## Contents

### INTRODUCTION
- What You’ll Need ................................................................. 1
- How to Use this Workbook .................................................... 1
- Icon keys .................................................................................. 1

### 1 • IMPORTANCE OF DATA SYSTEMS
- Welcome .................................................................................. 5
- Activity • Ice Breaker ............................................................... 5
- Workshop Goals ........................................................................ 6
- Goals for Lesson 1 ...................................................................... 6
- Data Systems Overview ............................................................ 7
  - Data Systems Components ..................................................... 7
  - Data Systems Improvement Process ...................................... 7
- Why are Data Systems Important? ............................................... 8
  - CASE STUDY DISCUSSION ................................................... 8
  - Data Requirements ............................................................... 9
  - Outputs .................................................................................. 10
  - Final Outcomes ...................................................................... 12
  - Socio–economic costs ............................................................ 13
  - Final Outcomes ...................................................................... 14
- Data for Program Design and for Program Evaluation .......... 15
  - Targets .................................................................................. 16
- Why Evaluate? ........................................................................... 17
  - Interventions .......................................................................... 17
  - Process Evaluation ................................................................ 18
  - Impact Evaluation .................................................................. 19
  - Outcome Evaluation .............................................................. 19
- Sector Roles and Data Needs ..................................................... 22
  - ACTIVITY • Sector Roles and Data Needs .............................. 22
  - Lesson Summary .................................................................... 25

### 2 • CURRENT DATA SYSTEM
- Goal for Lesson 2 ...................................................................... 29
  - ACTIVITY • Questionnaire Review .......................................... 29
  - Lesson Summary .................................................................... 31

### 3 • DATA SYSTEM COMPONENTS
- Goal for Lesson 3 ...................................................................... 35
  - Component Overview ............................................................ 35
    - Stakeholder Engagement ..................................................... 36
    - Data Quality ......................................................................... 37
    - Data Systems Sub Components ............................................. 38
  - Lesson Summary .................................................................... 39
# SITUATIONAL ASSESSMENT

**What is the Situational Assessment?**

**Goal for Lesson 4**

**What is the Situational Assessment?**

**Step One • Stakeholder Analysis**

- **Stakeholder Involvement**
- **Case Study • Boldonia**
- **ACTIVITY • Stakeholder Analysis**

**Step Two • Assess Data Sources, Systems, and Quality**

- **Assess Data Sources**
- **Case Study • Assess Data Sources**
- **ACTIVITY • Assess Data Sources**
- **Assess Data Systems**
- **ACTIVITY • Assess Data Systems**
- **Assess Data Quality**

**Step Three • Assess End Users**

**ACTIVITY • Assess End User’s Needs**

**Step Four • Analyze the Environment**

**ACTIVITY • Analyze the Environment**

**Boldonia Case Study**

**Lesson Summary**

# REVIEW AND VISION

**Goal for Lesson 5**

**ACTIVITY • Review**

**ACTIVITY • Our Vision**

# STRATEGIES FOR IMPROVEMENT

**Component Overview**

**Stakeholder Engagement**

**Gaining Stakeholder Engagement**

- **ACTIVITY • Define Conditions and Characteristics of Engagement**
- **Tips for Working with Stakeholders**
- **Stakeholder Engagement • My Take-Aways/Action Items**

**Data Quality**

**Definitions**

- **ACTIVITY • Think About Data Definitions**
- **Data Quality – Definitions • My Take-Aways/Action Items**

**Under–Reporting**

- **ACTIVITY • Think About Under–Reporting**
- **Data Quality: Under–Reporting • My Take–Aways/Action Items**

INTERNATIONAL TRAFFIC SAFETY • DATA SYSTEMS IMPROVEMENT
PARTICIPANT WORKBOOK • PAGE II
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing Data</td>
<td>85</td>
</tr>
<tr>
<td>Errors</td>
<td>86</td>
</tr>
<tr>
<td>Ensuring Data Quality</td>
<td>87</td>
</tr>
<tr>
<td>Data Elements</td>
<td>87</td>
</tr>
<tr>
<td>ACTIVITY • Dissect Data Elements</td>
<td>88</td>
</tr>
<tr>
<td>Data Elements • My Take–Aways/Action Items</td>
<td>89</td>
</tr>
<tr>
<td>Data Capture Procedure</td>
<td>89</td>
</tr>
<tr>
<td>ACTIVITY • Dive into Data Capture</td>
<td>90</td>
</tr>
<tr>
<td>Data Capture • My Take–Aways/Action Items</td>
<td>91</td>
</tr>
<tr>
<td>Data Collection Tools</td>
<td>91</td>
</tr>
<tr>
<td>ACTIVITY • Explore Data Collection Tools</td>
<td>91</td>
</tr>
<tr>
<td>Data Collection Tools • My Take–Aways/Action Items</td>
<td>93</td>
</tr>
<tr>
<td>System Requirements and Resources</td>
<td>94</td>
</tr>
<tr>
<td>Systems Requirements and Sub Components</td>
<td>95</td>
</tr>
<tr>
<td>Workflow</td>
<td>96</td>
</tr>
<tr>
<td>Database Features</td>
<td>97</td>
</tr>
<tr>
<td>Linkages</td>
<td>97</td>
</tr>
<tr>
<td>Data System Considerations</td>
<td>98</td>
</tr>
<tr>
<td>Data Management and Quality Assurance (QA)</td>
<td>98</td>
</tr>
<tr>
<td>Lesson Summary</td>
<td>99</td>
</tr>
<tr>
<td>7 • IMPROVING THE DATA SYSTEM</td>
<td>103</td>
</tr>
<tr>
<td>ACTIVITY • Boldonia Case Study</td>
<td>103</td>
</tr>
<tr>
<td>8 • WHAT’S NEXT?</td>
<td>111</td>
</tr>
<tr>
<td>ACTIVITY • Summary</td>
<td>112</td>
</tr>
</tbody>
</table>
Introduction

