

Children living in green neighbourhoods are less likely to develop asthma

May 8 2018, by Jeroen Douwes And Geoffrey H. Donovan



Credit: AI-generated image ([disclaimer](#))

Since the pioneering work of architecture professor [Roger Ulrich](#), who found that [patients with a view of a natural scene](#) recovered more quickly from surgery, research has shown that exposure to the natural environment is associated with a wide range of health benefits.

We have focused our work on asthma, and our [research](#), published today, shows that [children](#) who live in greener neighbourhoods are less likely to develop it.

Not all greenness was equally effective, however. If a child was exposed to a broader range of plants, they were even less likely to get asthma. Exposure to landscapes with low plant diversity, such as gorse and exotic conifers, on the other hand, were a risk factor for asthma. Thus, greenness is good, but more biodiverse greenness is even better.

How nature protects against asthma

One intriguing explanation is provided by the [hygiene hypothesis](#), which proposes that for children's immune systems to develop properly, they need to be exposed to a broad range of microbes in early life. Without this exposure, children may be more susceptible to immunological diseases, like allergies and asthma.

The [hygiene hypothesis](#) explains why children living on farms, where they are exposed to a wide range of animals, are less likely to develop asthma. However, it's not only farm children who benefit from exposure to animals. Having a pet in the house can also help protect against asthma. Similarly, children with more siblings are less likely to be asthmatic.

Living around a more diverse range of plants may also increase a child's exposure to microbes. In fact, [past studies](#) have shown that people who live in more biodiverse areas have more diverse skin bacteria. Exposure to the natural environment may, therefore, [improve our health by increasing the diversity of microbes](#) living on our skin and in our gut.

This, in turn, may promote a healthy immune response and reduce the risk of allergies and asthma. [Reduced stress](#) and increased physical

activity, associated with living close to green space, may be another reason for the observed protective effects.

Tracking children's environment

This study used the [Integrated Data Infrastructure](#) (IDI), which is a large database of individual-level data maintained by [Stats New Zealand](#). Currently, it contains 166 billion pieces of information on education, benefits, tax, families and households, health, justice and migration.

Using these data, we were able to track where children lived from birth until age 18, calculate the greenness of their neighbourhoods using satellite imagery and land-use data, and link to health records throughout each child's life. This was all done anonymously, in a secure data lab, to safeguard the children's privacy.

This study is an unusual collaboration between economists at the [US Forest Service](#) and epidemiologists in New Zealand. It contributes to our understanding of why asthma is on the rise.

Our results may lead to some innovative strategies to combat asthma, although there is a need to elucidate the underlying immunological mechanisms.

Improved prevention and treatment options for asthma are urgently needed as the burden of asthma is considerable, with [334 million people affected worldwide](#). Asthma prevalence in English-speaking countries such as New Zealand, Australia, the US and the UK is particularly high, with approximately one in six people suffering from it.

Good for people, good for the planet

Showing a link between biodiversity and human health may also change how we manage natural resources, especially in cities. Unfortunately, biodiversity is declining around the world due to [population growth](#), [climate change](#) and intensive agricultural practices. Our work suggests that this is not just an ecological problem, but may also present a significant threat to public [health](#).

Other [studies](#) have suggested that the exposure to the natural environment also protects against low birth weight, heart disease, [mental health disorders](#) and breast cancer, although results have not always been consistent. Therefore, as the diversity of our natural environment and resultant microbial [exposure](#) declines, we may see further increases in diseases, such as childhood allergies and [asthma](#).

This article was originally published on [The Conversation](#). Read the [original article](#).

Provided by The Conversation

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