

# Research on the Impacts of Automated Speed Enforcement in Rwanda to Develop Recommendations for African Countries

Supplementary Materials



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# Table of Contents

Key informant interview semi-structured interview guide .....	1
Focus group discussion Guide .....	17
Interview evaluation form and results .....	20
Road safety and traffic control legislation in Rwanda .....	22
Data Collection: Police crash investigation report form used from 2010-2022.....	23
Description and effective dates of other road safety policies implemented in Rwanda.....	24
Descriptive analysis: Analysis of crashes per district.....	26
Complete List of Randomly Selected Villages and Classifications .....	30
ASE National Survey Data Collection Form .....	33
ASE National Survey Data Collectors Training and Post-Survey Debriefing Review.....	48
ASE National Survey Sample Size Calculations and Sampling Frame.....	55
Complete multiple comparisons of perceptions of ASE among groups.....	58



# Key informant interview semi-structured interview guide

## Introduction Script

Thank you for your help in understanding how ASE was designed and implemented in Rwanda - these questions are adapted from questions posed to 50 state agencies in the USA to understand how they designed and implemented their ASE program so we are asking you similar questions so your answers will help us to describe the program here. We expect this interview to last between 1-2 hours. If you need to leave before we complete the entire interview, we will request to meet you again to finish it. We know you will not have answers to all of these questions, it's no problem. However, when you don't have all the information available it is very helpful if you could make suggestions of agencies or individuals that may best be able to answer the question. We are recording the audio of your responses and writing them in association with your identity but this record will only be shared with the research team, all responses will be presented anonymously and in aggregate so that informants can feel free to share their opinions and perceptions without fear. Some questions may not be clear, please ask us to clarify more when needed. It's better that you admit you don't know the answer than it is to give an answer that may not be accurate.

To begin please introduce yourself

Agency \_\_\_\_\_

Name of Person Completing Questionnaire \_\_\_\_\_

Title of Person Completing Questionnaire \_\_\_\_\_

Phone Number \_\_\_\_\_ Email Address \_\_\_\_\_

How do you engage with ASE in your position/agency?

\_\_\_\_\_  
\_\_\_\_\_

Name of Research Team Member Conducting Interview \_\_\_\_\_

The purpose of this study is to describe how ASE came to be in Rwanda well enough that if another country wanted to learn from Rwanda's experience how to design and implement their own program, what things would they need to know? Therefore, we would like to begin with some broad questions to help understand ASE in Rwanda generally. I may ask you for some additional details as you share this information

1. What is the origin of ASE in Rwanda, did an individual or a certain agency first introduce the idea? If you have some understanding, please tell us the story about the origin of ASE up until today
2. We know about Vitronic and Tatweer, are there other suppliers of ASE tools that Rwanda has made contracts with? How did Rwanda find the different options that were considered among possible ASE partners/stakeholders/vendors?

3. How was the contract negotiated with suppliers? Can you tell us more about the contract? For example, was there a fee paid at the beginning? Does a % of each ASE violation payment go back to the supplier of equipment and technology?
4. How were the locations where ASE cameras are placed on Rwandan roads chosen?
5. How was it decided how/when the public should be sensitized to ASE? What agency and which individuals made these decisions? Was anything special considered about the need to sensitize the public to ASE? Did the sensitization happen before, during or after ASE was already present and sending out violations? Any details you can share are helpful?
6. What governmental authorizations were needed for ASE implementation?
7. Which different governmental institutions were involved in this design and how were they selected?
8. What challenges were encountered in the ASE design process?
9. Were you overall satisfied with the design and implementation process of Rwandan ASE? Do you think things were not done that should have been done? Were all the needed governmental agencies consulted and authorizations obtained during ASE design and implementation?
10. Has ASE been evaluated in any way, such as analysing changes in crashes or citations issued? please elaborate on what kind of evaluation has been done
11. When was the speed governors first introduced in Rwanda?
12. Is there any relationship between speed governors and speed cameras?
13. What do you think was the impact of speed governors in reduction of traffic crashes?
14. What challenges were in the usage of speed governors?

<b>Section A. General Considerations and Planning</b>	
A1	<p><b>What year/month did Rwanda first consider and begin discussing and planning for Automated Speed Enforcement (ASE)?</b></p> <p>Discussions began _____</p>
A2	<p><b>What year/month did Rwanda first implement Automated Speed Enforcement (ASE)?</b></p> <p>Program began _____</p>
A3	<p><b>Were you aware of the existence of Automated Speed Enforcement (ASE) guidelines during the design of Rwanda's program?</b></p> <p>Yes No Don't know</p>

A3a	if yes, which guidelines were you aware of? If you don't know the name just tell us the country or institution that was responsible for it
A4	<p>Do you think that ASE Guidelines were used in the design of Rwanda's ASE program? If yes, please specify which guidelines</p> <p>Yes No Don't know Name of guideline:</p>
A4a	Please elaborate on this response - if guidelines were used in developing Rwanda's program, how were they used? If guidelines were not used, why not?
A5	<p>Who primarily advocated for ASE to be implemented in Rwanda? (Please check all that apply)</p> <p>Police department City manager/council Mayor/other elected officials Public demand ASE vendor(s) Other (please elaborate) Don't know</p>
A6	<p>Prior to implementing ASE in Rwanda, was a legal review or opinion provided by a person such as an attorney or judge to clarify ASE legal issues?</p> <p>Yes No Don't know</p>
A6a	<p>Please elaborate on this response - If yes: What did the legal review consider? Was it helpful? Do you think the legal review could be done differently to be more useful? What were the issues identified by this legal review?</p> <p>If no legal review was done, Why not?</p>
A7	<p>Does Rwanda have a written strategic plan to reduce speeding violations and crashes?</p> <p>Yes No Don't know</p>

A7a	<p>Please elaborate on this response - If yes: how does ASE fit into the plan?</p> <p>What are the key performance indicators measured to evaluate how well the plan is working?</p> <p>Who ensures that the plan is adhered to, and how do they assure this? Do you think the plan is effective and able to be implemented?</p> <hr/> <p>If yes, Are key stakeholders knowledgeable of the content of the plan? Is there actual support for the plan from these stakeholders?</p> <hr/> <p>If there is no written plan, do you know why not?</p>
A8	<p>Who decides where ASE is located in Rwanda? (Please check all that apply)</p> <p>Police department</p> <p>City traffic engineers/MININFRA</p> <p>ASE Vendor Company</p> <p>The public</p> <p>Others (please elaborate) _____</p> <p>Don't know</p>
A8a	<p>Please elaborate on this response -</p> <p>What factors affect whether or not the ASE will be actually installed? For example, is further authorization needed? must funding be available?</p> <hr/> <p>Do you think the party who makes the decisions is appropriate? Do you think another party in Rwanda could also contribute to these decisions?</p>
<p><b>Section B. Program Startup/Implementation</b></p>	
B1	<p>What factors are used to determine the locations of ASE deployment in Rwanda? (Check all that apply)</p> <p>Crash data</p> <p>Engineering data</p> <p>Revenue potential through many violations</p> <p>Speed data</p> <p>Citizen Requests/Complaints</p> <p>School Zones</p> <p>Traffic Volume Data</p> <p>Law Enforcement Recommendation</p> <p>Other (Please elaborate</p>

B2	<p><b>When implementing ASE programs, some communities form a committee of stakeholders to improve communication and support for ASE. was such a stakeholder committee formed in Rwanda?</b></p> <p>Yes No Don't know</p>
B2a	<p><b>Please elaborate- If yes: What were the primary things the stakeholder committee really did? What were the benefits and challenges associated with having a stakeholder committee?</b></p>
B3	<p><b>What images does Rwanda collect for use in issuing ASE citations? (Please check all that apply)</b></p> <p>Driver image Front vehicle license plate Rear vehicle license plate Other (Please elaborate) _____ Don't know</p>
B4	<p><b>In Rwanda, what kinds of penalties for ASE violations are possible as written in the laws? (Please check all that apply)</b></p> <p>Monetary fine Temporary driving licence suspension Permanent driving licence suspension Required to attend driving school again Vehicle can be imprisoned by the police Increased price for the driving insurance on the vehicle Putting the driver in jail Other (Please elaborate) _____ Don't know</p>
B5	<p><b>In Rwanda, what kinds of penalties are currently given for ASE violations? (Please check all that apply)</b></p> <p>Monetary fine Temporary driving licence suspension Permanent driving licence suspension Required to attend driving school again Vehicle can be imprisoned by the police Increased price for the driving insurance on the vehicle Putting the driver in jail Other (Please elaborate) _____ Don't know</p>



B6	<p><b>Under your ASE program, what other violations are authorized from the photographic evidence, if any? (Please check all that apply)</b></p> <p>not using a Seat belt</p> <p>Using a mobile phone while driving</p> <p>Driving without a license</p> <p>Vehicle without registration</p> <p>Other violations (Please elaborate) _____</p> <p>Not applicable</p> <p>Don't know</p>
B7	<p><b>What types of ASE devices are used in Rwanda (Please check all that apply)</b></p> <p>Fixed, permanent installations</p> <p>Semi-fixed (ASE cameras in secure housings that can remain on site for several days or weeks).</p> <p>Traffic Light linked ASE to catch "Speed on Green" violations where drivers overspeed through intersections.</p> <p>Fully mobile ASE?</p> <p>Other (Please elaborate) _____</p> <p>Don't know</p>
B7a	<p><b>Please elaborate if you have ideas - What is the purpose of different types of ASE in Rwanda? Do some types of ASE have particular advantages or disadvantages? Are some types of ASE especially useful in certain contexts or for certain purposes?</b></p>
B8	<p><b>In which of the following locations is ASE operating in your community? (Please check all that apply)</b></p> <p>School zones</p> <p>Residential neighbourhoods</p> <p>Arterial roads</p> <p>Expressways</p> <p>Highway work zones</p> <p>Other (Please elaborate)</p> <p>_____</p> <p>Don't know</p>

B9	<p><b>What types of signs warn road users about ASE in Rwanda? (Please check all that apply)</b></p> <p>ASE permanent signs posted on major roads and borders  ASE permanent signs posted in advance of fixed speed cameras (i.e., non-intersection, permanent locations)  ASE temporary signs posted in advance of mobile cameras  No advance ASE signage  Fully marked ASE mobile vehicles  Unmarked ASE mobile vehicles  Speed limit signs  Other (Please elaborate) _____  Don't know</p>
B9a	<p><b>Please elaborate on this question- What is the rationale for using the strategies that are employed? What issues were considered in choosing the different types of signs?</b></p> <hr/> <hr/> <p><b>Are there certain strategies to warn of ASE locations that were once used, but are no longer used – if so, why? What are the advantages and disadvantages of each strategy used? What is the purpose of the types of strategies used? In your opinion, how effective are each of the different strategies used?</b></p>
B10	<p><b>Prior to an initial deployment of ASE on a specific roadway segment, does a traffic engineer conduct a study to determine if the speed limit is appropriately set?</b></p> <p>Yes  No  Don't know</p>
B10a	<p><b>Please elaborate on this question- If yes, how was this study done? which data were used for the study? Once the study produced recommendations, what are the next steps that much occur for speed limits to change?</b></p> <hr/> <hr/> <p><b>If no, why is there no study performed? Is some other kind of analysis done in alternative to evaluate speed limits?</b></p>
B11	<p><b>Prior to an initial deployment of ASE on a specific roadway segment, are other measures to reduce speed first considered? (e.g., speed humps, physical police presence, etc)</b></p> <p>Yes  No  Don't know</p>

B11a	<p><b>Please elaborate - If yes, what other measures are typically considered? How is the decision made for ASE or other measures?</b></p> <hr/> <p><b>What are the advantages and disadvantages to these other measures? What conditions impact whether or not these measures are used instead of ASE?</b></p>
B12	<p><b>Who owns the ASE camera equipment used by Rwanda?</b></p> <p>Police department  ASE vendor  the MININFRA  the RTDA  Other (Please elaborate) _____  Don't know</p>
B13	<p><b>Who maintains/repairs the ASE camera equipment used by Rwanda?</b></p> <p>Police department  ASE vendor  the MININFRA  the RTDA  Other (Please elaborate) _____  Don't know</p>
B14	<p><b>Who owns the ASE records and data in Rwanda?</b></p> <p>Police Department  ASE Vendor  the MININFRA  the MINICT  RISA  Other (Please elaborate) _____  Don't know</p>
B14a	<p><b>Please elaborate - how are ASE data analysed and interpreted, and who does this work? If this analysis is done outside Rwanda, what is the plan to transfer this process to Rwandan agencies?</b></p>
B15	<p><b>Regarding your ASE program, Are there courts that adjudicate ASE cases in Rwanda?</b></p> <p>Yes  No  Don't Know</p>

B15a	<p><b>If yes , how would you characterize the relationship between the agency that issues violations and the courts that adjudicate ASE cases?</b></p> <p>Excellent (e.g., work closely, communicate frequently)          Good (e.g., coordinate and communicate as needed)          Fair (e.g., some limited coordination and communication)          Poor (e.g., little or no communication or coordination)          Not Applicable (e.g., the courts are not involved in ASE so far)          Don't know</p>
B15b	<p><b>Please elaborate on this response - how is communication between the violation issuing agency and the courts? Do they work collaboratively in any way? Are there written statutes to determine when the courts become involved in contested ASE cases? When the courts do not adjudicate ASE cases do you know why not?</b></p> <hr/>
B16	<p><b>How are electronic ASE data managed? Please choose all that apply</b></p> <p>ASE data are encrypted from the capture point          ASE data are stored on secure networks          The networks with ASE data are all within Rwanda          ASE data are stored in the cloud          It is the responsibility of RISA or the MINICIT          Other _____          Don't know</p>
B17	<p><b>When Rwanda first implemented ASE, was an initial public sensitization campaign conducted?</b></p> <p>Yes          No          Don't know          IF NO OR DON'T KNOW SKIP TO QUESTION B20</p>
B17a	<p>Please elaborate on this response - What were the goals of the sensitization campaign? What was the content and who did it reach? How was the campaign received? Was it actually useful to its target audience?</p>
B18	<p><b>Which of the following elements were included in the initial public sensitization campaign? (Please check all that apply)</b></p> <p>Promote awareness of ASE program          Explain the dangers of speeding          Identify camera-enforced locations          Explain penalties for ASE violations          Other (please elaborate)          _____          Don't know</p>

