Every 20 years
 - Do not know
- g. Maintenance cost per period per unit (refer to timeframe selected in 5f):
- Integrated into maintenance program, so unknown

- \$1,000 to \$5,000
- \$5,000 to \$10,000
- \$10,000 to \$25,000
- \$25,000 to \$50,000
- \$50,000 to \$75,000
- \$75,000 to \$100,000
- Greater than \$100,000
- Do not know

- h. Evaluation/assessment results of this treatment, measured in reduction of "fatal injury" and "suspected serious injury" crashes:

A fatal injury is an injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

A suspected serious injury is an injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissue/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second or third degree burns over 10 percent or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

- Treatment has not been evaluated/assessed
- Greater than 30% reduction
- 21-30% reduction
- 11-20% reduction
- 10% or less reduction
- No change
- Do not know

6. Please identify the individual **pavement and shoulder resurfacing and widening safety infrastructure treatments** used by your agency at high risk rural road locations. (check all that apply)

- Resurface existing road to improve skid resistance
- Widen existing travel lanes by two feet or less per lane
- Adjust superelevation through the limits of a horizontal curve
- Add passing lanes or truck climbing lanes

- Install or maintain a graded shoulder
- Pave an existing shoulder
- Widen an existing paved shoulder
- Install turnouts (used for refuge space for disabled vehicles or enforcement)
- Install a SafetyEdgeSM (<https://highways.dot.gov/safety/proven-safety-countermeasures/safetyedgesm>)
- Install continuous longitudinal rumble strips
(<https://highways.dot.gov/safety/proven-safety-countermeasures/longitudinal-rumble-strips-and-stripes-two-lane-roads>)
- Install targeted longitudinal rumble strips at key locations (such as on the outside of horizontal curves only)
- Install sinusoidal rumble strips/mumble strips
- Install transverse rumble strips prior to horizontal curves
- Others → List: _____

If the respondent selects, "Install continuous longitudinal rumble strips," they will be presented with question a.

- a. Where did you install continuous longitudinal rumble strips? (check all that apply)
- Center line
 - Shoulder
- b. For the safety infrastructure improvements you previously selected (listed below), identify a minimum of one (1) and up to five (5) of the most effective treatments your agency has deployed since 2013. Note that for each treatment selected, you will be asked about approximate quantity installed, initial investment, projected life, maintenance and cost, and safety effectiveness.

Respondent will be presented with all of the ones they selected in the previous question.

- Selected option from previous question
- Selected option from previous question
(and so on)

The following questions 6c-i will loop for each of the options the respondent selected in question 6b.

- c. Select the unit of measurement that best fits this treatment: {selected option from question 6b}. (Note: the unit selected will correspond to the upcoming questions.)
- Linear foot
 - Linear mile

- Square foot
 - Each
 - Lump sum
 - Other _____
- d. Approximate quantity installed of this treatment on high risk rural roads since 2013 (e.g., 5 roundabouts, 100 miles of rumble strips):
- _____
- e. Indicate initial investment of this treatment per the unit of measurement selected in 6c:
- _____
- f. Projected life of this treatment for the initial installation:
- Less than 1 year
 - 1-3 years
 - 3-5 years
 - 5-10 years
 - 10-15 years
 - 15-20 years
 - Greater than 20 years
 - Do not know
- g. Required maintenance timeframe of this treatment:
- None
 - Every 1 year
 - Every 2 years
 - Every 5 years
 - Every 10 years
 - Every 20 years
 - Do not know
- h. Maintenance cost per period per unit (refer to timeframe selected in 6g):
- Integrated into maintenance program, so unknown
 - \$1,000 to \$5,000
 - \$5,000 to \$10,000
 - \$10,000 to \$25,000
 - \$25,000 to \$50,000
 - \$50,000 to \$75,000
 - \$75,000 to \$100,000
 - Greater than \$100,000

Do not know

- i. Evaluation/assessment results of this treatment, measured in reduction of "fatal injury" and "suspected serious injury" crashes:

A fatal injury is an injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

A suspected serious injury is an injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissue/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second or third degree burns over 10 percent or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

