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EFFECTS OF NEW ROADS ON HOUSING TURNOVER

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INTRODUCTION

A new road will have an effect on the local environment. Environmental changes, changes in noise, visual intrusion, air pollution levels, etc., can in general be measured or assessed using standard methods. The reaction of the community to these changes however is not known.

Various Social Surveys have been undertaken to improve our knowledge of the community reaction to noise and, in the case of one TRRL Survey, to a decrease in noise (1)

Two main Social Survey methods have been used to date:-

i) Intrusion Studies, as typified by the Heathrow Noise Surveys (2)

ii) Self-rated Attitude Studies, as typified by the TRRL National Noise Survey (3)

We have reservations about the applicability of the results of Social Surveys and have strong theoretical objections to the use of Intrusion Studies.

A type of Social Survey method which in our view does not have as many drawbacks as the two mentioned above is an "Active Response" Survey. This type of survey involves recording the reactions that individuals make in response to a stimulus. In the case of a new road as a stimulus this action could range from keeping the windows closed to moving house. The ultimate practical response that an individual can make to an adverse local stimulus is to move.

Historical records relating to these actions do not generally exist, as few continuous before, during and after studies relating to the construction of a new road have been undertaken. There are, however, Electoral Registers which can be considered as an historical record of property occupancy.

It was hoped to confirm the hypothesis that new roads have an effect on housing turnover. This was performed by examining the Electoral Register for the affected and unaffected areas in an attempt to relate the two.

In addition, it was hoped that turnovers could be correlated with some physical variable associated with the new road, i.e. noise level, noise change or distance from the road. If this was the case then it would be reasonable to assume that this factor may be dominant when it comes to assessing a new road.

In this paper I will describe the results we have obtained from studying the housing turnover in the area of the M23 Motorway. This work was partially funded by a Department of Transport research contract.

METHODOLOGY

We chose the area around the M23 for our study as this area had several advantages: It is close to our East Grinstead Office- there was a minimal change in accessibility with the opening of the motorway and as Travers Morgan were the Consulting Engineers for the scheme, we were in possession of the noise impact plans and other mapping of the motorway.

The Motorway was constructed from Hooley in the North to Pease Pottage in the South through a semi-rural farming area. The motorway does however, pass close to London Airport, Gatwick so the area within the 35NNI contour was excluded from our study. The line order for the scheme was published in 1968 and work was started in 1971 finishing 3 years later in 1974.

We surveyed some 300 properties within 1.5 km and which were affected by motorway noise. Details of the properties were recorded, including details of the noise levels assessed prior to the opening and in the design year, the size, type, age, condition, distance from the road and size and condition of the gardens and possible outbuildings. To provide a control set of data an additional 300 properties removed from the motorway were also similarly surveyed and matched with the affected properties. This matching was carried out by visual inspection.

The addresses of the 600 properties were examined in the Electoral Register and the occupancy for each address was determined. Because some of the addresses were not found in the Electoral Register we were only able to match 260 properties which reduced the sample. We surveyed the turnovers from 1965 to 1980 and the property turnovers in the study and control areas were then compared to see if any differereces could be discovered.

RESULTS

The raw data indicated that there was considerable variation from year to year in the turnover, both in the study and control area. The

simplest form of analysis was to look at the study area and compare it with the control area. Figure, 1 shows how the ratio of turnovers in the study and control areas vary with time. In figure 1 we identified 3 time zones, zone 1 prior to publication of the motorway line order, zone 2 between publication and the opening of the road and zone 3, post opening. Mean value in each time zone are also shown in the figure. The turnover in the study area is significantly different from that in the control areas for time zones 2 and 3.

We examined this effect by studying the change in turnover with distances, final noise level and change in noise level of these are shown in Figures 2, 3 and 4.

DISCUSSION AND CONCLUSION

In undertaking this work we have concluded, as others have done, that Intrusion studies are theoretically invalid because they involve the numerical averaging of preferences (4). Attitude studies succeed in reporting the range of values individuals ascribe to a stimulus. Reporting of these individual responses in the form of a distribution, i.e. the percentage annoyed, the percentage moderately annoyed and the percentage highly annoyed produce a group response which is valid and useful. However, care must be taken in applying these results elsewhere in location and time.

This Active Response study has a number of advantages over the Attitude Type studies:

(i) there is no subjective contribution of question choice,
(ii) the movement, can be considered as the extreme practical method of reducing the impact,
(iii) it has a temporal component (the effect of a new road is studied before, during and after construction),
(iv) the whole population is surveyed.

The results appear to show that, as we would expect, there is a depression in turnover pre-opening, which may be due to the uncertainty of the motorway impact. This effect is commonly known as "blight". Also the increase in turnover post-opening is similar to the effect we have previously note (5) where we found an increase in turnover with increasing noise.

This study does not explain the factors which cause disturbance. However, it would, if positive, form a firmer basis on which to found any practical measures for assessing noise impact.

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1. A.M. Mackie and C.H. Davies, "Environmental Effects of Traffic Changes", TRRL Laboratory Report 1015, (1981).
2. A.C. McKennell, "Aircraft noise annoyance around London (Heathrow) Airport, Central Office of Information, London, Report S.S. 337. (1963).

3. D.G. Harland, "Units for exposure and response to traffic noise", TRRL Supplemenatry Report 297 (1977).
4. K.J. Arrow, "Social choice and individual values" Cowles Commission Monograph No. 12. John Wiley & Sons Inc., New York,(1951).
5. R. Travers Morgan & Partners, "Report on the aircraft disturbance survey" Handover paper No. 18, House Turnover Rates. (1974).