B19	<p><b>Has the public information and education campaign continued since the initial implementation period?</b></p> <p>Yes No Don't know</p>
B19a	<p>Please elaborate on this response - if no, why was it not continued? if yes, has the campaign changed compared to the initial implementation period? how did it change if so? why did it change if so?</p>
B20	<p><b>What mechanisms does Rwanda use to inform the public about your ASE program? (Please check all that apply)</b></p> <p>Press conferences/interviews Press releases Video releases Agency website Social media Nothing Other _____ Don't know</p>
B20a	<p><b>Please elaborate- What are the considerations/rationale for selecting any particular mechanism? What is the effectiveness of the mechanism? How is it measured?</b></p>
B21	<p><b>Was implementation of ASE in Rwanda preceded by a publicized warning period before violations were issued?</b></p> <p>Yes No Don't know</p>
B21a	<p><b>If yes, What was the goal of the warning period? Was that goal realized? What content was part of this warning period? How long did it last?</b></p>
<p><b>Section C. Operations</b></p>	
C1	<p><b>Does Rwanda communicate the specific sites of ASE deployments in advance to the public?</b></p> <p>Yes No Don't know</p>
C1a	<p><b>Please elaborate- If yes, what is the communication mode? Is that mode effective in reaching its target audience? How is the effectiveness of this communication assessed?</b></p>



C2	<p><b>Does Rwanda communicate the specific daily schedule of ASE deployments in advance to the public?</b></p> <p>Yes No Not Applicable, there is no daily schedule for ASE deployment in Rwanda Don't know</p>
C2a	<p><b>Please elaborate- If yes, what is the communication mode? Is that mode effective in reaching its target audience? How is the effectiveness of this communication assessed?</b></p>
C3	<p><b>What is the enforcement speed threshold (i.e., lowest speed in kilometers per hour (kph) over a posted speed limit at which a violation is recorded) for ASE deployments on the following location types?</b></p>
C3a	<p>Please elaborate- which agency decided this enforcement threshold? how was the threshold selected? is this threshold value public information? If it's not public, why not?</p>
C4	<p><b>Who staffs your mobile ASE units, if used? (Please check all that apply)</b></p> <p>Police officers Other police civilian employees ASE vendor Other _____</p>
C4a	<p>Please elaborate- What training do those staffing mobile ASE receive? How is staffing chosen for this? Are there advantages or disadvantages to selecting this staffing?</p>
C5	<p><b>Does Rwanda use a checklist to ensure that mobile ASE equipment is being properly operated during each mobile ASE enforcement deployment?</b></p> <p>Yes (If yes, please attach a copy of the checklist) No Don't know</p>
C5a	<p><b>Please elaborate- Has the checklist been validated and if so, how? How was it developed? Who uses it?</b></p>
C6	<p><b>What are the typical days and hours of operation for your ASE mobile units, if used?</b></p> <p>Sunday_____</p> <p>Monday_____</p> <p>Tuesday_____</p> <p>Wednesday_____</p> <p>Thursday_____</p> <p>Friday_____</p> <p>Saturday_____</p> <p>Not applicable Don't know</p>

C7	<p><b>Who has primary oversight of Rwanda’s mobile ASE deployment schedule?</b></p> <p>Police department staff  ASE vendor  Not applicable, there is no deployment schedule  Other (please elaborate) _____  Don’t know</p>
C7a	<p><b>Please elaborate- Is this oversight effective? Advantages and disadvantages?</b></p>
C8	<p><b>Does the ASE equipment provide some type of immediate feedback to drivers indicating a violation has been recorded, for instance, through a camera flash, speed display board, or other means?</b></p> <p>Yes  No  Don’t know</p>
C8a	<p><b>Please elaborate- If yes, what is the feedback? Do you know if drivers notice it? Is it effective? What information is the feedback meant to provide exactly?</b></p>
C9	<p><b>Does Rwanda review ASE data and/or crash data to determine whether cameras should be shifted to other locations? (Please check all that apply)</b></p> <p>Yes, review speed data  Yes, review crash data  Yes, review number of violations  No  Don’t Know</p>
C9a	<p><b>Please elaborate- If yes, What is the process for shifting ASE to other locations? What are the goals of the shifting and how are they assessed? if these data are not assessed, why not?</b></p>
C10	<p><b>Which of the following applies if no ASE driver image is taken and the vehicle’s registered owner contests the violation notice? Check all that apply</b></p> <p>Certification of innocence required from the registered owner  Identification of the driver required from the registered owner  Evidence that the vehicle was not in the legal possession of the registered owner (i.e., stolen)  Other (Please elaborate) _____  Not applicable  Don’t Know</p>

C11	<p><b>Does Rwanda have one person in authority assigned to ensure all ASE activities are in compliance with laws and policies?</b></p> <p>Yes No Don't know</p> <p>If yes, please identify this person and provide contact information</p> <p>Name &amp; Title: _____</p> <p>Phone Number: _____</p> <p>E-mail address: _____</p>
<p><b>Section D. Violation Processing, Delivery and Adjudication</b> (Please attach a sample violation notice to this questionnaire. Thank you)</p>	
D1	<p><b>In Rwanda's ASE program, who is responsible for maintaining control and supervision of the violation processing staff? (Please provide contact information)</b></p> <p>Name &amp; Title: _____</p> <p>Phone Number: _____</p> <p>Email address: _____</p>
D2	<p><b>Are any ASE violation quality control procedures used in Rwanda? (Please check all that apply)</b></p> <p>All violations are reviewed and certified by at least two individuals Police department supervisors intermittently confirm violation validity of a random sample Other (please elaborate) _____</p> <p>None Don't know</p>
D2a	<p><b>Please elaborate- How was this process developed? What are the quality indicators? Is it effective? Advantages, disadvantages of this process?</b></p>
D3	<p><b>How does Rwanda check twice to assure an ASE violation should be issued? (Please check all that apply)</b></p> <p>Vehicle/registration plate matching Driver gender matching with registered vehicle owner Image quality standards Other (please elaborate) _____</p> <p>None Don't know</p>
D4	<p><b>Does Rwanda have a policy on the maximum time for sending ASE violations to the offender?</b></p>

D5	<p><b>Who makes the final decision if an ASE violation notice should be issued?</b></p> <p>Police officer  ASE vendor employee  Nobody, they are all issued  Don't know  Other _____</p>
D5a	<p><b>Please elaborate if possible- What were the considerations in this choice of decision maker? what are the advantages, disadvantages of this choice?</b></p>
D6	<p><b>Does your ASE program use personal service (i.e., a hand delivered notice to appear) as an option for ASE violations when there is no response to the SMS notice of a violation?</b></p> <p>Yes, the majority of SMS ASE violations not responded to by the alleged violator are followed up by personal service  Yes, selected SMS ASE violations not responded to by the alleged violator are followed up by personal service.  No, our ASE program does not involve personal service of ASE violations.  Yes and no, police have checkpoints on roads to scan license plates and check for unpaid violations  Other (please elaborate) _____  Don't know</p>
D6a	<p><b>Please elaborate- If yes, what is the rationale or goal? Who notify someone who didn't respond to original sms notification, and why?</b></p> <p>_____</p> <p>_____</p> <p>If no, why not?</p>
D7	<p><b>For contested violations involving mobile unit ASE violations who appears in court on behalf of the agency? (Please check all that apply)</b></p> <p>whomever staffed the mobile unit  Police officer who reviewed the ASE violation  Vendor employee who reviewed the ASE violation  Other (please elaborate) _____  Not applicable  Don't know</p>
D7a	<p><b>Please elaborate- What is the rationale, the advantages and disadvantages of this choice, does the choice depend on certain factors?</b></p> <p>_____</p> <p>_____</p> <p><b>Is it any different for fixed cameras? if so, how?</b></p>

D8	<p><b>When issuing violation notices to vehicles owned by a government agency or a business, does the ASE agency request identification of the person driving at the time of the violation?</b></p> <p>Yes No Don't know</p>
D8a	Please elaborate- If yes, why and If No, why not?
D9	<p><b>Are citizen complaints regarding your ASE program reviewed by anyone?</b></p> <p>Yes No Don't know</p>
D9a	Please elaborate- What concerns have arisen in the past? How do citizens express their concerns? How were they dealt with? What is the criterion for making a change?
D10	<p><b>Since inception, how many total ASE violations were sent to violators?</b></p> <p>_____</p> <p>(If you don't know, who do you think we should ask?)</p>
D11	<p><b>Of those ASE violations, how many paid them?_____ (if you don't know, who do you think we should ask?)</b></p>
D12	<p><b>Are different fines assessed based on the context of the ASE violations? (Magnitude of overspeeding, school zones, residential neighbourhoods, arterial roads, etc)</b></p> <p>yes no Don't know</p>
D12a	Please elaborate- If yes, What are the factors that affect the amount of a fine? What is the purpose of varying the amount of a fine?
D13	<p><b>How is the revenue generated from your ASE program split? (Please check all that apply, if you don't know who do you suggest might?)</b></p> <p>Police department – traffic safety fund _____%</p> <p>Police department – general fund _____%</p> <p>Local government _____%</p> <p>RSSB _____%</p> <p>National government _____%</p> <p>ASE vendor _____%</p> <p>Other (please elaborate) _____%</p> <p>Don't know</p>



D14	<p>Since the start of ASE in Rwanda, what approximate percentage of all speeding violations issued (including RADAR, LIDAR, air speed timing, vehicle pacing, and any other traditional enforcement methods) were ASE violations?</p> <p>1-20%</p> <p>21-40%</p> <p>41-60%</p> <p>61-80%</p> <p>81-100%</p> <p>Don't know</p>
D14a	<p>Please elaborate- what other enforcement methods are still used in Rwanda? Does ASE produce more or fewer violations than other methods?</p>

# Focus group discussion Guide

## Introduction Script

Thank you for coming in today. My name is [data collector 1], and this is [data collector 2]. We are trying to learn more about speed enforcement in Rwanda. The best way for us to do this is to talk to people who have experience with speed enforcement. In our discussion today, we will want to talk about your experiences and knowledge of speed enforcement implementation.

All information will be confidential and only the research team will have access to the information. When we present results, it will not have your name or organization, but rather everything will be presented in aggregate.

During our discussion, X will be taking notes and reminding me if I forget to say something. It will not be possible to write everything down, so we would like to record this discussion. Is it okay for us to record this discussion?

During our discussion, let everyone share their views. Only one person should speak at a time so the recording will be clear. Just join in when you have something to say - we will not be going around in order. However, we do want participation from everyone, so if we call on you, it is to hear your views. Remember we want to hear from all of you. It is okay to disagree with others if you have a different opinion but please also respect other people's views.

Also, everything you hear today should be confidential and not shared with anyone outside of this group. The discussion will last an hour or so. I have some topics to discuss, but if there's anything you would like to add, please feel free to do so.

## Interview Questions

- 1) Can each of you share your name, your role/organization, and your experience related to speed enforcement?

In the next section, we will discuss the design and planning process for automated speed enforcement cameras. I have some topics to cover, but please add any other information related to design or planning that you may have.

### Section 1: Design and Planning

- Design guidelines
  - 2) Were you aware of the existence of Automated Speed Enforcement (ASE) guidelines during the design of Rwanda's program? (Ref: A3)
    - 2A) If so which ones?
  - 3) What were the ASE guidelines that were used during its design and implementation?
    - 3A) prompt: institution of origin, country
- ASE advocate and legal review

- 4) Prior to implementing ASE in Rwanda, was a legal review or opinion provided by a person such as an attorney or judge to clarify ASE legal issues? (A6)
  - 4A) If yes, how was the ASE program legally reviewed?
  - 4B) By who? An attorney, judge, etc
- Road crashes reduction strategic plan in relation to the ASE Program
  - 5) Does Rwanda have a written strategic plan to reduce speeding violations and crashes?
    - 5A) If yes: how does ASE fit into the plan? (A7&A7a)
  - 6) How does the ASE program fit into the written strategic plan to reduce speeding violations and crashes?
- ASE partnership
  - 7) How did Rwanda find partners/stakeholders and negotiated deals with suppliers?
- Government authorization
  - 8) What governmental authorizations were involved with ASE implementation?

In the next section, we have a few questions about how automated speed cameras are implemented.

## Section 2: Implementation

- ASE location decision making
  - 9) What governs the location of mobile speed cameras? (From intro question)
- ASE Ownership & maintenance
  - 10) Who owns and maintains the ASE camera equipment used in Rwanda? (B13&B14)
- ASE Legal part
- 11) What happens if a violation is contested?
  - 11A) If yes, is there a legal system in place should it be necessary?
  - 11B) Are there courts that adjudicate ASE cases in Rwanda? (B15b)
- ASE Data management
  - 12) How are electronic ASE data managed? (b16)
    - 12A) Prompt: stored in the cloud, stored on secure networks, stored elsewhere

In the next section, we have a few questions on the operations of ASE.

## Section 3: Operations

- ASE Operation process

- 13) What is the process of reviewing camera/crash data?
  - 13A) Prompt: Does this determine whether cameras should be shifted to other locations? (C9)
  - 13B) What else might happen after reviewing data?
- 14) What is the process for shifting ASE to other locations or making changes to the program?

In the next section, we have a few questions about how violations are processed. Please provide any other information you may have.

