

GoWell is a collaborative partnership between the Glasgow Centre for Population Health, and Urban Studies and the MRC/CSO Social and Public Health Sciences Unit at the University of Glasgow, sponsored by Glasgow Housing Association, the Scottish Government, NHS Health Scotland and NHS Greater Glasgow and Clyde.

Relocating or remaining: could the circumstances of area regeneration drive changes in health behaviours?

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GoWell is a planned ten-year research and learning programme that aims to investigate the impact of investment in housing, regeneration and neighbourhood renewal on the health and wellbeing of individuals, families and communities. It commenced in February 2006 and has several research components. This paper is part of a series of Briefing Papers which the GoWell team has developed in order to summarise key findings and policy and practice recommendations from the research. Further information on the GoWell Programme and the full series of Briefing Papers is available from the GoWell website at: www.gowellonline.com



Key findings

- Relocation from demolition areas to nearby neighbourhoods did not lead to better health behaviours in the short-to-medium term.
- Health behaviours were better among people living through regeneration than those in residentially stable areas.
- Internal home conditions were positively associated with smoking, drinking and diet.
- Neighbourhood conditions are inconsistently associated with health behaviours.
- Having educational qualifications and being in work have strong positive associations with healthy behaviours.



INTRODUCTION

Area regeneration programmes can and should benefit the health of people living in these locations¹. This has been recognised by the Scottish Government², who consider that regeneration should be holistic, aiming to deliver interrelated outcomes, including improvements in health.

Unhealthy behaviours may be a response to living in environments that are stressful due to their poor conditions³. It is reasonable to assume that this may be the case for the people living through major regeneration of some of Glasgow's deprived communities. On the other hand, relocation to a new neighbourhood may also cause stress⁴ and lead to unhealthy behaviours. This might be the case for people who have to move to a new neighbourhood, even with better conditions, as a result of the demolition of their old home. By comparison with these two groups, we might expect people living in more residentially stable neighbourhoods to experience less stress and therefore have healthier behaviours.

The GoWell study provides us with an opportunity to compare the health behaviours of people living under these three types of residential conditions.



RESEARCH OBJECTIVES

First, we examined the prevalence of good and bad health behaviours among GoWell respondents.

We then addressed three main questions:

- Do people who move out of an area undergoing major regeneration have better health behaviours than either those remaining in these areas, or those living in stable residential circumstances in other deprived areas?
- Are the health behaviours of people remaining in regeneration areas worse than those of people in areas of residential stability?
- Are health behaviours under the three types of residential circumstance associated with residents' perceptions of dwelling and neighbourhood quality?

We also looked at how personal characteristics and circumstances were associated with health behaviours to see how important they might be relative to the residential factors.



METHODS

We analysed 1,283 interviews with British householders (or partners) conducted in 2011 as part of the third wave of the GoWell Community Health and Wellbeing Survey. All participants were living in social-rented housing in a deprived area of Glasgow. Some of them (181 people) had moved, at some time within the previous five years, from one of five areas that had experienced (or were experiencing) demolition (Outmovers). A further 432 respondents had been living in one of the demolition areas for at least three years (Remainers). Another group (670 people) had been living in one of ten non-regeneration areas for at least three years and had not had any home improvements provided by their landlord or factor (Nonmovers).

We looked at 13 questions covering four types of health behaviour (see Appendix 1):

- **Smoking**: current habit; change in smoking habit in the past two years; intention to quit smoking; a household member smoking within the home.
- **Drinking alcohol**: current habit; change in drinking habit in the past two years.
- **Diet**: amount of fruit and vegetables, and of sweets and snacks eaten; frequency of eating home-cooked and fast-food main meals.



 Physical activity: frequency of walking in the neighbourhood; overall level of physical activity (derived from the International Physical Activity Questionnaire incorporated within our survey); complete physical inactivity.

As well as people's residential circumstances, we also took into account their opinions about the internal and external quality of their home, the quality of their neighbourhood and its services and amenities, and how serious they regarded antisocial behaviours and incivilities to be locally. These were measured as continuous indices derived from the results of groups of questions about specific aspects of each topic, standardised to values between 0 and 100. Our analyses also controlled for a number of the participants' personal characteristics and their health.