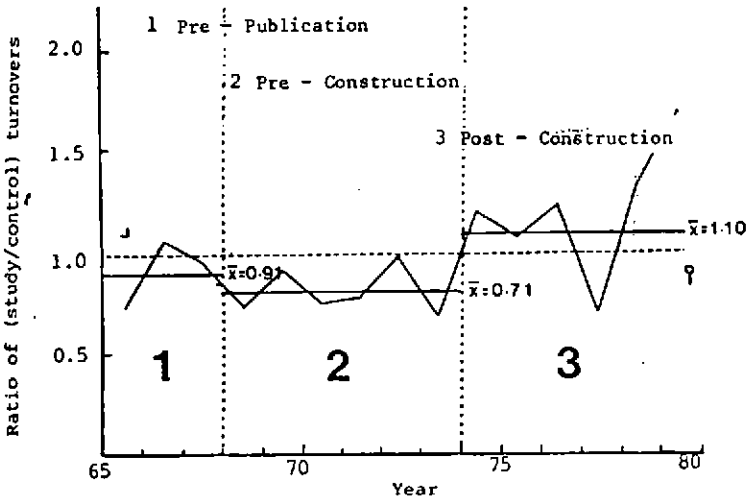

Fig.1 The ratio of (study/control) turnovers throughout the study period

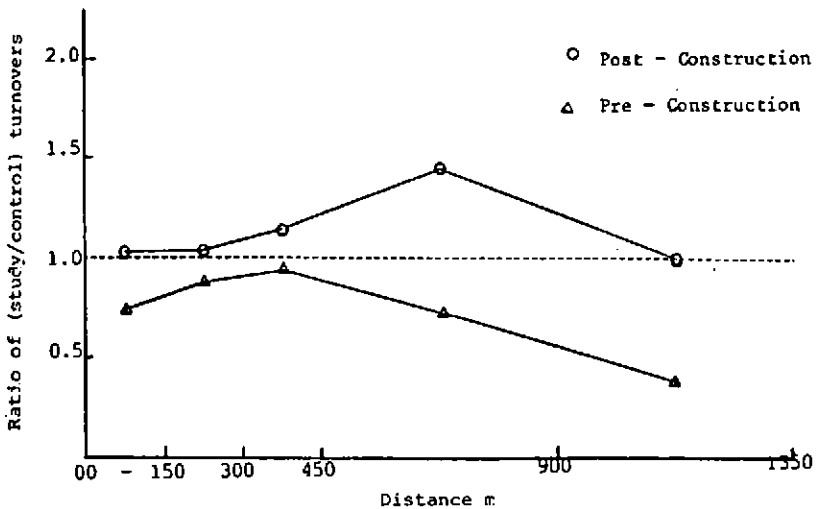

Fig.2 The effect of distance on housing turnover

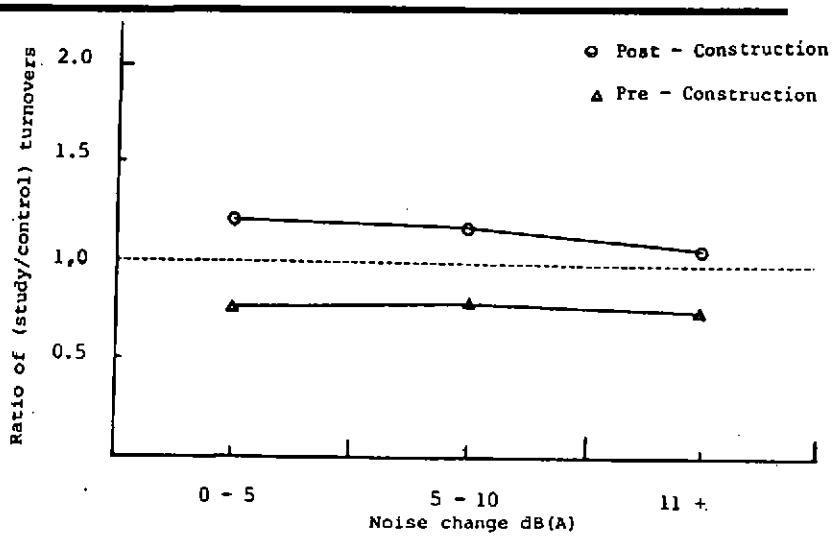

Fig.3 Effect of noise change on housing turnover

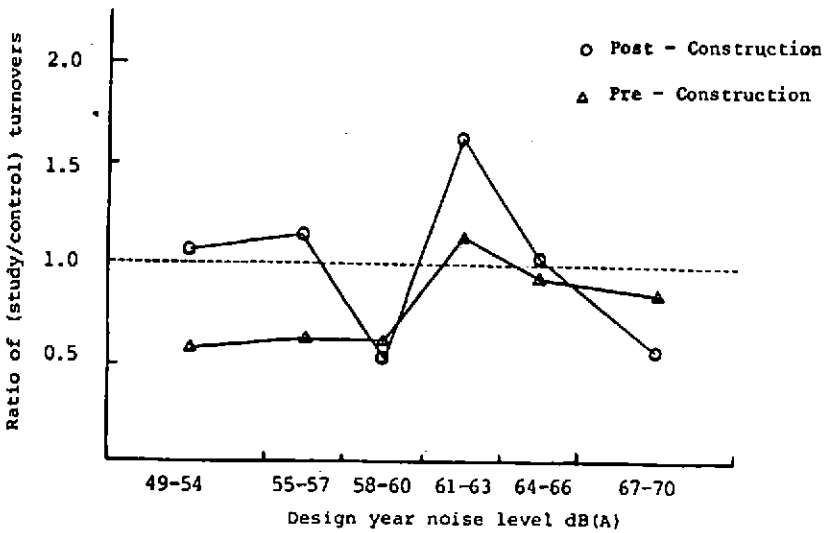

Fig.4 Effect of design year noise level on housing turnovers