#### Section 4: Violation Processing, Delivery and Adjudication

- Quality control
  - 15) What are the ASE violation quality control procedures used in Rwanda? (D2)
- Management of ASE revenues (ASE Violation fines)
  - 16) Tell me about the ASE violation revenue (fines) management?
  - 17) How is the revenue generated from your ASE program split? (D13)

In the next section, we want for you all to describe the ASE program overall - what went well, what could be improved, and such. We will ask some specific questions, but please feel free to share your views to help improve the program in Rwanda and for other countries that want to implement similar programs.

#### Section 5: Other questions (i.e., what went well, what would you recommend, speed governors)?

- 18) What went well in the ASE design and implementation process?
- 19) What did not go well in the ASE design and implementation process?
- 20) Were you overall satisfied with the design and implementation process of ASE in Rwanda?
- 21) Has ASE been evaluated in any way?
  - 21A) Prompts: changes in crashes or citations issued
- 22) What do you think has been the impact of introducing ASE cameras?
  - 22A) prompts: changes in crashes, injuries, deaths

We are now at the end of the discussion. Lastly, we would like to know,

- 23) What recommendations would you have for a country that wants to implement a ASE program?
- 24) Are there any other things you would like to share before we finish our discussion

## Interview evaluation form and results

Interview evaluation form are to be completed by the interviewer to rank the interviewee overall interview answers and interview performance to assess if the interview went as planned to meet objective of research. Under each heading, the interviewer should give the numerical rating and write specific job related comments in space provided comments can come from the interviewee too. The numerical rating system is based on the scale below.

Evaluation will give positive result if the total average is above 3 and none of the rating was below 3.

Scale:	5 – very good	4 – good	3 – Average	2 – bad	1 – very bad			
				Rating				
				5	4	3	2	1
Clarity of questions: Were the questions clear to the interviewee, or the interviewer had to explain/elaborate more for them to understand Comments:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recurrence of questions – How often the questions come back in the interview? Comments:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevance of questions: were questions relevant to the interviewee (some questions should be asked someone else in different institution). Comments:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verbal Communication – was the vocabulary used in questionnaire understandable/ was vocabulary interviewee used understandable. Comments:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions format– Was question formatted in easy way to be answered, or it required to answer in not specified way on questionnaire. Comments:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Interview evaluation findings

### Interview evaluation quantitative findings

Participant	Clarity of questions	Recurrence of questions	Relevance of questions	Verbal communication	Format of questions
Participant 1	4	4	4	5	5
Participant 2	4	4	3	5	4
Participant 3	4	5	4	4	5
Participant 4	3	4	4	4	4
Participant 5	4	4	3	3	2
Participant 6	4	4	4	4	4
Participant 7	4	4	4	3	4

Scoring system is as follows: 1- very bad; 2 – bad; 3 – average; 4 - good; 5 -very good.

Seven interview evaluation forms were completed for the key informant interviews. Quantitative results are presented in *Table 1*. Most participants had good (score=4) evaluation responses for each domain. When prompted for specific comments, positive feedback included that the questions were clear, and explanations were not required. Negative feedback included that some of the questions were not relevant for all participants or not able to be answered (i.e., only relevant for the National Police), and that there was repetition of questions. One participant recommended shortening the interview time.

# Road safety and traffic control legislation in Rwanda

[Presidential Decree n° 85/01 of 02/09/2002 regulating General Traffic Police and Road Traffic](#) (this includes extensive detail about all aspects of driving licensure, road use rules, vehicle standards and more)

## Part 7. NATIONAL ROAD SECURITY COMMITTEE

### Chapter 1. COMPOSITION

**Article 145:** A National Road Security Committee here-after called Committee, in short NRSC, is composed as follows:

- The Director of Transports in the Ministry having Transports in its remit: Chairman,
- The Traffic Police Commander: Vice-Chairman;
- The Director of the Roads and Highways Department in the Ministry having Public Works in its remit: member;
- Chief of Division having Road Safety in the Ministry having Transports in its remit as Secretary.

**Article 146:** The Committee may call, for consultation, any person from the public or private sector, whose presence is found useful.

**Article 147:** The Committee has in its remit those functions specified in Article 6 of Law N°34/1987 of September 1987 relating to Traffic Police and Road Traffic

### Chapter 2. FUNCTIONING

**Article 148:** The Committee meets every four months and after receipt of a notice to attend sent by the Chairman. an extraordinary meeting can be held on need arises. The Committee's decisions are taken by simple majority of votes, the Chairman's being predominant. In case of absence or impediment, the Chairman is replaced by the Vice- Chairman.

**Article 149:** The Committee meets and deliberates validly only when 2/3 of its members at least are present. The Committee makes its internal rules for issues related to notices to attend meetings, to the agenda for meetings, to the organisation of sessions, to debates and to votes. These internal rules are subject to the approval of the Minister having Transports in his remit.

**Article 150:** The Committee can set up the committees of Province, City and District which will ease its mission.

[N° 25/01 of 25/02/2015 - Presidential Order modifying and complementing Presidential Decree n° 85/01 of 02/09/2002 regulating general traffic police and road traffic](#)

#### **Article 4: Composition of the Consultative National Road Safety Committee**

Article 145 of the Presidential Decree n° 85/01 of 02/09/2002 regulating General Traffic Police and Road Traffic is modified and complemented as follows:

“A Consultative National Road Safety Committee hereinafter called Committee, shall be composed as follows:

- 1 - the Commissioner in Charge of **Traffic Police**: Chairman;
- 2 - the Director General of **Rwanda Transport Development Agency**: Vice-Chairman;
- 3 - Legal Officer in **Rwanda National Police**: Secretary;
- 4 - a representative of **Kigali City**: Member;
- 5 - a representative of **Transport Agency Forum**: member;
- 6 - the Director of transport Unit in the **Ministry in charge of Transport**: member;
- 7 - Director of Security Analysis in the **Ministry of Internal Affairs**: member”.

#### **Article 5: Authorities responsible for the implementation of this Order**

The Prime Minister, the Minister of Infrastructure, the Minister of Defense, the Minister of Foreign Affairs and Cooperation, the Minister of Local Government, the Minister of Internal Security and the Minister of Finance and Economic Planning are entrusted with the implementation of this Order.

[N° 01/2012/OL of 02/05/2012 Organic Law instituting the penal code](#) (this is the only specific mention of laws pertaining to road traffic violations like speeding, but Figure X further details penalties)


**Article 592: Punishment of road traffic offences** - Subject to severe penalties under other Articles of this Organic Law, any person who violates road traffic regulations while driving shall be liable to a fine of ten thousand (10,000) to one hundred and fifty thousand (150, 000) Rwandan francs. If failure to respect road traffic regulations causes damage to infrastructures or any other property, the offender shall also be liable to compensation of the damaged property.

[N° 63/01 of 30/12/2008 - Presidential Order modifying and complementing Presidential Decree N° 85/01 of 02/09/2002 regulating general traffic police and road traffic](#) - this update is concerned with the requirements for licensure of drivers in Rwanda to provide greater detail and clarity to previously elaborated rules.

[Law N° 34/1987 of September 1987 relating to Traffic Police and Road Traffic](#) is frequently referenced but mostly in that future legislation elaborated updates to these laws, it was not possible to find the text of this.

# Data Collection: Police crash investigation report form used from 2010-2022

## RNP crash investigation report form

Authority (digital stamp) Investigating officer name, rank/Reg. No. Crash time (Timestamp) DD MM YY		 <b>THE REPUBLIC OF RWANDA</b> <b>RWANDA NATIONAL POLICE</b> TRAFFIC SAFETY DEPARTMENT TRAFFIC CRASH REPORT		Case # Case description Date Driver name, rank/Reg. No.
Number of vehicles involved in the crash Station name & address: Traffic control type Multiple vehicle crash type (tick) Single vehicle crash type (tick) Weather (tick) Light (tick)	Head-on Angle Rear-end through Rear-end right turn Rear-end left turn Side-swipe-same direction Side-swipe-opposite direction Other unknown	Fixed object Train Animal Pedestrian Overturned Public cyclist Lost control Stalled off Mechanical failure Other unknown	Clear Clouds Fog/mist Rain Severe wind hailstorm excessive sun other/unknown	Daylight Dawn Dusk Dark-lighted Dark-unknown Other/unknown
Number of lanes (both directions) Speed limit (km/h) Speed limit posted? (tick)	Road surface condition (tick) Asphalt Earth road Dry Wet Other Gully (s)	Crash location (tick) Intersection Straight segment Horizontal/vertical curve	Location description (text) GPS coordinates	
Probable crash cause(s) Vehicle types (tick) Crash severity (tick)	Car/Minivan Motorcycle Light Lorry Heavy Lorry Truck Trailer Other	Car/Minivan Motorcycle Light Lorry Heavy Lorry Truck Trailer Other	Crash location District Sector Cell Village Road/river name Kilometres from intersection/kilometre post/landmark of curve or segment	
Multiple vehicle crash details Vehicle 1 Driver's name Sex Age Driver's license No. category License first issue date(MMYY) License expiry date(MMYY) Direction of travel prior to crash (L, R, J, S, left-turn, right-turn, through along a road) Vehicle ownership (tick)	Vehicle 2 Driver's name Sex Age Driver's license No. category License first issue date(MMYY) License expiry date(MMYY) Direction of travel prior to crash (L, R, J, S, left-turn, right-turn, through along a road) Vehicle ownership (tick)	Extent of vehicle damage (tick) Vehicle 1 Vehicle 2 Insurance company name Insurance company name Expiry date Expiry date REACTION TIME Time of receipt of information:	No of passenger killed No of passenger injured No of pedestrian killed No of pedestrian injured Driver killed in vehicle Driver injured in vehicle	

<input type="checkbox"/> Prison <input type="checkbox"/> Provisionally Reg(T)	<input type="checkbox"/> Other <input type="checkbox"/> Provisionally Reg(T)	Time of arrival at scene: General remarks by investigating officer (human activity, road environment, landscape)																																																						
Driver condition (tick) Normal Under influence (drug/alcohol) Distracted (mobile/ cell phone/other)	Driver condition (tick) Normal Under influence (drug/alcohol) Distracted (mobile/ cell phone/other)	Vehicle's Reg. No/model/make Vehicle's Reg. No/model/make																																																						
Number of crash involvements (text) Driver 1 Vehicle 1	Number of crash involvements (text) Driver 2 Vehicle 2																																																							
Victims <table border="1"> <thead> <tr> <th>S/N</th> <th>Names</th> <th>Age</th> <th>Gender</th> <th>Vehicle reg. no.</th> <th>killed</th> <th>Seriously injured</th> <th>Lightly injured</th> <th>Driver/Passenger/Pedestrian</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>			S/N	Names	Age	Gender	Vehicle reg. no.	killed	Seriously injured	Lightly injured	Driver/Passenger/Pedestrian	1									2									3									4									5								
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## Description and effective dates of other road safety policies implemented in Rwanda

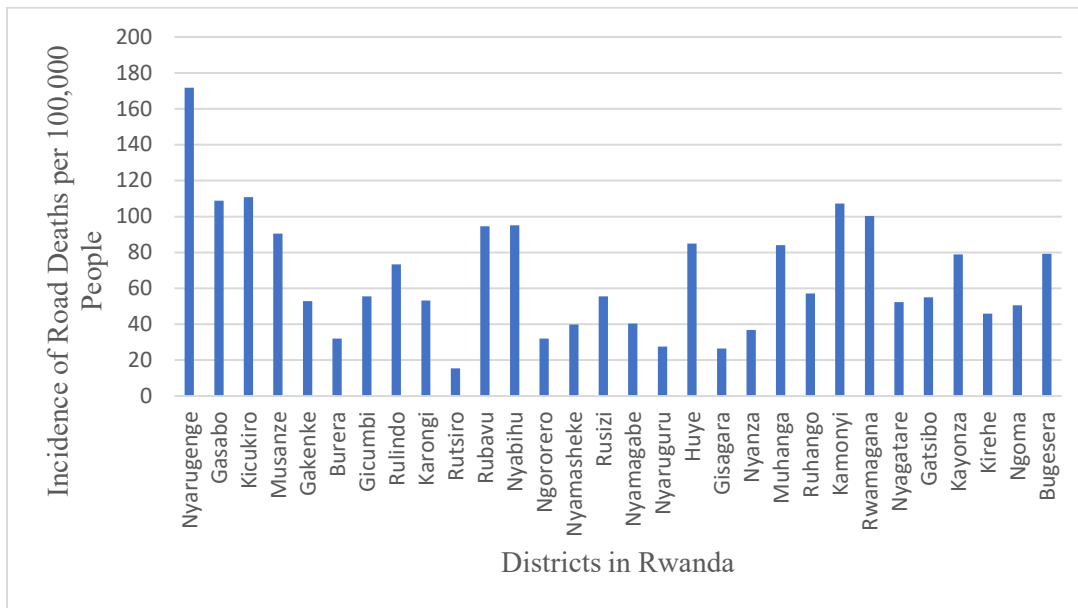
Road Safety Policy	Description	Citation
Gerayo Amahoro Campaign	<p>Gerayo Amahoro, which loosely translates to "arrive safely" in English, is a Rwandan road safety campaign that was supposed to span a 52-week period and was launched on May 13, 2019 ([PHOTOS]: Road Safety: RNP Launches 'Gerayo Amahoro' Campaign, 2019). The Rwandan National Police, in partnership with the Ministry of Infrastructure, the Rwanda Utilities Regulatory Authority, private transport agencies, and Healthy People Rwanda, among others, initiated the campaign with the aim of educating road users on safety and precautionary measures to avoid and reduce the number of crashes caused by ignorance (Marie Grace &amp; Major, 2019). To spread the message, the campaign was promoted through a variety of channels, such as social media, audio and video advertisements, religious communities, and outdoor advertisements in schools and other public places. Unfortunately, Gerayo Amahoro ended abruptly in its 39th week due to the outbreak of COVID-19 in the country. After the success of the initial campaign, the Rwandan National Police launched phase 2 on December 8, 2022 (Gerayo Amahoro Road Safety Campaign Resumes, 2022).</p>	<p><a href="https://www.newtimes.co.rw/article/166483/News/road-safety-police-launch-new-campaign">Marie Grace, &amp; Major. (2019, May 13). Road safety: Police launch new campaign. The New Times. Retrieved February 3, 2023, from https://www.newtimes.co.rw/article/166483/News/road-safety-police-launch-new-campaign</a></p> <p><a href="https://www.police.gov.rw/media-archives/news-detail/news/photos-road-safety-rnp-launches-gerayo-amahoro-campaign/?tx_news_pi1%5Bcontroller%5D=News&amp;tx_news_pi1%5Baction%5D=detail&amp;cHash=75d6cc6cb28f999bc610ef892ceb68c8">https://www.police.gov.rw/media-archives/news-detail/news/photos-road-safety-rnp-launches-gerayo-amahoro-campaign/?tx_news_pi1%5Bcontroller%5D=News&amp;tx_news_pi1%5Baction%5D=detail&amp;cHash=75d6cc6cb28f999bc610ef892ceb68c8</a></p> <p><a href="https://www.police.gov.rw/media-archives/news-detail/news/gerayo-amahoro-road-safety-campaign-resumes/">Gerayo Amahoro road safety campaign resumes. (2022, December 8). Gerayo Amahoro Road Safety Campaign Resumes. Retrieved February 3, 2023, from https://www.police.gov.rw/media-archives/news-detail/news/gerayo-amahoro-road-safety-campaign-resumes/</a></p>
Traffic week	<p>Road safety campaigns were conducted codenamed traffic week April 2014 and Traffic Month in Aug-Sept, 2014, which contributed to significant road crash reduction.</p>	<p><a href="https://www.police.gov.rw/uploads/tx_download/ENG_MAG_1.pdf">https://www.police.gov.rw/uploads/tx_download/ENG_MAG_1.pdf</a></p>

