

# Validity of Self-Reporting Accidents of the Drivers in Water Authority of Jordan

Arabi N. S. Al Qadi<sup>1</sup>, Mahmoud B. Alhasanat<sup>1,\*</sup>, Ola B. A. Al Hasanat<sup>2</sup>

<sup>1</sup>Department of Civil Engineering, Al Hussien Bin Talal University, Ma'an, Jordan

<sup>2</sup>Department of education for Petra, Ministry of education of Jordan, Jordan

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**Abstract** The objective of this study was to find if there was any validity of self-reporting accident of the drivers of water authority in Jordan. Police reports and questionnaires were used in the study; the questionnaires were processed by the drivers. The results indicated that there were some points in the questionnaire which agree with the police reporting where the other didn't agree with it, in comparing the results of self-reporting records with those of the police some points were not.

**Keywords** Self-Reporting accident, Self-reporting records, Questionnaires, Drivers

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## 1. Introduction

The validity of any person is relative, and dependent on many factors (personality, social status, education etc.), but this study will try to establish some sense of reliability on the items which are compatible with the police reports. The police reports will be the reference point.

Sok Foon Yeoha et. al. (2016) provided overview theories factors to the adaption of self-regulated driving and scales used to measures self-regulatory behaviour. Also, his report was focusing on the development and psychometric testing on the scale of Malaysian context for self-regulatory driving practices. Stephens and Fitzharris, (2016) measured the driver behaviour questionnaire that may increase crash involvement on the risk of the drivers. Four factors and 28 items of the validity of driver behaviour questionnaire in solution of Australian drivers were constructive. Also, measure gender, age, and between fleet and on-fleet drivers using multi group confirmatory analyses factors. The authors concluded that driver behaviour questionnaire was found to be gender-invariant and strong partial measurement invariance from 26 to 64, but not for younger (17–25) or older (65–75) drivers.

Eugene J. Carragee, (2007) established validity of element of the self-reporting history in patients with back or neck pain attributed to motor vehicle accident (MVA). A consecutive cohort of patients evaluated of back or neck/shoulder pain reportedly caused by an MVA was en-rolled. The prevalence of self-reported pre-MVA axial pain and at-risk conditions (drug, alcohol, and psychological

problems) and control conditions (hypertension and diabetes) were studied. It concluded that the validity of self-reported previous axial pain and comorbid conditions appeared poor. The self-reported prevalence of previous axial pain and drug, alcohol, and psychological problems is much less than the documented prevalence in prior medical records.

Wählberg, (2011) studied the accident-exposure association: Self-reported versus recorded collisions. To test the proposition that self-reported accidents create part of the curve-linearity in data by under-reporting by high-accident drivers, self-reported and recorded collisions were plotted against hours of driving for bus drivers. It was found that the recorded data differed from self-reported information at the high end of exposure, and had a more linear association with the exposure measure as compared to the self-reported data.

Don et al. (2008) determined the validity of self-reported history in subjects with axial neck or back pain attributed to a recent MVA. The self-reported prevalence of preexisting axial pain, at-risk comorbidities (psychological distress, alcohol, and drug abuse), and control conditions (hypertension and diabetes) was recorded. They concluded that the validity of the patient's self-reported history when presenting with persistent axial pain after an MVA appears poor in this large multi-clinic random sample. The self-reported rates of alcohol abuse, illicit drug use, and psychological diagnosis, as well as prior axial pain were significantly lower than that seen in the medical records.

Wählberg et al. (2011) studied the effect of social desirability on self-reported and recorded road traffic accidents. They concluded that self-reported crashes are used as an outcome variable and predicted by other self-report measures; a lie scale should be included and used for correcting the associations. The only existing lie

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\* Corresponding author:

20petra07@gmail.com (Mahmoud B. Alhasanat)

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scale for traffic safety is not likely to catch all socially desirable responding, because traffic safety may not be desirable for all demographic groups.

Winter and Dodou (2010) investigated the relation of errors and violations from the Driver Behaviour Questionnaire (DBQ) to accident involvement. They identified 174 studies using the DBQ, and a correlation of self-reported accidents with errors could be established in 32 samples and with violations in 42 samples. The results showed that violations predicted accidents with an overall correlation of 0.13 when based on zero-order effects reported in tabular form, and with an overall correlation of 0.07 for effects reported in multivariate analysis. Errors predicted accidents with overall correlations of 0.10 and 0.06, respectively. The meta-analysis also showed that errors and violations correlated negatively with age and positively with exposure, and that males reported less errors and more violations than females.

