Naturalistic Observations

Naturalistic observations takes place in the setting in which the behaviour of interest occurs, so in rod safety that setting consists of the roadway network and the vehicle occupants who travel on these roadways.

David W.Eby (In Handbook of Traffic Psychology,2001 by Porter B.E)

- **Research method**: involves a researcher (or more commonly several researches) making careful observations about what he/she sees on the roadways. The observations can occur as the behaviour is happening or the behaviour can be recorded on a video and observed later.

When we can use naturalistic observations:

- if the purpose of the research is to document the frequency of some behaviour
- if the behavior of interest can be accurately and reliably seen

Sample Design

A good design is essential to be able to generalize results to the larger population being studied and to reduce potential bias.

- Randomize as much of the design as possible (e.g random observation sites and which data collection takes place on random dates and times

2 different ways of Observations

- **Direct**: Researchers standing along roadways or other location accessible to traffic, looking into vehicles and recoding what they see. The researchers are visible to car drivers
- **Non direct** :Researchers are not visible to vehicle occupants. That means that either the researchers are physically hiding or more commonly using camera or video , placed in not visible locations

3 types of variables

- **Descriptive** (a researcher records what he/she sees without any interpretation or interference (e.g. seat belt use, helmet use). The user is using or not the safety device
- **Inferential** the researcher makes an assumption of what he/she sees (e.g mobile phone use, because one has to assume if a conversation takes place)
- **Evaluative** the researcher makes both an inference and a judgment (e.g risky driver behaviour). Evaluative variables are not used often is observational studies

Observer training

- **Training for consistency and accuracy** it is important that an observer collects data following the same procedures throughout the study, including following protocols and coding data identically each time the behavior is observed.

- Observes should practise the procedures prior to starting the actual study

- If more than one observer is collecting data, all observers should be trained together and tested for interobserver reliability to ensure that the data collected by each observer are comparable. This can be done by having observers practice together looking into the same vehicles but recoding data separately. The data then can be compared for consistency.

Applications

We can use naturalistic observations for

- **Pedestrian and Bicyclist Behavior**: pedestrian/bicyclists volumes and characteristics, classify specific behaviors of pedestrians and bicyclists on roadways, motor vehicle drivers response to pedestrians and cyclists
- **Driver distraction** (in –vehicle distractions): presence pf passengers, eating or dinking, smoking, adjusting vehicle controls, pets moving in the vehicle, use of technology (e.g mobile phones, navigation systems). Mobile use is one of the main distraction factors, however using observational techniques is challenging (we are not sure if the driver is indeed speaking on the phone, headsets can be too small to see or covered by hair, e.t.c.). Research has shown that hands –free cellular phone use cannot be accurately measured using roadside naturalistic observation techniques.
- **Risky drivers behavior** : use of turn signals, use of daytime headlights, red light running (mainly recorded by cameras)
- **Use of protection devices** (seat belt use, child seats, motorcycle helmets). Along with the observations other data are collected:

✓ age (because is difficult to judge we categorize age in groups, such as 0-15, 16-29, 30- 64 and 65 years and older

✓ gender (male –female)

✓ Seating position (front-back seats, left-right back seat)

✓ Vehicle type (e.g moped-motorcycle)

How to design a survey

- **Step 1. Get organized**

What the survey is intended to achieve? The survey results will be valid only for the survey area. Having a good map of the survey is essential. Which types of vehicles will be included? What kind of behaviors will be measured? What type of devices (eg. Belt use, helmet use)? What other data will be collected (age, gender, etc)?

- **Step 2. Select Observational Sites**

Select the observation sites where researchers will conduct the observational study. Determine how many observation sites are needed. Randomly select the locations of the sites and where the researcher will be standing.

Place

If not otherwise specified, the observations should be made in a city centre of a middle size city (between 100, 000 – 500,000 inhabitants). Some cities have many centres, which does not matter – just choose one of them – and in this case you can choose a large city (more than half million) too. The reason for choosing city centres is to standardise the traffic density and speed limit. The speed limit should be 40 km/h (30 km/h - 50 km/h) and the traffic should be "busy". A moderate size city is recommended, because these cities can be found in every country (e.g. Tallinn in Estonia) but please understand that we are rather interested in having the measurements in a "relatively busy downtown street where vehicle and pedestrian traffic mix" – you can also choose a subcentre (e.g. Bahcelievler in Ankara) if that seems to fit to the conditions. We try to avoid conditions which cannot be found anywhere else but in large cities (e.g. Manhattan, Istanbul Taksim square). The reason is that the traffic can be over-congested in large cities (traffic should be moving, not stagnant, when you make the observations) or pedestrian traffic is separated from vehicle traffic.

Since the pedestrian/vehicle density will be counted and standardised, small variations are OK.

The road should be a road in which we have level crossings (which is the case in city streets).

The location depends on the measurement type (see the protocols). In some measurements, the correct place is a traffic light, in others it can be, for example, turn to service station. Please follow the protocol.

Please note that you can do many observations simultaneously if you choose the place cleverly.

- **Step 3. Schedule the Survey**

Determine : the number of observers that participating in the study

: how many days they are available to collect data

Time & weather

To standardise the variations in traffic flow, we choose to do one 60 min observation on a weekday (preferably Wednesday). Choose a non-rainy day (dry surface) and preferably early afternoon (13:00).

- **Step 4. Collect Naturalistic Observations Data**

How to measure?

Use the attached protocols for each different type of observations. You could use a video camera. Then it is easy to control the measurements afterwards.