<p>Launches new unmarked patrol vehicles</p>	<p>The Rwanda National Police has launched a new initiative to better control traffic flow and prevent crashes. The initiative involves unmarked police cars equipped with overhead removable traffic lights that are dispatched across the country with plain clothed police officers. The aim is to spot and penalize drivers who are not following road safety standards, as well as encourage people to take responsibility for their own safety. According to a report by the traffic department, public transport vehicles are the most involved in crashes, with 91 deaths and 408 RTIs since July last year. The initiative is part of the RNP's effort to make roads safer for everyone to reduce the number of road deaths in the country</p>	<p><a href="https://www.police.gov.rw/uploads/tx_download/POLICE_MAGAZINE_No_15.pdf">https://www.police.gov.rw/uploads/tx_download/POLICE_MAGAZINE_No_15.pdf</a></p> <p><a href="https://twitter.com/Rwandapolice/status/769436491709837312">https://twitter.com/Rwandapolice/status/769436491709837312</a></p>
<p>Breathalyzer use in Rwanda</p>	<p>Police say that in addition to the alcohol test, several other measures to reduce the crashes were put in place, such as; car-speed limits, helmets and new tougher penalties for drunk driving. However, the number of crashes has remained high due to drunk driving, the police insist.</p>	<p><a href="https://www.newtimes.co.rw/article/34983/breathalyzer-use-in-rwanda">https://www.newtimes.co.rw/article/34983/breathalyzer-use-in-rwanda</a></p>
<p>Speed governor</p>	<p>"Though the deadline to install the devices was February 2016, figures from RNP indicate that only 37 per cent of the public transport buses have installed the speed limit devices, according to the regulator." as of April 2017.</p> <p>"The Traffic and Road Safety Department has launched an operation to impound public service vehicles operating without speed governor devices. On the first day of the operation on Thursday, about 50 commuter vehicles whose owners are yet to heed the compulsory policy, were impounded in the City of Kigali." as of March 2019.</p>	<p><a href="https://www.newtimes.co.rw/article/139504/News/public-transporters-commit-to-fast-track-installation-of-speed-governors">https://www.newtimes.co.rw/article/139504/News/public-transporters-commit-to-fast-track-installation-of-speed-governors</a></p> <p><a href="https://police.gov.rw/media/news-detail/news/police-reinforces-compulsory-speed-governor-policy/">https://police.gov.rw/media/news-detail/news/police-reinforces-compulsory-speed-governor-policy/</a></p>

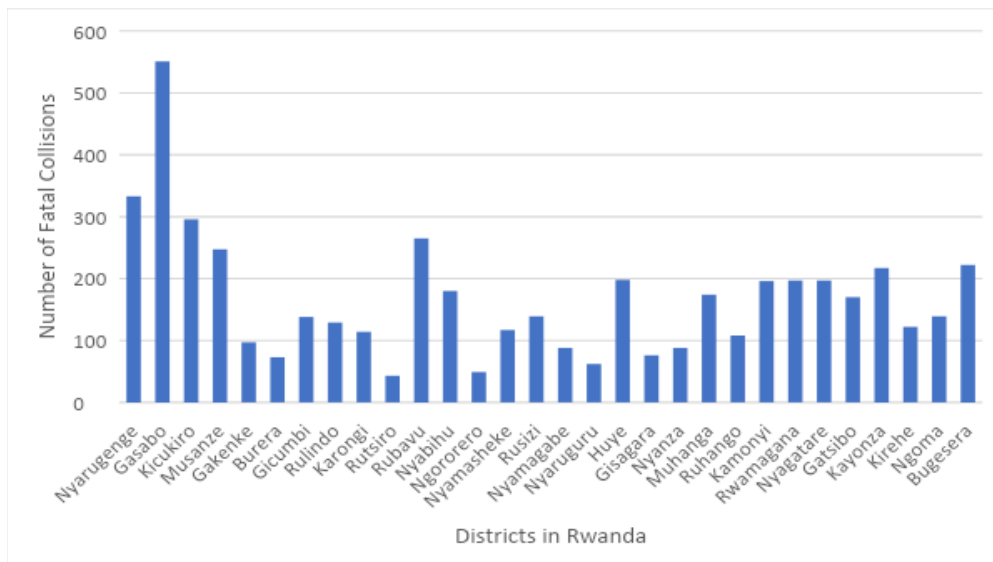
## Descriptive analysis: Analysis of crashes per district

This study will descriptively present information annually, seasonally, and monthly on crashes resulting in serious injuries, and deaths from 2010-2022. Also, the distribution of these crashes will be presented for all districts of Rwanda. The city of Kigali including the Nyarugenge, Gasabo, and Kicukiro districts had the largest number of all types of crashes from 2010 to 2022, e.g., an incidence of 123.71 road deaths (total of 1,666) per 100,000 people. After that, deaths in the Eastern (including Rwamagana, Nyagatare, Gatsibo, Kayonza, Kirehe, Ngoma, and Bugesera) district with an incidence of 64.46 (total of 1,974) is in the second rank.

Incidence of road deaths per 100,000 people in Rwanda, 2010-2022

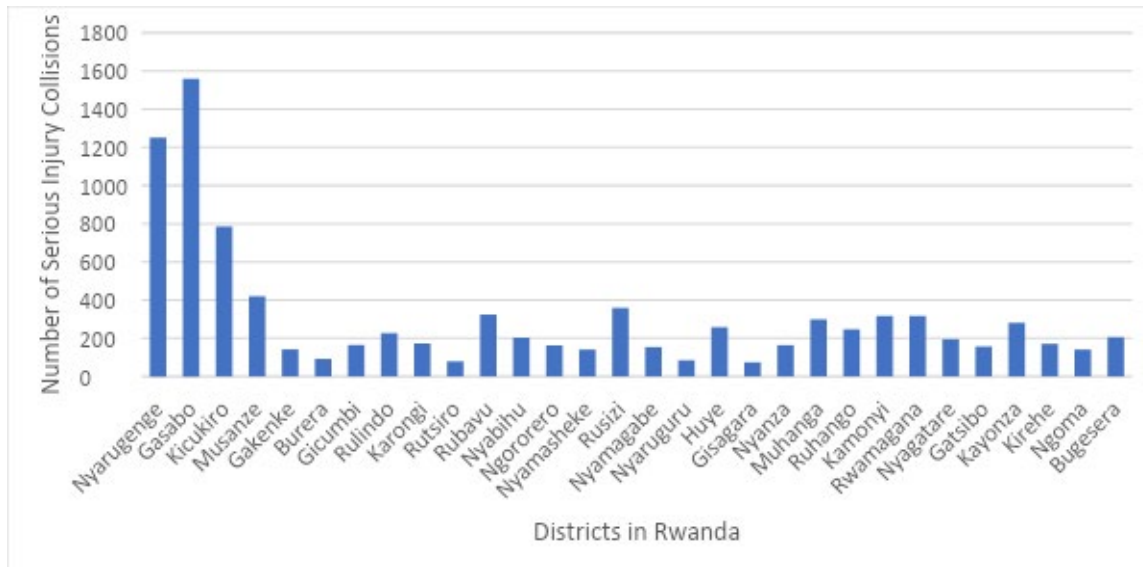


Number of total road death crashes in Rwanda, 2015-2022





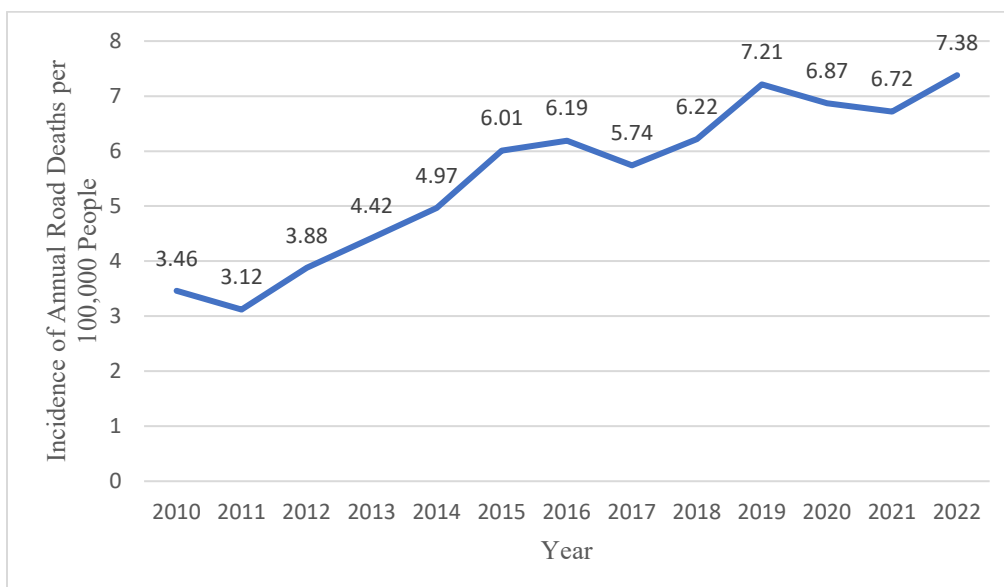
### Number of serious injury crashes in Rwanda, 2010-2022



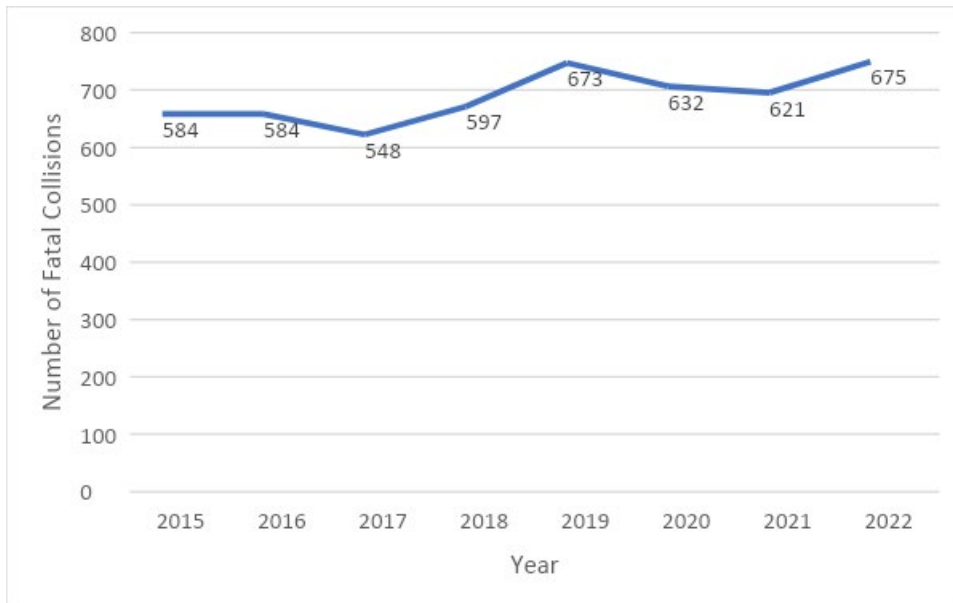
### Analysis of crashes per year

Incidence of road deaths per 100,000 people, and fatal and serious injury crashes were analysed annually from 2010 to 2022 in Figures B.4-B.6. A total of 7,835 road deaths occurred between 2010 and 2022 in Rwanda, equating to 67.42 deaths per 100,000 people. The incidence of death per 100,000 people decreased from 3.46 in 2010 to 3.12 in 2011, but then sharply increased to 6.19 in 2016. Thereafter, the incidence fluctuated at lower levels until it ultimately reached 7.38 deaths in 2022. This trend is the same for the number of death crashes from January 2015 to the end of 2022. There was a total of 9,150 serious injury crashes in Rwanda. A reduction from 1,265 to 114 serious injury crashes happens from 2010 to 2022 with a fluctuation, especially for the last five years of the studied period.

