

CSE 4408 : System Analysis & Design Project

# **Unsupervised Pedestrian Crossings Safety Indicator**

**Muftiqur Rahman Agni**

ID : 180041111

**Ocean Monjur**

ID : 180041112

**Abdullah Ibne Masud Mahi**

ID : 180041114

Requirement Analysis Report

# Persona, Scenarios & Requirements Description

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# 1 Methodology

The purpose of data gathering is to understand user requirements & collect sufficient, relevant, and appropriate data so that a set of stable requirements can be produced. There are several methods for data gathering for example - questionnaires, interviews, studying documentations, focus groups & many more.

Due to current pandemic situation, it is quietly impossible to arrange face to face interviews. So we used these methods to gather user requirements :

- (a) Questionnaires [Using Google forms]
- (b) Direct Phone Call Interviews

There are many benefits of using questionnaires for collect user data such as-

- (a) Good for answering specific questions. We followed pyramid structure while arranging questions.
- (b) Provides quantitative & qualitative data.
- (c) Can reach many people with low resource. Meanwhile we get almost 30 responses within 24 hours.

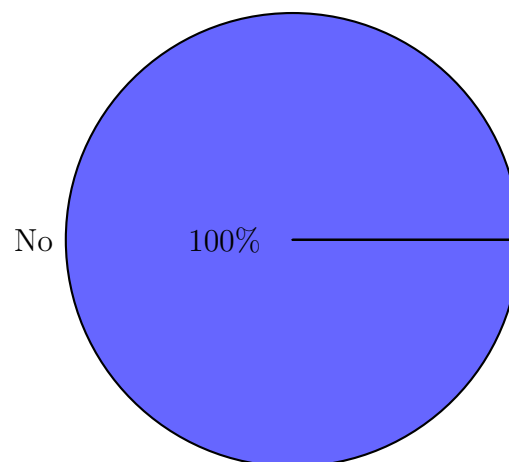
In our project, we have 2 types of potential users - **Pedestrians & Law Enforcement Agencies**.

- (a) Highway pedestrians have to cross roads regularly meanwhile their safety measures are often unnoticed.
- (b) Highway police face high speed cars quite often. To detect those vehicles they have to go through entire CCTV clip which they got from traffic cams.

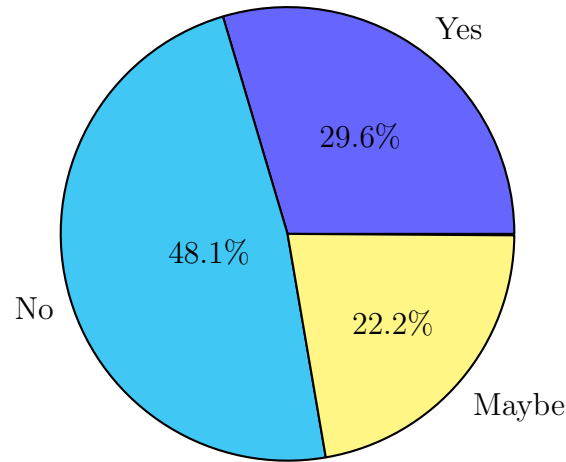
# 2 Raw Data

We found some salient results in our survey - for example : [\[See Appendix for whole survey result\]](#)

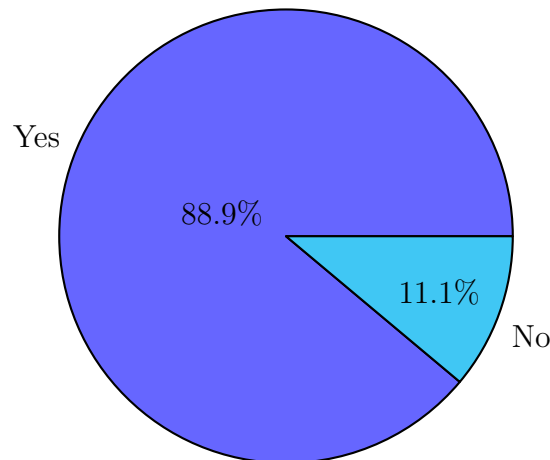
- Every participants believe to the fact that Bangladesh does not have adequate measures about road safety.



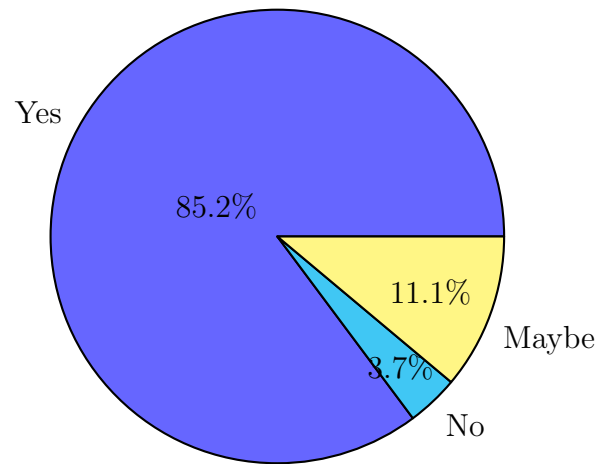
- We found a shocking fact from the participants that almost half of them are not completely focused when they are crossing the roads.



