

Urban Greenways have the Potential to Increase Physical Activity Levels Cost-effectively

Why are we interested in physical activity?

Physical activity can help prevent the occurrence of many chronic diseases, such as heart disease, some cancers, and diabetes. In fact, if an adult meets the current physical activity recommendations (150 minutes per week) they can decrease their chances of heart disease by up to 50% and colon and breast cancer by 25-30%. Yet, less than 40% of adults in Northern Ireland actually achieve this level. Therefore we need to find new, effective ways to get more people, more active, more often.

What did we want to find out?

We wanted to estimate the potential health impacts of the Connswater Community Greenway (CCG) if those living nearby used the new Greenway to do more physical activity. We also wanted to 'weigh-up' the costs of building the Greenway against the projected health benefits gained by the local population, from increased physical activity levels, to consider whether the CCG could be a cost-effective investment for public health.

What did we do?

Over 1200 local residents living near the proposed Greenway area were asked to complete a questionnaire. They were asked about how much physical activity they undertook, their current health and mental wellbeing. This information helped us to determine the proportion of those surveyed who currently met the physical activity recommendations (150 minutes/week) (Figure 1).

By drawing upon evidence from the scientific literature we proposed three hypothetical scenarios where, as a result of the Greenway, the proportion of local residents doing at least 150 minutes per week of physical activity increased by 2%, 5% or 10%. We then used a model to estimate how many new cases and deaths from heart disease, breast and bowel cancer could be prevented, over the next forty years, if these percentage increases in physical activity levels were achieved.

The model also predicted the gains in life expectancy and the number of years lived free of disease or disability by the beneficiaries of the Greenway. These results were combined into a single outcome called a Disability-Adjusted Life Year (DALY), for each hypothetical scenario. Disability-adjusted Life Years are a measure of overall disease burden which take into account years lived with disability and years lost due to premature death as a result of a disease.



By calculating the total cost savings through diseases prevented for each scenario and taking these away from the total construction and maintenance costs of the Greenway we obtained the net cost of the CCG per scenario. Then by dividing the net costs by the health benefits (DALYs) gained, we obtained a cost-effectiveness ratio for each scenario. Typically, the UK healthcare sector considers any intervention less than £20,000-£30,000/DALY to be cost-effective.

What did we find?

If just 2% of those people living nearby the Greenway who are currently inactive, did at least 150 minutes/week of physical activity as a result of the CCG, over 40 years, then a total of 184 new cases of chronic diseases and 17 deaths could be prevented.

If 10% of those people who are currently inactive became active, over 40 years, then a total of 886 new cases of chronic diseases and 75 deaths could be prevented.

The specific number of new cases and deaths from heart disease, breast and bowel cancer prevented per scenario are displayed in Figures 2 and 3. We found all three scenarios to be cost-effective ranging from £4,469/DALY to £18,411/DALY, which is well below the UK cost-effectiveness threshold.

Why is this important?

Physical inactivity is the 4th leading cause of preventable death and disease worldwide leading to increasing chronic diseases and healthcare costs. We have shown that environmental interventions, such as the Connswater Community Greenway, could be a cost-effective way to increase physical activity levels, prevent major chronic diseases and decrease healthcare expenditure. In addition, the Greenway may have benefits beyond health such as reductions in traffic and carbon emissions, crime and improvements in safety.

Citation:

