

ANNEX 6

THE IMPORTANCE OF NATURAL AMENITIES

Historically, rural development has depended on the types of industries present in rural regions and their productivity. Increases and declines in rural well-being were outcomes of changes in agriculture, lumbering and mining, and in some cases manufacturing. It is becoming clear, however, that particularly in more industrialized countries, this jobs approach provides only a limited understanding of rural well-being and the importance of rural regions. The growth of rural tourism, second homes, and retirement populations in many rural areas is a strong indication that rural areas hold an appeal that cannot be understood in traditional economic terms. How is one to understand, for instance, why urban residents sink so much time and money into fixing up old farm houses (or building new houses, for that matter) several hours away from their permanent residences? Why does having an additional home to maintain mean relaxation from the stresses of urban life and not simply more stress?

At least part of the answer is provided by environmental psychology, a field that has developed over the past twenty years and that remains largely unknown to economists and regional scientists. The landmark study on the psychological benefits of nature was done by Ulrich (1984), who examined records of patients with a particular type of gall bladder operation in a hospital for a period of 20 years, comparing the records of those who had views of trees from their windows with those whose rooms faced a blank hospital wall. Patients with a view of trees tended to stay in the hospital just as long, but they used substantially less painkillers and made fewer complaints to the nurses' station. In addition to replicating this study, subsequent research has examined health station visits by prisoners, finding that those with cells facing a rural scene outside the prison made fewer visits than those with cells facing inside the prison.

Wells and Evans (2003) have done one of the more interesting non-institutional studies relating nature to stress reduction. For a sample of over 300 children aged eight to ten in rural New York state, Wells and Evans ascertained home exposure to nature with a simple additive scale based on whether there were live plants in the living room, whether there were views of nature from (a) the kitchen and (b) the living room, and whether the home had a grass yard. Using a stressful life events scale, they found that children with high exposure to nature had far fewer symptoms of psychological distress than children with little exposure to nature, taking differences in household income into account (see Figure 1).

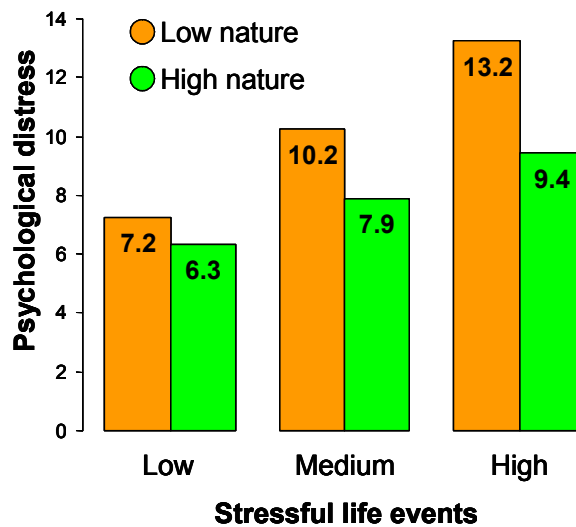
In short, there is now ample evidence that simple exposure to natural scenery reduces the effects of stressful events on psychological well-being. Other research has shown benefits from exercise or recreation, activities often associated with being in a natural setting. In this context, having a second house in a rural area begins to seem rational. It does not explain why, however, contact with nature should be relaxing.

All countryside is not equally appealing. Years of research on landscape aesthetics, often done in conjunction with public land use planning, have shown that people most prefer landscapes that contain open, traversable vistas, clumps of trees, a water source (pond, lake, or stream), and a hint of mystery - a suggestion that there is more around the corner. These preferred scenes often show up in landscape paintings. For instance, the picture below (see Figure 2) is in a lobby of the private building in which the U.S. Department of Agriculture's Economic Research Service is currently located. The picture has all the ingredients of a preferred landscape: clumps of trees, a water source, an open vista, and, with a green pathway extending around the corner, a hint of mystery.

