Summary
This report examines how urban living affects residents’ mental health and happiness, and ways to use this information to create saner and happier cities. Some often-cited studies suggest that urban living increases mental illness and unhappiness, but a critical review indicates that much of this research is incomplete and biased, and the issues are complex, often involving trade-offs between risk factors. City living may increase some forms of psychosis and mood disorders, drug addiction, and some people’s unhappiness, but tends reduce dementia, alcohol abuse and suicide rates, and many people are happier in cities than they would be in smaller communities. This report examines specific mechanisms by which urban living can affect mental health and happiness, and identifies practical strategies that communities and individuals can use to increase urban mental health and happiness. This analysis suggests that it is possible to create sane and happy cities.
# Table of Contents

Executive Summary .................................................................................................................. 3

Introduction .............................................................................................................................. 8

Research Challenges ............................................................................................................... 9
  Understanding Causation ...................................................................................................... 10

Summary of Previous Research ............................................................................................ 11
  Overviews ........................................................................................................................... 11
  Urbanity and Mental Illness ............................................................................................... 11
  Urbanity and Self-reported Happiness ............................................................................... 13
  Dementia and Alzheimer Rates .......................................................................................... 18
  Alcohol and Drug Abuse Rates ......................................................................................... 18
  Suicide Rates ...................................................................................................................... 19
  Summary ............................................................................................................................. 20

Urban Mental Health Impact Mechanisms ........................................................................... 21
  Concentrated Mental Illness Risks (Poverty, Substance Abuse, etc.) ................................. 21
  Alcohol and Drug Abuse .................................................................................................. 22
  Social Isolation and Loneliness ....................................................................................... 23
  Noise and Light Pollution ................................................................................................. 26
  Toxic Pollution .................................................................................................................. 27
  Excessive Stimulation and Stress ..................................................................................... 27
  Crime ................................................................................................................................. 29
  Crowding and Reduced Privacy ........................................................................................ 33
  Physical Fitness .................................................................................................................. 34
  Economic Stress ................................................................................................................ 35
  Transport Conditions ....................................................................................................... 36
  Inadequate Interaction With Nature .................................................................................. 38
  Impacts Summary ............................................................................................................. 40

Creating Saner and Happier Communities .......................................................................... 41

Who is Most Suited to Urban Living? .................................................................................... 43

Conclusions ............................................................................................................................ 44

References .............................................................................................................................. 47
Executive Summary
Does urban living threaten our mental health and happiness? Popular culture is rife with stories suggesting that city environments, including living in apartments and using public transit, cause emotional stress and unhappiness, and some scientific studies also find higher mental illness and depression rates in urban areas. Are these claims credible? What are their implications? How can communities and individuals respond to maximize urban mental health and happiness?

These are important and timely questions. The world’s population is in the middle of a transition from approximately 80% rural in 1920 to 80% urban by 2060. Decision-makers and individuals need practical guidance on how to maximize sanity and happiness when planning cities and choosing where to live. This report explores these issues.

This research can be challenging because mental health and happiness are difficult to measure, and much of the research is incomplete and biased, focusing on a particular impact or group, and failing to consider confounding factors that would differentiate between association (a condition is more common in cities) and causation (city living causes a condition). It is also challenging because this is an emotional issue: mental illness and associated social problems such as crime, substance abuse and homelessness tend to concentrate in urban neighborhoods. Urban environments tend to be crowded and noisy which can stimulate stress and fear, and city residents may seem unfriendly, particularly for newcomers. In addition, many people work in cities, live in suburbs and recreate in rural areas, and so associate cities with responsibilities and stress, suburbs with home and family, and rural areas with relaxation and enjoyment. These factors can contribute to negative emotions about city living.

Another challenge is confusion concerning what constitutes urban. The term conjures up images of skyscrapers, crowded sidewalks, subways and concentrated poverty; although such conditions exist, they are not representative of the overall urban experience. Urban includes many community types ranging from city centers to suburban villages. Most urban residents live in moderate-density, mixed neighborhoods, and rely on a combination of walking, cycling, public transit, and automobile travel, and most cities have a mixture of low-, middle- and high-income households. People who imply that most urban residents live in high-rise apartments, forego automobile travel, and are poor, are using atypical examples.

When considering how environments affect human sanity and happiness it is important to keep in mind people’s tremendous diversity and adaptability. Humans live successfully in a wide range of environments, from frozen tundra to dry deserts, and from single-family houses in sprawled suburbs to city center high-rises. Many of us will adapt to various environments during our lifetime. We shouldn’t assume that our personal preferences are universal or unchangeable.