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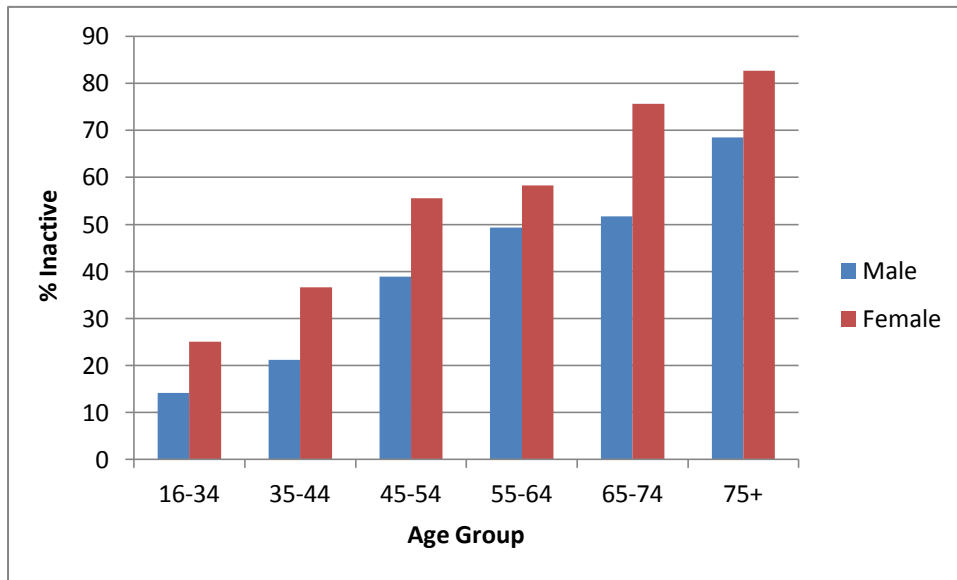
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Figure 1: Percentage of people classified as 'inactive' in the Greenway population



*Inactive= Do not meet the current UK physical activity guidelines of at least 150 minutes of moderate-intensity physical activity per week.

Figure 2: Number of new chronic diseases prevented over 40 years, if 2%, 5% or 10% of those currently inactive in the Greenway population, become active

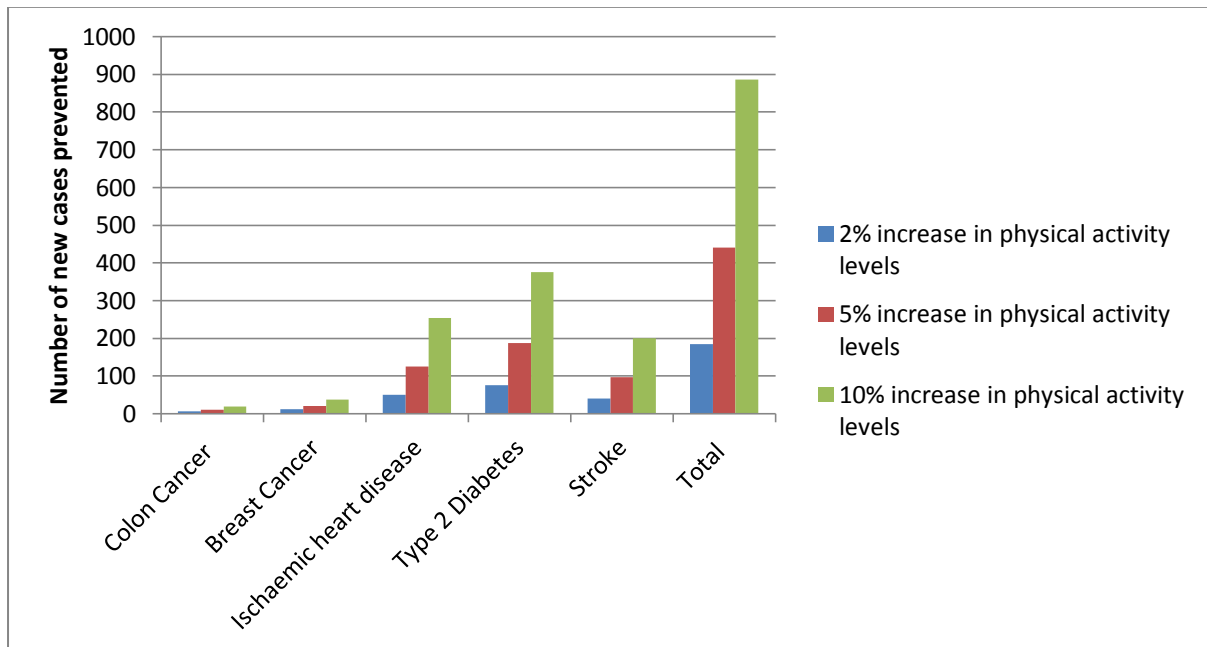


Figure 3: Number of deaths prevented from chronic diseases over 40 years, if 2%, 5% or 10% of those currently inactive in the Greenway population, become active