- As we want to develop a system which will provide signal to the pedestrians that whether it is safe to cross the road or not, we asked the participants that would they take technology as a helper function or not. Interestingly, most of our participants have said that they would take technology as a helper function. The survey result is shown in a pie-chart below :



- We asked our participants about the fact that will it be helpful for the law enforcement agencies to have a separate database about speeding cars so that they can identify those cars later on. In this regard, we get some a positive response from the participants that it will be helpful to have those kind of functionality.



### 3 Persona & Scenarios

1. **Name :** Adib  
**Age :** 27  
**Occupation :** Banker

#### Goals :

- Have an economic & social stability in the harsh reality of real world
- Lead a simple life along with his family

#### Motivation :

- Risking life for his family
- Honest
- Religious

#### Scenario 1

After spending an exhausted day at work, Adib now wants to go to home. But his mind is preoccupied with some thoughts about pressure of his work.

Now he is standing alone beside a road having thoughts about his family & whether he should leave this job or not. He has to cross the road to go to otherside of the road where he reside. Just after proceed a little,he suddenly see a high speed car is coming towards him. Meanwhile the car was just in front of him, restlessly horns to make him move aside but Adib is somewhat of stuck in that moment , he couldn't move. Then something like a miracle a unknown man pull him out of the road & Adib got saved from that incident.

2. **Name :** Hasan

**Age :** 24

**Occupation :** Traffic Police

**Goals :**

- Proper implementation of traffic laws
- Ensure public safety first

**Motivation :**

- Not to encounter any unnatural death by road accident
- Do good for the society
- Feels the urge to do something better within his power

### Scenario 2

Hasan joined the traffic police section not a long ago. One day Hasan was doing regular duties on Dhaka-Mymensingh Highway. All of a sudden, he heard a loud scream. Meanwhile everyone on the road stuck for a moment. Hasan rushed to the spot and saw a man was hit by a car and Hasan saw that went passing. After joined he hadn't face any incident like that - for a moment Hasan felt like his legs were paralysed, he couldn't move. He dived into thought bubble for a while. The gathered crowd was screaming at him to catch that culprit driver. But unfortunately, he couldn't recall every details about the car because it was too fast. Then he went to local control room to check the car details but he had to go through the whole clip and it became late to inform the nearby control room because of this difficulties. But fortunately the culprit was caught in the end. Hasan felt the urge to have a better solution of this kind of problems.

## 4 Current Situation

To ensure pedestrian safety, we have these safety measures -

- Foot over bridges
- Zebra crossings

Those systems some problems such as -

1. Foot over is costly & it is not possible to provide foot over bridges everywhere
2. It is very difficult for the old & disabled people to use foot over bridges
3. People may prefer to walk across a busy road rather than climb a bridge
4. Though zebra crossings is safe option in metro roads, but for highway it is not that good option, because to provide proper safety it has to be supervised by a traffic controller. Now it is impossible to provide traffic controller everywhere

## 5 Requirements

### 1. What we'll be must provide

Our system will be provide some features as primary requirements for example -

- *Vehicle detection & Speed Calculation*

Recall those scenarios mentioned above - to implement any kind of safety signal we must have to detect vehicles & then calculate those speed & lastly based on these speed, we have to provide signals. So this is one of main requisite of our system.

- *Providing Signal*

Then based on gathered data about vehicle & its speed, we've to provide signal. To provide signal we've to maintain some protocols. This would help our persona to see the signal & based on it they may proceed or not.

- *Saving clips of high speed vehicles*

Recalling the second scenario, we see a policeman is struggling to find the clip of a particular vehicle & he has to go through the entire the CCTV clip to find it. So our goal is to provide the facility to save clips of the high speed vehicles & save it to a local database, then may use it for future purpose.

### 2. Want list

As our project is based on very preliminary knowledge about road safety & protocols so we want to improve it time-to-time such as-

- *Introduce new parameters*

In preliminary level, we are only detecting a vehicle, calculating its speed & providing signal. In the long run, we can introduce some new parameters & based on those we can provide more accurate results.

### 3. Wish list

We wish to introduce another feature which is to detect number plates & save it to a database. But there certain issues in this regard.

