

# Linking Offence Histories to Accident Causation Using OTS Data

## Abstract

Offence history data were requested from Nottinghamshire and Thames Valley Police for 4,639 active road users involved in On The Spot (OTS) investigated collisions. Broadly categorised and anonymised offence data were sourced through Police National Computer (PNC) and Driver and Vehicle Licensing Agency (DVLA) records. This was linked to OTS data to create a unique dataset at each research centre (Transport Safety Research Centre (TSRC) and Transport Research Laboratory (TRL) which allows links between accident causation and offending to be explored (also taking account of road user characteristics). Police data coders were able to confirm the identity of 4,089 road users, and of these 1,910 had at least one offence identified (47%).

## Main findings

This project demonstrates a model for collecting offence data for accident involved road users and presents initial police sourced data, collected in tandem to the On The Spot (OTS) accident investigation study. These data relate to Nottinghamshire (Transport Safety Research Centre (TSRC) area) and Thames Valley (Transport Research Laboratory (TRL) area).

The following are key findings within the project data. These must be taken as local, project-specific results:

- Males are more likely to have offence histories than females (this applies to both Police National Computer (PNC) and Driver and Vehicle Licensing Agency (DVLA) recorded offences).
- Offending appears to be concentrated among younger age groups, particularly for PNC records (although further research is required to understand this finding, as there are a number of possible explanations that reflect the complexity of collecting and analysing these data).
- The highest proportion of identified DVLA offence histories is within the Light Goods Vehicle or LGV (van) and Heavy Goods Vehicle or HGV driver groups for both regions.
- There are clear differences in the highest-offending groups within the PNC data, with cyclists and motorcyclists featuring more heavily in the TSRC than the TRL results.
- Support is given to the theory that people who take risks by offending might take greater risks as drivers, as evidenced by fault within the collision causation data. There is a clear proportional increase in collision fault (road users defined as precipitating) among those with offence histories, particularly PNC offence histories.
- Speed-limit offenders (with offences linked to the collision excluded) are more likely to have caused a collision attributed with the OTS causation system factor excessive speed, compared with those without identified speed limit offences.

## Background

The Transport Safety Research Centre (TSRC) conducted a feasibility study in 2006–07 to see whether it was possible to match a sample of crash-involved road users, identified from the On The Spot (OTS) Project, to Police National Computer (PNC) and Driver Vehicle Licensing Agency (DVLA) records. This study was successful, and the TSRC started a follow-on project in 2008, with the aim of collecting offence data for all TSRC OTS Phase 2 and 3 active road users (accidents since 29 September 2003) for whom there were sufficient personal details to match their identities with PNC and DVLA records.

Following the success of the TSRC's project to link OTS and offence histories, TRL was commissioned to undertake similar work for OTS cases in its area (the Thames Valley region) and began data collection in August 2009. Each centre reported individually, to provide an initial overview of the convictions identified, their frequency and how they may be linked to both road user data and collision causation data. In total, offence history data were requested for 4,639 active road users involved in OTS-investigated collisions. Police data coders were able to confirm the identity of 4,089 road users, and of these 1,910 had at least one offence identified (47%). Of the identified road users 2,589 were considered predominantly 'at fault' in their collision (63%).

All findings within the Offence Histories study are related to active road users involved in collisions within the Nottinghamshire or Thames Valley regions. The data and findings may not be nationally representative and should not be treated as such. This work demonstrates a methodology for linking collision data and offence data. It is recommended that all findings are reviewed in this context. A shared annex makes some initial broad comparisons between these two datasets.

## Research findings

The most common offence type within both datasets was summary motoring. The TSRC

found summary motoring offence records for 826 active road users (37% of all ID matched, 80% of all identified offenders). TRL found summary motoring offence records for 578 active road users (31% of all ID matched, 66% of identified offenders).

The next most frequently identified offence group in both datasets was violence against the person, followed by theft and handling stolen goods. Within the TSRC data, these were associated with 275 and 210 of the active road users respectively. Within the TRL data these were associated with 148 and 122 of the active road users respectively.

Both datasets showed speed-limit offences to be the most commonly recorded motoring conviction. The TSRC data included speed offence records for 493 active road users (22% of all ID matched), whereas by comparison the TRL data included speed offence records for 324 active road users (18%).

The next most common motoring offences in both datasets were:

- 'driving etc. after consuming alcohol or taking drugs': (TSRC 150 active road users: 7% of all ID matched, TRL 91 active road users: 5% of all ID matched), and
- 'vehicle insurance offences' (TSRC 144 active road users: 6% of all ID matched, TRL 96 active road users: 5% of all ID matched).