Treatment has not been evaluated/assessed

Greater than 30% reduction

21-30% reduction

11-20% reduction

10% or less reduction

No change

Do not know

7. Please identify the individual **roadside safety infrastructure treatments** used by your agency at high risk rural road locations. (check all that apply)

Install breakaway sign posts or breakaway light/signal poles

Flatten road sideslope

Remove roadside objects such as isolated trees or boulders

Increase the clear zone distance to rigid roadside features

Relocate outside the clear zone, redesign, or bury utilities

Improve sight distance by maintaining roadside vegetation

Convert culvert headwalls to traversable end treatments

Shield roadside objects (with a concrete barrier or guardrail)

Upgrade non-crashworthy end treatments of existing guardrail

Upgrade existing guardrail system

Install median barrier

Install median guardrail

- Install median cable barrier
- Widen existing median
- Install crash cushions at select roadside object locations (such as bridge abutments or concrete barrier ends)
- Others → List: _____

If the respondent selects, "Install median barrier," they will be presented with question a.

- a. What type(s) of median barrier did you install? (check all that apply)
- Concrete median barrier
 - Median guardrail
 - Median cable barrier
- b. For the safety infrastructure improvements you previously selected (listed below), identify a minimum of one (1) and up to five (5) of the most effective treatments your agency has deployed since 2013. Note that for each treatment selected, you will be asked about approximate quantity installed, initial investment, projected life, maintenance and cost, and safety effectiveness.

Respondent will be presented with all of the ones they selected in the previous question.

- Selected option from previous question
- Selected option from previous question
(and so on)

The following questions 7c-i will loop for each of the options the respondent selected in question 7b.

- c. Select the unit of measurement that best fits this treatment: {selected option from question 7b}. (Note: the unit selected will correspond to the upcoming questions.)
- Linear foot
 - Linear mile
 - Square foot
 - Each
 - Lump sum
 - Other _____
- d. Approximate quantity installed of this treatment on high risk rural roads since 2013 (e.g., 5 roundabouts, 100 miles of rumble strips):
- _____

e. Indicate initial investment of this treatment per the unit of measurement selected in 7c:

f. Projected life of this treatment for the initial installation:

- Less than 1 year
- 1-3 years
- 3-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- Greater than 20 years
- Do not know

g. Required maintenance timeframe of this treatment:

- None
- Every 1 year
- Every 2 years
- Every 5 years
- Every 10 years
- Every 20 years
- Do not know

h. Maintenance cost per period per unit (refer to timeframe selected in 7g):

- Integrated into maintenance program, so unknown
- \$1,000 to \$5,000
- \$5,000 to \$10,000
- \$10,000 to \$25,000
- \$25,000 to \$50,000
- \$50,000 to \$75,000
- \$75,000 to \$100,000
- Greater than \$100,000
- Do not know

i. Evaluation/assessment results of this treatment, measured in reduction of "fatal injury" and "suspected serious injury" crashes:

A fatal injury is an injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

A suspected serious injury is an injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissue/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second or third degree burns over 10 percent or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

- Treatment has not been evaluated/assessed
- Greater than 30% reduction
- 21-30% reduction
- 11-20% reduction
- 10% or less reduction
- No change
- Do not know

8. Please identify **pedestrian and bicyclist safety infrastructure treatments** used by your agency at high risk rural road locations. (check all that apply)

- Construct continuous pedestrian facilities (e.g. sidewalk, separated multi-use path, etc.)
- Install pedestrian signal heads at existing signalized intersections
- Modify signal timing to benefit pedestrians (e.g., leading pedestrian interval, exclusive pedestrian phase)
- Install crosswalks
- Construct pedestrian refuge islands
- Construct curb extensions/bump-outs
- Install pedestrian hybrid beacons (PHB)
- Install rectangular rapid flashing beacons (RRFB)
- Construct shared-use path (used for both pedestrians and bicycles)
- Construct dedicated bicycle lane
- Mark paved shoulder as bicycle lane
- Sign and/or mark a shared bicycle lane (bicycle and vehicle share the same space)
- Install treatment to improve transit/bus stop safety → List:

Deploy traffic calming techniques → List: _____

Others → List: _____

a. For the safety infrastructure improvements you previously selected (listed below), identify a minimum of one (1) and up to five (5) of the most effective treatments your agency has deployed since 2013. Note that for each treatment selected, you will be

asked about approximate quantity installed, initial investment, projected life, maintenance and cost, and safety effectiveness.

