

Dying young in traffic

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SUMMARY There were 469 unnatural deaths among the Sheffield child population between 1947 and 1979, 226 of which were caused by traffic accidents. The annual incidence of these fatal traffic accidents has risen steadily since the early 1960s with boys being consistently more vulnerable. Fatal accidents were disproportionately higher among socially deprived families and in poorer areas of the city. The environment rather than the child may be 'accident prone' and there is an urgent need for safer play areas in deprived areas.

Accidents are the most common cause of death among children aged 1 to 15 years in developed countries and follow only gastrointestinal and respiratory infections as the third most common cause of death in the developing world.^{1 2} These deaths occur principally in healthy children who might have been expected to have had a productive life. In contrast with deaths from natural causes, accident deaths have shown no decline over time but 'epidemiological information on child pedestrian accidents is very inadequate in relation to the size of the problem'.³ To determine whether simple, readily available information might aid planning for prevention, the pattern of fatal childhood traffic accidents in a stable urban community has been analysed for the period 1947-79.

Subjects and methods

Sheffield has had a stable total population of approximately 500 000 throughout the period studied. Detailed paediatric necropsies are available from 1947 and complete coroners' records from 1964. These records and every death certificate issued in Sheffield between 1947 and 1979 were examined and details abstracted for every Sheffield child death. Details of Sheffield children who died away from the city were obtained from records kept by the medical officer of health or his successor, the specialist in community medicine. Sheffield children were defined as those whose home address was in the official Index of Sheffield Streets current at the time of death. The numbers of live Sheffield children were obtained from medical officer of health reports, and the population distribution by social class and residence were obtained from the

census reports for 1951, 1961, and 1971, and the 1977 Sheffield household survey.

An index of relative prosperity for each parliamentary constituency was derived from census information on the numbers of persons per room per dwelling and the availability of toilet facilities. These crude indicators were chosen because they are recorded consistently. A more detailed index of housing standards and area deprivation in the 1977 housing survey confirmed the rankings derived.

Results

The numbers of all unnatural deaths and of traffic accidents are given in Table 1. Traffic accidents by social class are shown in Table 2. After six of the pedestrian deaths since 1964, the drivers were convicted of dangerous driving, but in most of the remaining deaths evidence was presented that the child (usually a boy) had run or cycled into the path of the vehicle while no fault was found with the condition (steering, brakes etc) or observed speed of the vehicle. There were 13 deaths (12 boys, all over 9 years of age) involving cyclists. There were three deaths to car passengers (aged 1 to 4 years); one was travelling through Devon on holiday, the others all died in Sheffield. None were wearing seat belts. One child (a 15 year old boy) was killed by a train, another was struck by a runaway motorcycle combination, and a baby died of a fractured skull having fallen from her sister's arms when she was struck by a lorry (the sister survived). No Sheffield child died in this period from a skateboard accident.

Ranking of constituencies by prosperity showed no significant change despite boundary revisions, and this ranking is given in Table 3 together with a

Table 1 *Unnatural deaths by age and sex*

	Age years					Boys	Girls	Total
	<1	1-4	5-9	10-14	15			
Pedestrian	5	62	101	34	7	140	69	209
All traffic fatalities	5	65	101	42	12	155	71	226
Other unnatural deaths	59	95	54	29	7	148	95	243

Table 2 *Traffic fatalities by class with mean percentage of total population by class*

	Social class							Total
	I	II	III(NM)	III(M)	IV	V	Other	
Number	2	19	11	105	39	39	11	226
(%)	(0.9)	(8.4)	(4.9)	(46.5)	(17.3)	(17.3)	(4.9)	(100)
Population (%)	3.6	17.3	7.5	40.0	15.2	10.8	3.6	100

NM=non-manual; M=manual.
Other=unemployed and illegitimate.

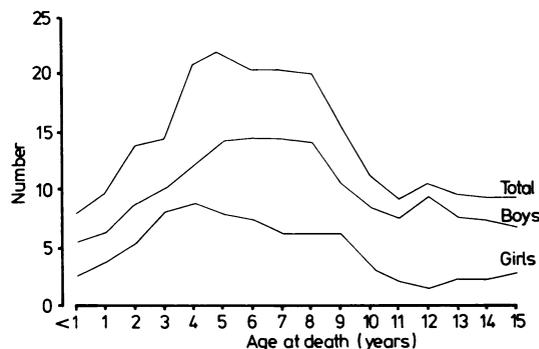
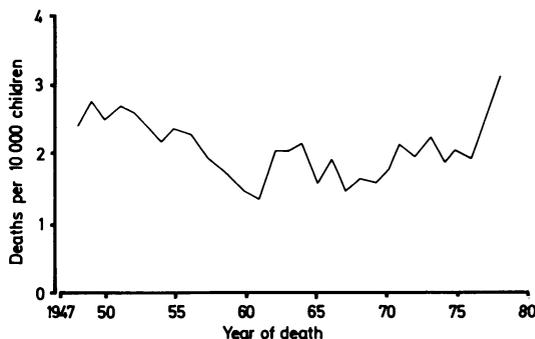
Table 3 *Ranking of constituencies by prosperity* and child traffic fatality rate per total population*

Constituency	Prosperity	Death rate
Hallam	1	1
Heeley	2	3
Hillsborough	3	4
Brightside	4	2
Attercliffe	5	7
Park	6	6
Neepsend	7	5

*1=most prosperous, 7=least prosperous.

summary ranking of child traffic fatality rate (per total population because the numbers of live children per constituency is not available before 1971).