Details of the residential questions we asked are set out in Appendix 2.

First, we calculated the incidence of each of the health behaviours among all the respondents. We then used logistic, ordinal or multinomial multivariate regression, as appropriate, to analyse the relationships between the responses to the health behaviour questions and the residential and personal circumstances and perceptions. We present only the statistically significant findings here.



FINDINGS

Health behaviours of GoWell participants

The incidence of the levels of health behaviours for all respondents and by location are shown in Table 1.

Table 1. Incidence of health behaviours among respondents, overall and by location groups.

		Percentage of respondents in sample						
Variable	Category	All	Outmovers	Remainers	Nonmovers			
Smoking								
Current smoking habit	No	49.0	39.8	54.2	48.2			
	Yes	51.0	60.2	45.8	51.8			
Change in smoking habit	Smokes less now	26.8	29.2	23.4	28.0			
	Smokes around the same amount	51.2	48.1	51.8	51.9			
	Smokes more now	22.0	22.6	24.9	20.1			
Intention to quit smoking	No	51.1	51.4	51.3	50.9			
	Yes	48.9	48.6	48.7	49.1			
Smoking within the home	No	60.6	46.4	68.8	59.3			
	Yes	39.4	53.6	31.3	40.7			



		Percentage of respondents in sample						
Variable	Category	All	Outmovers	Remainers	Nonmovers			
Drinking								
Current drinking habit (number of days per week)	Never	47.2	42.0	51.4	45.8			
	<1	26.6	30.4	25.0	26.6			
	1-7	26.3	27.6	23.6	27.6			
Change in drinking habit	Drinks less now	28.1	27.3	27.2	28.8			
	Drinks around the same amount	67.0	66.7	66.5	67.5			
	Drinks more now	4.9	6.0	6.3	3.7			
Diet								
Fruit and vegetable	<1	17.9	18.2	13.7	20.6			
consumption	1-4	53.2	54.7	56.0	50.9			
(portions per day)	5+	28.9	27.1	30.3	28.5			
Frequency of fast-food	0	62.7	58.0	61.8	64.5			
meal consumption (days per week)	1	34.1	38.1	31.9	34.3			
	2-7	3.3	3.9	6.3	1.2			
Frequency of home-cooked meal consumption (days per week)	0-5	21.2	28.7	24.3	17.2			
	6	15.8	14.9	14.4	17.0			
	7	63.0	56.4	61.3	65.8			
Cake and snack consumption (items per day)	0	48.6	45.9	50.5	48.2			
	1	19.6	21.0	20.4	18.8			
	2	31.7	33.1	29.2	33.0			
Physical activity								
Frequency of neighbourhood walking (days per week)	0	36.9	32.6	29.9	42.5			
	1-4	27.4	24.3	31.0	26.0			
	5-7	35.7	43.1	39.1	31.5			
Level of physical activity	Low	59.2	51.9	54.9	64.0			
	Medium	30.8	39.8	36.6	24.6			
	High	10.0	8.3	8.6	11.3			
Physical inactivity	No	79.1	84.5	84.0	74.5			
	Yes	20.9	15.5	16.0	25.5			

Smoking: Just over half of the people we interviewed (51%) were smokers – more than double the rate in the Scottish population (23.3% in 2011). Just over a quarter of respondents reported smoking more, and just under a quarter reported smoking less than they had two years before. Half of the respondents were smoking around the same amount. Roughly equal numbers of smokers were and were not planning





to give up smoking at some point in the future. Two people in five were exposed to smoke from living in a household in which someone smoked inside the home.

Drinking alcohol: Just under half our respondents (47.2%) claimed that they never drank alcohol, which is considerably higher than the figure for the Scottish population (around 12% in 2011). Just over one quarter of people drank on at least one day per week. Many more people said they drank less now than in the previous two years (28%) than said they drank more (5%).

Diet: Only a minority of respondents (29%) reported that they ate the daily recommended five portions of fresh fruit and vegetables, although this is higher than the Scottish rate of around 20%. While 37% of people ate at least one main meal a week from a fast-food or takeaway outlet, 79% claimed that their main meal was cooked at home on six to seven days of the week. Just over half of the respondents ate one or more cakes or snacks each day.

