The Planning Perspective on Health:

Community Health as a Goal of Good Design

An emerging body of research points to various connections between community design and health issues. This fact sheet – developed to provide rationale for land use policy change – presents a brief summary of existing research, categorized by built environment issue. It is intended to help planners work with public health practitioners toward land use policy solutions that improve community health.

Regional Location / Access to Transit

Communities built at the edges of metropolitan centers are those most likely to encourage a car-dependent lifestyle, marked by long commutes to work and significant distance from retail stores and public amenities. All of this driving contributes to health problems, including air pollution, obesity, and social isolation.

- Regional accessibility – that is, the location of a development relative to existing development or central business districts – has great impact on the amount that people drive, walk, and take transit. Lower-density areas without destinations in close walking distance or frequent transit service correlates with greater vehicle miles traveled (VMT) per capita because people must drive more to do the same activities.[1]
- VMT are directly associated with air pollution, and areas with high levels of VMT per capita also tend to have higher accident and injury rates.[2]

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- For each hour spent in a car each day, drivers are 6 percent more likely to be obese (controlling for age, education, gender, and ethnicity).[3]
- People who live in more sprawling environments are more at risk for headaches and breathing difficulties.[4]
- Drivers who commute longer distances tend to have higher blood pressure and report more feelings of being "tense" or "nervous."[5, 6]
- Each 1 percent increase in the proportion of neighbors who drive to work is associated with a 73 percent decrease in the chance that any individual will report having a social tie to a neighbor.[7]
- Almost one-third of Americans who use public transit to get to work meet their daily requirements for physical activity by walking as part of their daily life, including to and from the transit stop.[8]

Density and Intensity of Development

Photo courtesy of Steve Randolph

The density or intensity of land use ("compactness") brings destinations closer together and thus influences the amount people drive, walk, or take transit. Indeed, density has been shown to reduce obesity by promoting transit ridership and walking as a transportation mode.[9] Since a majority of people will not walk further than a quarter mile or five minutes to a destination, people are more likely to walk to their destinations in denser environments.[10]

- Neighborhood density is positively correlated with the number of minutes of physical activity residents get per day.[11] As density increases, the amount of physical activity typical residents get each day increases.
- For each half mile walked per day, people are about 5 percent less likely to be obese (controlling for age, education, gender, and ethnicity).[12]
- Per capita traffic casualties are many times lower in higher-density urban neighborhoods (where drivers are more alert for pedestrians) than in low-density suburbs.[13]
- Doubling density beyond 30 employees per acre, or 13 residents per acre, is associated with more than a 30 percent decrease in vehicle miles traveled (VMT) and total air pollution.[14]

Land Use Mix

Even more so than increasing density alone, creating mixed-use development (where residential, commercial, and office land uses are located near each other) reduces the need to drive and increases residents' opportunities to walk or bike for transportation.

- Specific land uses most strongly linked to the percentage of household trips made on foot are educational facilities, office buildings, restaurants and taverns, parks, neighborhood-scale retail establishments, civic uses, and grocery stores.[15]
- Neighborhoods with mixed land uses are associated with shorter trip distance and greater transit ridership, walking, and overall physical activity.[16, 17, 18, 19]
- A doubling of neighborhood mix is associated with a 5 percent reduction in both vehicle miles traveled and traffic accident rates.[20]
- People living in highly walkable, mixed-use communities are more than twice as likely to get 30 or more minutes of daily exercise as people who live in more auto-dependent neighborhoods.[21]

Photo courtesy of Mark Strozier

- One study in the Atlanta area found that residents of the most mixed-use neighborhoods were more than 30 percent less likely to be obese (controlling for age, education, gender, and ethnicity) than residents of neighborhoods with a lower mix of uses.[22]