- *High quality cam & technical equipments*

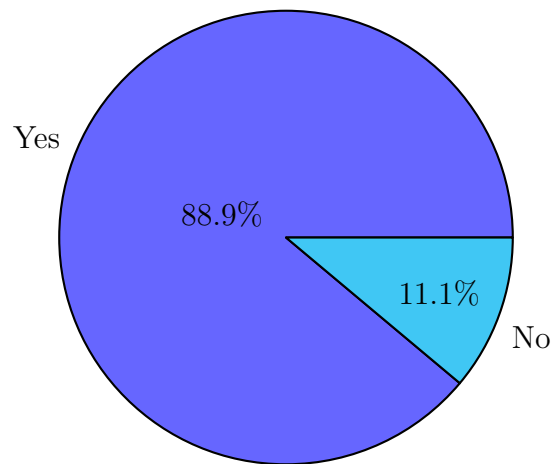
- *Government policy issues*

### 4. Our drawbacks

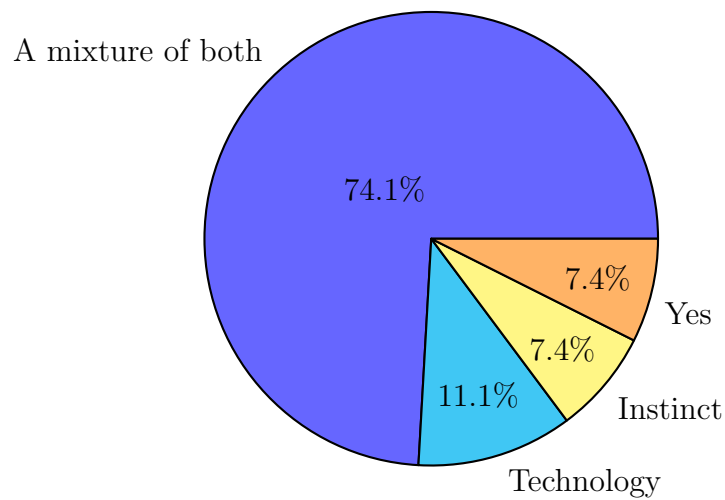
We want to develop a smooth system & provide signal to pedestrians to cross highway. But in the meantime, we just provide signals. Its totally depend on the pedestrians to follow the signals & in the busy metro way our system would be kind of inefficient. In that case we need rigorous traffic police & timer type system.

## 6 Appendix

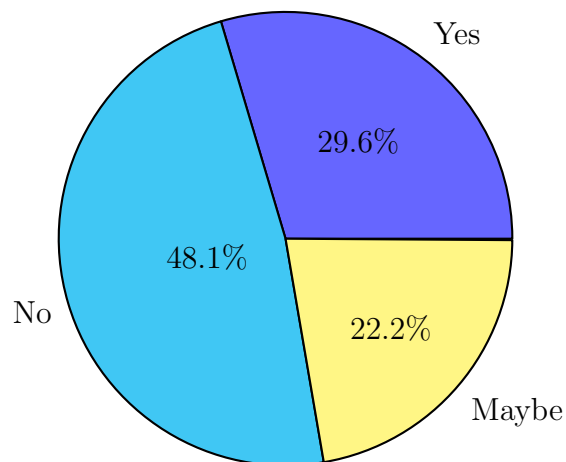
- (A) Would you take technology as a helper rather than completely depending on it while crossing roads on highways ?



- (B) Would you rather depend on your instinct or depend on technology ?

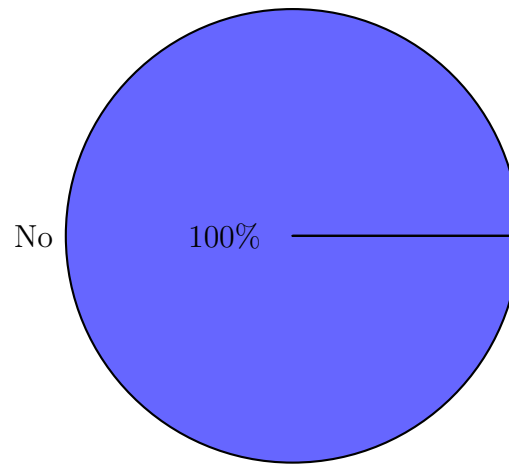


- (C) Are you always completely focused when you are crossing the road ?

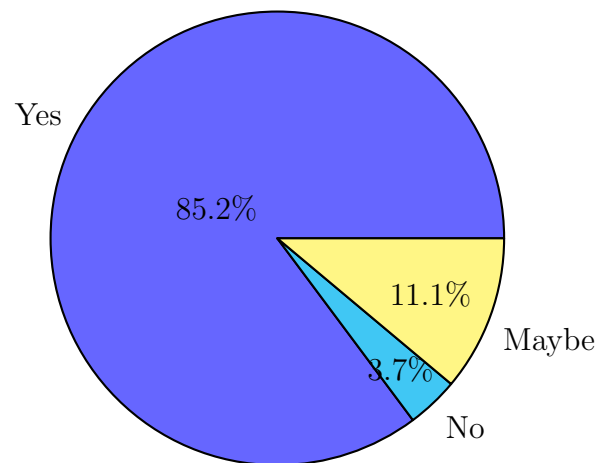




- (D) Do you think road crossing in Bangladesh especially in Highway have adequate measures ?



- (E) Do you think it would be better if law enforcement have a separate database of speeding cars so they can identify speeding cars ?



- (F) Do you think making a database where videos of speeding incidents are stored would help identify parts of the highway where speeding is prominent ?