### Collision fault and presence of offence history

Since all road users in this study were involved in a collision, investigation of links between offending and road traffic collisions divided the sample into two groups. This division was based on whether or not each individual was attributed with the precipitating factor by the OTS team and was therefore considered predominantly 'at fault' or not in the collision.

Table 1 shows these two groups split by the presence of DVLA offences and matches. These results are based on 2,589 ID matched 'at fault' road users and 1,498 ID matched 'not at fault' road users.

**Table 1: Number of 'at fault' and 'not at fault' drivers in the collision linked with presence of DVLA offence history (combined TSRC and TRL data)**

|  | DVLA offence history found |       | No DVLA identity match | DVLA offence history (%) |
|--|----------------------------|-------|------------------------|--------------------------|
|  | Yes                        | No    |                        |                          |
| Fault (precipitating road user)            | 1,031                      | 1,495 | 63                     | 40                       |
| Not at fault (not precipitating road user) | 462                        | 985   | 51                     | 31                       |

**Table 2: Number of 'at fault' and 'not at fault' drivers in the collision linked with presence of PNC offence history (combined TSRC and TRL data)**

|  | PNC offence history found |       | PNC offence history (%) |
|--|---------------------------|-------|-------------------------|
|  | Yes                       | No    |                         |
| Fault (precipitating road user)            | 730                       | 1,859 | 28                      |
| Not at fault (not precipitating road user) | 251                       | 1,247 | 17                      |

Of the active road users who were considered to be at fault in the accident, 40% were found to have an offence history compared with 31% of those not at fault (when the data are broken down by team, these percentages are identical). Using a chi-square test between presence of DVLA offence history and No DVLA offence history or no DVLA match, evidence was found of a significant difference in both datasets.

Table 2 shows whether the road user was considered to be predominantly at fault or not in the collision and whether they had a general (including motoring) offence linked to them for the PNC data.

These results also showed a higher percentage of offences found for those who were recorded as being at fault for the accident and, again, chi-square tests showed these differences to be significant in both datasets.

## Recommendations

Further work may be possible in the future to link more of the TSRC and TRL results. Together, the Nottinghamshire and Thames Valley regions contributed to the full OTS sample plan, which was designed to provide in-depth accident data that

are broadly representative of the national picture. Future work could very usefully combine offence history data with the accident data for both OTS regions, which might in turn be compared with suitably prepared national data. In that way it would be possible to understand better these in-depth data, their strengths and limitations, and the national implications.

While the reports are primarily intended to demonstrate the depth of new data now available for further validation, the data presented do provide useful indications for further work in this area, highlighting issues such as:

- peaks in offending among young collision-involved road users;
- the relationship between deprivation and driving without a licence and/or insurance;
- offending among people driving for work;
- links between specific offence types and specific precipitating accident factors; and
- potential over-representation of offending amongst collision-involved road users, compared with the national data.

## Conclusions

The offence histories project successfully demonstrates a way to link in-depth data on the causes of collisions with data on the offence histories of the active road users involved. Each project report provides a useful set of initial findings and the potential for further use of these data. Further validation against other OTS and national data would enable greater understanding of the results and the possibility to combine the two independent datasets.

## About the project

When OTS teams attended accidents, they requested personal details (name, address and date of birth) from road users at the scene. These details enabled the teams to identify the age of road users for the database, to calculate the Index of Multiple Deprivation (IMD) scores based on each home postcode and to send follow-up questionnaires.

For the offence histories project, all active road users were identified and their personal details were also entered onto a data request form. These forms were passed to a designated police officer.

Police personnel then searched the PNC and DVLA databases for any record of these road users. In line with local police security protocols, for the TSRC project these data were entered onto individual spreadsheets, and for the corresponding TRL project data were entered into a database. These records contained a case number and accident date, but no personal identity details. At no time did the researchers involved have access to the corresponding identity records.

Raw data with case numbers attached were stored securely by security-cleared researchers. Analysed data were stripped of case numbers, which broke the final link to the OTS database. Therefore all identities were protected and confidentiality was maintained. This process was based on detailed data-sharing agreements which were established with Nottinghamshire and Thames Valley police forces specifically for this project. No data were matched from Phase 1 of OTS (2000–03), as these identity records were destroyed in line with a strict data protection timescale. Data collection therefore started with Phase 2 (2003–06), and Phase 3 data collection (2006–10) began in 2009.

## Further information

The full reports, **Linking Offence Histories to Accidents Using OTS Data** by Dodson, Kirk & Hill (TSRC) and Stannard, Cookson and Hutchins (TRL), are published by TSRC and TRL respectively and may be obtained from [www.trl.co.uk/library/reports\\_publications](http://www.trl.co.uk/library/reports_publications) and [www.lboro.ac.uk/departments/lds/research/groups/tsrc/publications.html](http://www.lboro.ac.uk/departments/lds/research/groups/tsrc/publications.html)

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