We need to know when and where you made the observations. Please write down the date and time. Please take

photos from the location and you can also draw a sketch.

Traffic light observations: observe pedestrians' and drivers' behaviour at traffic lights (i.e. signalized level crossing).

Place: 2 downtown (city centre) signalized crossings (speed limit 30-50 km/h) and 2 suburban (residential area) signalized crossings (speed limit 30-50 km/h

Time: One hour observation in each place (4 h together). Choose non-rainy day (dry surface), nonweekend (e.g. Wed) and preferably early afternoon (13:00).

Measures: Counts during 60 min observation period. The measures include: 1) Driver crossing during red light (count clear red light violations, not amber) 2) Pedestrian red light violations 3) Number of cars passing the intersection 4) Number of pedestrians crossing 5) Number of beeps/horn honking

Method: The best way is to film the situation with a video camera or mobile phone from an appropriate spot. Then you can analyse the video afterwards. If this is not possible, please use a protocol on the spot where you tick to appropriate columns every car passing the intersection, every pedestrian crossing the road, every red light violation by the driver, and every violation by the pedestrian. You can use the protocol below.

SEAT BELT USE : passengers & drivers seat belt use

Place: Choose one city centre easy location (e.g. turn to petrol station, traffic lights).

Time: One hour observation. Choose non-rainy day (dry surface), non-weekend (e.g. Wed) and preferably early afternoon (13:00).

Measures: Counts during 60 min observation period. The measures include: 1) Number of drivers wearing a seat belt/not wearing a seat belt 2) Number of passengers (if different seats) wearing a seat belt/not wearing a seat belt

Method: One location for observations is enough, because we do not expect the location influence seat belt wearing. Choose an easy location, observe randomly selected vehicles (you can't observe them all so pick randomly) if the driver and passenger(s) use seat belt. Use the protocol attached. Fill columns for the driver, front seat passenger, back right seat passenger and left back seat passenger. Leave those columns empty which do not apply (if you have less than 3 passengers).

Pedestrians & drivers behaviour at non-signalized pedestrian crossings (i.e. zebra crossing).

Place: Choose 2 downtown (city centre) non-signalized crossings (speed limit 30-50 km/h) and 2 sub-urban (residential area) non-signalized crossings (speed limit 30-50 km/h). If you do not have time for 4 crossings, have at least one in town centre and one in a suburb.

Time: One hour observation in each place (4 h together). Choose non-rainy day (dry surface), nonweekend (e.g. Wed) and preferably early afternoon (13:00).

Measures: Counts during 60 min observation period. The measures include: 1) Number of drivers stopping/non-stopping in pedestrian crossings to give a pedestrian way 2) Driver's age and sex 3) Pedestrian age and sex 4) Number of cars passing (vehicle volume) 5) Number of pedestrians crossing (pedestrian volume)

Method: The best way is to film the situation with a video camera or mobile phone from an appropriate spot. Then you can analyse the video afterwards. If this is not possible, please use a protocol below on the spot. You should count all those occasions in which either car OR pedestrian yields (i.e. stops and lets the other party to go on) in a conflict situations. Conflict means a situation in which the drivers SHOULD stop for the pedestrian. Do NOT count events in which there is only a car or a pedestrian on the spot (these are not a problem). Count also the number of cars and pedestrians during a 60 min period.

Motorcycle helmet

Place: Choose one location in city centre.

Time: One 60 min observation on a weekday (e.g. Wed). Choose a non-rainy day (dry surface) and preferably early afternoon (13:00).

Measures: Counts during 60 min observation period. 1) Number of motorists (rider/passenger) wearing a helmet 2) Number of motorists (rider/passenger) not wearing a helmet 3) Type of the bike 4) Rider sex, age

Method: Observe every passing motorist (all directions). Try to observe if the bike is moped or scooter (usually licence not needed and speed max. 45 km/h) or a motorcyle.

Indicator use

Place: Choose one service station in city centre/close to centre. Try to choose a spot in which turning cars are not in a queue but independent. This is usually easy since not every car turns to a service station.

Time: One 60 min observation on a weekday (e.g. Wed). Choose a non-rainy day (dry surface) and preferably early afternoon (13:00).

Measures: Counts during 60 min observation period. 1) Gender, age group 2) Number of drivers using indicator when turning to service station.

Method: Observe every car turning to service station and observe if the indicator is used when turning. If the driver switches the indicator when already turning, count that as “indicator yes”.

Child seat use

Place: Choose one city centre easy location (e.g. turn to petrol station, traffic lights).

Time: One hour observation. Choose non-rainy day (dry surface), non-weekend (e.g. Wed) and preferably early afternoon (13:00).

Measures: Counts during 60 min observation period. The measures (1-4 kids per car) include: 1) Kids seated on a child seat. 2) Kids not seated on a child seat but wearing seatbelt. 3) Age of the kid 4) Location of the kid (front/back) 5) Drivers wearing a seat belt.

Method: One location for observations is enough, because we do not expect the location influence child seat use. Choose an easy location (turn to shopping centre or service station), observe randomly selected vehicles which have child passengers (you can't observe them all so pick randomly) if the children in the car are using child seats and if the driver is using a seat belt. Use the protocol attached and print as many pages of the protocol as you expect to need. In each car, you can observe 1 - 4 kids. Make a rough estimation of children's ages, if the child is sitting on front or a back seat, if the child is seated to a child seat and if she/he wears a seat belt if he/she is NOT on a child seat. Observe also if the drivers uses a seat belt.