Wählberg (2003) discussed some methodological problems in (psychological) research on traffic accident predictors and reviews a convenience sample of the literature. He focused on the reliability of accident predictors, time period for accidents used as dependent variable, and culpability for accidents. It was concluded that the current research into (psychological) accident predictors was fraught with methodological deficiencies.

Stevenson, (1996) reported on a series of studies of the validity of children's self-reported exposure to traffic. Three techniques were used to assess the validity of the self-reported 'habitual exposure', namely, the 'moving observer' technique, pedestrian diaries, and a test of construct validity. The studies indicate that children's self-reported 'habitual exposure' data is a valid measure of his or her actual exposure in the road environment. Bond and Cherpitel (2004) measured accuracy of self-reported vehicular offences and blood alcohol concentration levels among whites and Mexican Americans mandated to drinking driver programs. Self-reported and California Department of Motor Vehicles (DMV)-reported number of vehicular offences and blood alcohol concentration (BAC) levels were compared. Mexico-born respondents, 11% underreported compared to 7% for their America-born counterparts, while 3% of whites underreported. They concluded that Interview data combined with DMV data suggest that there are ethnic differences in accuracy of reporting vehicular offences and BAC levels.

The objectives of this study are: To inspect the validity of self-reporting accidents of Water Authority drivers in Jordan, to know whether the self-reporting accidents are reliable as a source of information and where is the soft point in the drivers psychology which is responsible in invalidating self-reports.

## 2. Methodology

The study tends to inspect if the self-reporting accidents

are reliable sources of information for studies. A questionnaire was delivered to a sample of 60 drivers in the water authority in Jordan; their answers to the questionnaire are the base of this study. The validity of this sample will be judged according to a comparison between each one of the 60 drivers and the police records of their accidents. To compare the police reports with the answers of the questionnaires a statistical formulation is made between the percent validity of self-reporting accidents with the variables in the police reports. The finding of this comparison will show, in percentage, the validity of self-reporting accidents; the comparison will also display which of the 36 items of the questionnaire can be trusted as a source of information with its compatibility to police reports. Statistics are used to show the relations and the difference between the self-reporting accidents and police reports.

### 2.1. Data Collection

The data is collected from:

#### 1. Water Authority-Jordan

- a) Traffic section: In this traffic section a lack of information is detected, there are no files concerning the accident and photocopies of any police report.
- b) Personal Department: In this department there are no formal records about any accident there are only record about the accident which involve internal investigation with on police interference.

#### 2. The Water Authority-Amman, Jordan:

Accident section: In this section which is related to the operation, maintenance and transportation department, managing to find some copies of police reports which show a lack in filing these accidents, in this section there is also an accident record which contains general information like the name of the driver, type of accident, date of accident etc. this records is only for insurance purpose and it does not contain any copy of police records.

3. Police traffic section: This section is a new one so its records are new the data concerning the Water Authority accident in Jordan are based on this section, records.
4. Police Department Jordan: The traffic records concerning the year before 1993 are filed in this department.
5. Jordan Court: the court notified that any cases before 11/11/1993 are eliminated because of the Royal Pardon.
6. The Badyiah police Department: Any accident which taken place in the territories east of Jordan are under jurisdiction of the Badyiah Department though the accident are not filed properly but every accident has its own file so they are will organized more than the Police Department.
7. Police Department Irbid: The accident reports in Irbid are distributed according to the place of the accident since Irbid is divided into a number of sections with each section having its own traffic department, filing

problem are the same as in Jordan.

8. The questionnaires, 60 of them all containing 36 items, are distributed to drivers of Water Authority in Jordan. The data analysis will depend on the comparison between the questionnaires and the police reports.

60 drivers in the Water Authority in Jordan. Most of the items of the questionnaire are analogous to that of the police accident reports Table 2 shows that. After the questionnaire are processed by drivers their answers are compared with the police reports; if the item in the questionnaire is compatible with its same counter parts in the police accident reports it is given the sign (√) if it's not the sign (×) is given these are seen in Table 1.