Physical activity: Over a third of people walked around their neighbourhood on most days of the week, but a similar proportion never did. Around three out of five people did a low level of physical activity, and one in five considered themselves to be physically inactive. Physical activity rates were therefore close to the Scottish rate in 2011^a.

Associations of residential location with health behaviours

We found a complex and at times unexpected set of relationships of the residential location, ratings of the home and neighbourhood and personal characteristics with various aspects of the four health behaviour domains.

Our results are in the form of *odds ratios*, which indicate how many times greater or smaller are the chances of somebody in one residential group doing a particular behaviour compared with somebody from another residential group (Figure 1).

Relocation may be responsible for worse health behaviours in the short-medium term

None of the health behaviours were better among people who had relocated from a regeneration area (Outmovers). In fact, far from relocation promoting healthier behaviours, moving out of a demolition area may have led to worse smoking behaviours.

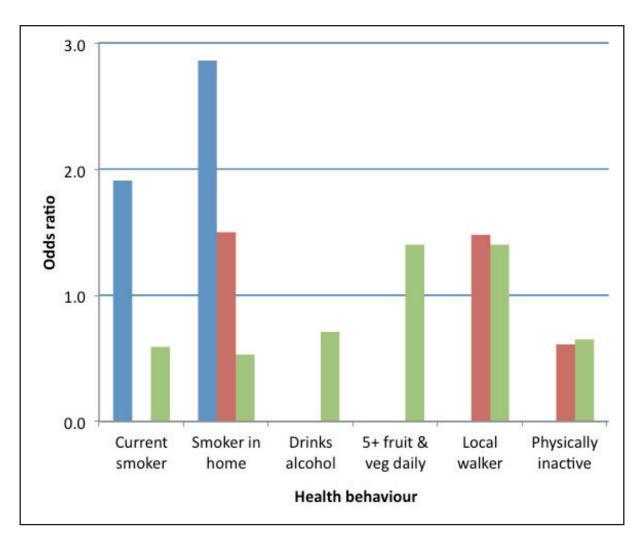
Outmovers were almost twice as likely to smoke as those who remained in the demolition areas. Compared with Remainers and those Nonmovers from residentially stable areas, people who moved out of demolition areas were, respectively, almost 3

^aCalculated as those achieving the amount of physical activity recommended between 2008 and 2011; these criteria were revised in 2011.



times and 1.5 times as likely to live in a household with someone who smoked inside their home. These findings are consistent with the idea of the stress of relocation leading to unhealthy behaviours.

Figure 1: Relative odds of engaging in a health behaviour in comparisons of residential location groups.



■: Outmover versus Remainer; ■: Outmover versus Nonmover; ■: Remainer versus Nonmover. Values greater than one indicate a greater chance of engaging in the behaviour. Conversely, values less than one indicate a lesser chance of engaging. Only significant comparisons are shown.

There were no differences between the Outmovers and Remainers with respect to the other smoking behaviours, or for any of the drinking, dietary or physical activity behaviours.

Nevertheless, Outmovers from demolition areas had better physical activity behaviours than the Nonmovers in the deprived but residentially stable areas: they were around 1.5 times more likely to walk in their neighbourhood on more days of the



week, and, conversely, nearly half as likely to consider themselves as physically inactive.

Living in a demolition area may not lead to unhealthy behaviours in the short-to-medium term

Remaining in an area with ongoing and extensive disruption as a result of demolition may not have the negative effects on health behaviours that we might have expected. In fact, we even found some examples of better health behaviours among Remainers across all four domains compared with the Nonmovers from the residentially stable areas (Figure 1).

Remainers were approximately half as likely to be smokers, or to live in a household in which somebody smoked indoors, and only around 0.7 times as likely to drink alcohol. They were 1.4 times more likely to eat more portions of fruit and vegetables and to walk more frequently in their neighbourhood, and around two-thirds as likely to be physically inactive.

The quality of the home and neighbourhood may influence health behaviours

We show these results as the *change in odds*, which is how many times greater or smaller are the chances of somebody doing a particular behaviour when the score on a residential or neighbourhood index rises by 10 points^b.