This review indicates that city living can have various mental health impacts. Credible research suggests that urban residency can increase psychosis and mood disorder risks, addiction to some drugs, and some people’s unhappiness, but reduces dementia, some types of substance abuse and suicide rates, and increases many people’s happiness, particularly those who are poor or alienated. Urban living also tends to improve mental health by increasing economic and social
opportunities, fitness and health, and access to mental health services, and higher mental illness rates reported in cities may partly reflect better reporting. Table ES-1 summarizes how urban living affects various mental health risks.

**Table ES-1  Urbanization Mental Health Impacts**

<table>
<thead>
<tr>
<th>Increased Risks</th>
<th>Reduced Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Psychosis (e.g. schizophrenia) and mood disorders (e.g., stress and depression)</td>
<td>• Self-reported unhappiness (in poor countries)</td>
</tr>
<tr>
<td>• Self-reported unhappiness (in affluent countries)</td>
<td>• Dementia and Alzheimer disease</td>
</tr>
<tr>
<td>• Cocaine and heroin addiction</td>
<td>• Alcohol and methamphetamine abuse</td>
</tr>
<tr>
<td></td>
<td>• Suicide rates</td>
</tr>
</tbody>
</table>

urbanization tends to increase some and reduce other mental illness risks.

This study explores mechanisms by which city living affects mental health and happiness. Higher mental illness and unhappiness rates in cities may largely reflect the concentration of people with elevated risk factors, such as poverty, disability and minority status, due to more economic opportunities, services and tolerance. This can create a self-reinforcing cycle of concentrated poverty, mental illness and associated social problems in certain urban areas, called social drift. As a result, the association between cities and mental illness does not necessarily indicate that cities cause these problems, or that a typical person will become less sane or happy by moving to a typical urban neighborhood. In fact, many mentally ill and unhappy people are better off overall in cities than in smaller communities that offer less opportunity and support.

Urban households tend to be smaller and more mobile than in rural areas, which can increase isolation and depression, but urban residents also tend to have larger social networks than in smaller communities, reflecting cities’ greater social opportunities. Urban conditions tend to increase some mental illness risk factors including noise, toxic pollution, crime and social over-stimulation, but these impacts are declining or can be reduced with appropriate planning. It is hyperbola to claim, as some researchers do, that cities cause “relentless” stress. Urban newcomers may be stressed by the additional noise, stimulation, and interactions with culturally diverse neighbors, but over time most learn to accommodate these factors. For visible minorities, the cultural diversity of cities can reduce stress and increase happiness.

In most countries, surveys find higher self-reported happiness (also called life satisfaction) in cities than rural areas. In the U.S., rural residents report slightly (up to three percentage points) higher average happiness ratings than in large cities, but this probably reflects confounding factors, and so they does not really indicate that people who move from rural to urban areas necessarily become less happy.

Rural areas tend to have much higher (about double) suicide rates than urban areas, which suggests that city living increases overall mental health and happiness. If urban living double residents’ lifetime psychosis risk, from about 1% to 2%, as some researchers suggest (others estimate much smaller effects) this approximately equals the higher rural suicide rates. Since psychosis is generally treatable and transitory, while suicides are devastating and permanent, cities’ increased psychosis risk is generally preferable to higher rural suicide risk.
Huge worldwide rural-to-urban migrations and high costs of living in cities offer empirical evidence that billions of people consider themselves better off overall in urban conditions, and willingly bear these costs. Although given unlimited resources many people say that they prefer a large suburban home and automobile commuting over an urban apartment and public transit commuting, when confronted with realistic trade-offs, a major portion of households will choose more compact housing and more resource-efficient travel modes in order to gain the benefits of city living. Much of the evidence that consumers dislike cities, and that cities increase mental illness and unhappiness, are specific to North America where public policies are anti-urban and cities have severe social problems; as a result, such evidence does not apply to economically successful, well designed urban neighborhoods.

Table ES-2 summarizes various mechanisms by which urban environments can affect mental health and happiness, considers whether these are actually caused by urbanization, and identifies specific response strategies.
Urban Sanity: Understanding Urban Mental Health Impacts and How to Create Saner, Happier Cities
Victoria Transport Policy Institute