What You’ll Need


IMPORTANT

When you download the Data Systems Manual using the link above, note that the link is only to one portion of the Manual. You will need to use hyperlinks within that document’s Table of Contents to download the remainder of the Manual.

Note that Chapter 3 is comprised of two files, one titled “3a” and one “3b.”

How to Use this Workbook

✓ You will use this Workbook to complete activities on your own as well as with your classmates.
✓ Icons in the left column of the guide identify key content types. See the table below for a key to the icons used in this guide.
✓ Many of the activity outcomes in this Workbook will become part of your project plan for the Situational Assessment that you’ll perform when you return to your country.

Icon keys

<table>
<thead>
<tr>
<th>Icon</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>🎥</td>
<td>Activity</td>
</tr>
<tr>
<td>🧮</td>
<td>Case Study</td>
</tr>
<tr>
<td>✅</td>
<td>Checklist</td>
</tr>
<tr>
<td>📚</td>
<td>Reference</td>
</tr>
<tr>
<td>📄</td>
<td>Summary</td>
</tr>
<tr>
<td>📩</td>
<td>Discussion</td>
</tr>
</tbody>
</table>
1

IMPORTANCE OF DATA SYSTEMS
1 • Importance of Data Systems

Welcome

Activity • Ice Breaker

INSTRUCTIONS

1. Take a few minutes to think about a traffic crash you recently experienced or observed. This crash can be something that happened to you or that you watched happen to someone else. Describe the crash below.

2. What could have prevented it from happening?

3. Allow a few minutes for participants to record the crash and preventive ideas in the Workbook.
Workshop Goals

Upon workshop completion, you’ll be able to:

✔ Describe traffic safety Data System Components required to build a successful traffic safety data system.

✔ Understand how the following contribute to a comprehensive traffic safety data system: data beyond crash data; road safety management; and data from different sectors.

✔ Describe how a comprehensive traffic safety data system leads to successful evaluation.

✔ Prepare the tools and strategy you’ll need when you return to your country and perform a Situational Assessment of your traffic safety data systems.

✔ Work through a fictional case study that includes some of the same challenges you may face in your home countries.

Goals for Lesson 1

✔ To define comprehensive traffic safety data system.

✔ To recognize how data from different sectors contribute to a comprehensive traffic safety data system and road safety management.

✔ Understand how a comprehensive traffic safety data system and successful evaluation are linked.
Data Systems Overview

Data Systems Components

International Traffic Safety • Data Systems

High quality data to make better decisions that ultimately reduce serious injuries and deaths

Stakeholder Engagement  Data Quality  System Requirements/Resources

Data Systems Improvement Process

1 • ASSESS
- Identify road safety stakeholders and perform analysis.
- Assess data sources, system, and quality (including).
- Conduct and user assessment.
- Perform environmental analysis.
- Identify gaps in data and data gathering systems and identify resources to improve.

2 • IMPROVE
- Establish multidisciplinary working group.
- Define goals for road safety data systems.
- Mobilize stakeholders.
- Review and refine minimum dataset.
- Revise/redesign data systems.
- Revise/redesign data capture processes/sytems performance.

3 • IMPLEMENT
- Test all refined/revised systems.
- Train users on new data collection processes.
- Monitor data quality and system performance and adjust as needed.

4 • USE
- Gather and disseminate data.
- Take action.
- Monitor trends.
Why are Data Systems Important?

Case Study
- One city in Brazil put a lot of money into policing the roundabouts in the city. Data showed that the highest volume of crashes occurred at roundabouts.
- Expensive engineering measures were considered to help solve the crash problem at roundabouts.
- When the city changed their data collection process and improved their data system, they came to understand that the efforts at the roundabouts were a waste of time and resources—because while it was true that most of the crashes happened at roundabouts, the types of accidents involved mostly minor property damage.
- The improved traffic safety data system told them where the most traffic fatalities were occurring, and by whom—areas where there was a high concentration of bars, by motorcyclists.
- With the new data pointing to a more serious problem, the city will ultimately be able to address the fatality issue and potentially reduce the number of people dying of traumatic brain injuries.

CASE STUDY DISCUSSION

................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
................................................................................................................
A comprehensive system collects and examines many factors related to traffic crashes, including:

- **Outputs.** What enforcement policies or interventions are in place?
- **Safety performance indicators.** How many people are driving the speed limit, wearing seatbelts, or driving drunk?
- **Final outcomes.** What was the end result of a crash—death, injury, property damage?
- **Socio-economic costs.** What is the cost to society (loss of life, property, productivity, health, etc.)?
The dictionary definition of **outputs** is:
- *The amount of energy, work, goods, or services produced by a machine, factory, company, or an individual in a period.*

Outputs are the *visible results* of safety policies and programs.