Higher ratings of the internal quality of the home were associated with several better health behaviours among respondents: according to them, they were less likely, by a factor of 0.4, to smoke more than previously, 0.6 times as likely to live in a household in which someone smoked inside the home, and 1.8 times more likely to eat more portions of fruit and vegetables. Conversely, better internal dwelling ratings were associated with eating more cakes and snacks (1.8 times).

Strikingly, ratings of the external quality of the home never showed any associations, for better or worse, with any of the health behaviours.

Respondents who rated the quality of the neighbourhood environment more highly were about a third as likely as others to be smokers. Conversely, those with a better perception of local services and amenities were less likely, by a factor of 0.4, to smoke less than previously, but 1.6 times more likely to eat home-cooked main meals more frequently.

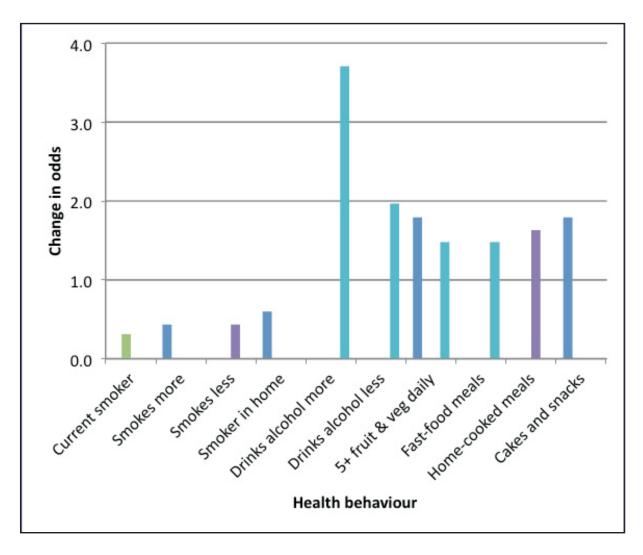
The identification of neighbourhood problems had mixed associations with health behaviours. On the positive side, those respondents who cited more neighbourhood problems were about 1.5 times more likely to eat more fresh fruit and vegetables, although, on the negative side, they were also 1.5 times as likely to eat more

^bThis is equivalent to the effect of citing around one extra item for all of the indices, except for that of neighbourhood environment quality, for which a 10-point increase is akin to citing 2.5 extra items.



fast-food main meals. Perceiving more neighbourhood problems was associated with a much greater likelihood (by 3.7 times) of drinking more than previously among some of the respondents, whereas others were twice as likely to be drinking less.

Figure 2: Change in odds of engaging in a health behaviour for a 10-point higher score on a residential or neighbourhood index.



^{■:} Quality of home (internal); ■: Quality of local environment; ■: Quality of local services and amenities: ■: Prevalence of neighbourhood incivilities. Values greater than one indicate a greater chance of engaging in the behaviour. Conversely, values less than one indicate a lesser chance of engaging. Only significant relationships are shown.



The possible role of personal factors in health behaviours

Over and above their residential location and their ratings of their home and neighbourhood, we found that the health behaviours of the people in our sample were linked to their personal characteristics and circumstances (in around one third of comparisons). These are presented numerically as odds ratios.

Women have healthier behaviours than men

For the most part, women tended to exhibit healthier smoking, drinking and dietary behaviours than men, but were slightly less likely to be physically active. They were around 0.6 times as likely to smoke and 0.7 times as likely to be part of a household with a member who smoked indoors, and 1.7 times the proportion of female than male smokers were intending to quit smoking. Similarly, women were 0.4 times as likely to drink alcohol, even though a relatively smaller proportion (0.6) of female than male drinkers considered they were drinking less than they had done two years before. Women were 1.7 and 1.4 times more likely than men to eat more fruit and vegetables and home-cooked main meals, respectively. Conversely, however, women were only 0.8 times as likely as men to achieve a higher level of physical activity.

Working people have healthier behaviours than those not working
Being in work was linked to a greater chance of having healthy behaviours.
Compared with those in work, people of working age but without a job were twice
as likely to be smokers, about 2.5 times more likely to report currently smoking
more than they had two years before, and 1.5 times more likely to live in a household
where someone smoked indoors. The non-workers were also 1.7 times more likely
to be in a lower physical activity group, as, by a factor of 2.8, were retired people.
Otherwise, retired people reported better diets, being only half as likely to eat
fast-food meals more often, and 1.8 times more likely to eat more home-cooked
meals.