Respondent will be presented with all of the ones they selected in the previous question.

- Selected option from previous question
- Selected option from previous question
(and so on)

The following questions 8b-h will loop for each of the options the respondent selected in question 8a.

- b. Select the unit of measurement that best fits this treatment: {selected option from question 8a}. (Note: the unit selected will correspond to the upcoming questions.)
 - Linear foot
 - Linear mile
 - Square foot
 - Each
 - Lump sum
 - Other _____
- c. Approximate quantity installed of this treatment on high risk rural roads since 2013 (e.g., 5 roundabouts, 100 miles of rumble strips):
 - _____
- d. Indicate initial investment of this treatment per the unit of measurement selected in 8b:
 - _____
- e. Projected life of this treatment for the initial installation:
 - Less than 1 year
 - 1-3 years
 - 3-5 years
 - 5-10 years
 - 10-15 years
 - 15-20 years
 - Greater than 20 years
 - Do not know
- f. Required maintenance timeframe of this treatment:
 - None

- Every 1 year
- Every 2 years
- Every 5 years
- Every 10 years
- Every 20 years
- Do not know

g. Maintenance cost per period per unit (refer to timeframe selected in 8f):

- Integrated into maintenance program, so unknown
- \$1,000 to \$5,000
- \$5,000 to \$10,000
- \$10,000 to \$25,000
- \$25,000 to \$50,000
- \$50,000 to \$75,000
- \$75,000 to \$100,000
- Greater than \$100,000
- Do not know

h. Evaluation/assessment results of this treatment, measured in reduction of "fatal injury" and "suspected serious injury" crashes:

A fatal injury is an injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

A suspected serious injury is an injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissue/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second or third degree burns over 10 percent or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

- Treatment has not been evaluated/assessed
- Greater than 30% reduction
- 21-30% reduction
- 11-20% reduction
- 10% or less reduction
- No change

Do not know

9. Please identify **other safety infrastructure treatments** used by your agency at high risk rural road locations. (check all that apply)

- Convert a two-lane two-way road into a three-lane road with one lane in each direction of travel plus a continuous two-way left-turn lane
- Convert a two-lane two-way road into a four-lane divided two-way road
- Convert a four-lane undivided two-way road into a three-lane road with one lane in each direction of travel plus a continuous two-way left-turn lane (i.e., Road Diet)
- Convert a four-lane undivided two-way road into a five-lane road with two lanes in each direction of travel plus a continuous two-way left-turn lane
- Modify horizontal geometry to enhance safety (e.g., increase radii) → Identify: _____
- Modify vertical geometry to improve vertical sight distance → Identify: _____
- Install reference location signs (e.g., milepost markers that provide a means to identify the location of an incident/crash)
- Construct snow fences
- Install automatic anti-icing systems (often used on bridges)
- Install ITS road-weather signs/systems that detect and warn motorists of road weather conditions (e.g., fog, flooding, high winds, dust storms, ice storms, blizzards)
- Install ITS wrong-way driver system
- Construct wildlife fencing
- Install grade-separated wildlife crossing structure (e.g., culvert or bridge)
- Install ITS wildlife detection signs/systems
- Implement variable speed limits
- Others → List: _____

a. For the safety infrastructure improvements you previously selected (listed below), identify a minimum of one (1) and up to five (5) of the most effective treatments your agency has deployed since 2013. Note that for each treatment selected, you will be asked about approximate quantity installed, initial investment, projected life, maintenance and cost, and safety effectiveness.

Respondent will be presented with all of the ones they selected in the previous question.

- Selected option from previous question
- Selected option from previous question
(and so on)

The following questions 9b-h will loop for each of the options the respondent selected in question 9a.

