

Prevention Routière Internationale



*Study design for measurement
of behavioural indicators*

March, 2016

1. Brief description of the project

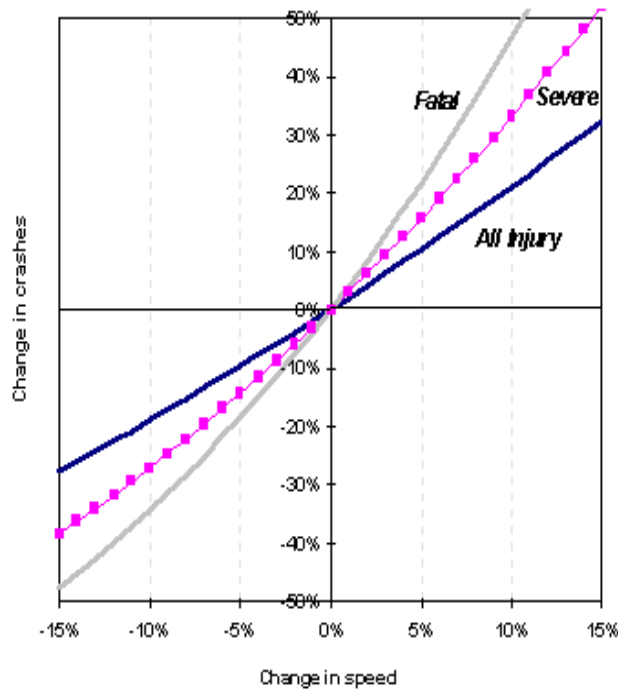
There is a high consensus among scientist community, researchers and experts in road safety that the behaviour of road users is strongly related to the level of risk accidents. speed, seat belt use, helmet use, respect of red-light priority, respect of Stop signal, phone use when driving, transportation of the children in the front seats, ...are the main themes concerned. This kind of behaviour on the road makes it unsafe and risky.

To help our members inside PRI and therefore their countries and stakeholders to build a sound strategy, to fixe priorities, to set targets and goals in road safety at national and local levels need to know first what are the realities and figures of those indicators. We believe that inside PRI we can offer some technical assistance to members using the expertise we have among other members already familiars with this kind of studies. With this initiative, PRI expect to be a real and best area for changing best practices, challenges, fails to avoid, ...between members. The outcome of this project is highly important for all members and should help all of you to be a real advisor for national authorities responsible for road safety.

This document aim to present the main principles necessary for the implementation of some or all studies. So, some adaptations to national context could be necessary for each project. By year to year, and with your real involvement and your support, PRI could develop a sound methodology for this kind of studies which could benefit to international road safety community.

1. Speed measurement :

To know the average speed in the country, inside cities and at national road network will help so much not only Police for their work but all stakeholders. If this level is high this means that our traffic is risky. Researches show the significant relation between the average speed and level risk accidents. So, we all know that to decrease the level of average speed by 1% will decrease the fatality by 5%. That means reduce speed is equal to save more lives.



There is different way to measure speed at national level. PRI Member can get a radar unit directly or with special agreement with Police. The main goal is only to measure speed to know the right situation of the speed behaviour of drivers. Recent radar units are very sophisticated and they can collect also information about the :

- Place code of measurement
- Day, time
- Kind of vehicle (moped, cars, heavy vehicles)
- Speed

All this data is storage in the radar unit and can be downloaded for analysis and comments. If some PRI members could have a problem to access to the radar unit, one issue is that in the new strategy of PRI can have contact with private companies and they are many (Gatso, Radar Luxe, Robot, RedFlex, Sagem, ...) to borrow one unit just for doing studies. In this case and with coordination between PRI and active members, they can set a program for the year to do speed measurement. Some logistics issue could be arranged at close level regarding the situation for stockholders involved in the project.

Places where to do measurements can be fixed in coordination with Police administration or National Road administration, mainly in the straight road sections, near schools, hospitals, etc where we expect from the experience that the speed is very high and represent a high risk for other road users.