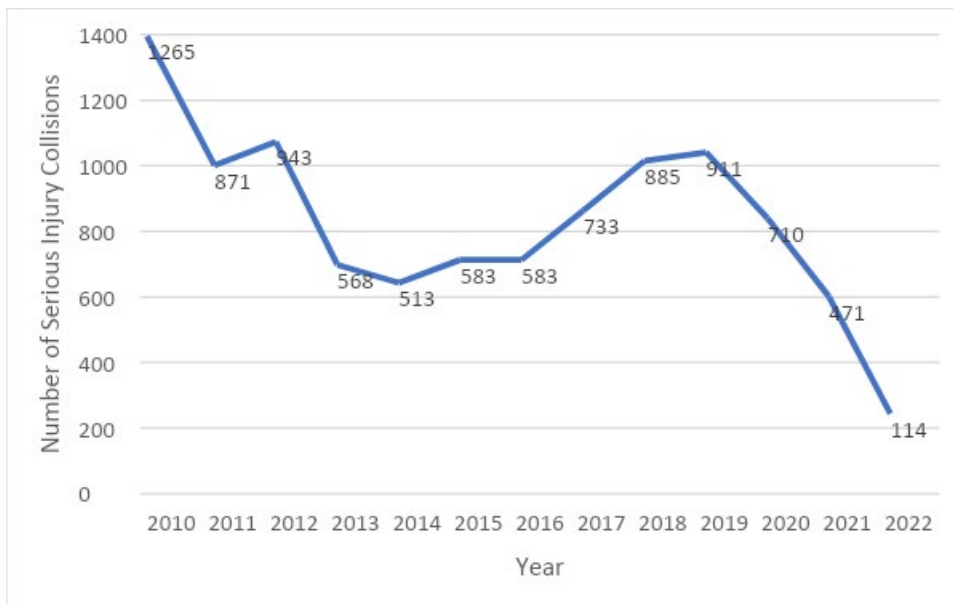
### Incidence of annual road deaths per 100,000 people in Rwanda, 2010-2022



### Number of annual road death crashes in Rwanda, 2015-2022



### Number of annual serious injury crashes in Rwanda, 2010-2022

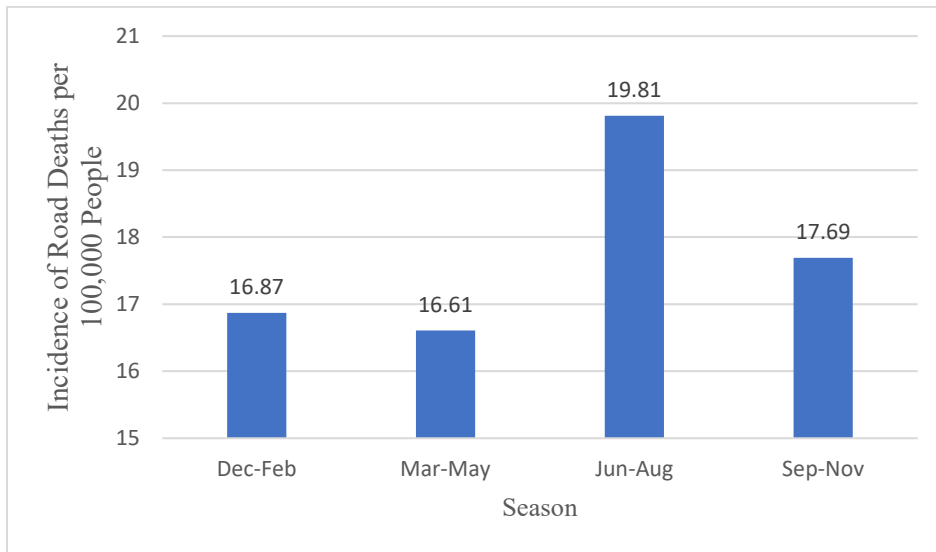


### Analysis of crashes per season:

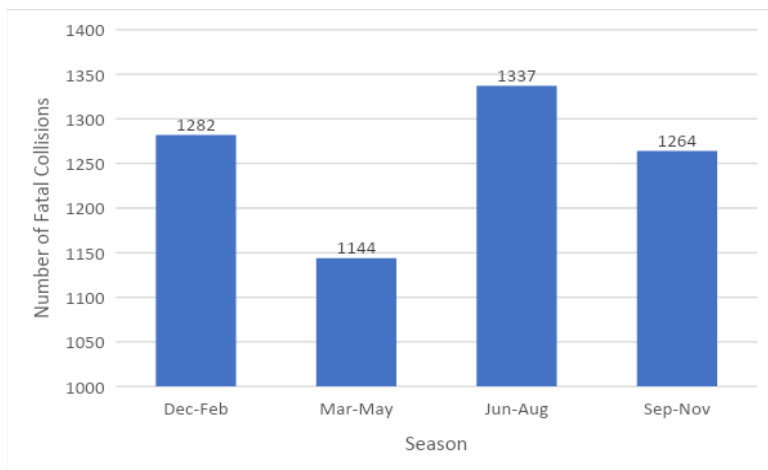
Incidence of road deaths per 100,000 people, and crashes resulting in death and serious injury, by season from 2010 to 2022 in Figure B.7-B.9. There are four climactic seasons represent the long rainy season: March to May, and short rainy season: September to November. These seasons alternate with the long dry season: June to August, and short dry season: December to February. These figures show that the highest frequency of all types of crashes (e.g., 28% of incidence of deaths) happened between June and August. This can be due to a larger number of people traveling for vacations during this long dry season.



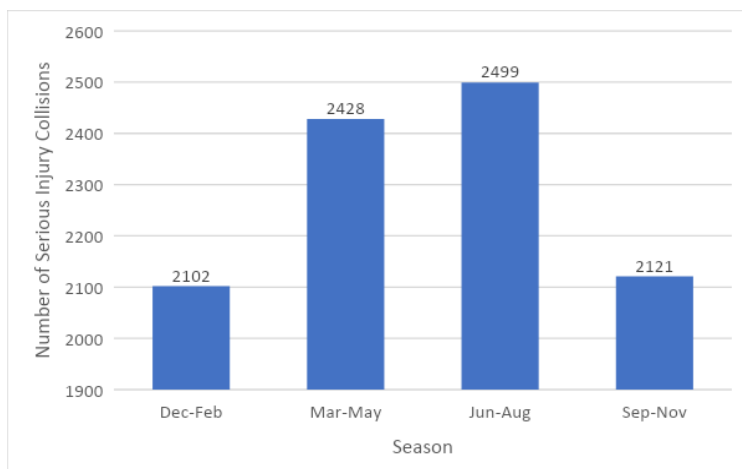
### Incidence of road deaths per 100,000 people by season in Rwanda, 2010-2022



### Number of road death crashes by season in Rwanda, 2015-2022



### Number of serious injury crashes by season in Rwanda, 2010-2022



## Complete List of Randomly Selected Villages and Classifications

Province	District	Sector	Cell	Village	Classification
City of Kigali	Nyarugenge	Gitega	Akahizi	Gihanga	Urban
City of Kigali	Nyarugenge	Kimisagara	Kimisagara	Inkurunziza	Urban
City of Kigali	Nyarugenge	Mageregere	Nyarufunzo	Nyarufunzo	Rural
City of Kigali	Nyarugenge	Nyamirambo	Cyivugiza	Muhoza	Urban
City of Kigali	Gasabo	Gisozi	Musezero	Amajyambere	Urban
City of Kigali	Gasabo	Jali	Nyabuliba	Nyaburira	Rural
City of Kigali	Gasabo	Kimihurura	Kamukina	Isano	Urban
City of Kigali	Gasabo	Kinyinya	Kagugu	Kabuhunde I	Urban
City of Kigali	Gasabo	Remera	Nyarutarama	Kangondo I	Urban
City of Kigali	Kicukiro	Gahanga	Kagasa	Nyacyonga	Urban
City of Kigali	Kicukiro	Gahanga	Murinja	Runyoni	Rural
City of Kigali	Kicukiro	Gikondo	Kinunga	Ruganwa li	Urban
City of Kigali	Kicukiro	Kicukiro	Kicukiro	Ubumwe	Urban
City of Kigali	Kicukiro	Niboye	Gatare	Byimana	Urban
Southern Province	Nyamagabe	Buruhukiro	Byimana	Rukeri	Rural
Southern Province	Nyamagabe	Gasaka	Ngiryi	Munyege	Urban
Southern Province	Nyamagabe	Kamegeri	Rususa	Baro	Rural
Southern Province	Nyamagabe	Musange	Masagara	Nyagihima	Rural
Southern Province	Muhanga	Cyeza	Makera	Binunga	Urban
Southern Province	Muhanga	Kiyumba	Rukeri	Kabuga	Rural
Southern Province	Muhanga	Nyamabuye	Gitarama	Gatika	Urban
Southern Province	Muhanga	Rugendabari	Gasave	Nyakibuye	Rural
Western Province	Rubavu	Cyanzarwe	Busigari	Bisizi	Rural
Western Province	Rubavu	Gisenyi	Bugoyi	Amataba	Urban

Province	District	Sector	Cell	Village	Classification
Western Province	Rubavu	Kanama	Mahoko	Kara	Urban
Western Province	Rubavu	Nyamyumba	Kinigi	Burevu	Rural
Western Province	Rubavu	Rubavu	Gikombe	Bambiro	Urban
Western Province	Ngororero	KABAYA	Kabaya	Rurembo	Urban
Western Province	Ngororero	KAGEYO	Kageshi	Mukaka	Rural
Western Province	Ngororero	MUHORORO	Mubuga	Murambi	Rural
Western Province	Ngororero	SOVU	Musenyi	Gisiza	Rural
Western Province	Rusizi	Bugarama	Pera	Mwaro	Urban
Western Province	Rusizi	Gikundamvura	Kizura	Gitambi	Rural
Western Province	Rusizi	Muganza	Gakoni	Gatabuvuga	Urban
Western Province	Rusizi	Nkombo	Bigoga	Rebero	Rural
Western Province	Rusizi	Rwimbogo	Mushaka	Gakombe	Rural
Nothern province	Musanze	Gashaki	Kivumu	Nyakariba	Rural
Nothern province	Musanze	Muhoza	Cyabararika	Yorodani	Urban
Nothern province	Musanze	Nyange	Kabeza	Kibingo	Urban
Nothern province	Musanze	Nyange	Kabeza	Nyarubuye	Rural
Nothern province	Gicumbi	Byumba	Nyarutarama	Mukeri	Urban
Nothern province	Gicumbi	Kageyo	Muhondo	Kamanyundo	Rural
Nothern province	Gicumbi	Nyamiyaga	Jamba	Rugarama	Rural
Nothern province	Gicumbi	Ruvune	Rebero	Rwaburegeya	Rural

Province	District	Sector	Cell	Village	Classification
Eastern province	Nyagatare	KATABAGEM U	Kaduha	Kanyinya	Rural
Eastern province	Nyagatare	MATIMBA	Matimba	Umudugudu Wa Iii	Urban
Eastern province	Nyagatare	MUSERI	Rugarama li	Umunini	Rural
Eastern province	Nyagatare	RUKOMO	Gashenyi	Nyamirambo	Urban
Eastern province	Nyagatare	TABAGWE	Nkoma	Ibare	Rural
Eastern province	Kirehe	Kigarama	Nyakerera	Rukiri	Rural
Eastern province	Kirehe	Kirehe	Nyabikor a	Rugero	Urban
Eastern province	Kirehe	Musaza	Kabuga	Kimeya	Rural
Eastern province	Kirehe	Nyarubuye	Mareba	Burembo	Rural
Eastern province	Ngoma	Kibungo	Gatonde	Nyagakizi	Rural
Eastern province	Ngoma	Rukira	Buliba	Gatare	Urban
Eastern province	Ngoma	Rukira	Buliba	Rugaragara	Rural
Eastern province	Ngoma	Zaza	Nyagatugu nda	Amahoro	Rural

# ASE National Survey Data Collection Form

## ASE IN RWANDA: PUBLIC PERCEPTION SURVEY QUESTIONNAIRE

Code	Question	Responses	Who is asked this question?
Q0	What is your age?	Number in years	All
Q1	Are you aware of speed cameras, or Sophia's? (Speed cameras are speed limit enforcement tools that detect the speed of vehicles by using detectors embedded into the road surface or radar technology)	1, Yes 2, No 3, Unsure	All
Q2	Are you aware of the Gerayo Amahoro Campaign? (Gerayo Amahoro was a Rwandan National road safety campaign that aimed to teach road users safeties and precautions they have to follow in order to avoid and reduce accidents caused by ignorance.)	1, Yes 2, No 3, Unsure	All eligible participants (IF Q2 = NO SKIP Q117)
Q3	What is your sex?	1, Male 2, Female 3, Prefer not to say	All eligible participants
Q4	Which option best describes your occupation?	1, Permanent paid work 2, Self employed 3, Casual worker 4, unemployed 5, Retired 6, Student	All eligible participants

Code	Question	Responses	Who is asked this question?
Q5	<p>Which sector do you work in?  Agriculture refers to food crops, livestock, forestry, and fishing.  Industry refers to mining/quarrying, electricity, water&amp; waste management, and construction, Services refers to maintenance and repair of vehicles, trade, transportation services, hotels/restaurants, information and communication, financial services, real estate, professional,/scientific and technical activities, administration, education, and other services.</p>	<p>1, Agriculture, Forestry, and Fishing,  2, Industry,  3, Services  4, Engineering  5, Transport  6, Health care  7, Business  8.Others (please specify)</p>	All eligible participants
Q6	<p>What is your highest level of education that you have COMPLETED?</p>	<p>1-None  2-Primary  3-Secondary  4-Ordinary Level  5-Secondary Advanced  6-Vocational  7-University  8-Masters or higher</p>	All eligible participants
Q7	<p>What is your household's average net monthly income?  Please consider all money from all sources, including salary, loans, gifts, and others.</p>	Number	All eligible participants
Q8	<p>What amount of money does your household spend in an average month? Please consider money from all sources (salary, loans, gifts, etc)? This includes any items/services you buy (food, beer, cash power) or give it to somebody else.</p>	Number	All eligible participants