Street Connectivity and Street Design

Cul de sac developments isolate homes and create disconnected, often meandering routes accessible primarily by car. Such "incomplete streets," which fail to provide connectivity and appropriate pedestrian and bicycle facilities (such as sidewalks and designated bike routes), discourage walking and cycling by creating unsafe environments and forcing longer, indirect routes to destinations. Creating "complete streets" can decrease vehicle miles traveled (VMT) and increase the number of destinations within walking or biking distance.[23, 24]

- Traditional grids disperse traffic, resulting in less congestion and fewer VMT. Decreased congestion particularly lowers hydrocarbon emissions, nitrogen oxides, and other pollutants produced during combustion.[25]
- Pedestrian accidents are 2.5 times more likely on streets without sidewalks than on otherwise similar streets.[26]
- Crash rates increase exponentially with street width, especially since drivers move faster on wider roads[27] and more cautiously on narrow streets.[28]
- Pedestrian injuries can be reduced more than sevenfold by slowing traffic down from 30 to 20 miles per hour.[29] Slowing traffic from 40 to 20 miles per hour can reduce a pedestrians' chance of being killed, if hit, from 85 percent to just 5 percent.[30]
- Traffic calming measures such as speed humps are associated with a 50 to 60 percent reduction in the risk of children's injury or death when struck by a car.[31] In particular, chicanes (S-shaped curves in the road) are the most effective strategy, reducing collisions by an average of 82 percent.[32]

Access to Healthy Food Retail

California has four times as many "unhealthy" food outlets (e.g., fast food chains, restaurants, and convenience stores) as "healthy" food outlets (supermarkets, produce vendors, and farmers' markets).[33] The result is what's known as *food deserts*, neighborhoods that lack places where residents can buy fresh fruits and vegetables and other healthy foods. Convenience stores, gas stations, and fast food outlets are often the only food retailers available in low-income neighborhoods, where there may be high concentrations of households eligible for food stamps.[34] Residents who can't drive are left to either take a bus or taxi to the nearest grocery store – a time-consuming inconvenience that many people can't afford – or rely on more expensive, "fringe"

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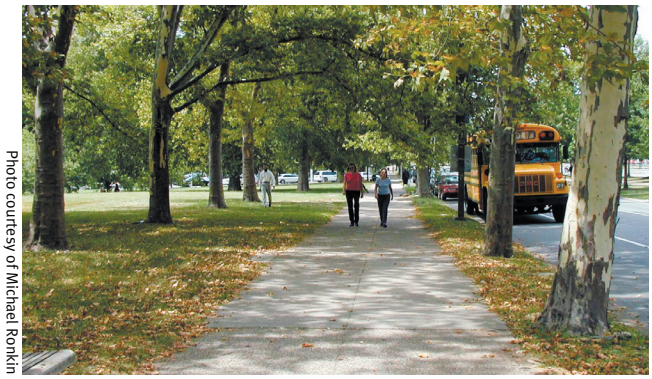
food retail outlets such as gas stations or liquor stores. Transportation, land use, and economic development decisions shape neighborhood food access and the food retail environment.

- In low-income neighborhoods, each additional supermarket increases residents' likelihood of meeting nutritional guidelines by one-third.[35]
- Residents in communities with a more "imbalanced food environment" (where fast food and corner stores are more convenient and prevalent than grocery stores) have more health problems and higher mortality than residents of areas with a higher proportion of grocery stores, when other factors are held constant.[36]
- The presence of a supermarket in a neighborhood is linked to higher fruit and vegetable consumption and a reduced prevalence of overweight and obesity.[37, 38]

Access to Recreational Facilities



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Lack of physical activity is a primary risk factor in five of the top ten causes of death in California: heart disease, cancer, stroke, diabetes, and Alzheimer's disease. It is also a primary risk factor for obesity and diabetes, the fastest-growing diseases in the state.[39] Yet only 47 percent of Californians meet the recommended guidelines for physical activity.[40] Convenient, safe access to recreational facilities is directly correlated to an increase in the amount that people exercise.