Figure 1

Results

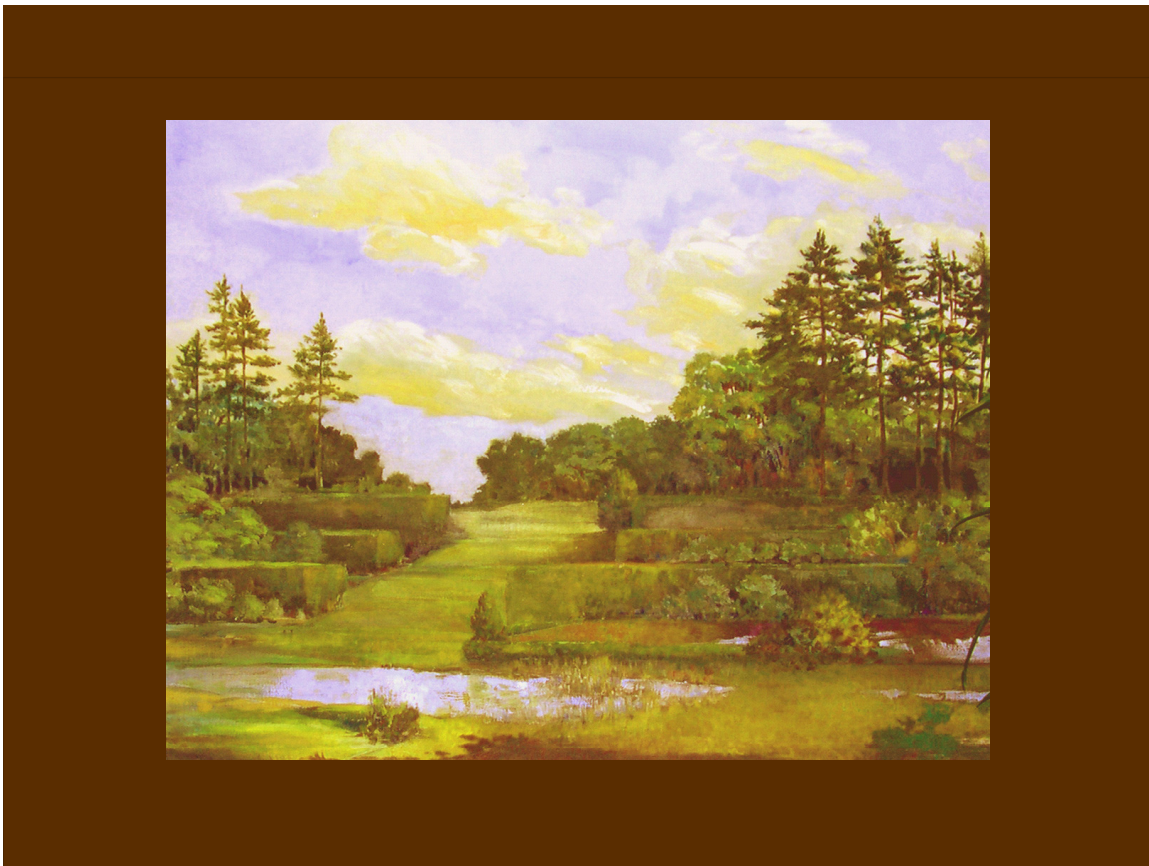
Nature moderates effects of stressful life events on psychological distress



Source: N. M. Wells and G. W. Evans, "Nearby Nature: A Buffer of Life Stress Among Rural Children," *Environment and Behavior* 35:3:311-330, 2003.

These preferences are generally consistent across cultures, but they do not necessarily extend to people who have particular occupational or recreational uses that they make of the land. For instance, a recent study comparing three groups of people (rural Chinese, design students in China and U.S. design students) found that the preferences of the Chinese design students (even those that were from rural China) were more like the U.S. design students than the rural Chinese (many of whom were presumably farmers). In general, farmers tend to like agricultural scenes more than others. By the same token, foresters like trees to be evenly spaced and of equal size, while the general public prefers forests that look more natural.

The influence of occupation was also evident in a Netherlands study contrasting local farmers, local residents, and visitors (often bicyclists). Farmers clearly thought agrarian land was more beautiful than "half-open swamp" but local non-farm residents were more like visitors in their preference for the latter.