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Causation or Association</th>
<th>Mental Health and Happiness Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentrated mental illness risks (poverty, addiction, etc.)</td>
<td>Mainly association. Concentration may exacerbate some problems but reduce others by improving economic opportunity and treatment services.</td>
<td>Improve mental health and welfare support services. Recognize that cities tend to attract people with mental health risks, and so should provide appropriate services.</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>Mainly association. Cities have more cocaine and heroin addiction, rural areas more prescription drug, meth and alcohol abuse.</td>
<td>Provide targeted substance abuse prevention and treatment programs.</td>
</tr>
<tr>
<td>Social isolation and loneliness</td>
<td>Mixed. Urban households tend to be smaller and more mobile, but these differences are declining. Rural residents tend to be superficially friendly, but cities offer more social opportunities.</td>
<td>Encourage community cohesion (positive interactions among neighbors) and programs to welcome newcomers.</td>
</tr>
<tr>
<td>Noise and light pollution</td>
<td>Increases with density, but can be minimized with policy and design changes.</td>
<td>Regulations and designs that reduce noise and light pollution.</td>
</tr>
<tr>
<td>Toxic pollution</td>
<td>Increases with density but can be reduced.</td>
<td>Pollution reduction strategies.</td>
</tr>
<tr>
<td>Excessive stimulation and stress</td>
<td>Mixed. New urban residents often experience stress, but this usually declines over time.</td>
<td>Support programs that help people to become more comfortable with diversity.</td>
</tr>
<tr>
<td>Crime</td>
<td>Mixed. Some cities have high crime rates, but this is declining.</td>
<td>Support crime reductions and more accurate crime risk information.</td>
</tr>
<tr>
<td>Crowding</td>
<td>High urban housing costs can increase low income household crowding.</td>
<td>Increase affordable housing supply in cities, including larger units for families.</td>
</tr>
<tr>
<td>Economic stress</td>
<td>Mixed. Urban areas tend to have high living costs, but better economic opportunities.</td>
<td>Support affordability and economic opportunities.</td>
</tr>
<tr>
<td>Transport conditions</td>
<td>Mixed impacts. Urban living has both positive and negative impacts.</td>
<td>Improve walking, cycling and public transit, and support Smart Growth policies.</td>
</tr>
<tr>
<td>Inadequate access to nature</td>
<td>Mainly causation, but can be reduced.</td>
<td>Increase greenspace and opportunities to visit natural areas.</td>
</tr>
</tbody>
</table>

Urban living can affect mental health and happiness in several ways. Some are inherent to urban conditions, but many are associations related to confounding factors.

This suggests that better policies can increase urban mental health and happiness. The following planning and design strategies can help create saner and happier cities:

- **Targeted social service.** Recognize that cities tend to attract people with elevated mental illness risks, and provide appropriate mental health, housing and substance abuse treatment services.
- **Affordability.** Improve affordable urban housing and transportation options (walking, cycling, public transit, taxi, etc.) to reduce residents’ financial stress.
- **Independent mobility.** Provide independent mobility options for diverse community members, including those who are poor, have disabilities or impairments, adolescents or seniors.
- **Pro-social places.** Create public spaces that promote community and encourage positive interactions among residents. Involve residents in creating public places and activities that meet their needs.
Community safety. Create communities that minimize urban dangers including traffic, crime and harassment, and pollution exposure. This can involve traffic safety programs, crime prevention though environmental design, appropriate lighting, passive surveillance by nearby residents and by-passers, and other community safety programs.

Design for physical activity. Integrate physical activity by providing good walking and cycling conditions, high quality public transit, compact and mixed neighborhoods, local parks and recreational facilities, plus appropriate community sports and recreation programs.

Pollution reductions. Implement noise, air, light and toxic pollution reduction programs.

Greenspace. Design cities with appropriate greenspaces, including local and regional parks, green infrastructure, and out-of-city wilderness access programs.

The following strategies are particularly important in suburban and rural areas:

- Since many suburban and rural areas have high poverty and substance abuse rates, they need social services that respond to those needs, including affordable housing and transport options.
- Because residents are isolated, residents are vulnerable to loneliness and depression, and so require suitable places to socialize, and options for accessing those places.
- Because some smaller communities can be exclusive and oppressive, they may require targeted programs to include minorities and non-conformists.
- Because transport systems more automobile-dependent, it is particularly important to improve walking and cycling conditions.

Such policies are important in both developed countries that currently under-support cities compared with suburbs and rural areas, and in developing countries where new cities are developing rapidly.

This is not to suggest that everybody should live in dense cities; some people are unsuited due to their lifestyle or temperament, for example, because they own large pets, engage in noisy activities, or are uncomfortable with cultural diversity. However, because cities tend to improve economic and social opportunities, many people benefit from urban living overall, because their economic and social gains more than offset any additional mental stress, particularly over the long run as they become accustomed to urban environments. Since urban living reduces per capita land consumption and transport costs, it tends to provide additional, indirect benefits.

Many people should find this research reassuring: it suggests that most people can take advantage of urban living benefits without sacrificing their sanity or happiness.
Introduction

Does urban living threaten our mental health and happiness? Popular culture is rife with stories suggesting that urban environments, apartment living and public transit travel cause emotional stress and unhappiness. Some scientific studies also find higher mental illness and depression rates in urban areas. Are these claims credible? What are their implications? How can communities and individuals maximize urban mental health and happiness?

