FEEDBACK TUTORIAL LETTER

2ND SEMESTER 2019

Assignment 1
Transport Safety Practice and Infrastructure Management
(SPI621S)
Dear students

Thank you for the effort and congratulations in completing your first assignment for this semester.

It is very important to write a proper assignment report at your academic level. You can only achieve this by following the assessment criteria pin your tutorial letter. An assignment is graded with distinction if it is adhering to the content, structure, presentation and language defined criteria. Apart from answering the questions correctly, we also assess the understanding and use of transport safety concepts and theories; logical flow of ideas, presentation of information using diagrams, examples, tables and correct grammar.

The biggest problem is that students are not referencing (in text referencing) their work. Please use the APA referencing guide to cite the sources of the information used in your assignments.

Finally, you should always make sure you read your assignment carefully before attempting to answer any question, and also, be guided by the marks allocated per question when answering questions.

Best regards,

Mrs Ester Jesaya

SPI621S Marker Tutor
QUESTION 1 [32 MARKS]

1.1. Discuss the safety data management challenges? 12 Marks

The challenges of managing Safety Data fall within three categories, namely (Federal Highway Administration (FHWA), 2017):

- **Systems**
  - Data collection - budget restrictions may limit agencies’ ability to collect data elements required for safety analysis on all transport infrastructures.
  - Data access - data is stored in unrelated systems and databases, all stakeholders may not have access to data or they may lack technical skills to use it in the native format.

Safety manager can also ask the question below to assess the data management system:

  - Are there gaps in required data elements needed for safety analysis? Are data elements consistent with national guidelines?
  - Are there redundancies in current data collection or data management efforts?
  - Is data easily accessible?
  - Can users find the data they need in the format they need?
  - Are there difficulties integrating safety data within the agency or across multiple agencies?
  - What are the challenges with integrating safety data (such as lack of geographical coordinates, differing segment identification, different data formats, varying temporal resolution)?
  - Are system owners entering data in a timely manner?
  - Is the available history of crashes adequate for safety analysis?
  - Is documentation complete and up-to-date?

- **Technology**
  
  The following questions can be used to help identify specific issues, symptoms, and root causes to address in the Safety?

  - Can users access the tools they need to conduct safety analysis?
  - Can users achieve consistent results when using safety analysis tools?
  - Do users need tools such as dashboards, scorecards, and data visualization to help with reporting, performance tracking, and analysis of safety data?
  - Do users need geospatial location capabilities to facilitate efficient visualization and analysis of data when using safety analysis tools?
  - Do users need additional functionality within applications such as enhanced modelling and reporting capabilities to help identify and prioritize safety improvements?
  - Can users generate customizable reports to support safety analysis?
  - Are safety related data sets stored in older legacy systems that require substantial investment to meet current and future business needs?
Do users need more streamlined access to data and information?
Are there data “silos,” especially for critical data sets needed to support safety programs?
Can staff access the latest information about safety systems, data, policies, reports, tools, and training resources through a centralized knowledge management system?

- **Institutional**
  - Is there a data governance structure for the Safety Data System?
  - Are roles, responsibilities, and processes for safety data governance formalized and documented?
  - Are formal data sharing agreements in place to facilitate data sharing between internal and external stakeholders?
  - What policies and procedures exist for collecting, maintaining, using, and updating safety data?
  - Do staff need training on safety data policies, procedures, and processes?
  - Do staff know how to use tools for safety analysis and reporting?
  - Are Safety Data System investments made at the functional (that is, within the safety program) or enterprise level?
  - Are overall agency needs for safety data optimized? How are safety data improvements prioritized with respect to improvements in other program areas?
  - Are safety data system needs coordinated with IT, local agencies, and other stakeholders?
  - Do data program investments align with business needs for safety data systems?

1.2. **How can you assess the quality of transport safety data?** 10 Marks

A variety of methods is available to assess under-reporting (Silva, 2018):

- Compare the number of police reports filed on certain events to those captured in the database.
- Compare the number of road traffic fatalities and/or injuries counted by one data source, usually the police database, to those counted in a survey.
- Compare the number of traffic fatalities and/or injuries counted in the police database to the number counted in other databases – cause-of-death statistics, hospital admissions, accident and emergency records, trauma registries.
- Use linkage or capture-recapture methods to match records from different databases and identify the proportion of road traffic injuries appearing in one or both databases.