From the data base you will constitute, some specific skill person should be involved in the project like statisticians to get information and speed indicators for the country :

- Average speed
- Minimum and maximum speed in the section
- By day of the week, time during the day, by place of measurement, etc.

2. Helmet use among motorcyclists :

“Injuries to the head and neck are the main cause of death, severe injury and disability among users of motorcycles and bicycles. In European countries, head injuries contribute to around 75% of deaths among motorized two-wheeler users; in some low-income and middle-income countries head injuries are estimated to account for up to 88% of such fatalities. The social costs of head injuries for survivors, their families and communities are high, in part because they frequently require specialized or long term care. Head injuries also result in much higher medical costs than any other type of injury, such that these injuries exert a high toll on a country’s health care costs and its economy”¹.

Being a Motorcyclist road user is not safe in many countries. All stakeholders should work together to improve the situation via improving specific laws, enforcement, right infrastructure but also by awareness and communication campaigns.

The first step could be also to know the right level of helmet use among cyclists and motorcyclists in the country. This will help for sure all stakeholders to set measures to improve the safety for this category of road users qualified as vulnerable.

To have a good statistical data, we need an observational study with sound methodology with good sampling design. To comply sampling technique requirements, representative observational study needs special information different from one country to other. Here, we will describe the main criteria to respect and May some adaptation is necessary to implement the study.

○ Sampling technique

In order to observe the behaviour of motorcyclists in terms of helmet use, we need to divide the territory of the country to some homogenous strata regarding the main variables of the study. The number of strata depends on how the area is big and the distribution of Motorcyclist motorization among citizens is different between counties or provinces. Sometimes, the distribution of the population or households inside the country could be a good entrance to make homogenous strata. In some countries, we can have the rate of motorization or ownership of motorcycles (this type of information are available in the official national census report or using National Statistic system. In many countries, National census is organized each 10 years). Using this data, we can set different levels regarding how this indicator is distributed between counties.

Sometimes, if we have more data available, we need one or too **standardised** indicators to dilute differences between counties and we think for :

- The number of fatality of 100,000 habitants in each county;
- The number of fatality of 100,000 motorcycles in each county;

For countries where we will do for the first time this kind of study, it’s very important to start with one city, one county, one province, etc.

¹ *Helmets: a road safety manual for decision-makers and practitioners.* Geneva, World Health Organization,2006

When the exercise above is well done, to realise the observation in each area fixed (city, county, province, strata, etc) we can agreed about the number of places where to observe the behaviour in the city. This number is decided on the basis of the importance and the size of the cities.

We also believe that the mobility of motorcycles is varying regarding to the time of the day and the day of the week. So, we can choose:

- 5 periods per day (8:30 am, 10:00 am, 12:30 pm, 17:00 pm and 21:00 pm). The duration of the observation at each site is half on hour, the objective is to avoid the probability that one motorcycle could be counted twice.
- Three days per week, 2 days inside the week and one day of the weekend (Tuesday, Thursday and Sunday).

We note that the observations will be done at the same place in all different times and days.

Persons who will observe the helmet use will not ask any direct question to motorcyclists. This method will allow avoiding the probably refuse of motorcyclists collaboration. The application form where we have the collected information is given below.

The observer has to estimate also the age group and to report if the motorcyclist is male or female.

The aim is to reduce statistical errors for the final sample to an acceptable rate and also to guarantee that all motorcyclists are well represented.

Persons who will be involved to observe motorcyclists must receive a good training using appropriate guideline.

The cornerstone of the methodology is to reduce as much as possible all kinds of errors at acceptable rate not more than 5%.

○ **Collecting data**

Data must be collected by experienced and skilled persons regarding to high quality required in this case. Also, all statistical trials needed in this case should be used (software, data cleaning,...). Raw data must be also stored securely.

○ **Analysis**

After collecting data, it's possible to calculate all kind of indicators:

- Rate of helmet use;
- This rate could be drawn by group age, male, female, time, day etc. some combination is also available.