The number of fatal accidents by age and sex is given in Fig. 1. The secondary peak in deaths in boys aged around 12 years is due to cycle accidents. The annual incidence per 10 000 children aged 2 to 15 years is shown as a three year moving mean in Fig. 2. This rising trend is occurring among young schoolchildren. The numbers of deaths per calendar month among 2 to 15 year olds is shown in Fig. 3, corrected for the differing lengths of months. The increased number of boys' deaths in the autumn is not due to accidents during journeys to or from school, but while playing in dark autumnal streets. There were lower numbers of deaths in January than December in most years, no clear explanation was available from the data, although the weather may have affected outdoor playing.

Fig. 1 *Fatal traffic accidents by age and sex (three year moving mean).*Fig. 2 *Fatal traffic accidents among 2 to 15 year olds, 1947-79 (three year moving mean).*

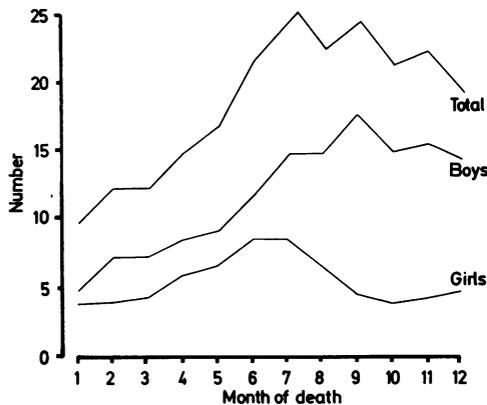


Fig. 3 Seasonal distribution of fatal accidents among 2 to 15 year olds.

Discussion

The worldwide increase in fatal child traffic accidents between 1951 and 1971 was so great that it masked declines in all other unnatural causes of death.² The trend among Sheffield's children confirms this (Fig. 2) and the incidence is now higher than for many conditions that used to occupy much medical time. Paediatricians are rightly concerned with all aspects of the health of children and the rising trend in these deaths might draw attention away from the clinic.

Simple, readily available information has identified vulnerable subgroups in this population. Similar data could be derived for other areas and be incorporated in health education or surveillance programmes. Fig. 1 suggests that preventive action has to begin before school age if these deaths are to be reduced. Parental awareness of traffic dangers to children seems to be frighteningly inadequate⁴⁻⁶ and may require a separate educational programme.

A disproportionate number of accidents occurred among underprivileged children (Tables 2 and 3). Most of these deaths were among children living in crowded dwellings, many of which are situated near main roads. The environment rather than the child may be 'accident prone'. Preston, in a one year study of all child accidents in Manchester and Salford, concluded that the main difference between areas with a high accident rate and other areas was the lack of safe play areas.⁷

The different age and seasonal peaks for boys (Figs. 1 and 3) may reflect developmental differences

but are more likely to be due to their more boisterous pattern of play. Therefore, to protect these children until they mature, safer attractive play areas should be planned in high risk areas. This is now being done in Sheffield. Unfortunately, municipal funds are often spent on parks where cycling and football are prohibited.

Cycling accidents were the most common cause of death after 10 years of age. Legislation to prevent skateboarding on public highways was rapidly introduced yet a child may 'wobble' a bicycle onto any road except a motorway. The lay press mounted a successful campaign about the dangers of skateboarding; a similar campaign on the potential dangers of cycles and the need for protective clothing and headgear is long overdue.

There are limited but valuable published reports on factors common to many child traffic accidents which have been summarised by Jackson.⁸ The epidemics of infectious disease in the last century were controlled by public health measures which were initially unpopular⁹ and such an approach may again be required. There are many health workers employed in child health surveillance; accident prevention could become a logical extension of their work.

Traffic accidents constitute half of all unnatural child deaths (Table 1). The incidence of fatalities has risen despite a fall in the birth rate. In addition to these sudden deaths of previously healthy children, there is the additional burden of physical and mental handicap due to traffic accidents. More information on the prevention of child accidents is needed but much is already known. It is already too late for the children in this study.

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⁷ Preston B. Statistical analysis of child pedestrian accidents in Manchester and Salford. *Accident Analysis and Prevention* 1972;**4**:323-32.

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Annual meetings

1985	16-20 April	York University
1986	15-19 April	York University
1987	7-11 April	York University