A STUDY OF THE EFFECT OF SOCIO ECONOMIC DIFFERENCES IN SECONDARY SCHOOLS ON THE CHOICE OF 'TRAVEL TO SCHOOL' MODES?

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1. INTRODUCTION

The increase in car travel and the corresponding reduction in walking and cycling to school have had a number of negative results. Today's children have suffered as a result of an increase in traffic congestion, noise and air pollution and a high rate of road traffic accidents, and this has led to a reduction physical activity, with its long-term health problems.

In Northern Ireland the public's 'love' for the motorcar is particularly strong and the authors predict that the subsequent effect of the 'school run' is exacerbated by this fact. In fact, the results show that the 'school run' has a greater impact in Northern Ireland than mainland GB as a whole. As a result of this hypothesis the effect of the school-run on a single provincial town was selected as a microcosmic sample of the whole province.

The initial problem would appear to be traffic congestion in the vicinity of schools, which in turn leads to time loss, accidents, road rage, polluted environment and less fit children. The primary cause of this congestion appears to be the excessive number of parents 'delivering' their children in private cars many of which were single passenger occupancy. Furthermore the time of arrival of pupils and the school start-up times all appeared to be similar across the town. Finally, the road layout and land use in the precincts of the various schools appear to be of a permanent nature and not easily modified. Consequently the problem could be clearly defined in terms of 'traffic', 'time' and 'township'.

1.1 Factors that contribute to the impact of the 'school run'

There would appear to be a complex interaction of six main factors that affect their choice of mode, and in particular the use of the car for school travel. These six main factors are:

- topography/geography,
- weather conditions,
- parents detouring on the way to work,
- stranger danger,
- road safety, and
- socio-economic factors.

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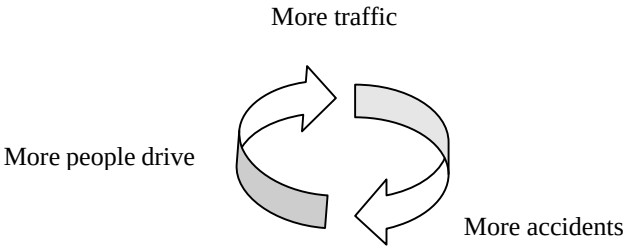
Parents would appear to be justified in fearing for the safety of the children whilst on or near roads. Road accidents are the number one killer of children. "*Two-thirds of all fatal accidents involving school children are the result of road accidents…….In 1998 almost 43,500 children were killed or injured on our roads. Of these, around 24,900 (~57%) were pedestrians and cyclists.*" [1]

One of the top reasons for driving children to school therefore is their road safety. This is a vicious circle that affects all 'travellers' and those people without cars are often left at a dangerous disadvantage.



The 'school run' also appears to be influenced by socio-economic conditions. The North East of England has the lowest car ownership rate in GB and the highest percentage of pupils walking to school, hence only 18% of children are driven to school. To tackle the problem of the 'school run' it would be necessary to address the two types of car journeys that compose the 'school run'.

- A 'detour' to the daily commute to work
- The exclusive journey with the sole purpose of driving children to school

The National Travel Survey states that 66% of 'school run' drivers return home and only 10% then go to work. The NTS also states that approximately 12% of all vehicles between 0800 hrs and 0900 hrs are 'school run' related and that at 0850 hrs 20% of all vehicles are 'school run' cars. Compared to the cost of several bus fares, the school run can be significantly cheaper; especially of it is a parental detour. [2]

On a more local note, a local journalist writing on the subject gave her reasons for transporting her son by car from Four Winds to the Lisburn Road every day.

- There is no direct bus service
- It is too far to walk and there are several main roads to cross
- If there were several children travelling to the same school it would be cheaper for them to be driven
- By using the car it is possible to get closer to the destination more quickly [3]

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What the author did not mention was that there probably were suitable schools nearer to home and that the perception of certain schools may weigh more heavily than the inconvenience of accessing them!

School travel is only part of travel as a whole and an indicator of travel attitudes. To set school travel in context it is necessary to examine some travel statistics.