- Creating new places for physical activity or improving their accessibility can increase the proportion of residents who exercise three times a week by 25 percent.[41]
- People who live within walking distance (1/4 mile) of a park are 25 percent more likely to meet the minimum weekly exercise recommendation of 30 minutes three times a week.[42]
- In a study of adolescent girls (whose physical activity levels tend to decline substantially during puberty), those who lived near more parks – particularly parks with amenities that are conducive to walking and other physical activity – engaged in more extracurricular moderate/vigorous activity than girls who lived near fewer parks.[43]

Presence of Greenery

In addition to parks for active recreation, the mere presence of street trees, shrubs, and green open spaces can provide an important mental refuge for people. It is important that all urban environments, regardless of density or location, provide high-quality green spaces such as public parks and trails, street trees, and community gardens.

- Street trees and open space help filter pollutants from the air and mitigate the "heat island effect" caused by bare pavement.[44]
- The presence of trees reduces self-reported feelings of stress.[45]
- The presence of shared natural or open spaces has been associated with stronger social ties among neighbors.[46]
- Children with easier access to green space in their own neighborhoods have exhibited better ability to concentrate in school.[47]

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Distance from Sources of Air Pollution

Motor vehicles are often the principal contributors of particulate matter, nitrogen oxides, and other pollutants that contribute to the formation of ozone. Diesel trucks in particular emit particulate matter air pollutants that have the potential to cause asthma, cancer, premature death, and other health effects.[48, 49] Air pollution is significantly worse near highly trafficked roads, diesel truck routes, and energy-intensive industrial areas, and in regions with high rates of vehicle miles traveled (VMT). Land use decisions and transportation investments affect location of uses and transportation mode choices, contributing to both regional and site-specific air quality.

- Compared with more compact communities, lower-density communities have higher vehicle ownership rates and residents who drive longer distances.[50] Sprawling communities generate higher per-capita vehicle emissions[51] and have higher peak ozone concentrations than more compact areas.[52]
- Residents of homes within 1,000 feet of busy streets are at an increased risk of exposure to particulate matter, nitrogen oxide, hydrocarbon, and carbon monoxide pollution.[53]
- Children living near busy highways have significant impairments in lung development that can lead to respiratory problems for the rest of their lives.[54]
- Living in heavily trafficked areas greatly increases asthma severity, a burden borne disproportionately by asthma sufferers who are ethnic/racial minorities or from low-income households.[55]
- A substantial number of children in California attend schools close to major roads with very high traffic counts (and corresponding air pollution levels), and a disproportionate number of those students are economically disadvantaged and ethnic/racial minorities.[56]

Affordable Housing

Concentrations of affordable housing, either in public housing projects or in lower-income neighborhoods, exacerbate residents' health problems by increasing the concentration of poverty.

- A lack of affordable housing within communities may compromise the health of low-income residents as they spend more on housing costs and less on health care and healthy food. It can also put residents at greater risk of exposure to problems associated with poor-quality housing (mold, pests, and lead and other hazardous substances), and cause stress and other adverse health outcomes as a result of potential housing instability.[57]
- Relocating residents from public housing projects into neighborhoods with lower concentrations of poverty has been associated with weight loss and a decline in reported stress levels among adults, and reduced rates of injury among male youths.[58, 59] (However, research suggests that relocating vulnerable public housing residents to higher-quality housing or safer neighborhoods may not improve their health status without substantial relocation assistance, partly due to poorer initial health status of public housing residents and the stress of forced relocation.[60] This may have implications for the health of low-income residents who are displaced due to gentrification or redevelopment.)
- Community development strategies to improve or develop neighborhood amenities that have the potential to improve health outcomes may be especially important in neighborhoods where low-income and affordable housing is located, since low-income populations face increased vulnerability to health problems. For example, creating walkable communities facilitates healthy exercise, and adding retail establishments increases access to fresh fruits and vegetables.[61]

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