Co-ordinated Research into Accidents on Salford's Highways (CRASH): A data linkage study enhancing the quality and quantity of data relating to road traffic accidents sustained by children in the U.K.

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Introduction

The child pedestrian injury rate in Salford is almost twice the national average - itself already high by European standards. The local City Council faces difficult decisions on where to deploy limited resources within its accident prevention strategy in order to most effectively and efficiently reduce this unacceptable cause of avoidable disability. The standard practise of all local authorities in the U.K. of applying cost benefit techniques based on routinely collected police data is often at odds with the general public's perception of accident 'black spots' and there is concern that the police data may not represent the true distribution and severity of road crashes. The CRASH project was established to link police data with hospital Emergency Department records so that any deficiencies in the present reporting system could be identified and the value of any additional information assessed.

Methodology

• Establishment of the 'CRASH' relational database

(a) Emergency Department (ED) patient records (b) Police reporting form F530 and STATS 19 Full hospital notes were checked whenever available, but most children only attended the ED.

- Multi-agency approach Universities of Manchester & Salford, Salford City Council, U.K. Government Department of the Environment, Transport and the Regions, Greater Manchester Police, Salford Royal Hospitals
- Inclusion Criteria: Children under 16 years involved in road crashes within Salford, UK
- Data Collection over 3 years (1st May 1995-31st April 1998)

Results

1182 Injured Children



Table 1 Variations in police reporting by subject profile and road usage

Group	'CRASH' TOTAL	Official Police Statistics		
2	n = 1182	858	(72.6%)	
		(n)	%	
Males	682	510	75	
Females	500	348	70	
0-4yrs	223	127	57	
5-9yrs	418	319	76	
10-15yrs	541	412	76	
Cyclists	198	144	73	
Car Passengers	545	350	64	
Pedestrians	439	364	83	

Table 2 Injury Severity Analysis

The police assigned an injury severity code of fatal, serious or slight to all children reported to them. The definitions of each category are shown below:

Category	Definition used in the report form ' (STATS 19)'		
Slight in jury	Casualty suffers injury resulting in slight shock, cuts and bruises		
Serious injury	Casualty suffers a fracture, internal injuries, concussion, severe shock or is admitted to hospital overnight or dies from injuries sustained after 31 days		
Fatal	Casualty dies from injuries resulting from a road crash within 31 days		

Table 3	Hospital rep	ported accidents	s coded using	the definitions	shown in '	Table 2

Police Coded	(n)	%	Hospital Coded	(n)	%
Fatal	3	0.3	Fatal	3	0.3
Serious	68	7.9	Serious	168	19.1
Slight	739	86.1	Slight	598	68.0
None	47	5.5	None	111	12.6
Missing	1		Missing	0	
Total	858		Total	880	

- A total of 1182 children were identified on the CRASH database. Of these, 324 (27.4%) were brought to hospital but their accident had not been reported to the police and hence did not appear in the official police statistics. On clinical examination, 252 (78%) were found to have been injured and 39 (12%) were classed as conforming to the police definition of 'serious' injury.
- Discrepancies were found between the police and the hospitals coding of injury severity. 78 children initially coded as 'slight' by the police were found to have 'serious' injuries on examination in the ED. Concussion and closed fractures were the most common diagnoses in this group, the majority of whom were pedestrians.
- Emergency Department coded severity of the 324 children in accidents not reported to the police was as follows: Serious =39(22%), Slight= 213 (66%), None =72 (12%).
- 37% of children who were car occupants were recorded in the Emergency Department notes as having sustained a Whiplash Associated Disorder. This condition was most prevalent in children from unreported accidents.
- Supplementing police data with information from the ED was found to alter the distribution of accident 'black spots'. This is represented graphically on the poster.

Conclusions

In the U.K. road safety schemes are developed by local councils and based only on police derived data. The addition of Emergency Department data allows a more accurate determination of injury severity and also identifies a higher number of serious injuries. Hospital records indicate that 27% of children involved in a road crash in Salford are not reported to the police. Furthermore, the true proportion of serious child accidents should be 19% rather than the reported 8%. These data could be used by the City Council to introduce remedial schemes which would be beneficial both in terms of both cost and effectiveness. They could also provide clinical information about the injury type which would compliment police data on the environmental and biomechanical aspects of crashes which are used in Injury Prevention Programmes.