Over the last 50 years there has been an explosion in personal mobility. Integral to this has been the car. Car mileage has increased over ten-fold in 50 years, and the number of privately owned cars has also increased ten-fold. [2]

Table I

Household Car Availability. 1951-1994 (%)

Households with:	1951	1970	1980	1990	1994
No cars	86	48	41	33	32
One car	13	45	44	44	45
Two cars	1	6	13	19	20
Three or more cars	-	2	2	4	4

[2]

As shown in Table I, in 1951 over four-fifths of households had no car, whereas in 1994 less than a third of homes did not have a car. Also, in the nineties nearly a quarter of households had two or more cars. Walking has become an insignificant form of travel and sustainable forms of travel, such as walking and cycling account for only 3% of all distance travelled, whereas the car accounts for 80%. [4]

Changes in travel and personal mobility are a result of changes in society and economic prosperity. The main factors are:

1. Rising car ownership & licence ownership
2. Rising disposable income
3. A decline in the real cost of motoring

The use of most other forms of transport reduces as car ownership increases.

As car ownership levels increase car users travel more often and further. People also walk less when they have more cars.

There also appears to be a relationship between income and travel behaviour, probably related to car ownership. "*Of the 20% of households with the lowest incomes in the 1992/94 National Travel Survey, 58% do not have a car. This proportion steadily declines in the higher income quintiles (20% bands) to only 4% in the 20% of households with the highest incomes*." [4]

One of the top reasons for driving children to school would appear to be their road safety. "*In 1971, 80% of 7 and 8 year old English children were allowed to*

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travel to school unaccompanied, in 1990 the figure was 9%. The principal reason parents gave for their reluctance to travel unaccompanied as traffic danger". [5]

"In Britain between 1968 and 1987 the number of police reported child pedestrian casualties fell by 49% but the number of deaths fell by 61% suggesting that some of the decline in child pedestrian mortality may be due to a reduction in case fatality…… The 49% decrease in casualty numbers implies that most of the reduction in child pedestrian mortality is due to a reduction in collisions between child pedestrians and motor vehicles." [5]

The result of this is decreasing traffic exposure, which has led to a decrease in the numbers of children involved in accidents and child mortality. As well as children not being allowed to travel independently they are being curtailed in this independence for longer than their parents were.

The attitude of parents' appears to have been that there was, and is, a risk to their children and that they should be protected and removed from that threat. However, when these same children have grown older the same risk will be there and they will have to learn to cope with the situation on their own. "*The decline in pedestrian mortality has been least in 5-14 year age group, as it would be more difficult for parents to limit the traffic exposure of older children. Moreover …… the pedestrian injury rate amongst children aged 11-14 had increased by 15% between 1969 and 1987.*"

"*As a means of preventing child pedestrian injuries limiting children's traffic exposure has powerful disadvantages. In particular it will exacerbate the striking socio-economic inequalities in child pedestrian injury morbidity that already exists…….Poor children have a risk of pedestrian injury some three times greater than the least poor, and census area unemployment has been shown to be strongly correlated with census area child pedestrian injury rates.*" [5]

As it is the better-off families, who have access to a car, the evidence would appear to show that their children are more likely to be driven to school, and vice versa.

The increased use of the private car will therefore be adverse for both those in poor and better-off households. For those children confined to the indoors, and dependent mobility, "*changes in childhood exercise patterns may impact on children's cardiovascular health, and with children increasingly confined to the home because of traffic danger heightened family tensions may erupt as well as family violence.*" For those children who have no protection from traffic exposure, the increase in the volume of traffic "*will inevitably result in a more hostile urban environment for children.*" [5]

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As mentioned earlier, the majority of children involved in RTA are pedestrians and cyclists. PSNI statistics show a trend that is similar across the whole of the UK.

However, the PSNI/RUC RTA (2002/01) Statistical Bulletin states that "*among the 1,804 child casualties, the largest road user classes during the 2000/012 were passengers (67% of the total, followed by pedestrian (25%) and pedal cyclists (7%). By way of demonstrating the vulnerability of children during the 2000/01, half of all pedal cyclists casualties and two fifths of pedestrian casualties were children.* " [6]

2. RESEARCH METHODS

As discovered in the earlier stages of this study, there were significant differences in the modal split between different types of school. This paper sets out to examine the socio-economic factors that may explain why the 'school run' is so popular in Larne, Northern Ireland and the UK.

Children at the three secondary schools in the town, Larne Grammar School, Larne High School and St Comgall's College, were surveyed as part of the Larne School Travel Study. Questionnaires were distributed to all pupils during registration classes for them to complete. This was after a publicity campaign in the local media designed to inform them of the study and thus encourage a greater response to the questionnaire. The document was a simple two-page self-completion questionnaire designed to cover a number of key issues. Approximate 1,000 questionnaires were delivered and 50% were returned.