Figure 2

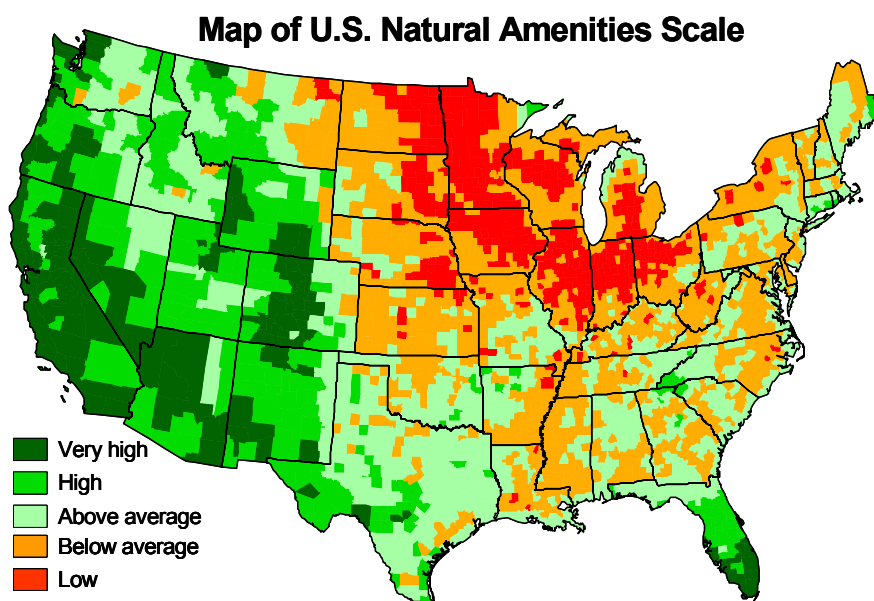
Landscape preference studies have typically been done by asking people to rate pictures of various outdoor scenes. A problem with this approach is that these scenes have varied along several dimensions, so that it is difficult to isolate the important differences. In a recent study of alpine farmland scenery, Hunziker and Kienast digitally altered a single picture, adding and subtracting trees from the scene. This study clearly showed respondents preferences for more forest than there was in the original picture, but not total forestation. Completely cleared land was the least preferred.

The consistency across cultures has suggested to some that there is a vestigial genetic component to landscape preferences. Preferred landscapes, it is argued, are the landscapes that were most suitable to early humans. Other animal species tend to have inherently preferred habitats, why not us? While many are skeptical, no convincing alternative explanations have been forthcoming.

Some attempts have been made to measure natural or landscape evaluation in rural areas. Sjerp de Vries and his colleagues at the Landscape Center in Wageningen in the Netherlands have developed GLAM (GIS-based Landscape Appreciation Model) to reflect landscape attractiveness at a very local level. Their measures include: naturalness (largely forest), historical distinctiveness, urbanization (negative) and skyline disturbance (negative). Two other measures, topographical relief and noise level (negative), proved to be redundant in predicting local evaluations of landscape.

McGranahan developed a scale of “natural amenities” for U.S. counties, based on climate measures (warm, sunny winters; cool, low-humidity summers), water area (ponds, lakes, ocean), and topographic variation (relief). Each measure received equal weight in the overall scale, based on results of regression analyses. Areas scoring high on the scale include the Rocky Mountains and the West Coast (see Figure 3). The lowest scoring areas tend to be the heavily agricultural lands across the centre of the country. Areas with flat, unbroken land, wet winters, and hot humid summers are very good for grains, but tend to inhibit amenity-based development. Counties in the low amenity areas have tended to lose population every decade since 1950. In contrast, high amenity counties have, on average, doubled their populations since 1970.