These are important and timely questions. The human experience is increasingly urban; the world’s population is currently transitioning from being approximately 80% rural in 1920 to 80% urban in 2060. Many people whose grandparents lived in traditional villages have children who will live in large, industrial cities. Decision-makers and individuals need practical guidance on how to maximize sanity and happiness when planning cities and choosing where to live.

Abundant empirical evidence indicates that people can benefit overall from city living. Many people migrate from rural to urban areas to achieve healthier, wealthier and more satisfying lives. Public policies to discourage urbanization, such as China’s hukou registration system which limits rural-to-urban migrations, and restrictions on building density and height common in many cities, are often unsuccessful, indicating that many people prefer city living overall.

Of course, migrating can be stressful, and urban living can impose certain physical and emotional stresses. However, humans are adaptable. Most migrants eventually adapt successful to their new communities. Rural and urban environments each offer advantages and disadvantages, and some people are more suited to one or the other, but there is little evidence that most people cannot adapt to urban conditions.

This analysis is challenging. Much research concerning urban mental health impacts is incomplete and biased, focusing on specific impacts or groups, and most guidance for improving urban mental health and happiness is vague and unrealistic. There are many possible ways to define and measure mental health and urban conditions, and various factors to consider when evaluating these impacts, making quantification difficult.

This report investigates these issues. It examines scientific evidence concerning the mental health risks of urban living, identifies specific mechanisms that explain these impacts, and describes practical strategies that communities and individuals can use to improve urban mental health and happiness. This research should be useful to local officials, public health professionals, planners, and individual households.
Research Challenges
Evaluating urban mental health impacts is challenging for reasons described below.

First, these are emotional and political issues, so many sources provide incomplete and biased information. For example, Okulicz-Kozaryn’s 2015, book *Happiness and Place: Why Life is Better Outside of the City*, and Recsei’s 2013 blog, *Health, Happiness, and Density*, assume that most experts are irrationally biased in favor of cities, which they attempt to correct by describing urban social problems, while Kunstler’s 1994 book, *The Geography Of Nowhere*, and Glaeser’s 2011 book, *The Triumph of the City*, argue that policies are irrationally biased against cities, which they attempt to correct by providing information on urban social and economic benefits. To avoid bias, it is important to consult diverse information sources and critically evaluate evidence to obtain comprehensive and objective information (Meyer 2015).

Second, mental health and urbanity are difficult to quantify. Studies can measure incidents or rates of mental illnesses such as schizophrenia, suicide rates (which can be considered an indication of mental illness and unhappiness), and self-reported happiness. Similarly, urbanity can be measured by neighborhood type (downtown, urban neighborhood, inner or outer suburb, and exurban), density (people and jobs per acre/hectare), crowding (people per square foot/meter in a home), or multi-facetted indices (Ewing and Hamidi 2014). Many reported urban mental health impacts only apply to a subset of conditions, such as distressed neighborhoods, high-rise buildings or crowded residences, and so should not be generalized to all city living.

Another challenge is that, because they offer superior economic opportunities and services, cities tend to attract people with elevated mental illness risks including poverty, homelessness, disability, addiction and social alienation, so associations between urban living and mental illness do not necessarily indicate causation. Although these groups may have high rates of mental illness and unhappiness, they are often better off in cities than in smaller communities with fewer opportunities and services. Despite extensive research showing associations between urbanity and some mental illnesses, the mechanism that explain this have not been identified or measured, so it is possible that these associated reflect confounding factors that affect the types of people who live in cities (Golembiewski 2017; Gruebner, et al. 2017).

These omissions and biases emphasize the importance of properly defining and measuring these effects. For example, a widely-cited *Scientific American* article, “Population Density and Social Pathology” (Calhoun 1962) described how rats in extremely crowded colonies demonstrated sexual deviation, cannibalism, child abandonment, frenetic over-activity and pathological withdrawal, which the author claimed demonstrates human urban mental health risks. Critics point out that crowding is very different from density, the degree of crowding in the study was many times greater than what is commonly associated with urban living, and humans respond to problems differently than rats (1000 Friends 1999). More appropriate research finds little or no correlation between urban densities and mental health problems (Ramsden 2009; Schmitt, Zane and Nishi 1978). Research on crowding may be useful for evaluating prison, submarine and space travel conditions, but has little relevance to common urban planning issues.
Understanding Causation

A key issue in this analysis is the degree that urban living actually *causes* mental illness and unhappiness, and therefore increases total problems and harms people who move to cities, in contrast to cities attracting people with elevated mental illness and unhappiness risks. To explore this, risk factors are categorized in three ways:

1. **Self-selection** factors reflect the types of people who locate in urban areas. People experiencing poverty, disability, mental illness, addiction, immigrant status, alienation, and personal crises often locate in cities due to their better services and opportunities. These conditions tend to increase mental illness and unhappiness regardless of where people live; in fact, people with these risks are often saner and happier than in smaller communities with fewer opportunities and services.