We can use the same technique to observe other behaviours using specific variables. In this document, we will focus on seat belt use, respect of stop signal and phone use while driving. Application forms to collect data are also available and developed in the same document. PRI

members should feel free for any kind of scientific and technical assistance to implement this kind of studies in their home country. For any comments you are kindly requested to contact the secretariat of PRI at this mail address : boulaajoul@lapri.info or contact@lapri.info or secretariat@lapri.info

Regarding the literature of this kind of behavioural studies, many application form or observation Ingrid are use always similar and more or less different. Some of them are easier to fill than others and Members can make their choice regarding their own context. The outcome is almost the same.

Application form for collecting data : Helmet use

Region :	Date : aa-mm-jj : ____-____-____
City :	Hour : 8:30 <input type="checkbox"/> 10: 00 <input type="checkbox"/> 12 : 30 <input type="checkbox"/> 17:00 <input type="checkbox"/> 21:00 <input type="checkbox"/>
Name of the site :	Day of week : Tu <input type="checkbox"/> Thu <input type="checkbox"/> Sun <input type="checkbox"/>
Number of the site :	Weather : - sunny day - cloudy day - rainy day

N° obs	Helmet use		Correctly adjusted		Male/Female		Age Group		
	Yes	No	Yes	No	M	F	< 25 years	25 – 45 years	> 45 years
01									
02									
03									
04									
05									
06									
07									
08									
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Observer :	PRI member
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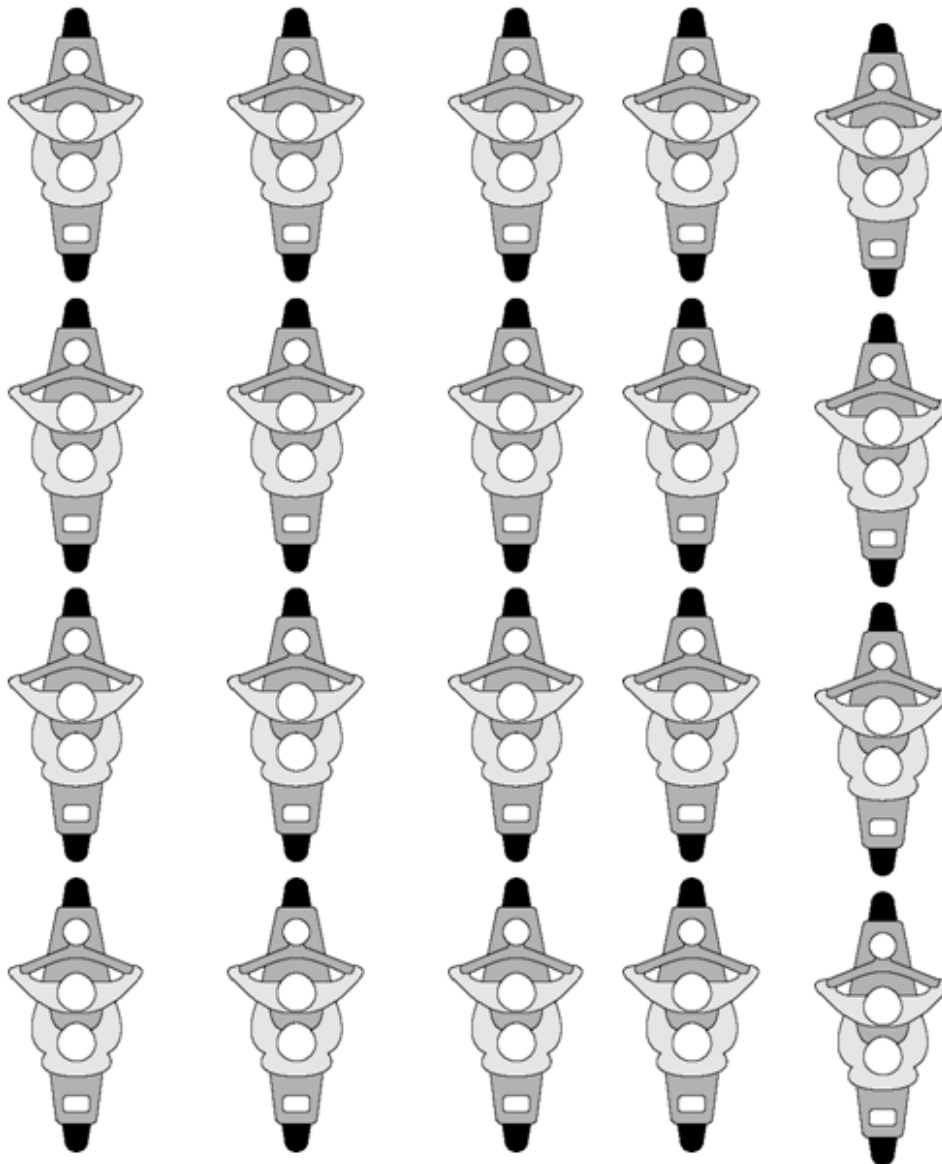
Observation grid