Output data may include:
- How many roadblocks were set up for random breath testing?
- How many speed bumps have been built?
- How many billboards were used for a safety campaign?

Enforcement efforts are outputs. Enforcement efforts require *energy* and *work*.
- This work is measured in terms of man hours spent on enforcement tasks such as performing breathalyzer tests for alcohol detection.

1. [http://www.businessdictionary.com/definition/output.html](http://www.businessdictionary.com/definition/output.html)
Safety Performance Indicators

Safety Performance Indicators are factors that lead up to the final outcome. Indicators are variables that can be used to measure change. Think of Safety Performance Indicators as factors in effect between point A and point B of a trip over the road. Safety Performance Indicators are variables related to the environment, the vehicle, or road-user behavior. For example:

- Does the driver speed?
- Does the driver drink alcohol and then drive?
- Do motorcyclists wear helmets?
- Is the road designed for safety?
- How quickly can an ambulance reach the site and then transport people to the hospital?
- How old is the vehicle, and how crash-worthy?
Final Outcomes

End results include:

- Death
- Injury
- Property Damage
Socio–economic costs

Socio–economic costs are the costs borne by everyone in a society:

Unsafe driving conditions affect the economy on a local and national level.

“Congestion is estimated to cost the nation around £22 billion per year. Research from the RAC Foundation shows that a quarter of that congestion is associated with road accidents.

Prioritising road safety will most likely have a positive influence on congestion levels within a Highway Authority.”

Making It Count – A Business Case for Road Safety (Great Britain, Association of Directors of Environment, Economy, Transport and Planning (ADEPT) 2010)
DATA REQUIREMENTS SUMMARY

Final Outcomes

Exposure Data

Safety Performance Indicators

Outputs

Final Outcomes
Data systems and interventions are co–dependent:

- data systems **provide information** to help design the interventions most likely to be effective;
- then, data systems are used **to analyze** the effect(s) of the interventions and monitor progress.
Targets

Establishing **Targets** are a way to assess your progress and success. Targets are specific goals that interventions are designed to work towards.

**Target Guidelines** are:

1. 

2. 

3. 

4. 

5. 

Notes
Why Evaluate?

EVALUATION DISCUSSION

Interventions

Box 4: Key legislative interventions in Victoria over a 20-year period

1981: Compulsory helmet wearing for motorcyclists
1981: Compulsory seat belt wearing for all passenger vehicle occupants
1994: Consent testing for blood alcohol level of injured person at scene and for those unco-operative
1998: Legislation to permit random traffic driver testing (RDT)
1999: Legislation to permit mobile roadside saliva testing to detect drivers under the influence of drugs
2009: Mandatory alcohol interlock for repeat drink driver offenders
2010: Introduction of points to point speed measurement legislation
2004: Implementation of random drug testing
EVALUATION DISCUSSION

Process Evaluation

✓ Examines whether the intervention was carried out as planned.
✓ Helps to understand why the measure led or did not lead to the desired result.
✓ Identifies the strengths and weaknesses to guide program improvement.
✓ Aids in understanding why certain outcomes were, or were not, achieved.

Common questions include:
Impact Evaluation

- Determines whether the intervention brought about a change that would not have occurred without the intervention.
- Measures changes such as road-user knowledge, perceptions and behavior, and impact of engineering treatments (immediate effects).
- Benefits from regularly measured Safety Performance Indicators.

Common questions include:

Outcomes Evaluation

- Investigates where the intervention was successful.
- Did intervention lead to the desired result?
- Typically measures changes in outcome indicators.
- Concerned with measuring longer-term effects.

Common questions include:
Outcome Evaluation Types

- Randomized Control Trial (RCT)
- Controlled Before-After Study
- Interrupted Time Series Design
- Before-After Study (No Control Group)
- Sample Size and Statistical Analysis
When improving your data system, consider three factors that will affect the possibility and quality of road safety interventions.

1. Systems architecture.

2. Data quality.

3. Output.

DATA REQUIREMENTS AND EVALUATION SUMMARY
Sector Roles and Data Needs

ACTIVITY • Sector Roles and Data Needs

INSTRUCTIONS

Listen as your instructor explains the activity.

My Sector Assignment:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

PRESENTATION OUTLINE

Prepare for your sector presentation using the questions below.

1. In addition to data collection, what are the other duties of your assigned sector?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

2. According to the Data Systems Manual, what data is typically collected by the sector?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
3. Who collects the data in your assigned sector? What is their role?

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

4. What data does the sector need for its own purposes?

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

Use the following table to capture information from the sector presentations.

<table>
<thead>
<tr>
<th>Law Enforcement Sector</th>
<th>Transport Sector</th>
<th>Health Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTOR DATA NEEDS DISCUSSION

Sector Data Needs

**Law Enforcement Sector**
- Monitor occurrence of traffic law infractions.
- Keep track of legal issues such as court appearances and fines.
- Use data on collisions and infractions to target nature of and location of enforcement activity.