The questionnaire contained questions about the children's current patterns of travel to school, why they use their modes of travel to school and what alternative modes would they be prepared to accept. The data was analysed using the latest statistical software to cross-tabulate the inputted information.

3. RESULTS

It is estimated that the 'school run' in the UK is a particularly significant portion of the peak hour traffic flow, up to 20%. However, its impact in Larne could be more significant than is realised.

The results show that for the secondary school age children, Table II, the levels of walking are below the national mean, even during the summer. The level of car use is also significantly higher.

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Table II

Travel to school modes during the summer, winter and the National Travel Survey statistics

Mode	N.T.S.	Summer	Winter
Walk	42	36	19
Car	21	33	46
Bus	33	24	26

At all schools, the percentage of children being driven to school increases during the winter months, Table III. At Larne Grammar School the levels of car use during the winter is much higher than the other two schools. Even during the summer months the levels of car use at LGS is approximately double that of the other schools.

Table III

Travel to school modes at the three schools during the summer and winter

		Walking	Car	Bus	Train	Taxi	Other
LGS	Summer	22	47	22	9	0	0
	Winter	10	58	22	10	0	0
LHS	Summer	51	23	25	0	0	0
	Winter	18	33	24	24	0	0
SCC	Summer	36	26	25	12	1	0
	Winter	25	36	26	12	1	0

If we look more closely at Table IV we can see that during the winter the shift appears to be from the walking to being driven to school. A similar pattern appears for the other two schools.

Table IV

Winter travel modes compared to summer modes

		Winter Mode					
		Walking	Car	Bus	Train	Taxi	Other
Summer mode	Walking	54	36	10	0	0	1
	Car	0	99	1	0	0	0
	Bus	0	3	96	1	0	0
	Train	0	2	0	98	0	0
	Taxi	0	0	0	0	100	0
	Other	0	0	0	0	0	100

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A closer examination of pupils who walk during the summer shows that approximately 37% of these pupils will be driven to school, 10% will take a bus and ~53% will remain walking during the winter.

For pupils who are driven to school, 99% of them will continue to be driven during the winter and approximately 1% will get a bus.

When examining children who walk home from school during the summer approximately 10% of these children will get a bus, 29% will be driven and ~62% will still walk.

A picture has been painted showing that pupils at LGS are more likely to be driven to school and that the increase in pupils being driven to school in the winter is due to a modal shift from pupils who walk during the summer and periods of better weather.

Why do pupils use their modes of transport during the winter?

For pupils who walk to school, Table V, the top three reasons for being driven to school are (1) 'Only real option', 46%, (2) 'More convenient/time constraints', 28% and 'Live to close, 15%.

Table V

Winter travel modes and why the modes are used

	Only real option	Road Safety	Stranger danger'/bullying/dark winter mornings	Live too close for free transport	Weight of books/equipment	More convenient/time constraints	More comfortable/weather factors	Health/ fitness reasons	Other
Walking	45	1	1	15	0	29	1	8	1
By Car	38	7	9	2	0	27	15	0	0
Bus	48	12	5	1	0	23	6	0	5

Pupils who are driven to school do so for similar motives. The main reason for the majority is pupils is that it is their (1) 'Only real option' – 38% or (2) that it is 'More convenient' – 28% with (3) 'Weather factors' only a priority for 15% of pupils.

Seven out of ten children live within 3 miles of schools and 1 in 5 live five of more miles away from school. However, fewer of the pupils from LGS live as close to schools as the pupils from the other schools and approximately 30% of them come from 5 of more miles away.

The percentage of pupils who live within a mile of their school and who walk is approximately 80%. Very few children walk more than 2 miles to school. Slightly more pupils at Larne High School travel from 1-2 miles but this may indicate that these pupils live in the Craigyhill estate on the western fringe of the town. The

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distance that pupils are driven to school shows that 80% of these pupils driven to LGS live within 3 miles of school.

So far there has been little difference between the schools to explain why more pupils are driven to school at Larne Grammar compared to Larne High School & St Comgall's College.

When examining the occupations of the male in the household we see some surprising differences between the schools.

Tables VI & VII

2 tables showing pupils who are driven to school and their parents socio-economic status

Male	Professional	Clerical	Skilled manual	Unskilled manual	Unemployed	Other	N/A
LGS	41	5	40	2	2	7	2
LHS	16	4	52	6	11	9	2
SCC	23	4	46	6	10	6	5

Female	Professional	Clerical	Skilled manual	Unskilled manual	Unemployed	Other	N/A
LGS	37	21	12	1	10	16	3
LHS	14	13	26	17	17	12	2
SCC	13	16	20	10	23	13	4

The slight majority of male parents/guardians at Larne Grammar School, Table VI, who drive their children to school are 'Professional', 41%, while the main male occupation at the other schools is 'Skilled manual', 52% & 46%.