### 3. Data Analysis and Discussion

A questionnaire of 36 items is distributed to a sample of

**Table 1.** Validity of self-reporting accident with respect to police reports sample sheet

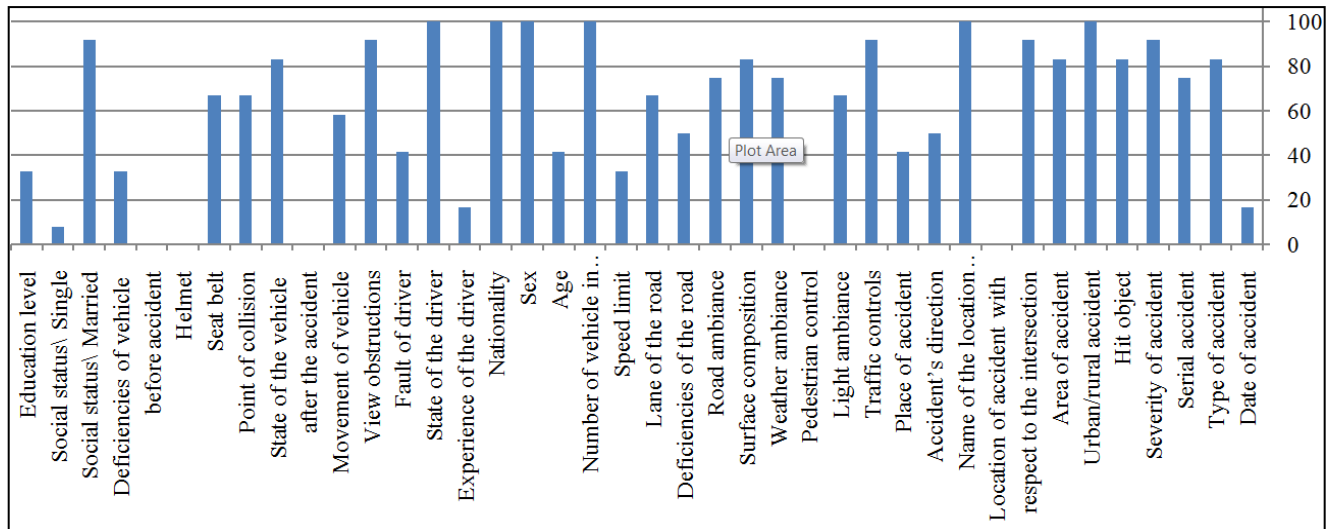
No.	Items	Validity of self-reporting accident with respect to police reports												Validity (%)
		Questionnaire number												
		1	4	7	15	23	30	36	41	49	55	58	60	
1	Date of accident	√	×	×	×	×	×	×	×	×	√	×	16.7	
2	Type of accident	√	√	√	√	√	√	√	×	√	√	×	√	83
3	Serial accident	√	√	√	×	√	√	√	√	√	√	×	×	75
4	Severity of accident	√	√	√	√	√	√	√	√	√	√	×	√	91.7
5	Hit object	×	√	√	×	√	√	√	√	√	√	√	√	83
6	Urban/rural accident	√	√	√	√	√	√	√	√	√	√	√	√	100
7	Area of accident	√	√	×	√	×	√	√	√	√	√	√	√	83
8	Location of accident with	√	√	×	√	√	√	√	√	√	√	√	√	91.7
9	Name of the location accident	√	√	√	√	√	√	√	√	√	√	√	√	100
10	Accident's direction	√	√	×	×	√	√	×	√	×	×	√	×	50
11	Place of accident	√	√	×	×	×	×	×	×	√	√	√	×	41.7
12	Traffic controls	√	√	√	×	√	√	√	√	√	√	√	√	91.7
13	Light ambience	√	√	√	√	×	×	×	×	√	√	√	√	66.7
14	Pedestrian control	√	√	√	√	√	√	√	√	√	√	√	√	
15	Weather ambience	×	√	√	×	√	√	√	√	√	√	√	×	75
16	Surface composition	√	√	×	√	√	√	√	√	√	√	√	√	83
17	Road ambience	√	√	×	×	√	√	√	√	√	×	√	√	75
18	Deficiencies of the road	×	√	√	×	√	√	√	×	×	×	×	√	50
19	Lane of the road	√	√	√	×	√	√	√	×	×	√	√	×	66.7
20	Speed limit	×	√	√	×	√	×	×	×	×	×	√	×	33
21	Number of vehicle in accident	√	√	√	√	√	√	√	√	√	√	√	√	100
22	Age	√	√	×	×	×	×	×	×	√	√	×	√	41.7
23	Sex	√	√	√	√	√	√	√	√	√	√	√	√	100
24	Nationality	√	√	√	√	√	√	√	√	√	√	√	√	100
25	Experience of the driver	√	√	×	×	×	×	×	×	×	×	×	×	16.7
26	State of the driver	√	√	√	√	√	√	√	√	√	√	√	√	100
27	Fault of driver	×	√	√	×	√	×	×	×	√	×	×	√	41.7
28	View obstructions	√	√	√	√	√	√	√	√	√	×	√	√	91.7
29	Movement of vehicle	√	√	√	√	×	×	×	×	√	×	√	√	58
30	State of the vehicle after the	√	√	√	×	√	√	×	√	√	√	√	√	83
31	Point of collision	√	√	√	√	×	×	√	×	√	√	√	×	66.7
32	Seat belt	√	√	×	√	√	√	×	√	√	√	×	×	66.7
33	Helmet													
34	Deficiencies of vehicle before	×	×	√	×	×	√	×	×	×	√	×	√	33
35	Social status													
	Married	√	√	√	√	√	√	√	√	√	√	√		91.7
	Single												√	8
36	Education level													
	Preparatory	√				√	√				√			33
	Elementary		√		√			√		√				33
	Secondary			√				√			√	√		33