**Transport Sector**
- Identify locations, times, and environmental conditions where collisions occur most frequently.
- Identify human factors contributing to collision for which preventive measures are needed (e.g., better education programs).
- Identify vehicular factors that contributed to collision that could be addressed by vehicle safety standards.

**Health Sector**
- Number of fatalities and injuries
- Severity of injuries
- Causal factors involved so that appropriate health promotion messages can be effectively targeted
- Assess effectiveness of injury management and treatment and outcomes
- Monitor trends in traffic fatalities and injuries
Lesson Summary

In this lesson, we:

- Reviewed terminology we’ll be using in this workshop and that you’ll encounter in your traffic safety data systems work.
- Discussed a case study that illustrates why traffic safety data systems are important.
- Identified data requirements for a comprehensive traffic safety data system.
- Identified the different data needs of different sectors involved in data collection.
- Discovered the links between data requirements, road safety management, and evaluation.

Summary • Module 1
Notes
CURRENT DATA SYSTEMS
Welcome

Goal for Lesson 2
✓ Gain a firm understanding of where you/your group is at in your data systems improvement process.

ACTIVITY • Questionnaire Review

Questionnaire on Traffic Safety Data in Your Jurisdiction

Instructions
1. Complete the questions to the best of your ability before attending your first workshop.
   Please send the completed questionnaire to:
   
   Name:
   Email:
   Phone:
   Date Due:

2. Also bring a completed copy of the questionnaire to your workshops.

Questions:
1. Which agencies in your jurisdiction collect the following data? Please list all agencies you are aware of:

<table>
<thead>
<tr>
<th>Type of Data</th>
<th>Agency that collects data</th>
<th>Not extinguished</th>
<th>Dust Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian accidents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic crashes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency roadway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Licensed drivers and registered vehicles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conditions of road network</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visually impaired Pedestrians, motorists, bicyclists</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trees and vegetation: Health, size, crown, location, and damage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree-related accidents: Fires, falling, disease, pest, and death</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INTERNATIONAL TRAFFIC SAFETY • DATA SYSTEMS IMPROVEMENT
PARTICIPANT WORKBOOK • PAGE 29
### QUESTION 1

#### Question 1

<table>
<thead>
<tr>
<th>Type of Data</th>
<th>Agencies that collect data</th>
<th>Not collected</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road traffic fatalities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road traffic injuries (non-fatal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damage-only crashes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Licensed drivers and registered vehicles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition of road network</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road user behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helmet use, seatbelt use, drinking and driving</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel patterns and journey type</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### DISCUSSION

...
Lesson Summary

Summary • Module 2

In this lesson, we:

- Reviewed your Questionnaire on Traffic Safety Data in Your Jurisdiction.
- Based on the responses to your questionnaires, we began to get a picture of the job ahead of us in our Situational Assessment.
3

DATA SYSTEM COMPONENTS
Data System Components

Overview

Goal for Lesson 3
✓ Understand a traffic safety data system’s building block components.

Component Overview
Stakeholder Engagement

Describe stakeholder engagement.
Data Quality

Describe the three sub components of data quality.

Data Elements

Data Capture

Data Collection Tools

Listen to the facilitator mention items that may affect data quality. Determine how each item might affect data quality.
Describe the sub components of the data system.

Workflow

Database Features

Linkages

Data management and quality assurance
Lesson Summary

In this lesson we introduced the building block components of a traffic safety data system.
Understanding these core components will help you improve your data system.
An improved data system leads to effective road safety management and ultimately fewer road crash deaths and serious injuries.
Situational Assessment

What is the Situational Assessment?

4
SITUATIONAL ASSESSMENT

Goal for Lesson 4

✓ Describe the Assessment Phase of the Improvement Process.
✓ Create a draft Situational Assessment Action Plan.

What is the Situational Assessment?

Situational Assessment • Objectives

To identify:
1. People and agencies involved in the collection, processes and use of road safety data
2. Data sources and system(s) already in place, and their strengths and limitations
3. The needs of end users
4. Political factors that will help or hinder the road safety data systems improvement process
There are four main steps in the Situational Assessment.

1. Define and assess stakeholders.
2. Assess data sources, data systems, and data quality.
3. Define and assess end users.
4. Assess the environment.

The output of the Situational Assessment is:
The Situational Assessment is Phase 1 • Assess in your country’s data system’s improvement process.

Step One • Stakeholder Analysis

1. Stakeholder Analysis • Function and Groups

- Primary: Identify organizations and individuals with interest in data collection.
- Secondary: Examine roles and activities.
- Tertiary: Decide how stakeholders should be involved in the improvement process.

- Road Safety Advisory Stakeholder Group
- Road Safety End User Group
- Data Systems Improvement Working Group
Stakeholders most involved with road safety data include:

1. 

2. 

3. 

PRIMARY STAKEHOLDER GROUPS

SECONDARY STAKEHOLDER GROUPS
Stakeholder Involvement

Road Safety Advisory Stakeholder Group

Road Safety End User Group

Data Systems Improvement Working Group

Case Study • Boldonia

Refer to the Stakeholder Analysis on page 3 of the Boldonia Case Study. You’ll review this together with the class.