Education is linked to healthier behaviours

People educated beyond the School Leaving Certificate (SLC) were nearly twice as likely to have cut down on their smoking over the previous two years and to intend to give up smoking. Those who had received more than a basic school education (although not the most highly qualified group) were at least 2.3 times as likely to drink more than they had in the past, while simultaneously, some of those with O level qualifications were nearly twice as likely to be drinking less. The most highly educated respondents were almost 2.5 times more likely to eat more fruit and vegetables than those with no qualifications. Those with more than the most basic of educational qualifications were at least twice as likely to be more physically active, and, conversely, around half as likely to be physically inactive.

Long-term illness is associated with worse health behaviours
Compared with their healthier counterparts, those with a long-term illness were
around 1.5 times more likely to be a smoker, to be part of a household with a member
who smoked indoors, and to report drinking less than two years previously. Those



with a long-standing illness were only about three-quarters as likely to eat fruit and vegetables, but, on the positive side, also about three-quarters as likely to eat fast-food meals. As might be expected, people with a long-standing illness were less likely to engage in physical activity. They were about half as likely to walk more frequently in the neighbourhood and to be in a higher physical activity group, and had almost three times the likelihood of being physically inactive.

The type of household people live in has mixed associations with health behaviours Compared with adult households, respondents from two-parent households with dependent children had some better health behaviours: they were only about half as likely to drink alcohol and about 1.8 times as likely to eat more portions of fruit and vegetables. Single parents were 1.4 times more likely to eat more cakes and snacks but only about half as likely to live in a household in which someone smoked indoors. Members of older person households had some better drinking and dietary behaviours than younger adults with no dependent children. They were only about two-thirds as likely to drink alcohol, to eat more snacks and 1.8 times more likely to eat more fruit and vegetables. They were 1.6 times more likely to eat home-cooked main meals more frequently and, conversely, only half as likely to eat fast-food meals more often. However, older people were less likely (by a factor of 0.7) to walk around their neighbourhood more frequently, and had 1.5 times the odds of being physically inactive.

Implications of our findings

Relocation due to regeneration

We found no evidence that moving from a home in a demolition area to another neighbourhood *per se* is a stimulus to making lifestyle changes. Indeed, the finding that two smoking behaviours were worse in this group is consistent with the notion that the stress of relocation may promote unhealthy behaviours⁴. These findings cannot convincingly be explained by the prioritised relocation of people with worse health behaviours out of regeneration areas, since relocation of residents had been going on for eight years by the time of the study, and so would have involved the full range of residents.

The lack of healthier behaviours in the relocated group could be due to the absence of other supporting conditions. In particular, the neighbourhoods to which people move may not be sufficiently different or better to prompt lifestyle changes. Indeed, the Outmovers tended to move only short distances, into similarly or marginally less deprived areas⁵. Other socioeconomic circumstances may also not have changed sufficiently to stimulate health behavioural changes. Although relocated residents have desires and expectations to change their lives substantively after relocation, including making lifestyle changes⁶, other qualitative work by GoWell suggests that the bigger changes people seek were rarely achieved within two years of moving.





Local cultures themselves may reinforce unhealthy behaviours⁷, so people may need to develop new social networks if they are to change their lifestyles. Although our previous research on the Outmovers indicated that very few of them relocated alongside their previous neighbours, and that they did indeed have new and stronger social capital relations in their new neighbourhoods than those still living in regeneration areas⁸, the social composition of these new social networks may not have been sufficiently different to stimulate behavioural changes among the relocated group.

Finally, relocation programmes provided no personal support or counselling services to help relocated residents settle into their new neighbourhoods and make the changes they wished to see in their lives; people with few resources may be unlikely to make such changes without support.

Remaining in a regeneration area

Considering the people who continued to live through regeneration in their original neighbourhood, we found better results in all four health behaviour domains than among those living in residentially more stable areas. It is possible that in *situ* change is more effective at creating a mood or trajectory of positive change than relocation, at least for residents in deprived areas in a very deprived city where alternative locations may not offer much better conditions.