- b. Select the unit of measurement that best fits this treatment: {selected option from question 9a}. (Note: the unit selected will correspond to the upcoming questions.)
- Linear foot
 - Linear mile
 - Square foot
 - Each
 - Lump sum
 - Other _____
- c. Approximate quantity installed of this treatment on high risk rural roads since 2013 (e.g., 5 roundabouts, 100 miles of rumble strips):
- _____
- d. Indicate initial investment of this treatment per the unit of measurement selected in 9b:
- _____
- e. Projected life of this treatment for the initial installation:
- Less than 1 year
 - 1-3 years
 - 3-5 years
 - 5-10 years
 - 10-15 years
 - 15-20 years
 - Greater than 20 years
 - Do not know
- f. Required maintenance timeframe of this treatment:
- None
 - Every 1 year
 - Every 2 years
 - Every 5 years
 - Every 10 years
 - Every 20 years
 - Do not know
- g. Maintenance cost per period per unit (refer to timeframe selected in 9f):
- Integrated into maintenance program, so unknown

- \$1,000 to \$5,000
- \$5,000 to \$10,000
- \$10,000 to \$25,000
- \$25,000 to \$50,000
- \$50,000 to \$75,000
- \$75,000 to \$100,000
- Greater than \$100,000
- Do not know

h. Evaluation/assessment results of this treatment, measured in reduction of "fatal injury" and "suspected serious injury" crashes:

A fatal injury is an injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.

A suspected serious injury is an injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissue/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second or third degree burns over 10 percent or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

- Treatment has not been evaluated/assessed
- Greater than 30% reduction
- 21-30% reduction
- 11-20% reduction
- 10% or less reduction
- No change
- Do not know

10. What is the lowest benefit/cost ratio your agency is willing to accept to treat a known safety issue?

- _____
- Do Not Know

11. What considerations go into establishing the limit for project costs to treat a known safety issue? _____

12. Consider safety projects that your agency has implemented with only agency funding (i.e., not seeking funds from other agencies). What is typically the highest cost of those projects?

- Cost in dollars: _____
- Not applicable → Explain: _____
- Do Not Know

13. How does your agency assess the effectiveness of a safety treatment after it has been implemented? (check all that apply)

- Crash frequency (all crashes)
- Crash frequency (serious injury and fatal crashes)
- Crash rate (crash frequency divided by exposure data, typically traffic volume or roadway mileage)
- Cost-benefit ratio (or benefit-cost ratio)
- Cost-effectiveness index (present value of project costs divided by the estimated average annual crash reduction)
- Severity index → Explain: _____
- Other method Explain: _____
- Our agency does not assess effectiveness of specific treatments → Explain: _____
- Do not know
- Not applicable → Explain: _____

14. Does your agency use performance measures to evaluate the safety effectiveness on high risk rural road facilities? (check all that apply)

- Yes, for infrastructure safety treatments
- Yes, for projects
- Yes, for safety programs
- No
- Do not know

If the respondent selects any of the yes options, they will be presented with question a.

a. Please describe the performance measures your agency uses:

15. What data sources does your agency use to evaluate the safety effectiveness of treatments? (check all that apply)

- Crash data
- Conflict studies

- Surrogate measures (an alternate way to detect if safety has been improved, e.g., no more tire braking marks or tire rutting off the edge of pavement) → Explain: _____
- Others → Explain: _____
- Do not know
- Not applicable

If the respondent indicated that their agency uses crash data for safety evaluation, they will be presented with question a.

- a. What period of years does your agency use when evaluating crash data?
 - 1 year
 - 3 years
 - 5 years
 - Other → Explain: _____

16. What methods does your agency use to identify rural road locations that need safety infrastructure improvements? (check all that apply)

- Network screening (method that considers crash history, roadway factors, and traffic characteristics that may contribute to future crashes)
- Crash frequency
- Crash rate
- Excess predicted crash frequency using SPFs
- Excess expected crash frequency with the EB adjustment
- Excess proportions of specific crash types
- Expected crash frequency with EB adjustment
- Level of service of safety (LOSS)
- Probability of specific crash types
- Locations are identified and/or recommended by a different agency
- Other → Explain: _____
- Do not know
- Not applicable

17. Which methods does your agency use to assist in selecting appropriate safety treatments? (check all that apply)

- Crash data analysis
- Data-driven safety analysis tools (e.g., Highway Safety Manual, Crash Modification Factors Clearinghouse, Safety Analyst, usRAP)
- Locally-derived CMFs, crash reduction factors (CRF), and/or safety performance functions
- Road safety assessment or audit

- Engineering study → Explain: _____
- Strategic highway safety plan or local road safety plan
- Intersection control evaluation (ICE)
- Stakeholder and public input
- Independent research and/or peer State/agency communication
- Other → Explain: _____
- Do not know
- Not applicable

18. A systemic approach to safety involves widely implemented improvements based on high-risk roadway features correlated with specific crash types.