CASE STUDY DISCUSSION • STAKEHOLDER ANALYSIS
ACTIVITY • Stakeholder Analysis

INSTRUCTIONS
1. Work in your home group to complete the questions below.
   - Identify all stakeholders in law enforcement, transport, and health sectors.
   
   ......................................................................
   ......................................................................
   ......................................................................
   ......................................................................
   ......................................................................

   - Identify other types of stakeholders (insurance, NGO’s, academic institutions, automobile industry).

   ......................................................................
   ......................................................................
   ......................................................................
   ......................................................................
   ......................................................................

   - Identify the activities and roles of each stakeholder in relation to road safety data.

   ......................................................................
   ......................................................................
   ......................................................................
   ......................................................................
   ......................................................................
Identify the stakeholders who will be key supporters or opponents.

Describe your first meeting. Who’s there? What is the agenda? What is the meeting goal?

What will you need to do to fully identify all stakeholders, roles, and positions?

ACTIVITY DISCUSSION
Step Two • Assess Data Sources, Systems, and Quality

Assess Data Sources

✓ Different institutions collect information about the same road crash using various techniques.
✓ There may or may not already be mechanisms in place to aggregate these data within or across sectors.
✓ Rarely will one person, or even one agency, be able to answer all the questions in this step.
✓ Your Working Stakeholder Group will help you execute the Situational Assessment—especially, this step.
Case Study • Assess Data Sources

Refer once again to the Boldonia Case Study.

Refer to the table titled Data Type Mapped to Source, System, and End-User. Review the table, then your instructor will ask you a few questions.

CASE STUDY DISCUSSION

ACTIVITY • Assess Data Sources

INSTRUCTIONS

1. In your home group, review the Key Sources of Road Traffic Injury Data table on page 26, Table 2.1 of the Manual.
2. Use this list of sources and sectors to begin to populate the table below (as best you can, based on your current point of view).
3. Finally, complete the Action Items list and document the tasks that must be executed to complete this assessment step in your jurisdiction or country.
### SOURCES AND SECTOR ANALYSIS

<table>
<thead>
<tr>
<th>Source/Sector</th>
<th>Type of Data (Data Variable)</th>
<th>Data Format</th>
<th>Observations</th>
</tr>
</thead>
</table>

### ACTION ITEMS FOR ASSESSING DATA SOURCES AND SYSTEMS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>BY WHOM</th>
<th>BY WHEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DATA SOURCES DISCUSSION

Assess Data Systems

The objectives are to understand:

1. 
2. 
3. 
4. 

ACTIVITY • Assess Data Systems

INSTRUCTIONS

1. In your home group, read the Checklist to Assess Data Systems on page 28, Box 2.3 of the Manual.
2. Discuss these questions with your group.
3. Determine what needs to happen to complete this checklist and fully assess each data system. Populate your Action Item list (on previous page).
Assess Data Quality

See your Manual.

*Your facilitator will lead a discussion. If you discover any Action Items for yourself during this discussion, record them on the following page.*
CASE STUDY

Review the Data Sources, System and Quality • Step 2 section of the Case Study. Be prepared to discuss the following questions.

? What did the Boldonian team do to assess data quality?
? What did the Boldonian team discover after their test of data quality?
? What does the Boldonian team need to do to improve data quality?

ACTION ITEMS FOR ASSESSING DATA QUALITY

<table>
<thead>
<tr>
<th>ITEM</th>
<th>BY WHOM</th>
<th>BY WHEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Step Three • Assess End Users

### ACTIVITY • Assess End User’s Needs

**INSTRUCTIONS**

1. Refer to the list on pages 39–40 in the Data Systems Manual.
2. Using this list, brainstorm your plan to gather information about end user’s needs.
   - Document Action Items on the next page.
3. Be prepared to share and discuss your plans.

**END USER DISCUSSION**
## Action Items for Assessing End User Needs

<table>
<thead>
<tr>
<th>Item</th>
<th>By Whom</th>
<th>By When</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ACTIVITY • Analyze the Environment

INSTRUCTIONS
1. Work in your home group.
2. Read and discuss the questions in Box 2.7 on the bottom of page 40 in the Data Systems Manual.
3. Complete the Action Items list on the next page.
4. Prepare to discuss the activity with the class.
**ANALYZE THE ENVIRONMENT DISCUSSION**

---

**Boldonia Case Study**

**INSTRUCTIONS**

1. Work in your home group.
2. Read the full Boldonian case study.
3. Using the case study as an example—and thinking about your own Situational Assessment—compare the case to your own case. What’s different, what is the same?
   - Go back to your Action Items in your Workbook. Is there anything you would like to add?

**ACTION ITEMS FOR ASSESSING DATA QUALITY**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>BY WHOM</th>
<th>BY WHEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lesson Summary

Data systems that can accurately count injuries and fatalities, reliably provide information to identify road–users at risk, and identify hazardous locations require an investment of funds, resources, and time.

It may take years to build this kind of system.

Through your discussions in the workshop, you should have a better idea of what your situation will require.

Remember to set your goals realistically.

You may have discovered that there are only bits and pieces of a data available and no real system in place.

In this case, you can develop an intermediate plan based on your list of Action Items derived throughout this workshop.

Work to lay the groundwork and convene a working stakeholder group to begin.