An alternative explanation for this might be a 'healthy migrant' effect. In the GoWell regeneration areas, between 30-40% of residents are international migrants, mostly asylum seekers and refugees. An earlier analysis showed them to have some better health behaviours than UK-born residents: migrants were less likely to drink alcohol or smoke, and more likely to be physically active⁹. Improved supportive social relations among these migrants may have produced health benefits among them, and this, given their high proportion in the local population, might have had a spillover effect upon the health behaviours of the majority White Scottish group in the regeneration areas, which we have studied here.

Whatever the explanation, our findings do not support the idea that unhealthy behaviours are a response to living in stressful environments³.

Residential conditions

Perceived better internal (but not external) dwelling conditions may lead to healthier smoking, drinking and dietary behaviours, but they can also be associated with more negative health behaviours (eating more cakes and biscuits, in this case). It may be that a more comfortable home leads some people to engage in more comfort-type behaviours, perhaps because housing-related cost savings allow them to spend more money on other things. It may also be that people with unhealthy behaviours (e.g., snacking), spend more time at home and are more likely to rate their home positively.



We found few associations between residents' perceptions of neighbourhood environments and amenities, and self-reported health behaviours. There were conflicting results in relation to smoking, and the only clear, positive association was between the quality of local amenities and consumption of home-cooked meals. Given what is practically achievable from interventions in deprived areas, it seems that higher quality neighbourhoods and services can do little to help sustain more healthy behaviours through altering the neighbourhood opportunity structure. However, it may be that actions to improve neighbourhood environments and services and amenities in deprived areas are currently insufficient to make their mark in this way. Similarly, we found few links between the identification of neighbourhood problems and health behaviours: there were none with smoking and physical activity, and conflicting associations with diet and drinking. This is further evidence against the notion that living in stressful environments leads to unhealthy behaviours³.

Social regeneration

In the context of holistic regeneration, our findings suggest that adult learning programmes may be important, since level of education was positively associated with better outcomes across all four health behaviour domains. Similarly, employment programmes have a role, since worklessness was associated with negative smoking and physical activity behaviours. Finally, personal support programmes may help improve the health behaviours of specific groups: those with long-term health conditions had worse behaviours in all four domains; single parents had worse smoking and dietary behaviours; and older people had worse physical activity behaviours.

LIMITATIONS OF OUR ANALYSIS

Our interpretation of the results can highlight only the *possibility* that relationships between explanatory variables and health behaviours are causal; with the cross-sectional design used here, causality cannot be definitively distinguished from other explanations of the associations.

Some of the associations, though statistically significant, are small in magnitude, suggesting that they may be of minor substantive importance and therefore difficult to exploit practically in interventions for better health.

Conversely, some associations, though of a reasonable magnitude, were not statistically significant (values not shown) because the number of respondents in a comparison category was too low. This was the case, for example, for the Outmovers, the smallest of the three residential location groups considered (181 respondents). For similar reasons of limited statistical power, neither could we develop separate multivariate models for different sociodemographic groups (e.g., women and men).





We were also unable to study the health behaviours of asylum seekers and refugees, who make up a substantial minority of the respondents in our overall sample, since we lack information about the whereabouts of those who are Outmovers.

Although our models highlighted a number of important associations, they left the majority (at least 82%) of the variation in the outcomes unexplained. This means that there are other factors in play, some of which could be more important in determining health behaviours than those examined here.



POLICY RECOMMENDATIONS

Our analysis suggests that regeneration can have positive impacts upon the health behaviours of people subject to such interventions, but that the effects are inconsistent and sometimes unexpected in the absence of specific health improvement goals within such programmes. Programme providers therefore need to be aware of possible unintended consequences of interventions.

The health behavioural effects of moving away from regeneration areas are disappointing, and in this regard it seems that relocation programmes, certainly in the UK, may not change residential or social conditions sufficiently for changed residential context to positively influence health behaviours. We also note that the relocation programmes studied here have lacked any personal supports to assist behavioural change post-move. This may be an element worth considering in future relocation programmes, especially as we have found an appetite for changing health behaviours in our qualitative research with the relocated group.

Additional, theory-informed research is required to examine the effectiveness of specific behavioural change mechanisms in a deprived context.

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