(<https://highways.dot.gov/safety/data-analysis-tools/systemic>) Select the safety infrastructure improvements for high risk rural roads that your agency has implemented throughout your State or local region, using a systemic approach. (check all that apply)

- Cable median barriers
- Clear zone improvements
- High friction surface treatment
- Horizontal curve signage enhancements
- Improved pavement marking/delineation
- Intersection signage enhancements
- Pedestrian/bicycle safety (STEP countermeasures)
- Pavement/shoulder widening
- Rumble strips
- SafetyEdgeSM
- Upgrade barrier (guardrails, end treatments, etc.)
- Wrong way driving treatments
- Other _____
- Do not know
- N/A

19. Does your agency use federal funding for safety infrastructure improvements on high risk rural roads?

- Yes
- No
- Do not know

If the respondent answers no, they will be presented with question a.

a. Why not? (check all that apply)

- Unaware of or lack sufficient information about federal funding programs
- Agency projects do not meet federal funding requirements.

- Federal process requirements are too cumbersome
- Difficulty identifying roads that qualify for federal program funding
- Other → Explain: _____

20. In some cases, candidate infrastructure treatments may not be selected due to real or perceived constraints in acquiring or deploying the treatments. Which challenges apply in your agency? (check all that apply)

- My agency does not have the expertise to deploy certain safety improvements
- It is difficult for my agency to work in conjunction with other transportation agencies and/or to hire outside expertise to help guide safety improvement decisions
- My agency does not have the funds to routinely deploy safety improvements
- My agency has limited funding and does not utilize Federal funding due to Federal process requirements
- Other → Explain: _____
- Do not know
- Not applicable

21. What more could be done to help your agency deploy cost-effective improvements on high risk rural roads? Explain:

22. Is your agency undertaking any experimental research on new cost-effective improvements on high risk rural roads?

- Yes
- No
- Do Not Know

If the respondent indicated yes, they will be presented with question a.

a. Provide more information on your agency's experimental research on new cost-effective improvements on high risk rural roads:

23. Is there any additional information on effective practices your agency uses for high risk rural roads or is aware of that is not captured in the previous questions?

- Yes
- No

If the respondent indicated yes, they will be presented with question a.

- a. Provide additional details on effective practices for high risk rural roads not captured in the previous questions. _____

24. As part of this study and update of the “best practices manual” ([Manual for Selecting Safety Improvements on High Risk Rural Roads](#)), agencies may be featured, with their permission, for noteworthy practices, procedures, and projects using case-studies, highlights, and/or pictures. Additionally, cost-effectiveness analysis will be conducted for a wide variety of infrastructure safety improvements and FHWA is seeking agency data to support this analysis. Candidate information would include crash data before and after installation of the treatment, initial treatment cost, maintenance cost and frequency, and life cycle of the treatment. If your agency is willing to assist with either of the above, FHWA representatives may want to contact you or someone from your agency to acquire this additional information. Please provide applicable contact information below.

Name: _____

Agency: _____

Telephone Number: _____

Email Address: _____

25. Looking ahead to the update of the [Manual](#), there are many ways to spread information to make agencies aware of and encourage implementation of noteworthy practices. Please rank each of the techniques below from most useful to least useful when you are learning about and considering new practices.

(There will be a 1-5 scale for each; 1-least useful to 5-most useful)

- Workshops, Conferences, and Seminars
- Peer Exchanges
- Webinars
- Case Studies
- Fact Sheets
- Websites
- Newsletters and Magazine Articles
- Social Media/Interactive Media

End of Survey.

You have completed the survey!

Thank you very much for your time and effort. If you would like to go back and review or adjust any answers, please do so now by selecting the previous question button. Otherwise, select submit and your answers will be final and recorded.