Summarize your Action Items/Take–Aways.
REVIEW AND VISION
5 • Review and Vision

Mid–Workshop Review

Goal for Lesson 5
✓ To integrate knowledge from the first part of the workshop.
✓ To form a vision for the work ahead.

ACTIVITY • Review
DATA SYSTEMS OVERVIEW
Data Systems Improvement Process

1. **ASSESS**
   - Identify road safety stakeholders and perform analysis.
   - Assess data sources, system, and quality (identify gaps and user assessment).
   - Perform environmental analysis.
   - Identify gaps in data and data-gathering systems and identify resources to improve.

2. **IMPROVE**
   - Establish multi-sector working group.
   - Define goals for road safety data systems.
   - Mobilize stakeholders.
   - Gather and refine minimum dataset.
   - Refine/redesign data systems.
   - Refine/redesign data capture processes / system performance.

3. **IMPLEMENT**
   - Test all refined redesigned systems.
   - Train users on new data collection processes.
   - Monitor data quality and system performance and adjust as needed.

4. **USE**
   - Gather and disseminate data.
   - Take action.
   - Monitor for trends.

**INSTRUCTIONS**

1. A colleague from another country wants to attend this workshop. Take a moment to capture 3–10 things you learned from this workshop that you will share with your colleague.

2. Take five minutes to write your thoughts below.
REVIEW DISCUSSION

Use the lines below to capture a summary list.

My major take-aways so far are:

ACTIVITY • Our Vision

INSTRUCTIONS

The goal of this activity is to co-create a vision, with regard to data systems improvement, for your agency with the intended messages you wish to communicate. The vision does not have to be complete. Rather, identify key messages that will help your agency inspire vision and maintain motivation for all involved stakeholders.
1. Review your notes and content.
2. Individually answer the questions below.
3. When complete, discuss your responses with your small group.
4. Document a collective vision (or list a few main ideas).
5. Share your vision with the larger group.

**RELECTION**

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

**VISION ACTIVITY**

*Imagine your job in the next six months. Jot down words or phrases that describe the following:*

? **What do you see? How does it look and feel?**
5 • Review and Vision

What does it look/feel like to your customers or end users?

What does your agency provide? What’s special about this?

What does success look like?

DISCUSS THE ACTIVITY
STRATEGIES FOR IMPROVEMENT
Strategies for Improvement

Overview

Component Overview

Discuss the following questions with a partner:

How are the Data Requirements/Resource subcomponents related? How do they influence one another?
Stakeholder Engagement

Data System’s Components

- Road Safety Group
- End Users
- Working Group
- Data Elements
- Data Capture Procedures
- Data Collection Tools
- Workflow
- Database Features
- Linkages
- Data Management
- Quality Assurance
- System Requirements/Resources
STAKEHOLDER ENGAGEMENT AND THE IMPROVEMENT PROCESS

Improvement Process and Stakeholder Engagement

1. ASSESS
   - Identify road safety problems and perform analysis.
   - Access data sources, system, and quality (reviewing).
   - Conduct end user assessment.
   - Perform environmental analysis.
   - Identify gaps in data and data-gathering systems and identify resources to improve.

2. IMPROVE
   - Establish multidisciplinary working group.
   - Define targets for road safety data systems.
   - Mobilize stakeholders.
   - Review and refine minimum dataset.
   - Refine/modify data systems.
   - Refit/redesign data capture processes/systems performance.

3. IMPLEMENT
   - Establish multidisciplinary working group.
   - Define targets for road safety data systems.
   - Mobilize stakeholders.
   - Review and refine minimum dataset.
   - Refine/modify data systems.
   - Refit/redesign data capture processes/systems performance.

4. USE
   - Gather and disseminate data.
   - Take action.
   - Monitor for trends.
Gaining Stakeholder Engagement

ACTIVITY • Define Conditions and Characteristics of Engagement

INSTRUCTIONS
1. Answer the first two questions on your own. When prompted, share your answers with your small group.

Bring to mind a specific project where you or someone you worked with successfully brought the right people together to accomplish a goal. What conditions in your own organization or the general environment were present to enable the right people to show up, participate, and add value?
Thinking about this same project, what things did you or someone else do that helped foster stakeholder contribution?

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

Compare your responses with your home group. What’s the same? What’s different? What did you learn?

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

2. In your small group, complete the table below.

MEANINGFUL STAKEHOLDER ENGAGEMENT

<table>
<thead>
<tr>
<th>CONDITIONS TO CREATE</th>
<th>CHARACTERISTICS THAT ENGAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Tips for Working with Stakeholders**

1. Engage stakeholders early in the process.
2. Listen. Ask how they want to talk to you. Consider appointing stakeholder managers.
3. Make sure there is two-way dialogue.
4. Find out how much influence they have with your target audiences.
5. Remember they may have a different agenda. Always define mutual objectives and highlight common goals.
6. Communicate appropriately, relevantly, and demonstrate appreciation.
7. Don’t forget stakeholders may talk to each other more than to you. Keep your story straight and your offer transparent.
8. Don’t treat stakeholder relationships as a onetime event—communication at the start of a project: keep them informed and involved throughout the project.
9. Allocate energy and attention to developing positive relationships—building trust-based relationships takes time, effort, and attention!
Stakeholder Engagement • My Take–Aways/Action Items

Data Quality

Factors that can compromise data quality are:

1. .................................................................