The questions below can also be used to assess the quality of transport safety data:

- How reliable and representative are the data?
- Does the system capture all crashes (or injuries if that is the defining criteria)? If not, what kind of bias is created by the exclusion of some events?
- How does that affect utilization of the data?
- For the events captured, are the data complete and accurate?
- What validation procedures are in place?
- What is the frequency with which missing data occurs?
- Are data systematically missing for certain variables or certain types of crashes – i.e. is there a bias in what does and does not get recorded?

### 1.3. How can you effectively manage transport safety Data? 10 Marks

Data can be effectively managed as follows (Silva, 2018):

**Getting Started**

- An assessment of data requirements should be done.
- For countries with no comprehensive crash data, data on final and intermediate outcomes must be gathered for high risk routes (e.g. high volume roads) to allow measurement of safety problems and identification of measures.
- A crash data system should be developed.
- Focus should be on gathering data essential at addressing fatal and serious injury crash outcomes which will include exposure data, final outcome data as well as intermediate outcome data.
- Transport infrastructure data collection must be considered to make informed safety decisions.

**Making Progress**

- A data collection strategy must be developed to ensure that important data is gathered.
- The crash data system must be routinely checked for accuracy and completeness.
- The database should include basic features to allow comprehensive analysis of crash problem types, and be fit for use by the required stakeholders.
- Other data relevant to the setting and monitoring of transport safety targets should be collected and the accuracy of this data assessed.
- All outputs (such as reports) must be assessed to ensure that they are fit for the purpose and address the needs of key stakeholders.

**Consolidating Activity**

- A comprehensive data collection strategy should be put in place and regularly monitored to ensure that is fit for purpose, accurate and complete.
- A crash database must be fully implemented and must contain all crash data.
- Such data should be spatially coded, and appropriate quality control checks must be established.
- Linkages between data sources must be prioritised, especially data collected by police and hospitals.
QUESTION 2 [18 MARKS]

2.1. Which method do you think is used in Namibia to identify hazards when it comes to roads accidents or incidents? Justify your answer

Students can choose to any of the methods below and justify their answers with examples and events that happened:

There are three hazard identification methodologies

- **Reactive**: This methodology entails analysis of past outcomes or events.
  - Hazards are identified by investigating safety occurrences (i.e. accidents or incidents).
  - *Some examples of reactive approach* (Rods Authority, 2018)
    - The upgrading of the road from single to dual carriageway between Windhoek and Okahandja after a lot of accidents statistics were recorded, is a definite implementation of reactive approach.
    - Windhoek – Hosea Kutako International Airport, Phase 2, Road Upgrading to dual Carriage-Freeway
    - Omuthiya – Ondangwa – Ongwediva – Oshakati dual road carriageway (145km)
    - Windhoek – Rehoboth, Section A dualroad carriageway (km)
- **Proactive**: This methodology entails the analysis of real-time events.
  - It involves actively *seeking hazards in the existing processes*.
- **Predictive**: This methodology entails the gathering of data to identify potential negative events.
  - It rests mostly on forecasting future occurrences and put in place mechanisms to counter them before they even happen.

2.2. National Road Safety Council (NRSC) of Namibia conducted investigation on reoccurring road accidents in Namibia. The investigation team has suggest several mitigations approaches that can be implemented to prevent the accidents from happening again. NRSC needs your advice on which approach/method to implement considering its success of the approach. In your advice, discuss at least eight factors that NRSC can assess to determine if a risk mitigation approach will be successful or not?

Students should discuss the following factors in their advices (Silva, 2018):

- Effectiveness – the extent to which the alternatives reduce/eliminate safety risks.
- Cost/benefit – the extent to which the perceived benefits of the mitigation outweigh the costs.
- Practicality – can the mitigation be implemented and how appropriate is it in terms of available technology, financial and administrative resources, legislation and regulations, as well as political will.

- Acceptability – how consistent is the approach with shareholder’s standards.

- Enforceability – does the approach comply with new rules, regulations and can operating procedures be monitored.

- Durability – is the approach sustainable and effective.

- Residual safety risks – what level can the risk remain subsequent to the implementation of the initial mitigation and which risk might need additional control measures.

- Unintended consequences – the introduction of new hazards and related safety associated with the implementation of any mitigation alternative.
Bibliography


[www.skybrary.aero](http://www.skybrary.aero)