2. **Economic and social factors** reflect geographic variations in how people work, interact and live. As mentioned above, communities of people with elevated mental illness risk factors often concentrate in cities. For example, many cities have neighborhoods where poverty and associated social problems are concentrated and tolerated. Living in such neighborhoods can increase mental illness and unhappiness, but those factors often apply only to certain neighborhoods and change over time.

3. **Environmental factors** reflect inherent urban factors such as more interactions with unfamiliar people, more cultural diversity, increased noise and air pollution exposure, and reduced interactions with nature. These mechanisms can be considered to actually *cause* mental illness and unhappiness, although they can change. For example, new technologies and management practices can reduce urban noise and air pollution, and planning changes can increase urban residents’ access to nature.

Table 1 summarizes these categories.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Factors Affecting Urban Mental Health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Selection</strong></td>
<td><strong>Economic and Social</strong></td>
</tr>
<tr>
<td>Differences in the types of people who locate in different community types. Does not reflect causation.</td>
<td>Differences in how people live and interact. May reflect causation, but often changes over time.</td>
</tr>
<tr>
<td>• Poverty and income</td>
<td>• Higher incomes and disparities</td>
</tr>
<tr>
<td>• Age and life stage</td>
<td>• Higher costs of living</td>
</tr>
<tr>
<td>• Mobility (duration of residency)</td>
<td>• More subcultures</td>
</tr>
<tr>
<td>• Family &amp; community connections</td>
<td>• Higher crime rates</td>
</tr>
</tbody>
</table>

This table categorizes factors that affect urban mental health. Most factors are associations; only a few may actually cause cities to increase mental illness and unhappiness.

Although many urban mental health studies try to account for confounding factors, it is infeasible to consider them all (Bell 2016; Sariaslan, et al. 2016). For example, people often move from rural to urban areas following a family breakup, job loss or disability, which tend to increase stress and unhappiness regardless of location, yet few studies can incorporate all of these factors in their analysis. This suggests that many studies exaggerate the degree that urban living actually causes mental illness and unhappiness, and results may only apply to certain conditions or people. For example, it would be wrong to apply research findings from distressed neighborhoods to affluent and stable urban areas.
Summary of Previous Research
This section summarizes research concerning urban impacts on mental health and happiness.

Overviews
The American Psychological Association report, Toward an Urban Psychology (APA 2005), offers guidance on urban mental health issues for practitioners and policymakers. In this context urban refers primarily to poor and minority communities, so the report mainly explores the effects of poverty and minority status, and associated conditions such as neighborhood decay, disorder and gentrification, but provides little guidance on how to plan saner and happier cities.

Urbaneitv and Mental Illness
Some studies suggest that urban living increases mental illness (Kwon 2016). A meta-analysis by Peen, et al. (2010) concluded that city living increases anxiety disorders approximately 21%, mood disorders 39%, and roughly doubles schizophrenia rates. Similarly, a meta-analysis by Vassos, et al. (2012) found 2.37 times higher psychosis risk in the most urban rated areas compared with those that are most rural rated. Such studies measure how reported rates of mental illness or substance abuse treatments, or self-reported depression incidents vary by geographic location, adjusting for demographic factors such as age, income and relationship status (single, married, divorced, widowed, etc.). Critics argue that these studies cannot account for all significant confounding factors, such as the tendency of poor and mentally ill people to concentrate in urban areas, and the possibility that cities have better mental illness reporting, which would exaggerate these effects (Bell 2016; Sariaslan, et al. 2016). In a critical review of ten studies concerning built environment mental health impacts Gong, et al. (2016) concluded that there is evidence of associations between urban environment and psychological distress, but all studies were cross-sectional and so could not indicate the direction of causation, that is, whether this may reflect the tendency of urban environments to attract higher-risk residents.

MRI brain scans by Abbott (2012) and Lederbogen, et al. (2012) suggested that growing up in a city increases psychotic conditions such as schizophrenia, but these studies were small (brain scans are costly), other researchers challenge their methods (Eklund, Nichols and Knutsson 2016; Scicurious 2011), and no further such studies have been published, which suggests that subsequent results are less conclusive. Analyzing British twins (which allows researchers to separate genetic from environmental factors), Newbury, et al. (2016) found that children in deprived urban neighborhoods were ~80% more likely to experience psychotic symptoms than those in non-urban neighborhoods, but this primarily reflected increased social disorder and crime risk in deprived neighborhoods, and so does not apply to affluent urban areas.