×: Invalid, √: Valid

**Table 2.** Items with percentages of validity of Self-Reporting Accidents of the Drivers Water Authority in Jordan

No.	Item	Validity less than 40%	Validity from 40 to 60%	Validity from 60 to 80%	Validity from 80 to 100%
1	Date of accident	16.7			
2	Type of accident				83
3	Serial accident			75	
4	Severity of accident				91.7
5	Hit object				83
6	Urban/rural accident				100
7	Area of accident				
8	Location of accident with respect to the		41.7		91.7
9	Name of the location accident				100
10	Accident's direction		50		
11	Place of accident				
12	Traffic controls				91.7
13	Light ambiance			66.7	
14	Pedestrian control				
15	Weather ambiance			75	
16	Surface composition				83
17	Road ambiance			75	
18	Deficiencies of the road		50		
19	Lane of the road			66.7	
20	Speed limit	33			
21	Number of vehicle in accident				100
22	Age		41.7		
23	Sex				100
24	Nationality				100
25	Experience of the driver	16.7			
26	State of the driver				100
27	Fault of driver		41.7		
28	View obstructions				91.7
29	Movement of vehicle		58		
30	State of the vehicle after the accident	33			83
31	Point of collision			66.7	
32	Seat belt			66.7	
33	Helmet				
34	Deficiencies of vehicle before accident				
35	Social status				91.7
	Married				
	Single				
36	Education level	33			
	Preparatory				
	Elementary				
	Secondary				

A histogram is made in which the 36 items of the questionnaire are in the X-axis, these items are compared with the police accident reports to show their percentage (%) of validity, y-axis as shown in Table 2 and Figure 1.



**Figure 1.** Histogram of the items with % validity of self-reporting accident with respect to police reports

The human factor plays a big role in deciding the validity of self-reporting accidents. For example an excogitate that the item which is scoured a high validity is not of any value in blaming the driver for the accident for example a validity of 100% are given to nature of the location, urban/rural accident, sex, nationality, these items show no relation that connect the drivers the cause of the accident.

The validity of the drivers between 60 -80% is related to the driver items which show a probable relation between the accident and the driver in this category light ambiance, lane of the street, point of collision and seat belt scoured the least percentage 66.7% because these items show a probable relation that the driver may be the cause of the accident.

The items which are scored 40-60% validity point are those which connect the problem to driver to the accident or may cause some problem to the drivers for example the driver fault has 41.7% validity point.

The validity of less than 40% is for the items that either ignorance in the self-reporting importance (33% educational status), or items that can connect the driver to the accident (speed limit and deficiencies of the vehicle), and items that may cause carrier problem to the drivers like the years of experience 16.7%.