Code	Question	Responses	Who is asked this question?
Q9	Which option best describes the status of your personal access to a mobile phone?	1, I have no access to a phone 2, I have a my own simple phone 3, I have my own smart phone 4, I share a simple phone with others 5, I share a smart phone with others (The term 'smart phones' refer to phones that can use data or wifi to access android/apple applications.)	All eligible participants
Q10	Have you or anyone else in your household ever driven a vehicle or a motorcycle?	1, Yes I have driven a vehicle 2, Yes I have driven a moto 3, Yes I have driven both, 4, Yes someone has driven a vehicle, 5, yes someone has driven a moto, 6, yes someone has driven both 7. No	All eligible participants
Q11	Do you or someone else in your household OWN a vehicle or motorcycle?	1, Yes I do 2, Yes someone else does 3, Yes, both myself and others do 4, No	All eligible participants(I F NO skip Q12,Q13, Q14)
Q12	Do you or someone else in your household RENT a vehicle or motorcycle?	1, Yes I do 2, Yes someone else does 3, Yes, both myself and others do 4, No	All eligible participants(I f NO skip Q13)
Q13	How many days in a month do you RENT a vehicle?	Number	All which say yes to vehicle_rent
Q14	What kind of vehicles do you or your household OWN or RENT from these choices? (choose all that apply)	1, 2- wheel motorcycle, 2, 3- wheel motorcycle (tricycle) 3, light weight car 4, heavy weight car 6, truck/trailer, 7, bus	All which say yes to vehicle_ownership and vehicle_rent
Q15	Do you or anyone in your household have a driving license?	1, Yes I have a definitive driving License 2, I don't have a driving license but member of House hold have a driving license 3, no one in house hold have a driving license 4, Yes we all have driving license	All eligible participants(I F NO SKIP Q16)

Code	Question	Responses	Who is asked this question?
Q16	What type of driver's license do you have?	<p>1, Provisional driving license</p> <p>2, Category A and A1 driving License (Motorcycles and motor tricycles with or without side-car with A1 is for handicaped persons)</p> <p>3, Category B and B1 driving license (Vehicles of this category may be coupled a light trailer with one axle. B1 is for handicaped persons)</p> <p>4, Category C driving License ( Vehicles of this category can be coupled a lightrailer.)</p> <p>5, Category D and D1 driving License ( Automobile vehicles made for the transport of persons and having more than eight (8) seats but not exceeding thirty seats (30), in addition to the driver's seat. D1 is for handicaped persons)</p> <p>6, Category E driving license ( Line of vehicles the hauler of which is included in one of the categories B, C, D for which the driver is authorised and a trailer which has more than 750 kg authorised maximum weight.)</p> <p>7, Category F driving license (Special machines (agricultural tractors, bulldozers, wrecking cranes...))</p>	Those who respond yes to license
Q17	For how many years have you been driving?	Number	Yes to ever_driven
Q18	Have you driven in the past 30 days?	1, Yes 2, No	any response but no to ever_driven (IF NO SKIP Q19,Q20, Q54, Q56)



Code	Question	Responses	Who is asked this question?
Q19	On average, what best describes how often you have driven in the past 30 days?	1, Very often (5-7 days a week) 2, often (2-4 days a week), 3, sometimes (1 day per week); 4, rarely (once a month)	Those who say yes to recent_drive
Q20	What best describes why you have driven in the past 30 days?	1, for professional reasons (i.e., as a taxi or commercial driver) most of the time 2, for personal reasons (i.e., getting around for example to go work or market) most of the time 3, equally for both professional and personal purposes	those who say yes to recent_drive
Q21	What types of transport do you use? Please consider the following list and RANK them in the order you use most often. If you NEVER use a form of transport listed assign the value 99.	1, Walk/ wheelchair 2, Bicycle Driver 3, Bicycle Passenger 4, Car/truck Driver 5, Car/truck Passenger 6, Bus Driver 7, Bus Passenger 8, Moto Driver 9, Moto Passenger	All eligible participants
Q22	On average, how safe or dangerous do you believe that Rwandan roads are? Please choose on a scale of 1 to 10, with 1 meaning you think that Rwanda roads are very safe, and 10 meaning you think Rwandan roads are very dangerous.	1 to 10	All eligible participants
Q23	How often when using Rwandan roads are you scared you will be in a crash, injured or killed?	1, When i drive ( Scale from Everytime to never +Not applicable) 2, When Using Public Transport ( Scale from Everytime to never +Not applicable) 3, When using Motorcycle ( Scale from Everytime to never +Not applicable) 4, When walking ( Scale from Everytime to never +Not applicable))	All eligible participants

Code	Question	Responses	Who is asked this question?
Q24	Which factors do you believe increase the risk of being injured or killed on the roads most?	1, road user risk factors including people speeding, drink-driving, not wearing helmets, not wearing seatbelts, or being distracted, or having an arrogant attitude or different attitude based on car size, 2, road risk factors including the roads not having infrastructure for the safety of pedestrians, cyclists, and motorcyclists, 3, vehicle factors including cars not having impact protection, seat belts and anti-lock braking systems, 4, limited post-crash care including ambulances, or care at the scene	All eligible participants (IF Q24=2,3,4, SKIP Q25)
Q25	Please RANK the following list based on which factors you think INCREASE the risk of being injured or killed in a crash when using the roads most	For those that select road user risk factors: 1, speed 2, drink-driving, 3, motorcycle helmet use, 4, seat belt use, 5, child restraint use, 6, distracted driving, 7, drug-driving	Those that select road user for risk_factors
Q26	Have you or anyone in your household been in a crash? This means a collision with a vehicle or motorcycle, even if it only resulted in damage and no one was injured or died in the crash. This also includes if you were in the vehicle/moto or walking or cycling at the time	1, Yes I have, 2 Yes someone in my household has 3, Yes both I and someone in my house has 4, No we have not to my knowledge	All eligible participants
	What was results of the crush?	1, Not injured 2, Minor Injury 3, Severe Injury 4, Injury resulted into death (Fatal injury) 5, Death at the scene Don't know	

Code	Question	Responses	Who is asked this question?
Q27	What month and year did your most serious crash happen?	Months 1-12, Years 1950-2022	1 or 3 to experience
Q28	What were you doing when the accident occurred?	1, I was driving a car/truck/bus 2, I was driving a moto 3, I was riding a bicycle 4, I was a passenger in a car/truck/bus 5, I was a passenger on a moto 6, I was on a bicycle as a passenger 7, I was a pedestrian struck	1 or 3 response to experience
Q29	Did you sustain any injuries from your crash?	1, Yes, 2, No	1 or 3 response to experience
Q37	Where/how did you learn about ASE in Rwanda (select all)	1, radio, 2, television, 3, online/website, 4, printed publication or billboard, 5, social media, 6, on the road, 7, school, 8, police informed me, 9, a training, 10, word of mouth, 11, none of the above	All eligible participants
Q38	Which of the following, if any, make you think that there might be a speed camera ahead(select all)?	1, speed limit sign 2, permanent camera sign, 3, temporary camera sign, 4, a police man or woman 5, there are no indications of where there is a camera, 6,Informed by peer driver signal 7, I don't know	All ASE eligible participants
Q39	Have you seen a warning sign before reaching the speed camera?	1, Yes 2, unsure 3, No	All ASE eligible participants

Code	Question	Responses	Who is asked this question?
Q40	Where are cameras installed (select all)?	1, City Paved roads 2, Rural Paved roads 3, Neighborhood paved roads 4, Feeder Roads 5, School zones 5, I dont know	All ASE eligible participants
Q 41	What type of cameras have you seen/ heard that are available in Rwanda (select all)?	1, fixed camera [ speed cameras that are fixed to a specific location] 2, semi-fixed cameras [Speed cameras that are installed to a specific location for some days] 3, mobile camera [ Speed cameras that are set to a specific locatio for some hours] 4, enforcement fine camera [ Cameras that are set to a specific place or on the moving police car that are for checking cars with unpaid citation] 5, RLC (Red Light Camera) [ system/ cameras that detects and captures images of automobiles entering an intersection after the traffic signal controlling the intersection has turned red.] 6. Others (Please specify) 7, I don't know	All ASE eligible participants
	What do you think cameras are monitoring or checking (select all)?	1, driving over the speed limit 2, running red lights, 3, driving with unpaid violations 4, driving and not wearing a seatbelt, 5, speaking on the phone when driving, 6, driving without a license, 7, driving with no insurance 8, Others(Please specify) 9, I don't know	All ASE eligible participants

Code	Question	Responses	Who is asked this question?
Q42	What type of cameras are available in your local area (select all)? When we say local area we mean 5 Km radius from your house or Sector.	1, fixed camera [ speed cameras that are fixed to a specific location] 2, semi-fixed cameras [Speed cameras that are installed to a specific location for some days] 3, mobile camera [ Speed cameras that are set to a specific locatio for some hours] 4, enforcement fine camera [ Cameras that are set to a specific place or on the moving police car that are for checking cars with unpaid citation] 5, RLC (Red Light Camera) [ system/ cameras that detects and captures images of automobiles entering an intersection after the traffic signal controlling the intersection has turned red.] 6, Others( Please specify) 7, I don't know	All ASE eligible participants
Q43	What type of vehicles are captured by cameras (select all)?	1, Moto cycle 2, light weight car 3, heavy weight cars, 4, Bus, 5, I don't know	All ASE eligible participants
	What Category of Vehicles that are not Captured by camera (select all)	1, Business Car 2, Private cars 3,Public transport cars 4, Government cars 5, Ambulance 6, Military cars 7, Police cars 8, Others (please Specify)	All ASE eligible Participants
Q44	How are drivers notified about speed limit violation? ( Select all that apply)	1, SMS, 2, phone call, 3, letter, 4,being stopped in the road by police 5,I don't know	All ASE eligible participants

Code	Question	Responses	Who is asked this question?
Q45	What direction of vehicles can be captured by a camera?	1, Vehicles approaching the camera 2, Vehicles that passed the camera 3, Both 4, I don't know	All ASE eligible participants
Q46	In order for an automated speed enforcement camera to issue a violation a vehicle must be within how many meters of that camera?	1, 5 meters, 2, 10 meters, 3, 50 meters, 4, 100 meters, 5, 150 meters, 6, 200 meters or above 7, I don't know.	All ASE eligible participants
Q47	Out of every 100 drivers in Rwanda, about how many are given a violation by a camera per month, on average?	Number	All ASE eligible participants
Q48	In your experience, are the cameras accurate in that they send a violation only when a vehicle is going faster than the speed limit posted in the area?	1) Yes always matches the speed limit 2) Yes most of the time matches 3) half the time they match 4) no most of the time they don't match 5) No the never match the speed limits 6, Don't know	All ASE eligible participants
Q49	Does violation fines differ per type of vehicle?	1, Yes 2, No 3, Unsure	All ASE eligible participants
Q50	What do you think the primary reason that Rwanda decided to implement ASE (select one)?	1, to improve road safety and reduce driving speed, 2, to make money through citations; 3, to reduce corruption and conflict between police and road users, 4, to make the jobs of police safer and easier; 5, to improve security with added surveillance; 6, i don't know	All eligible participants
Q51	In general, what do you think about the number of speed cameras that have so far been installed in Rwanda?	1, There are too few 2, There are few 3, There are too many 4, There are many 5, There are an ideal amount 4, I don't know	All eligible participants

Code	Question	Responses	Who is asked this question?
Q52	What do you think of the number of speed cameras installed in your local area today? When we say 'local area' we mean the 5 km around your house or your sector	1, There are too few 2, There are few 3, There are too many 4, There are many 5, There are an ideal amount 4, I don't know	All eligible participants
Q53	In your observation how many cameras are installed within your sector or those 5 km around your house?	Number	All eligible participants
Q54	Has a speed camera captured a photo of your vehicle or moto?	1, Yes, 2, No, 3, Unsure	Those who say they have driven in the past 30 days
Q55	Have you ever filed a claim for a citation given by a speed camera?	1,Yes 2,No	
Q56	How many times have you gotten a citation from violating a speed camera in last 12 months?	Number	Those who say they have driven in the past 30 days
Q57	Rwanda uses speed cameras because they make the roads safer by reducing the speeds of drivers	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q58	Rwanda uses speed cameras to reduce crashes, injuries, and deaths on the roads	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants

Code	Question	Responses	Who is asked this question?
Q59	Rwanda uses speed cameras because they make a lot of money for the country	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q60	Rwanda uses speed cameras because they reduce confrontation between traffic police and drivers, and prevent corruption	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q61	Rwanda uses speed cameras because they make the jobs of police safer and easier	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q62	Rwanda uses speed cameras because they provide security with more surveillance of the roads	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q63	Speed cameras in Rwanda are fair to drivers	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q64	When a violation is sent to a driver it is accurate and matches the actual speed the driver was traveling	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants



Code	Question	Responses	Who is asked this question?
Q65	When a violation is sent to a driver it is only issued when they exceed the posted speed limit in that area	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q66	The police had a campaign to sensitize road users about these speed cameras before installing them and sending violations	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q67	The locations where these cameras are installed makes sense to me	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q68	Different features of the road were considered when locations were selected	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q69	Cameras are hidden and drivers are not specifically warned about cameras operating ahead so that drivers respect speed limits everywhere not just at the camera sites	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q70	All districts were equally targeted for speed cameras	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants

Code	Question	Responses	Who is asked this question?
Q71	These speed cameras have caused problems with the flow of traffic because vehicles are going too slow now and it's causing congestion	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q72	Speed cameras are costing drivers too much money because of so many violations	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q73	The money raised for speed cameras is used to improve road quality and public safety	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q74	If the money that is raised from all the speed cameras violations was used only for improving road quality and safety, the public would really support the campaign	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants
Q75	Rwanda spent too much money on these speed cameras that should have been used for other things	1, Strongly Agree 2, Agree 3, Neutral 4, Disagree 5, Strongly Disagree 6, I don't know	All eligible participants

Code	Question	Responses	Who is asked this question?
Q76	<p>Don't think too deeply, just share the <b>FIRST THINGS THAT COME TO YOUR MIND</b> when you think about how these speed cameras impact road users, a list of words or brief phrases is ideal - here's an example from another topic; if I was asked to list the 5-10 Rwandan foods that I believe are the healthiest my answer without thinking deeply is isombe, ugali, banana, milk, rice, tomatoes and papaya - (The respondent can decline, or their complete response will be transcribed in order, word-by-word into a text field (to avoid biases from survey conductors interpreting/summarizing responses)</p>		All eligible participants
Q77	<p>In the same way as the previous question, briefly list the <b>POSITIVES BENEFITS</b> of ASE in Rwanda in your opinion up to 3 total benefits</p>		All eligible participants

# ASE National Survey Data Collectors Training and Post-Survey Debriefing Review

## Overview of the Debriefing

The debriefing review of the ASE and GA Nationwide public survey was held on the 23<sup>rd</sup> of December 2022 in Kigali, Rwanda. The objectives of the debriefing were:

1. To review the Data collection activity and the survey to the current situation in 4 provinces and Kigali city - lessons learned, challenges, and gaps throughout the survey period.
2. To document the experiences and best practices to be integrated into future data collection activities.
3. To propose recommendations for improvement of HPR management.