Based on studies of U.S. immigrant families in the 1930s, sociologist Louis Wirth argued that urban living weakens traditional kinship bonds and social solidarity. Milgram (1970) describes specific ways that urban living may affect residents’ daily experiences, social relationships and mental health, and suggests that cognitive overload and excessive social interactions and fear often leads to defensive behaviors such as unfriendliness and distrust.
Some studies identify urban environment mental health benefits. In a detailed survey of 6,630 people over 60 years of age, Tien, et al. (2015) found that in China, urban elderly had better mental health and fewer psychological disorders than rural elderly. An Ontario College of Family Physician’s study concludes that sprawled, automobile-dependent development can harm mental health by eroding social capital, creating unhealthy lifestyles, increasing commuting stress and degrading natural environments (OCFP 2005). Melis, et al. (2015) conclude that improving local mobility and increased neighborhood density in cities tends to improve non-drivers’ mental health by improving their access to services and social activities.

Figure 1 illustrates results from the U.S. National Survey on Drug Use and Health. It indicates that many rural areas have higher mental illness rates than many urban areas. These rates are particularly low in many large and dense urban regions including Los Angeles, San Francisco, Chicago and New York, and particularly high in many rural areas. Of course, some urban neighborhoods have high mental illness rates, but this survey suggests that they are offset by lower mental illness in other urban areas.

Figure 1: Serious Mental Illness During the Past Year (Samhsa 2014)

Many rural areas have higher mental illness rates than many urban areas.

Overall, the evidence that urban living causes mental illness is inconclusive and biased by self-selection, that is, the tendency of people with elevated mental health risks to live in urban neighborhoods due to their greater economic and social opportunities. As a result, these studies almost certainly exaggerate any contribution of urban living to mental illness.
Urban Sanity: Understanding Urban Mental Health Impacts and How to Create Saner, Happier Cities
Victoria Transport Policy Institute

Urbanity and Self-reported Happiness
Studies (Ballas 2013; Helliwell, Layard and Sachs 2015; Shekhar, Joshi and Sanwal 2014; Sharpe, et al. 2011) indicate that self-reported happiness (or life satisfaction) tends to increase with:

1. Financial situation (incomes relative to living costs and peers’ incomes).
2. Family status (being in a stable family).
3. Work status (having a secure and satisfying job).
4. Health (being healthy and physically active).
5. Community connections and close friends (also called community cohesion or social capital).
6. Social inclusiveness (being a visible minority tends to reduce happiness).
7. Personal freedom and security (having civil rights and security).
8. Positive attitudes and belief in a higher power.

Some studies consider how geographic factors happiness (Chauvin, et al. 2016). When people move to cities from poor rural areas, they generally gain mental health and happiness. In his book, Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier, Glaeser (2011) states that, “Across countries, reported life satisfaction rises with the share of the population that lives in cities, even when controlling for the countries' income and education... Cities and urbanization are not only associated with greater material prosperity. In poorer countries, people in cities also say that they are happier. Throughout a sample of twenty-five poorer countries, where per capita GDP levels are below $10,000, where I had access to self-reported happiness surveys for urban and non-urban populations, I found that the share of urban people saying that they were very happy was higher in eighteen countries and lower in seven. The share of people saying that they were not at all happy was higher in the non-urban areas in sixteen countries and lower in nine.”

Okulicz-Kozaryn (2016) counters, “People are happier in more urbanized countries than in less urbanized countries, but it does not mean that people are happier in cities than in smaller areas. More urbanized countries are simply richer, healthier, better governed, etc., than less urbanized countries. This is one of the most agreed upon findings in happiness literature: In a cross-section of countries, people are happier in more developed areas. Urbanization leads to economic growth, but economic growth does not lead to much happiness over time, especially in developed countries.”

Using data from the Quality of Life Survey, which asked residents in 10 major cities (New York, London, Paris, Stockholm, Toronto, Milan, Berlin, Seoul, Beijing, and Tokyo) to rate their happiness, Leyden, Goldberg and Michelbach (2011) conclude that happiness tends to increase if cities have efficient public transport; convenient access to cultural and leisure amenities; are considered affordable, safe, clean and attractive; and foster social connections. Ardeshiri, Willis and Madanipour (2016) used hedonic pricing (which infers values based on how consumers spend money) and Life Satisfaction surveys to measure how various urban environmental and economic factors affect residents’ quality of life (QoL). Similarly, Albouy (2012) developed an economic model of location effects on happiness. He concluded that in the U.S.,
“there is no reason to see urbanization as lowering economic welfare, undermining arguments for policies to disperse the population to mitigate negative urban externalities...that most QOL differences are explained by natural amenities suggests that policy-makers should also consider ways to help households move to places with greater sun, mountains, coastal proximity, or temperate seasons. For instance, they could consider relaxing restrictions to residential development on lands well-endowed by nature, as higher densities are unlikely to reduce, and may even improve, local QOL.”