Significant differences also appear when examining the female occupations, Table VII. At Larne Grammar School the majority of females whose children are driven to school are 'Professional', 37%, whereas at Larne High School the main occupation is 'Skilled manual', 26%, and at St Comgall's College the main female socio-economic group is 'Unemployed', 23%.

If we examine car ownership levels, Fig I, what we see is that at LGS 60% of the households have 2 or more cars, at LHS 34% of households have 2 or more cars and at SCC 29% of households have 2 or more cars.

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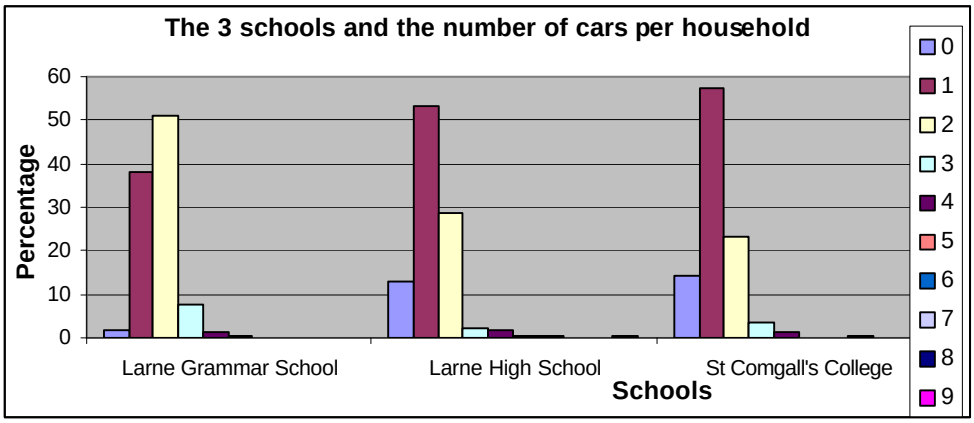
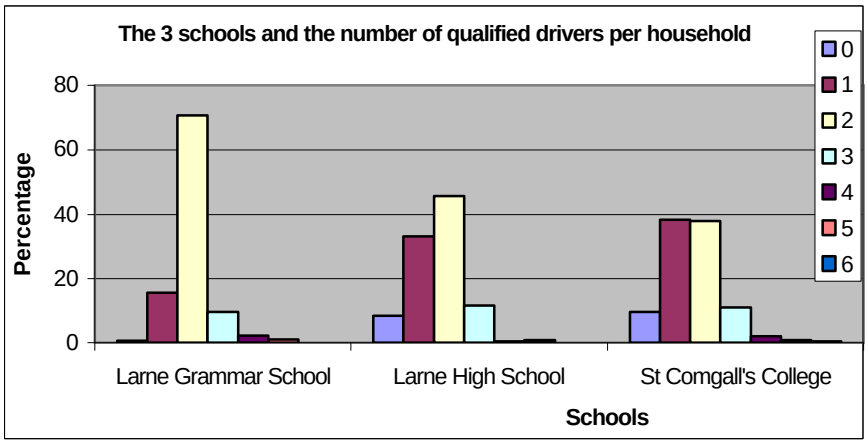
Fig I



The 3 schools & the household car ownership

A similar scene unfolds when the number of qualified drivers is analysed, Fig II. At LGS ~84% have 2 or more qualified drivers per household, at LHS 59% of households have 2 or more qualified drivers and at SCC 52% of households have 2 or more qualified drivers.

Fig II



The 3 schools & qualified drivers per household

Surprising figures also emerge when we examine the destination of drivers after the 'school run', Fig III. At Larne Grammar School the vast majority, 58%, of parents proceed to work. At Larne High School the (slight) majority, 39%, of parents go home and at St Comgall's College 45% of parents go on to work.