2. .................................................................

3. .................................................................

4. .................................................................
Definitions

ACTIVITY • Think About Data Definitions

INSTRUCTIONS

1. In your home group, look at the definitions of “road traffic crash/accident” in the Manual on page 30 and “road traffic fatality” on page 31, and the table on page 33.
   - Review how you responded to the questions related to data definitions on the pre-workshop questionnaire.
2. Compare your country or jurisdiction’s definitions with the Data System Manual’s definitions. Then, answer the following questions with your home group.

   What events are excluded by the definition of road traffic crash, and what kind of bias does this omission create?
Has anyone estimated the number of crashes that are excluded from the data because of the definition?

Are police required to judge injury severity?

Does injury severity get assessed at the crash scene only, or through follow-up with the victim and health services?
? Are the definitions for injury severity straightforward enough for police officers to understand and apply them? If not, are adjustment factors applied so numbers can be compared?

? Do police receive training to determine injury severity?

? Has someone made comparisons with hospital data to evaluate the accuracy of the policy reported injury severity?
? Are the definitions used by the various sectors matched so that everyone understands the definitions the same way? If not, are adjustment factors applied so numbers can be compared?

? Is there an opportunity to create uniform understanding? How?

DISCUSS THE ACTIVITY
There are several areas where under-reporting can happen. 
1. Under-reporting in police data 
2. In accurate reporting rates of road traffic deaths in vital statistics 
3. Under-reporting of road traffic injuries in health facility data
ACTIVITY • Think About Under–Reporting

INSTRUCTIONS
1. In your small group, refer to Manual pages 33–37 and your assigned sector.
   - Read the section that lists factors contributing to under–reporting in your sector.
   - Summarize below.
2. Next, discuss these factors with your small group.
   - Add your own examples, if you have them, of obstacles that have contributed to under–reporting in your sector.
   - Use the worksheet below to gather your ideas and present a summary to the larger group.

MANUAL SUMMARY • FACTORS THAT CONTRIBUTE TO UNDER–REPORTING

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

OBSTACLES THAT HAVE CONTRIBUTED TO UNDER–REPORTING

? What are the factors that contribute to under–reporting in your sector?

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
What obstacles contribute to under-reporting?

How can these obstacles be overcome? What are some ideas for overcoming these obstacles?

What linkages, resources, communicating, or training would help to alleviate under-reporting in your sector?

DISCUSS THE ACTIVITY
Data Quality: Under-Reporting • My Take-Aways/Action Items

Missing Data

Data Quality • Missing Data

One lesson learned about missing data is:
Errors

Data Quality • Errors

What kinds of things lead to data collection and data entry errors?

MEASUREMENT ERRORS

RESPONSE ERRORS
DATA PROCESSING ERRORS

Ensuring Data Quality

Data Elements
Select your system’s **minimum data elements** based on what criteria?

1. ..............................................................................................................................

2. ..............................................................................................................................

3. ..............................................................................................................................
ACTIVITY • Dissect Data Elements

INSTRUCTIONS
1. In your home group, review the following:
   - The Data Systems Manual minimum data elements on pages 59, 94–113 and
   - Your pre-work Questionnaire on Traffic Safety Data in Your Jurisdiction—questions related to minimum data elements (Questions 15, 16, 17).
2. Next, as a group answer the questions below.
   1. **Identify the types of crashes that will be included in your database—**injury only or property damage as well?

   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................

   2. **Is your common dataset defined? What needs to happen to get a common dataset?**

   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................

   3. **What type of data is important but will not be gathered at the crash scene? What is its source/sector?**

   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
   ...........................................................................................................................................................................
DISCUSS THE ACTIVITY

Data Elements • My Take-Aways/Action Items

- Data Capture Procedure
  Data capture procedures are the processes used to collect information about the crash and transfer that information to a database.
  
  Data capture procedures will vary by _________ and by _________.

-
ACTIVITY • Dive into Data Capture

INSTRUCTIONS
1. On your own, read both case studies on pages 81–82 of the Data Systems Manual—a centralized data extraction and entry and a data capture from multiple data sources.
2. With your home group, answer the following questions.

? In your country or jurisdiction, does your traffic safety data collection system look more like the Ghanaian or the Peruvian case study? With respect to data capture processes, what are the similar characteristics? What’s different?

...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
...........................................................................................................................................................................
DISCUSS THE ACTIVITY

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

Data Capture • My Take–Aways/Action Items

..................................................................
..................................................................
..................................................................
..................................................................
..................................................................
..................................................................
..................................................................
..................................................................

Data Collection Tools
Road safety data collection tools range from simple, paper-based questionnaires to sophisticated, electronic mobile devices that can transfer data in real time.

The tools are best designed to capture all data variables according your country’s/jurisdiction’s ________________________________.

ACTIVITY • Explore Data Collection Tools

INSTRUCTIONS
1. On your own, read the Improve Data Collection Tools section
on pages 63–64 in the Data Systems Manual and then answer the questions below. When complete, discuss your responses in your home group.