Theme: Lights, helmets and lights direction **Sheet n-°** _____

Date: ___/___/___ **Hour** ___ h ___

Observation place: _____

Observer name: _____



Subtitles:

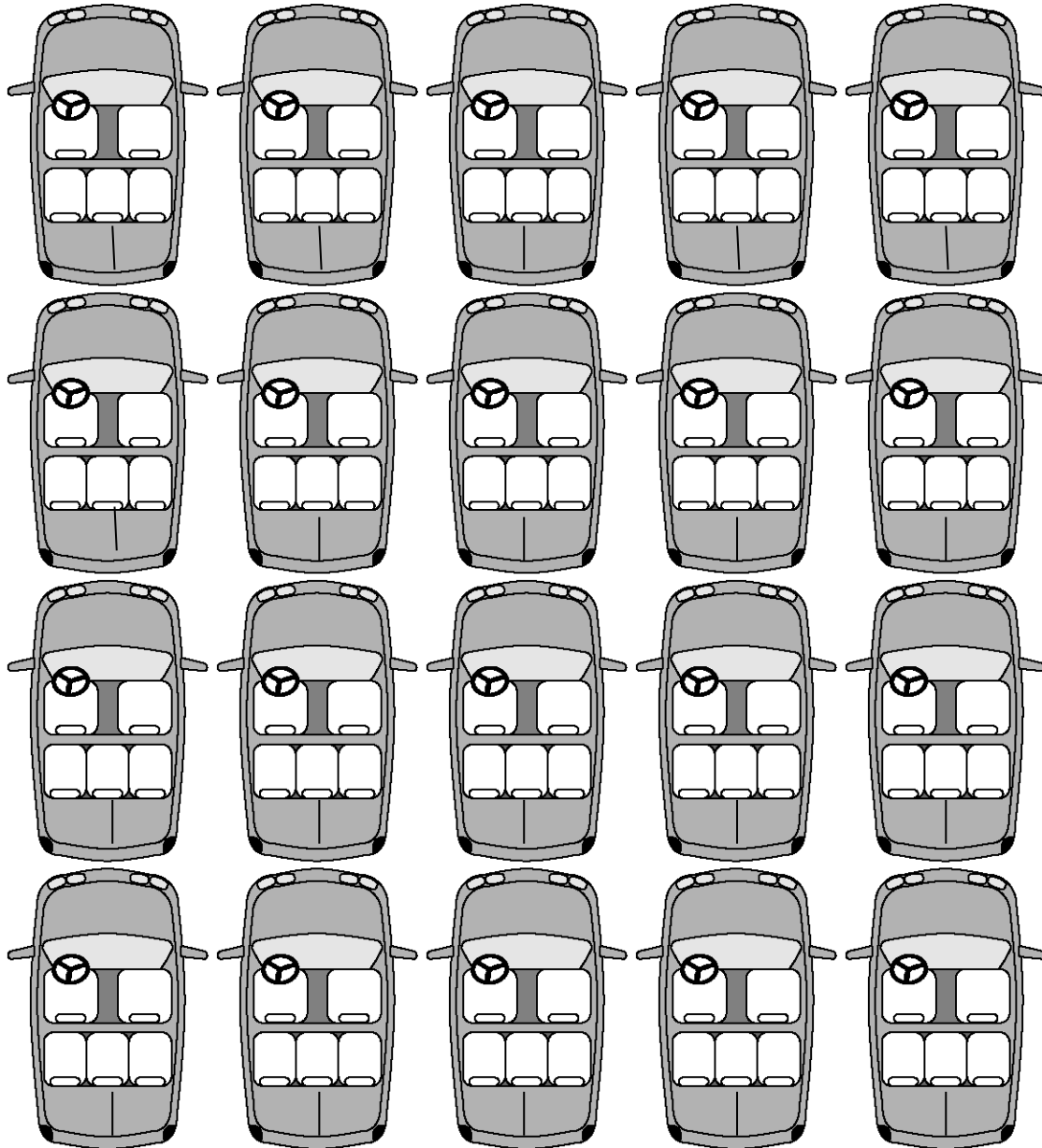
Male	M	Without helmet	X	Motorcycle	1
Female	F	Without front/back light	X	Moped	2