Berry and Okulicz-Kozaryn (2009) used World Values Survey (www.worldvaluessurvey.org) data to evaluate how geographic location affects happiness, controlling for personal characteristics such as income, family status and age, and geographic factors such as level of development (regional income). They find that life satisfaction depends primarily on personal characteristics, and no evidence of significant variation between rural and city locations in much of the world. Exceptions include rapidly-urbanizing Asia, where dissatisfaction (unhappiness) is lower in big cities, and in higher income countries, particularly those of Anglo-Saxon heritage, where life dissatisfaction is higher in large cities. Similarly, Okulicz-Kozaryn (2015 and 2016) used U.S. General Social Survey data, which asked respondents whether they feel “Very Happy,” “Pretty Happy” or “Not Too Happy,” to evaluate how community size affects happiness. He found that in the U.S., unhappiness (“malaise”) peaks at 5,000-8000 residents (i.e., small towns) and above 250,000 (i.e. medium and large cities). Figure 2 shows his results, which suggest that community size significantly affects residents’ happiness.

**Figure 2**  
City Size Versus Self-reported Happiness (Okulicz-Kozaryn 2016)

Analysis of the U.S. General Social Survey indicates that unhappiness (“not too happy”) tends to increase with community size, and happiness (“very happy”) is highest in small rural communities. Note differences in scales: much smaller portions of respondents report being “not too happy” than “pretty happy” and “very happy,” but this is not obvious in the graphs.
Note that Figure 1 uses very different scales for the different ratings, making the variations look large. Figure 3 presents the same results using a constant scale. Viewed this way the variations look small, which suggests that community size has little effect. For example, the portion of residents who consider themselves “not too happy” increases from 9.2% in rural areas to 12.2% in the largest cities, which can be described either as a seemingly large 33% increase or a seemingly small 3.0 percentage point change. The researchers do account for some confounding factors, and find that poverty and crime significantly affect urban happiness, but overlook other potentially significant factors, so they are wrong to claim that the analysis proves that large cities make people unhappy; their results may actually reflect unmeasured differences in the types of people who locate in cities.

**Figure 3** City Size Versus Self-reported Happiness (Okulicz-Kozaryn 2016)

Using U.S. *Behavioral Risk Factor Surveillance System* data, and controlling for various demographic factors, Winters and Li (2016) found that urbanization lowers self-reported life-satisfaction, with as much as 2.6 percentage points lower ratings for residents in the largest and densest metropolitan areas, and natural amenities such as warmer winters increase satisfaction.

Florida, Mellander and Rentfrow (2013) find that that human capital (education attainment) has a significant and large positive effect on regional happiness in the U.S. The researchers suggest that this occurs because increased education provides higher incomes, increased sense of control over life, stable and supportive relationships, more occupational opportunities, plus more stimulating and satisfying work. In addition, higher incomes and the increased incomes it provides allow residents to live in more costly communities with more amenities.
They also find that, when normalized for income, several factors thought to affect community-level happiness, such as density and commute time, have no statistically significant effect on happiness. They find that happiness tends to increase with housing prices, which probably reflects a combination of increased productivity and therefore economic opportunities, and improved livability in higher-priced areas. In these regions, individuals can afford and benefit from neighborhood-related amenities, which in turn increases happiness.

Since education and wages tend to increase with city size and happiness tends to increase with income, normalizing for income (comparing happiness for people with the same incomes) exaggerates rural happiness and urban unhappiness (Jaffe 2011). Workers who move from poor rural areas to cities with better economic opportunities can gain happiness overall because their income gains more than offsets any happiness reduced by city living (Albouy 2012). Okulicz-Kozaryn, argues that people are poor judges of such trade-offs, stating (2015 p. 32), “Cities, like capitalism which they embody, lure us by exploiting our passions. Cities promise or even provide momentary enjoyment and pleasure (just like shopping), but not life satisfaction or happiness.” This claim is speculative, while the evidence that happiness tends to increase with incomes, particularly from low to moderate incomes, is credible, which suggests that Okulicz-Kozaryn’s analysis significantly exaggerates large city unhappiness.

Recent research by Okulicz-Kozaryn and Valente (2018) indicates that Americans are generally happiest in smaller cities and rural areas but the advantage of rural living is declining – rural residents are becoming less happy relative to urbanites – and Millennials, born 1982–2004, are least happy in small rural areas, much happier in small urban areas, a little less happy in suburbs, and most happy in the largest metropolitan areas. The authors speculate that this reflects changing preferences: previous generations saw a home in the suburbs or a smaller, pastoral place as a sign of success and happiness. Today, cities are safer, offer more and better economic opportunities, afford more chances to make friends or find partners and mates, provide a wide range of amenities, and are more associated with status and “making it.” Millennials also place a higher value on diversity, and cities offer more diversity than other kinds of places.