This debriefing was attended by the Data Collectors/ Enumerators, and HPR staff members involved in the Nationwide survey and data collection activity. Overall, 28 physically present participants took part in the debriefing exercise.

Factors that led to successful implementation of the nationwide survey:

- The well-prepared training of data collectors/ Enumerators
- The well functional electronics equipment
- The approvals from the National Institute of Statistics of Rwanda, National Ethical Committee, Ministry of Local Government.
- Prior contact to District officer
- Daily coordination of Survey coordinator with Enumerators
- Daily reporting by the Team leads
- Afterwards the one-day debriefing

## Debriefing Methodology and Tools

The critical approach involves a genuine and honest discussion among the participants and key responses to reflect on the context, the data collection activity, best practices, challenges, lessons, and areas for improvement. The discussions were oriented towards identifying solutions to the challenges faced.

Based on a participative approach, PowerPoint presentations, brainstorming and group discussion, and experience sharing were used to encourage participation and enhance understanding.

Groups were formed making sure each group has participants from different field teams to capture experiences from different areas and encourage participation.

The debriefing analysis was conducted on the following:

**What worked well? What worked less well? And why?** Participants work to identify the challenges and best practices of the data collection activity.

- Field team and HPR Coordination
- Field team and HPR communication
- Local leaders' and enumerator's communication
- Information Sharing among teams and HPR coordination
- Fieldwork arrangement (papers, authorization, etc)
- Travel arrangement
- Logistics and Transport
- Field realities

**What can we do to improve for next time?**

- Participants work to identify what can be done to strengthen the Data collection activity.

**Way Forward:** discussion on the best way to take these activities forward.

Findings

<b>Field team and HPR Coordination</b>	
Best practices	<ul style="list-style-type: none"> <li>• Good remunerations.</li> <li>• Good leadership and team management.</li> <li>• Cooperative drivers.</li> <li>• Proper treatment by the HPR team during training and before starting data collection.</li> <li>• Good attitudes toward seeking ideas and suggestions from enumerators.</li> <li>• Transport facilities and Materials to be used.</li> <li>• The letters were well prepared and explained very well the project and the survey.</li> <li>• The survey was very well prepared.</li> <li>• Letters to district leaders were very helpful.</li> <li>• The survey guide and document were very well prepared and helpful, especially in the first days of the survey.</li> <li>• From day one of training to the last day of data collection the coordination was perfect.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• The training helped to understand the questionnaire before going to the field which helped in conducting the survey.</li> <li>• Achievement of the target during the survey.</li> </ul>

<b>Field team and HPR Coordination</b>	
Enabling factor	<ul style="list-style-type: none"> <li>• Good training and facilitators resulted in achieving the goal</li> <li>• Emails sent to the district's officers helped during the field because they knew the survey before we even get there.</li> <li>• Effective pilot before the fieldwork.</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>• Working during weekends was a challenge, not only was it inconvenient to the enumerators, but it was also harder to find local leaders which affected the number of household interviews.</li> <li>• Poor coordination with local leaders during the weekends</li> <li>• The last 2 days were not coordinated well with the HPR team as the survey was on final stage;</li> <li>• Delayed the 2<sup>nd</sup> Installment refund</li> <li>• some questions were too long</li> <li>• Poor sampling village (16 vs 30 households)</li> <li>• Enumerators did not receive enough training on the speed cameras questionnaire.</li> <li>• Some questions were directed to personal privacy with no significant relevance to what we were explaining as a study purpose and questionnaire and this affected the accuracy of the data.</li> <li>• Kinyarwanda questionnaire was complex which affected the questions' understanding of participants therefore response accuracy.</li> <li>• The HPR team administrative process took a long to start on the first day of data collection.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• Arrived late to the field on the first day</li> </ul>
Limiting factor	<ul style="list-style-type: none"> <li>• Sometimes finding local leaders was difficult</li> <li>• It was hard to find participants, some had already gone to work.</li> <li>• Long questionnaires reduced participant compliance.</li> <li>• Questions related to personal information reduced the willingness to answer accurately.</li> <li>• Delaying of team leaders at the HPR office and enumerators waited for a long time.</li> <li>• Different HPR staff to give information to data collectors.</li> </ul>
<p>The questionnaire should have a place for people's recommendation</p> <p>Questions that ask for personal information (personal income) should not be up-front; they should be at the end of a questionnaire after establishing trust.</p>	

<b>2.2. Field team and HPR communication</b>	
Best practices	<ul style="list-style-type: none"> <li>Information sharing among the team and HPR coordination was excellent.</li> <li>Communication from the field with the HPR team was good.</li> <li>HPR gave us communication fees and also HPR team was always available when we needed them.</li> <li>Daily follow-up of HPR staff.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>Knowing that there are coordinators helped us do the job with no wonder.</li> <li>Quick response from the HPR team.</li> <li>Helped us in improving the quality and quantity of deliverables.</li> <li>Good performance regarding data collection activity.</li> <li>Easy access to Household and on time.</li> <li>Motivation of enumerators</li> <li>Enumerators were open to expressing challenges.</li> </ul>
Enabling factors	<ul style="list-style-type: none"> <li>communication fees and facilities.</li> <li>Availability of HPR staff.</li> <li>Sufficient communication fees are provided on time.</li> <li>Training and pilot day.</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>We were not informed that the money we received at the beginning was accommodation fees for the entire survey.</li> <li>Contracts were not structured well</li> <li>failure to share driver's contacts delayed the transportation of teams.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>Inadequate or lack of proper information on daily substance allowance/perdiems and their use resulted in miss management and complicated fieldwork.</li> </ul>
Limiting factors	<ul style="list-style-type: none"> <li>Enumerators were disturbed because funds were not available on time.</li> <li>Asking what we don't understand</li> <li>Delayed transportation for the Kigali team</li> </ul>
<p>Share report feedback to all concerned enumerators</p> <p>Encouragement, when there is a weakness, can boost performance</p> <p>Put into consideration field challenges whenever daily targets are not achieved before concluding.</p>	

<b>2.3 Local leaders' and enumerator's communication</b>	
Best practices	<ul style="list-style-type: none"> <li>Some local leaders were collaborative.</li> <li>Communication was good between local leaders and enumerators.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>Local leaders welcomed us and guided us in the local community.</li> <li>It made the job easy for the local leaders.</li> </ul>
Enabling factor	<ul style="list-style-type: none"> <li>Good communication between Local leaders and enumerators.</li> <li>Supporting letters provided helped in the introduction of the survey to local leaders.</li> <li>Local leaders' contacts and addresses were available.</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>Some local leaders didn't cooperate well.</li> <li>Some local leaders didn't facilitate enumerators because they weren't going to be paid for it.</li> <li>Some local leaders delayed approval which delayed our work.</li> <li>It was hard for some local leaders to give us time.</li> <li>Some local leaders did not respond to their mobile phones.</li> <li>In Kigali, a village leader did not cooperate well.</li> <li>Poor communication from district leaders' levels down to selected village leaders.</li> </ul>
Impacts	<ul style="list-style-type: none"> <li>Delayed starting survey</li> <li>This resulted in limited knowledge of the village's boundary.</li> <li>Affected starting hours, therefore, affected daily targets.</li> </ul>
Limiting factors	<ul style="list-style-type: none"> <li>No incentives for local leaders.</li> <li>Unavailability of local leaders.</li> <li>Some local leaders didn't respond on their mobile phones.</li> </ul>
<p>- If possible next time consider some incentives for local leaders to easy cooperation</p>	

<b>2.4 Fieldwork arrangement (papers, authorization, etc)</b>	
Best practices	<ul style="list-style-type: none"> <li>The letters were well prepared and explained very well the project and the survey.</li> <li>The letters were very helpful.</li> <li>The survey was very well prepared</li> <li>The survey guide was very well prepared and helpful, especially in the survey's first few days.</li> <li>From day one of training to the last day the coordination was perfect.</li> </ul>



<b>2.4 Fieldwork arrangement (papers, authorization, etc)</b>	
Impact	<ul style="list-style-type: none"> <li>• After work follow-up call with the HPR team eases the next day's task.</li> <li>• The provided transport on time helped.</li> <li>• The early communication with local leaders was helpful, we didn't have to spend much time explaining to them.</li> <li>• The field arrangement helped to achieve the target.</li> <li>• Direct transport to the field without extra costs and different modes of transport/ transitions.</li> <li>• Eased communication with local leaders.</li> </ul>
Enabling Factors	<ul style="list-style-type: none"> <li>• Good management from the HPR team.</li> <li>• Personal good attitudes and compliance of team leaders, with the regulations and experience.</li> <li>• Clear job plan ahead of starting the data collection activity.</li> <li>• The good spirit of the HPR team.</li> <li>• Good coordination and anticipation of the HPR team.</li> <li>• HPR dressing code.</li> <li>• Well-functioning computer tools (tablets)</li> <li>• Sharing information among the HPR team and field team</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>• People worked in provinces and some parts of Kigali city had issues with GPS.</li> <li>• There was a village that didn't exist and we had its name on the tablets.</li> <li>• Some people were not welcoming due to their living conditions and lifestyle.</li> <li>• It was hard to identify the village on the same day we had to work in that day.</li> <li>• Some people weren't welcoming and they gave unreliable information.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• The absence of villages affected the process of working with local leaders.</li> </ul>
Limiting factors	<ul style="list-style-type: none"> <li>• lack of an updated list of villages from the district</li> </ul>
Provide materials depending on the field and seasons, such as boots, and an umbrella	

<b>2.5 Travel arrangement/ Logistics and Transport</b>	
Best practices	<ul style="list-style-type: none"> <li>• The departure date was respected.</li> <li>• Logistics and transport were respected/provided on time.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• Arrival on time on the field</li> </ul>
Enabling factors	<ul style="list-style-type: none"> <li>• Availability of cars.</li> <li>• Timely availability of tablets and printed tools</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>• Accommodation fees got delayed due to different bank's processes</li> <li>• lack of rain jacket.</li> <li>• It rained a lot and we did not have raincoats.</li> <li>• Depending on the field some places we took a moto bike and walk on foot because of poor infrastructure and bad roads.</li> <li>• Sometimes our car did not reach the designated place and we had to walk on foot</li> <li>• We encountered heavy rain in remote sectors with bad roads.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• It was hard to get a hotel and some borrowed money to pay for accommodation</li> </ul>
Limiting factor	<ul style="list-style-type: none"> <li>• HPR did not provide raincoats</li> <li>• on a rainy day, we delayed starting</li> <li>• slippery roads due to rain.</li> </ul>
Accommodation fees should be provided before and during the job, not after completion	

## Recommendations

- Take enough time to revise the questionnaire.
- To give enough days for the training of enumerators on every activity to be done during the fieldwork.
- Clear clarification on facilitation fees.
- Clear clarification of the contract.
- Motivation or incentives to village leaders that would help to get more information.
- Early communication with local leaders from district officers.
- Site visit before sending data collectors to the field.
- Consideration of improvised items in the budget like extra transport fees in places where cars can't reach.
- Sensitization of the survey before conducting it to ease the availability of participants.
- During planning and scheduling Climate condition should be taken into consideration.
- Feedback on performance reports should be shared with every enumerator at least twice a week.

# ASE National Survey Sample Size Calculations and Sampling Frame

$$n = \frac{z^2 p(1-p) \cdot Deff \cdot k}{e^2} \quad (1)$$

Where:

**n** : is the minimum sample size desired.

**z** : a coefficient of the degree of confidence (=1.96 to the confidence level of 95%)

**p** : the proportion of the population with the characteristic (indicator) of interest. In the absence of real data, we preferred to assign this parameter a value of 0.5%, which gives the largest sample size for this study.

**k** : non-response factor (the factor is 10% for this study. A value of 1.1 (= 1 + 10%) for k is considered for this study).

**Deff**: Design effect (1.5)

**e** = Margin of error, sampling errors or level of precision (3.6%)

The margin error of 3.6 percent is of good precision, as it falls under the required margin error for the national estimate, which ranges from 1 to 5% and considers budget and time constraints of this study.