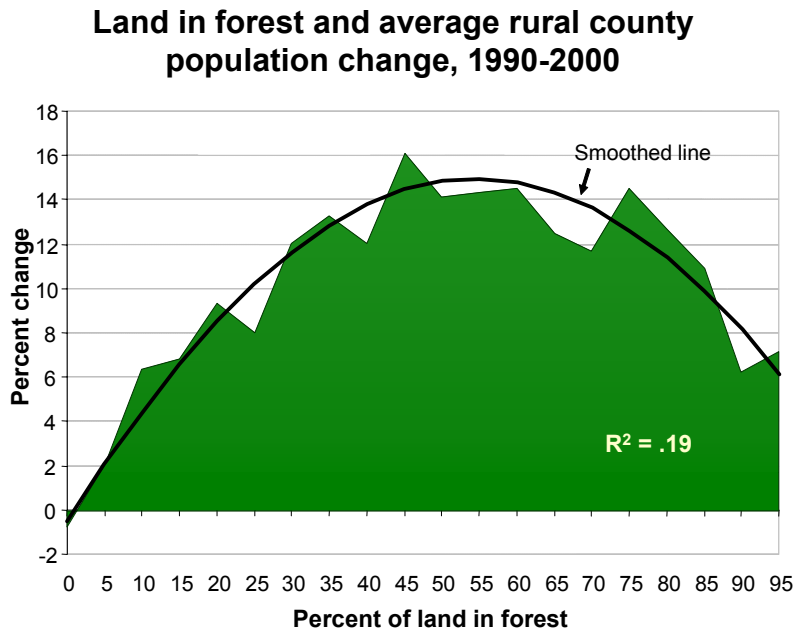
Figure 3



D. A. McGranahan, "Natural Amenities Drive Rural Population Change,"
AER-781, Economic Research Service, USDA, Washington, DC, 1999

Although forest is correlated with topographical variation, this natural amenities scale does not include land use and there is no measure of forest cover. However, a graph of average county population growth, 1990-2000 by percentage of county land in forest (see Figure 4) closely resembles the inverted “U” of the Hunziker and Keinast study showing preferences in a Swiss agricultural setting (see Figure 5). Partially forested counties had the most rapid growth, while counties with no forest lost population and counties almost completely forested had relatively little growth.