Observation grid of seat belts

Date: ____/____/____ Hour: from ____ h ____ to ____ h ____ Sheet: _____

Place of observation: _____

Name of observer: _____



1 – Men with seatbelt, 2 – Men without seatbelt, 3 – Woman with seatbelt, 4 – Woman without seatbelt, 5 – Child with restraint system, 6 – Child without restraint system

Application form for collecting data : Phone use while driving

Region :	Date : aa-mm-jj : ____ - ____ - ____
City :	Day of week : Tu <input type="checkbox"/> Thu <input type="checkbox"/> Sun <input type="checkbox"/>
Name of the site :	
Number of the site :	

Type of vehicle	Driver	Age	Infraction

Hour period	Type of vehicle	Gender	Age
1 : 8h to 9h	1 : car	1 : Male	1 : < 25 years
2 : 10h to 11h	2 : heavy vehicle	2 : Female	2 : 25 - 40 Years
3 : 12h to 13h	3 : moped	Infraction	3 : 40 - 60 Years
4 : 14h to 15h		1 : with precaution	4 : > 60 Years
5 : 19h to 20h		2: without precaution	5 : 19h to 20h
		3 : None	

Observer :	PRI member
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Observations
Mobile phones

Date: ____/____/____

Hour: from ____h____ to ____h____

Sheet: _____

Observation place: _____

Observer name: _____

	Gender		Wasn't speaking	Hands held speaking	Hands free speaking	Texting/checking social media
	M	F				
1	M	F				
2	M	F				
3	M	F				
4	M	F				
5	M	F				
6	M	F				
7	M	F				
8	M	F				
9	M	F				
10	M	F				
11	M	F				
12	M	F				
13	M	F				
14	M	F				
15	M	F				
16	M	F				
17	M	F				
18	M	F				
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25	M	F				
26	M	F				
27	M	F				
28	M	F				
29	M	F				
30	M	F				
31	M	F				
32	M	F				
33	M	F				
34	M	F				
35	M	F				

Observation Grid Transport of children in cars Sheet nº _____

	Child							Driver		
Date	Place	Age	Stature	Place where is sitting	CRS Y / N	Position of the CRS	Seat belt Y / N	Affinity	Gender	Seat belt Y / N
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Place where is sitting: F – front passenger
 BR – behind right seat
 BL – behind left seat
 BM – behind middle seat
 LSR – MPV last seat right side
 LSL – MPV last seat left side

CRS position: F – Facing traffic
 B – Back to traffic
 Driver affinity: 1 – Father/Mother
 2 – Grandfather/grandmother
 3 – Uncle/Aunt/Friend
 4 - Professional