In comparison of this study with others literatures above this study handling more responses than the studies in the literatures more comprehensive with all items of data related to traffic accident.

## 4. Conclusions

The main conclusions are:

1. It was found that the validity of self-reporting accident with respect to police reports were the most reliable for the following ten variables: Severity of accident, location, location with respect to the intersection, name of the location, traffic control, number of vehicle

in the accident, sex, nationality, state of the driver, view obstructions, state of the vehicle after the accident. At the other extreme the least reliable with respect to each reports (the questionnaire and the police report) concerned date of accident, direction of accident, place of the accident, lights, deficiencies of the road, speed limit, age, driver experience, fault of drivers, deficiencies of vehicle before accident.

2. The police reports were almost inaccessible, due to the lack of organization and filing, either in police department or Water Authority branches.
3. The sensitivity of the drivers towards investigation of accident resulted in the failure to cite some factors which they feel are dangerous to reveal because they were afraid of punishment.
4. There are some factors not analogous with police reports, so it didn't take in the account. (i.e. traffic control for pedestrian, view obstruction, helmet).
5. Educational status show that the higher average validity is the elementary average 21.1%, while the preparatory validity is 19.86% and secondary average validity is 12.82%.
6. Age items validity are: 31-40 years averaged 22.2%, 21-30 years averaged 19.43%, 41-50 years averaged 4.84%, and over 50 years averaged 6.95%. It is worth noticing that the age item ranked an average of 41.7% which is a low percentage, this phenomenon needs further investigation.
7. The driver experience averaged a total validity of 16.7% classified thus: 5-10 years averaged 24.2%, 11-15 years averaged 12.5%, and 16-20 years averaged 21.7%. An indication shows that the less validity (11-15 years) this belong to that they are in the middle of their jobs so they care too much to show the one who is responsible on them that they didn't have any fault.
8. Driver faults: the faults in the questionnaire are speeding, no faults, didn't take any attention on the

right of way, sudden stopping, followed too closely, don't stopping in the intersections, right of way, return back, and can't stop the vehicle. This shows that the old drivers faults are return back and can't stop the vehicle, while the young drivers show speed to fast, not stopping in the intersections, followed too closely, right of way, etc. these return to the psychological effects on the drivers.

## 5. Recommendations

The prevalent use of police reports with respect to validity of the drivers for various non-police needs such as research, policy making and highway improvements, provides a strong justification for improving the validity of the driver self-report data or at the very least bringing the lack of validity to the awareness of the different data users. An important implication of the results obtained in the preceding analysis is the need to reevaluate police reported data with respect to the validity of self-reporting of the drivers data in the proposed National Accident Sampling System (NASS) use of that data for accident statistics purposes.

Because it is very likely that police reports will remain a popular source for comparison of validity of self-reporting accident of the drivers some recommendations are made:

1. The generally poor self-reporting accidents of the drivers performance indicated by this assessment provides a strong argument for improving the training and motivation of government drivers. Significantly many of the errors were recorded for factors which clearly don't require high levels of expertise to correctly assess.
2. This Assessment also demonstrates the need to periodically monitor and report the accuracy of government agencies. Such evaluation can be of benefit both in motivating law enforcement personnel, and through helpful feedback. Information them as to problem areas or errors they may be making. It might be conducted as supervisors within the agency or state personnel.
3. Some of the problems detected emphasize the need for improved design of accident report forms. A change in the structure of the recording form might ensure that such relatively rare items are properly considered. In addition, government agencies should also monitor the rate of missing information, and take corrective action.
4. Depending that the vehicle is under insurance the driver is careless and irresponsible in dealing with it. The vehicle in this case is turned to a mean of transport or even fun. To such kind of drivers a set of rules must be in action in order to put them under monitor or even to take punishment to such a kind of drivers.
5. Most of the drivers haven't any mechanical background. A set of courses must be held to enhance such a background, periodical brochures are to be published and distributed to the drivers to revitalize there information and finally a responsible monitor procedure have to be held in order to maintain a good organized vehicle maintenance.
6. A new design for police report is favourable, since the nearest forms are lacking some items like the environmental causes and the psychological effect.
7. The driver status is an important cause of accident the psychological status like anger, fear, neurosis are status which need further investigation and monitoring. The physical status of the drivers is also important in classifying the accident.

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