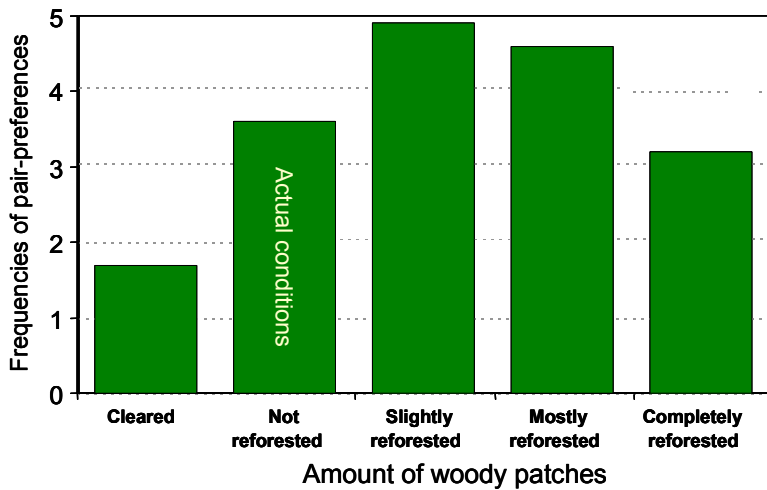
Figure 4



D. McGranahan and P. Sullivan, "Farm Programs, Natural Amenities, and Rural Development," *Amber Waves* 3:1:28-35

Figure 5

Preferences in an Swiss agricultural setting



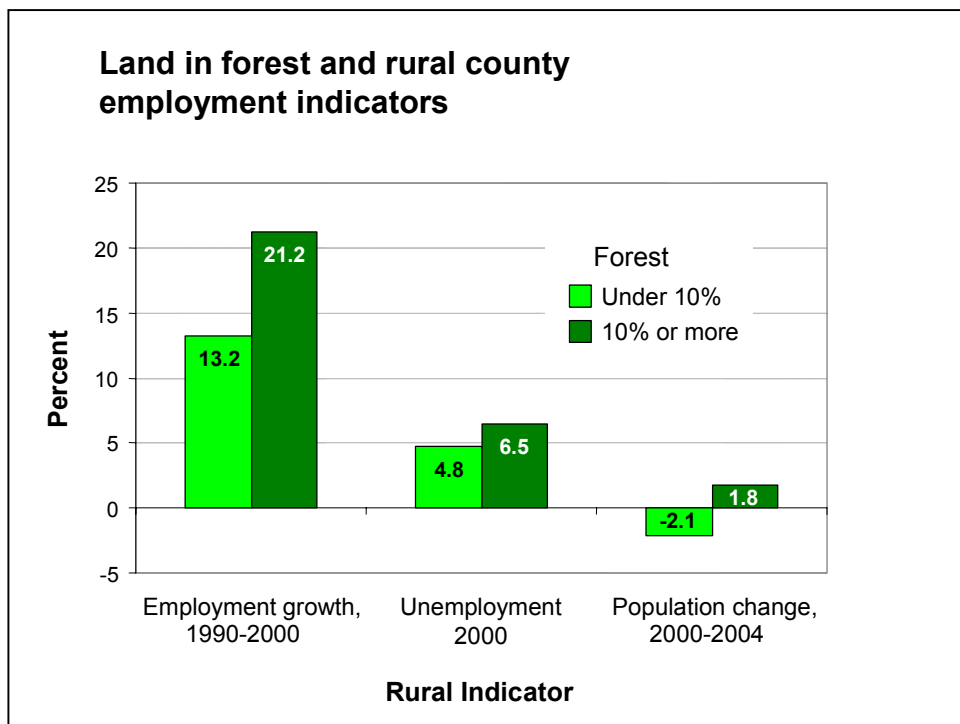
M. Hunziker and F. Kienast, "Potential Impacts of Changing Agricultural Activities on Scenic Beauty: A Prototypical Technique for Automated Rapid Assessment," *Landscape Ecology* 14: 161-176, 1999

The quality of life gains from rural residence, particularly those with attractive landscapes, can generate apparent anomalies in socio-economic statistics. People may be willing to sacrifice economic well-being for residence in an area with beautiful landscapes and a comfortable climate. Economists suggest that the willingness to trade income for quality of life rises with earnings, suggesting that quality of life is likely to play an increasing role in residential location as countries become wealthier, increasing the likelihood of anomalies.

Figure 6 presents an example of an anomaly, using the proportion of land in forest as a simple measure of landscape appeal. Counties with at least 10% forest had much greater employment growth than those without forest from 1990 to 2000. Yet, unemployment rates in 2000 were considerably higher in the more forested counties. Further, even with this higher unemployment, the forested counties gained population in the 2000-2004 period, while those with little or no forest lost population. There are other possible explanations for this pattern. For instance, areas with little forest tend to have more agriculture and in these areas economic hardship may result less in unemployment than in underemployment. Whatever the explanation, the unemployment rate - a key socioeconomic indicator - is of questionable value in many rural contexts.

Amenities, whether natural or man-made, may be reflected in both lower wages (as individuals willingly forgo income for amenities) and higher housing costs (as individuals willingly pay a premium to reside in a high-amenity area). Thus, although household incomes are much the same in low-forest counties as in higher-forest counties, the median value of housing is over 35% higher in the latter counties.

Figure 6



The importance of natural amenities in explaining differences in rural development across rural areas is undoubtedly greater in the U.S. and other countries with wide variations in rural climate and topography than in countries where rural landscapes are more uniform. However, as incomes rise and the importance of national borders diminishes, the future of rural livelihood and well-being may, for certain rural communities, depend increasingly on the scenic appeal of rural landscapes. This will be particularly important for rural areas that are close to urban centres.

The focus here has been on natural landscapes and climate. In many areas, there is a heritage factor as well. For instance, in the China-U.S. comparative study mentioned above, the greatest agreement between the Chinese urban design students and the rural respondents was in the high appeal of a scene evoking traditional rural culture.