Observation grid

Theme: Signaled a change of direction

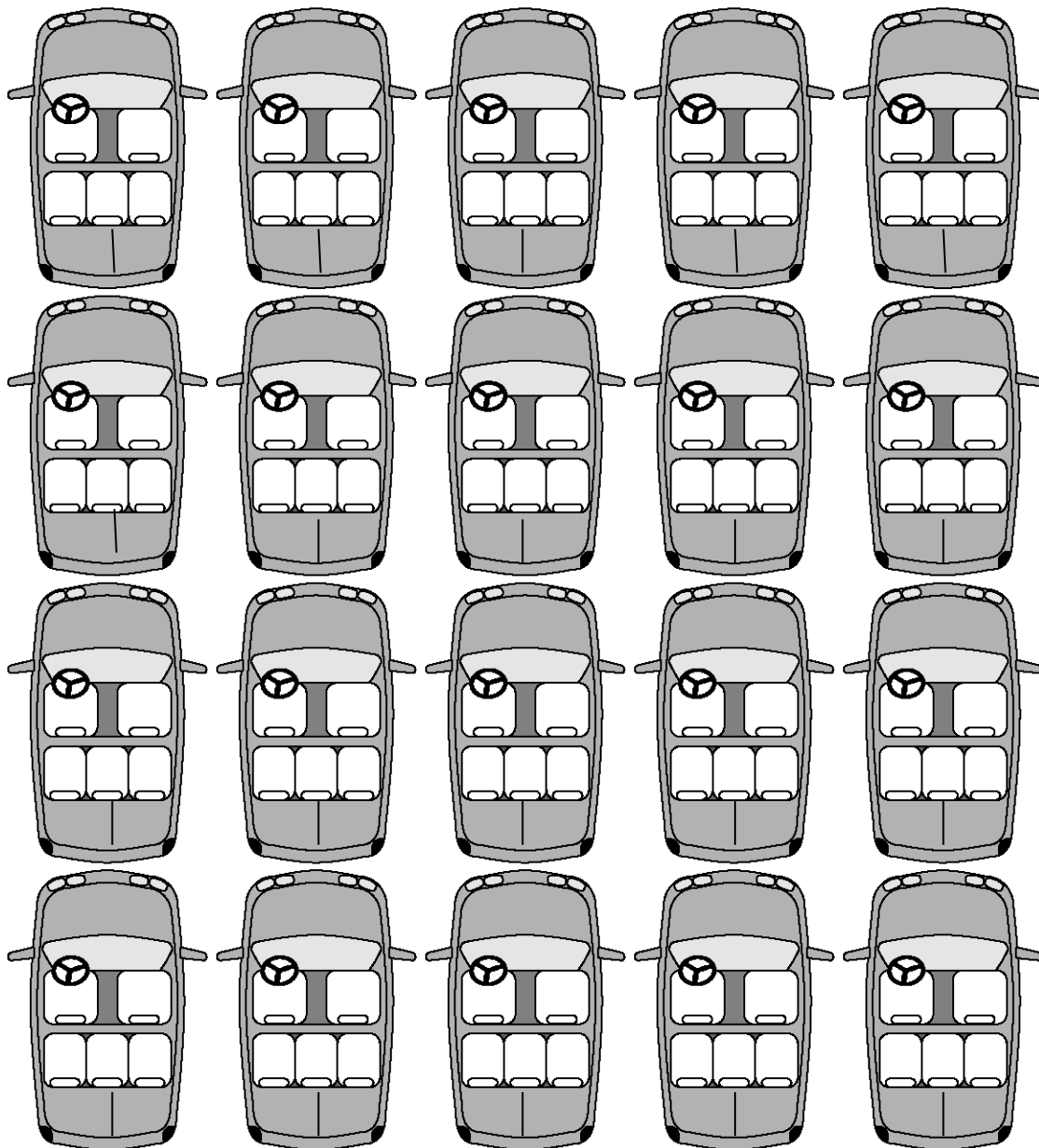
Sheet n-° _____

Date: ___/___/___

Hour _____ h _____

Observation place: _____

Observer name: _____



Subtitles:

Male driver	M	Female driver	F	Signaled	○	Didn't signaled	X
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