? **What kinds of data collection tools are available in your sector? Are they paper-based or electronic?**

? **What tools work best? Why?**

? **How do data collection tools vary by source or sector? Can any of these tools be shared?**
What do you think is important about the data collection tools that are used or will be used? Describe the ideal characteristics.

DISCUSS THE ACTIVITY

Data Collection Tools • My Take–Aways/Action Items

☐ ☐ ☐ ☐ ☐ ☐ ☐
System Requirements and Resources

Data System’s Components • Systems Requirements

COSTS

TRAINING AND CONSULTING
STAFFING AND ROLES

Systems Requirements and Sub Components

![Diagram showing Systems Requirements and Sub Components: Workflow, Data Management, System Requirements, Linkages, Database Features]
Workflow Map Example

WORKFLOW DISCUSSION
Database Features

Database Features • Good Practice

Research on ‘good practice’ crash database systems in Asia, Europe and North America identified several useful features (4):  
- Built-in quality checks (algorithms and logic checks)  
- GIS linkage to allow accurate identification of crash locations  
- Ability to add new data fields without re-developing the database  
- Database navigation features such as drop-down menus, clickable maps  
- Pre-defined queries and reports  
- Option for customised, user-defined queries and reports  
- Mapping facility for data entry, crash selection and presentation of aggregated crash information  
- Ability to export data to third-party applications (e.g. Microsoft Excel, Statistical Analysis Software (SAS)) for further analysis  
- Inclusion of crash narratives, sketches of crash scenes, photographs and videos linked to crashes  
- Automatically generated collision diagrams

Complete list on pages 73 and 74 of the Manual

DATABASE FEATURES DISCUSSION

Linkages

For linkages to add _________ to the data quality, they must be accurate, up-to-date, and collected in a stable system and accessible format.

Linking ___________ and other data sources is often a way to improve data quality, however, it may not be the best place to begin your data systems improvement project.
Focus on a strategy for ________________ among the participating sectors.

**Data System Considerations**

*See your Manual. Address these questions after completing the Situational Assessment.*

**DATA SYSTEMS CONSIDERATIONS**

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

**Data Management and Quality Assurance (QA)**

Your data management plan will document the intended workflow (process map) for data collection, entry, processing and analysis. This plan will also specify the roles, responsibilities, and involved agencies.

Page 76 of the Data Systems Manual lists a number of items to include in your data management plan.

✓ Include _____________ procedures.
✓ Consult an IT expert to establish _____________ protocol and security mechanisms.
✓ Plan for and allocate resources for ________________.
✓ Plan for and execute regular _____________ checks such as random checks for data completeness and accuracy.
✓ Conduct in–depth _____________ to ensure the data system is meeting its goals, that data are timely, accurate and useful,
and that data outputs can be effectively used to improve the road safety.

✓ Conduct your first validation about _____ months after systems implementation. Then, in one year. Validate under-reporting every _____ years.

DATA MANAGEMENT AND QA DISCUSSION

Lesson Summary

*Take a few moments right now to review your Take-Aways and Action Items from this lesson. Start thinking about how you will prioritize the work that lies ahead!*

Data System's Components

- **Summary**

  - High quality data to make better decisions that ultimately reduce serious injuries and deaths

  - Road Safety Group
    - Data Elements
    - Data Capture
    - Data Collection Tools
    - Data Management and Quality Assurance
    - Workflow
    - Database Features
    - Linkages
  
  - Stakeholder Engagement
  
  - Data Quality
    - Assess
    - Improve
    - Implement
    - Use

  - System Requirements/Resources

  - ROAD SAFETY MANAGEMENT

  - IMPROVEMENT
ACTIVITY • Boldonia Case Study

INSTRUCTIONS
1. Re-read the Boldonia case study.
2. Answer and discuss the questions below with your small group.
1. What is Boldonia’s ultimate target?

2. What improvement strategies will help Boldonia’s data system generate the most reliable outputs? Outline several strategies and list the main steps you need to see the strategy through.

3. List potential safety performance indicators that the data system must track.
4. What kind effort will be needed and who has to put forth the effort for the Ministry of Transport to obtain the data they need?

5. Presuming Boldonia will use all of the minimum data elements, review the minimum data elements in the Manual and determine if you have the data elements necessary to obtain the information that the Ministry of transport wants? Are they enough or does the data system require additional elements?

6. What initial safety performance indicators and process indicators do you want the data system to capture?
7. If you are able to generate quality data on safety performance indicators and process indicators (outputs), how does this data contribute to road safety management?

8. What kind of resource allocation and planning will you need to meet your targets?
CASE STUDY DISCUSSION
8

WHAT’S NEXT
What’s Next?

Overview

International Traffic Safety • Data Systems

High quality data to make better decisions that ultimately reduce serious injuries and deaths

Road Safety Management

- Assess
- Improve
- Implement
- Use

Stakeholder Engagement

- Data Elements
- Data Capture Procedures
- Data Collection Tools

Data Quality

- Workflow
- Database Features
- Logistics
- Data Management and Quality Assurance

System Requirements/Resources

WHAT'S NEXT?

8 • What's Next?
ACTIVITY • Summary

INSTRUCTIONS
You’ll have about 10 minutes to work with your home group to create a summary of what you learned and will take with you.

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................

FINAL SUMMARY DISCUSSION
What top three things will you walk away with?

......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................
......................................................................