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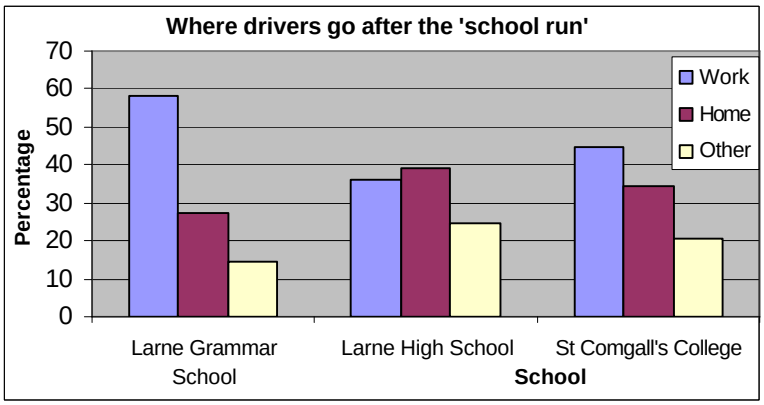
Fig III



The 3 schools & where drivers go after the 'school run'

4. CONCLUSIONS

What has been seen so far is that walking is the number one mode of travel to schools in the summer and that it is superceded by the car during the winter, or more inclement weather.

Children are a vulnerable group and are at risk from an increase in traffic, both a pedestrians and as car passengers. Delaying their exposure to danger is only postponing the problem for it to reappear at a later date in an unreduced state.

This indicates that there is the potential to develop sustainable travel schemes such as 'walking buses' or 'cycling trains'.

1. Parents are reluctant to permit their children to walk to school, especially during the winter. This may be a result of (1) weather conditions (2) dark winter morning and the inherent road safety danger and (3) a fear for the personal safety of their children.

2. Children who walk to school do so because either they live close to school or there is no available car transport for them.

3. Similarly, children who are driven to school do so because either they live too far away to walk and they have no other option, or it is 'More Convenient' for them. This may indicate that a parent is going to work and is prepared to 'detour' on the way.

4. If 34% of drivers return home then there exists the potential to develop sustainable travel schemes such as walking and a cycling club.

5. Children who live in households with 2 or more cars and 2 or more qualified drivers are more likely to be driven to school.

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6. Parents' and families' socio-economic groupings have a bearing on car use. This is probably as a result of higher levels of disposable income and flexible working houses, or even 0900 start times.

5. RECOMMENDATIONS

The '3Ts' of reducing the 'school run' (Woodside et al, 2001) still apply to Larne. These are three categories of measures or schemes that can reduce the impact of the 'school run'.

TIME

Most of the schools in the town have a similar start time and when this is combined with the very high levels of car use for the 'school run', the daily occurrence of congestion is only to be expected. Only one of the schools has a staggered start time or a time that is later than all the others. The advantages of this are two-fold:

1. the peak hour traffic flow can be lowered by virtue of 'spreading the peak', and
2. many parents may be unable to drive their children to school before work and so will be forced to either permit their children to walk to school or deposit them at a suitable 'drop-off' point or 'set down' bay.

TOWNSHIP

There is much that can be done to improve the physical environment and highway system around schools. There are many simple and low cost measures that can be implemented as par of a 'school (safety) zone' to both placate worried parents, improve traffic flow and improve pedestrian safety.

TRAFFIC

There is a tremendous need to reduce the levels of traffic in Larne. The benefits of this would be (1) reduced congestion, (2) reduced levels of noise and air pollution and (3) fewer road traffic accidents.

There are two main ways of reducing the need for, and the use or, the private car:

1 Public Transport

A public transport system, In Larne's case, a bus network that was a better match for the needs of passengers and potential passengers. Government subsidies could be used to create an attractive fare structure for all types of user.

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There are a number of crossing points on the journey from home to school that may cause concern for the parents and prevent them from permitting their children to walk. This situation could be remedied by either improved junction design, signalised crossings or supervised crossings.

Greater 'on-street supervision' may not be to the satisfaction of all parents but supervised forms of group walking or cycling may have potential for 33-57% of households.

Many parents are understandably reluctant to let their children cycle to school. However, the introduction of wider 'shared use' footpaths/cycle paths may satisfy some parents, after suitable cycling proficiency training.

And finally, the 'school run' does not exist in isolation from the rest of urban transport and congestion. The 'school run' is a case of 'poor parental example' and strategies should be developed to provide realistic alternative modes of transport for the public, especially for routine essential journeys such as commuting to work.

The whole situation is a 'chicken and egg' scenario. Can the 'car culture' be challenged and changed by moulding future 'travellers' at their most impressionable age. Or, will the 'school run' be reduced only when the 'car culture' has been challenged and changed. Until then children will continue to die on our roads, parents will fear for their children's' safety, more cars will be on the roads and more pedestrians, and in particular children, will die

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