Housing tenure and car access: further exploration of the nature of their relations with health in a UK setting

S Macintyre, R Hiscock, A Kearns, A Ellaway

Housing tenure and car access predict longevity and health in many European countries. It is usually assumed that they do so only because they are markers of other material determinants of health. However, in a previous paper we showed that both variables were still significantly associated with several health outcomes after controls for age, sex, and income.\(^1\) Here we replicate and extend that analysis in another sample, examining whether observed relations between tenure or car access and health remain after controlling for alternative measures of material assets (social class and income), and, following suggestions that socioeconomic gradients in health may differ between men and women,\(^6\) whether there are interactions with gender.

### Methods

A postal questionnaire, with three follow ups, achieved a response rate of 50\% (42\% male, 58\% female), from a random sample of 6500 adults from the electoral roll in eight local authority areas in the west of Scotland in 1997. We examined four domains of self assessed health: chronic, recent and mental health problems, and health in general, measured respectively by the presence/absence of limiting longstanding illness, the number of 20 common symptoms experienced during the past month, the depression subscale of the Hospital Anxiety and Depression Scale\(^2\) and perceived health over the past year as either excellent/good or fair/poor. Social class was based on own occupation, using registrar general’s classification, income was household income adjusted for family composition.\(^7\) We excluded subjects (245) who reported they were economically inactive because of permanent sickness or disability (to reduce the possibility of reverse causation), and those with missing values on any of the independent, control, or dependent variables. As tenure, car access and health are associated with age, sex, and marital status, all models control for these variables. Dichotomous health variables were analysed using logistic regression, numerical ones using the GLM procedure in SPSS.

### Results

Adding social class attenuated but did not eliminate the significant association between tenure and any of the health measures (see table 1). The same picture was observed for the income model, except for limiting longstanding illness, where there was a significant interaction with marital status (\(p=0.036\); there was no tenure difference for married respondents, but single renters had poorer health than single owners).

Car access showed a more complex pattern; it was not a significant predictor of chronic illness for women even before controlling for social class or income, whereas for men having access to a car was associated with lower probability of limiting longstanding illness after controlling for social class but not after controlling for income. Associations with the other health variables were still significant after controlling for social class, but only general health was significantly related to car access after controlling for income.

### Discussion

These findings suggest that we need to take a more differentiated view of the relation between four material asset indicators (tenure, car access, social class and income). They may not be interchangeable as measures of financial status. Tenure was still a significant predictor of measures in four health domains after controlling for social class and income, suggesting that it is not solely associated with health because it is a marker for these other, underlying, material assets. Car access was still a predictor of health after controlling for social class, except for limiting longstanding illness among women; but controlling for income eliminated the significant association with health for most measures. The significant gender interaction for car access (also observable on analysis of longstanding illness and number of longstanding illnesses; data not shown) suggests that access to private transport might have different implications for men and women.

Table 1 Odds and \(\eta^2\) for the relation between health measures and (a) tenure and (b) car access, controlling for age, sex and marital status (model 1), and socioeconomic control (either social class or adjusted household income) (model 2)

<table>
<thead>
<tr>
<th></th>
<th>Illi</th>
<th>Odds</th>
<th>(\eta^2)</th>
<th>Symptoms (n)</th>
<th>General health</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Tenure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1</td>
<td>1.88</td>
<td>0.0000</td>
<td>0.026</td>
<td>0.0000</td>
<td>2.65</td>
<td>0.0000</td>
</tr>
<tr>
<td>Model 2</td>
<td>1.75</td>
<td>0.0000</td>
<td>0.017</td>
<td>0.0000</td>
<td>2.28</td>
<td>0.0000</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1</td>
<td>Int</td>
<td>0.020</td>
<td>0.0000</td>
<td>2.67</td>
<td>0.0000</td>
<td>Int</td>
</tr>
<tr>
<td>Model 2</td>
<td>Int</td>
<td>0.004</td>
<td>0.008</td>
<td>1.76</td>
<td>0.0000</td>
<td>0.010</td>
</tr>
<tr>
<td>Number</td>
<td>1751</td>
<td>1900</td>
<td>1900</td>
<td>1827</td>
<td>1729</td>
<td></td>
</tr>
<tr>
<td>(b) Car access</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1</td>
<td>Int</td>
<td>0.012</td>
<td>0.0000</td>
<td>2.29</td>
<td>0.0000</td>
<td>Int</td>
</tr>
<tr>
<td>Model 2</td>
<td>Int</td>
<td>0.007</td>
<td>0.0000</td>
<td>2.01</td>
<td>0.0000</td>
<td>0.007</td>
</tr>
<tr>
<td>Number</td>
<td>1970</td>
<td>2023</td>
<td>2076</td>
<td>1887</td>
<td>1782</td>
<td></td>
</tr>
</tbody>
</table>

\(\eta^2\) = limiting longstanding illness; Int = significant interaction with tenure or car access.
As is common in most health surveys, our response rate was higher among women, older persons, and higher social classes. Having excluded the permanently sick and those with missing values on any relevant variables, the proportion of women was 57%, of owner occupiers 68%, and car owners 67%, compared respectively with 53%, 62%, and 64% reported in the Scottish Household Survey in 1999. We thus need to exercise caution in generalising prevalence rates of sociodemographic or health variables to the underlying population or to other populations. However, we are not convinced that these sample biases cast into doubt the basic conclusions reported above.

We will be exploring these issues further by investigating the practical and emotional significance of tenure and car access in our respondents’ everyday lives.

Funding: the research on which this short report is based was funded under the Economic and Social Research Council Programme “Health Variations Programme” (“Housing tenure and car ownership; why do they predict health and longevity?” award number L12830100174). SM and AE are employed by the UK Medical Research Council, as was RH at the time this research was done.

Conflicts of interest: none.

Housing tenure and car access: further exploration of the nature of their relations with health in a UK setting
S Macintyre, R Hiscock, A Kearns and A Ellaway

*J Epidemiol Community Health* 2001 55: 330-331
doi: 10.1136/jech.55.5.330

Updated information and services can be found at:
[http://jech.bmj.com/content/55/5/330](http://jech.bmj.com/content/55/5/330)

These include:

**References**
This article cites 2 articles, 0 of which you can access for free at:
[http://jech.bmj.com/content/55/5/330#BIBL](http://jech.bmj.com/content/55/5/330#BIBL)

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Topic Collections**
Articles on similar topics can be found in the following collections

- Sociology (974)

**Notes**

To request permissions go to:
[http://group.bmj.com/group/rights-licensing/permissions](http://group.bmj.com/group/rights-licensing/permissions)

To order reprints go to:
[http://journals.bmj.com/cgi/reprintform](http://journals.bmj.com/cgi/reprintform)

To subscribe to BMJ go to:
[http://group.bmj.com/subscribe/](http://group.bmj.com/subscribe/)