When the formula was applied, the sample had **1,200** respondents.

## Calculation of Margin error

Building on the formula (1) and given that the targeted sample for the general population is estimated at 1,200, the margin error was determined using the formula (2) and as follows:

$$e = \sqrt{\frac{Z^2 \cdot P(1-P) \cdot Deff \cdot k}{n}} \quad (2)$$

$$\begin{aligned} e &= \sqrt{\frac{1.96^2 \cdot 0.5(1 - 0.5) \cdot 1.5 \cdot 1.1}{1200}} \\ e &= \sqrt{\frac{1.58466}{1200}} \\ e &= \sqrt{0.00132055} \\ e &= 0.036339372586769 \\ e &= 3.6\% \end{aligned}$$

vehicle/Moto Sample

The formula below is used to determine the needed sample size.

$$n = \frac{z^2 r(1-r)}{e^2} \quad (3)$$

where:

n = is the minimum sample size desired.

z = a coefficient of the degree of confidence (from 1.96 to the confidence level of 95%)

r = the proportion of the population with the characteristic (indicator) of interest. In the absence of real data, we preferred to assign this parameter a value of 0.5, which gives the largest sample size for this study.

e = margin of error, sampling error, or level of precision (5.65%).

Results from the above formula indicate that the sample was 300 drivers, evenly distributed across the four categories.

### Margin error calculation

Using the formula (3) and the fact that the estimated number of people in the sample group was 300, the margin of error was calculated as follows:

$$e = \sqrt{\frac{z^2 * P(1-P)}{n}} \quad (4)$$

$$e = \sqrt{\frac{1.96^2 * 0.5(1 - 0.5)}{300}}$$

$$e = \sqrt{\frac{0.9604}{300}}$$

$$e = \sqrt{0.003201}$$

$$e = 0.056580$$

$$e = 5.65\%$$

Within the randomly selected districts and villages, the selection of respondents for both general population households and drivers was done randomly with different approaches as follows.

To select households for the general population, every village executive had a list of households in the village he led. To determine the number of households to be surveyed in a village, the total number of households in that village was divided by the number of households to be surveyed in that same village. For example, if village A had A households and B number of household surveys to be done, then the equation was A/B to get C as the leading random selection range number on the list. This number C was then rounded to the closest number by excess if it had a decimal (for example, if C = 7.3, 8 was taken, and if C = 7.8, 8 was taken as well). On the list, a number was randomly selected below C to start selecting the household on the village's households list. The selected household was considered the first household to be surveyed. On the same list, the C

number, or a nearly rounded number of households, was skipped from the selected one to choose the second household to be surveyed; the same was done to choose the third household; and so on until the B household was chosen.

Also, after picking a household, the next step would be to pick a member from that household. Therefore, To select a participant, enumerators started by picking the first adult they saw who said they were the head of the household and knew about the household's finances. If it was a family, a parent was chosen; if it was a household with mature individuals living together, the head of the family or anyone available was chosen. If it was a household containing one person, that person automatically passed the selection. If a household-selected participant didn't pass the screening or agree to the consent form, you chose the other person available in the household. If no one passed the screening or no one agreed to the consent form in the household, the household was skipped to the next and the same process was repeated until a participant consented.

Since there is no sampling frame for drivers in Rwanda, a purposive method of selecting a sample is employed for this study. We intended to include about 300 drivers, with an even number from the chosen districts and driver classes. The classes of drivers include those who transport vehicles, public transport drivers, private vehicle owners, and motorcyclists. The four core categories of drivers are defined as follows: 1) Transport of goods: this category is composed of drivers of vehicles involved in the transport of goods. 2) Public transport: this category comprises all drivers transporting passengers. 3) Private vehicle owners: this is a category of individuals who drive their own vehicles. 4) Motorcyclists: are drivers who drive motorcycles.

Drivers were selected from areas where they typically gathered based on the advice of people asked after the enumerator team gathered in the village centre. An enumerator met with them and asked if they were willing to participate in the study. Those who agreed to take part were then interviewed, for instance, at taxi parks, workplaces, or petrol stations for private drivers. As the selection of drivers was purposeful, it was not possible to compute the probability of selection or the final weight because the size of the total population was unknown. If the driver didn't consent to participate in the study, he was skipped and tried the next one. In Rwanda, women do not commonly drive their own personal vehicles nor professionally, so despite attempts at equitable enrolment across gender it was not possible.

## Complete multiple comparisons of perceptions of ASE among groups

Scheffe							
Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Rwanda uses speed cameras because they make the roads safer by reducing the speeds of drivers	House	Driver	0.048	0.051	<b>0.645</b>	-0.08	0.17
		moto	0.033	0.066	<b>0.882</b>	-0.13	0.19
	Driver	House	-0.048	0.051	<b>0.645</b>	-0.17	0.08
		moto	-0.015	0.075	<b>0.981</b>	-0.20	0.17
	moto	House	-0.033	0.066	<b>0.882</b>	-0.19	0.13
		Driver	0.015	0.075	<b>0.981</b>	-0.17	0.20
Rwanda uses speed cameras to reduce crashes, injuries, and deaths on the road	House	Driver	0.036	0.049	<b>0.766</b>	-0.08	0.15
		moto	-0.083	0.063	<b>0.418</b>	-0.24	0.07
	Driver	House	-0.036	0.049	<b>0.766</b>	-0.15	0.08
		moto	-0.118	0.071	<b>0.254</b>	-0.29	0.06
	moto	House	0.083	0.063	<b>0.418</b>	-0.07	0.24
		Driver	0.118	0.071	<b>0.254</b>	-0.06	0.29
Rwanda uses speed cameras because they make a lot of money for the country	House	Driver	.527*	0.093	<b>0.000</b>	0.30	0.75
		moto	.665*	0.119	<b>0.000</b>	0.37	0.96
	Driver	House	-.527*	0.093	<b>0.000</b>	-0.75	-0.30
		moto	0.139	0.136	<b>0.595</b>	-0.19	0.47
	moto	House	-.665*	0.119	<b>0.000</b>	-0.96	-0.37
		Driver	-0.139	0.136	<b>0.595</b>	-0.47	0.19
Rwanda uses speed cameras because they reduce confrontation between traffic police and drivers, and prevent corruption	House	Driver	0.086	0.080	<b>0.560</b>	-0.11	0.28
		moto	0.020	0.103	<b>0.981</b>	-0.23	0.27
	Driver	House	-0.086	0.080	<b>0.560</b>	-0.28	0.11
		moto	-0.066	0.118	<b>0.855</b>	-0.35	0.22
	moto	House	-0.020	0.103	<b>0.981</b>	-0.27	0.23
		Driver	0.066	0.118	<b>0.855</b>	-0.22	0.35
Rwanda uses speed cameras because they make the jobs of police safer and easier	House	Driver	-0.034	0.087	<b>0.924</b>	-0.25	0.18
		moto	0.095	0.112	<b>0.699</b>	-0.18	0.37
	Driver	House	0.034	0.087	<b>0.924</b>	-0.18	0.25
		moto	0.129	0.127	<b>0.598</b>	-0.18	0.44
	moto	House	-0.095	0.112	<b>0.699</b>	-0.37	0.18
		Driver	-0.129	0.127	<b>0.598</b>	-0.44	0.18
Rwanda uses speed cameras because they provide security with more surveillance of the roads	House	Driver	-0.166	0.073	<b>0.074</b>	-0.34	0.01
		moto	-0.139	0.094	<b>0.336</b>	-0.37	0.09
	Driver	House	0.166	0.073	<b>0.074</b>	-0.01	0.34
		moto	0.027	0.107	<b>0.968</b>	-0.23	0.29

Scheffe							
Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
	moto	House	0.139	0.094	<b>0.336</b>	-0.09	0.37
		Driver	-0.027	0.107	<b>0.968</b>	-0.29	0.23
Speed cameras in Rwanda are fair to drivers	House	Driver	.386*	0.092	<b>0.000</b>	0.16	0.61
		moto	.294*	0.118	<b>0.046</b>	0.00	0.58
	Driver	House	-.386*	0.092	<b>0.000</b>	-0.61	-0.16
		moto	-0.092	0.135	<b>0.793</b>	-0.42	0.24
	moto	House	-.294*	0.118	<b>0.046</b>	-0.58	0.00
		Driver	0.092	0.135	<b>0.793</b>	-0.24	0.42
When a violation is sent to a driver it is accurate and matches the actual speed the driver was traveling	House	Driver	1.156*	0.127	<b>0.000</b>	0.84	1.47
		moto	.689*	0.164	<b>0.000</b>	0.29	1.09
	Driver	House	-1.156*	0.127	<b>0.000</b>	-1.47	-0.84
		moto	-.466*	0.187	<b>0.045</b>	-0.92	-0.01
	moto	House	-.689*	0.164	<b>0.000</b>	-1.09	-0.29
		Driver	.466*	0.187	<b>0.045</b>	0.01	0.92
When a violation is sent to a driver it is only issued when they exceed the posted speed limit in that area	House	Driver	.897*	0.122	<b>0.000</b>	0.60	1.20
		moto	.557*	0.158	<b>0.002</b>	0.17	0.94
	Driver	House	-.897*	0.122	<b>0.000</b>	-1.20	-0.60
		moto	-0.340	0.179	<b>0.167</b>	-0.78	0.10
	moto	House	-.557*	0.158	<b>0.002</b>	-0.94	-0.17
		Driver	0.340	0.179	<b>0.167</b>	-0.10	0.78
The police had a campaign to sensitize road users about these speed cameras	House	Driver	.492*	0.131	<b>0.001</b>	0.17	0.81
		moto	0.409	0.169	<b>0.054</b>	-0.01	0.82
	Driver	House	-.492*	0.131	<b>0.001</b>	-0.81	-0.17
		moto	-0.084	0.193	<b>0.910</b>	-0.56	0.39
	moto	House	-0.409	0.169	<b>0.054</b>	-0.82	0.01
		Driver	0.084	0.193	<b>0.910</b>	-0.39	0.56
The locations where these cameras are installed makes sense to me	House	Driver	0.184	0.112	<b>0.260</b>	-0.09	0.46
		moto	0.024	0.145	<b>0.986</b>	-0.33	0.38
	Driver	House	-0.184	0.112	<b>0.260</b>	-0.46	0.09
		moto	-0.160	0.165	<b>0.624</b>	-0.56	0.24
	moto	House	-0.024	0.145	<b>0.986</b>	-0.38	0.33
		Driver	0.160	0.165	<b>0.624</b>	-0.24	0.56
Different features of the road were considered when locations were installed	House	Driver	-0.069	0.140	<b>0.886</b>	-0.41	0.27
		moto	-0.245	0.181	<b>0.398</b>	-0.69	0.20
	Driver	House	0.069	0.140	<b>0.886</b>	-0.27	0.41
		moto	-0.176	0.206	<b>0.693</b>	-0.68	0.33
	moto	House	0.245	0.181	<b>0.398</b>	-0.20	0.69
		Driver	0.176	0.206	<b>0.693</b>	-0.33	0.68

Scheffe							
Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Cameras are hidden and drivers are not specifically warned about cameras operating ahead so that drivers respect speed limits everywhere not just at the camera sites	House	Driver	1.124*	0.108	<b>0.000</b>	0.86	1.39
		moto	1.209*	0.139	<b>0.000</b>	0.87	1.55
	Driver	House	-1.124*	0.108	<b>0.000</b>	-1.39	-0.86
		moto	0.085	0.159	<b>0.866</b>	-0.30	0.47
	moto	House	-1.209*	0.139	<b>0.000</b>	-1.55	-0.87
		Driver	-0.085	0.159	<b>0.866</b>	-0.47	0.30
All districts were equally targeted for speed cameras	House	Driver	.516*	0.127	<b>0.000</b>	0.20	0.83
		moto	0.295	0.164	<b>0.197</b>	-0.11	0.70
	Driver	House	-.516*	0.127	<b>0.000</b>	-0.83	-0.20
		moto	-0.221	0.186	<b>0.497</b>	-0.68	0.24
	moto	House	-0.295	0.164	<b>0.197</b>	-0.70	0.11
		Driver	0.221	0.186	<b>0.497</b>	-0.24	0.68
These speed cameras have caused problems with the flow of traffic because vehicles are going too slow now and it's causing congestion	House	Driver	.610*	0.087	<b>0.000</b>	0.40	0.82
		moto	.519*	0.112	<b>0.000</b>	0.25	0.79
	Driver	House	-.610*	0.087	<b>0.000</b>	-0.82	-0.40
		moto	-0.091	0.127	<b>0.772</b>	-0.40	0.22
	moto	House	-.519*	0.112	<b>0.000</b>	-0.79	-0.25
		Driver	0.091	0.127	<b>0.772</b>	-0.22	0.40
Speed cameras are costing drivers too much money because of so many violations	House	Driver	.908*	0.099	<b>0.000</b>	0.67	1.15
		moto	.771*	0.128	<b>0.000</b>	0.46	1.08
	Driver	House	-.908*	0.099	<b>0.000</b>	-1.15	-0.67
		moto	-0.138	0.146	<b>0.641</b>	-0.50	0.22
	moto	House	-.771*	0.128	<b>0.000</b>	-1.08	-0.46
		Driver	0.138	0.146	<b>0.641</b>	-0.22	0.50
The money raised for speed cameras is used to improve road quality and public safety	House	Driver	-.358*	0.142	<b>0.043</b>	-0.71	-0.01
		moto	-0.101	0.184	<b>0.860</b>	-0.55	0.35
	Driver	House	.358*	0.142	<b>0.043</b>	0.01	0.71
		moto	0.257	0.209	<b>0.470</b>	-0.26	0.77
	moto	House	0.101	0.184	<b>0.860</b>	-0.35	0.55
		Driver	-0.257	0.209	<b>0.470</b>	-0.77	0.26





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