Sharpe, et al. (2011) used Canadian Community Health Survey data to evaluate how various factors affect self-reported life satisfaction. They found that it tends to increase with:

- **Mental health.** A one-unit increase in perceived mental health, measured on a 5-point scale, increases the portion of people who consider themselves very satisfied with life by 17.5 points.
- **Perceived health.** A one-unit increase in health status increases the proportion of people very satisfied with life by 8.8 percentage points.
- **Marital and immigration status.** Married persons are happier compared to people who have never been married. Recent immigrants are less happy compared to non-immigrants.
- **Lower stress levels.** A one-unit decrease in stress increases the proportion of people very satisfied by 7.9 percentage points.
- **Community belonging.** A one-unit increase in sense of belonging increases the proportion of individuals that are very satisfied with life by 6.5 percentage points.
• **Employment and income.** Household income alone has modest impacts: a 10% increase raises very satisfied ratings by 0.6 percentage points, and average community level income is negatively associated with individual happiness: holding individual income constant, a 10% increase in a region’s average household income decreases very satisfied individuals by 1.1 points, suggesting that relative income is more important than absolute income.

• A person’s sense of belonging to their local community had relatively low weight but varies significantly, and so was the largest contributor to geographic variation of happiness, while mental health had a high weight but less variation. Since higher income areas tend to have less sense of belonging, these factors often offset one another, minimizing variations in overall happiness.

Mouratidis (2017) investigated how the urban form affects social life and personal relationships in the Oslo, Norway region. The results indicate that compact neighborhood residents are significantly more satisfied with their personal relationships than lower-density suburban area residents, and overall social wellbeing increases with city center proximity, higher densities, and mixed land uses. The suggests that compact urban forms enable residents to maintain larger relationship networks, socialize more with friends and family, receive stronger social support, and enjoy more opportunities to make new acquaintances.

**Figure 4** Impact of Distance to City Center on Social Life (Mouratidis 2017)

![Figure 4](image)

Dolan and Metcalfe (2011) use economic psychology research to investigate people’s ability to optimize their happiness when making housing decisions. They conclude that many people overestimate the happiness they gain from the larger and more prestigious housing typically found at the urban fringe, which tends to decline over time, and underestimate the unhappiness caused by their longer commutes and social isolation, which tend to be durable. In his 2013 book, *Happy Cities*, Montgomery argues that people can be happy in cities provided that they are designed to meet residents’ emotional and social, as well as physical needs.

Most of these studies reflect specific times and locations. Urban unhappiness appears to be particularly high in the U.S., where city living tends to be stigmatized and receives less policy support (such as favorable tax policies and investments in public transport) than in most peer countries (Glaeser 2010; Hirt 2014; Renn 2010). This suggests that urban life satisfaction is affected by specific conditions and cannot be considered universal.
Dementia and Alzheimer Rates
Dementia and Alzheimer Disease rates tend to be higher in rural areas than cities, particularly for rural area natives (Nunes, et al. 2010). A meta-analysis (Russ, et al. 2012) concludes that rural living increases dementia risk more than 10%, and growing up in a rural area approximately doubles Alzheimer Disease risk. Similar results are found in China (Jia, et al. 2014). This may reflect higher rates of dementia risk factors in rural areas including physical and cognitive inactivity, low education, smoking, obesity, depression, diabetes and high blood pressure.

Alcohol and Drug Abuse Rates
Drug and alcohol abuse rates vary by geography (figures 5 and 6).

Figure 5  Rural Vs Urban Drug Abuse (www.12keysrehab.com/blog/urban-rural-drug-abuse)

Urban areas tend to have more cocaine and heroin addiction, while rural areas tend to have more alcohol, prescription drug and methamphetamine abuse (SAMHSA 2012). Rural youths are significantly more likely to abuse prescription drugs and alcohol (drinking more than four drinks on a single occasion), than suburban and urban youths (Monnat and Rigg 2015; McInnis, et al. 2015). Since alcohol and prescription drug abuse are more common than cocaine and heroin addiction, rural areas tend to have more total substance abuse.

Figure 6  Adolescent Prescription Painkiller Abuse, 2014 (Monnat and Rigg 2015)

Prescription painkiller abuse is more common among rural than urban adolescents. In 2014, 8.6% of rural adolescents, 8.1% of small urban area adolescents, and 6.5% of large urban area adolescents reported ever abusing prescription pain relievers. Past year and past month use were also higher among rural adolescents.
Suicide Rates
Suicide rates tend to be much higher in rural than urban areas (figures 7 and 8).

**Figure 7**  Age-Adjusted Suicide Rates by Location — US 2004 and 2013 (CDC 2015)

Suicide rates are lowest in large central cities and increase as community size declines. These rates increased significantly during the last decade.

This suggests that mental health and happiness are greater in cities than rural areas.

U.S., rural male youths had 19.9 suicides per 100,000, compared to 10.3 in urban areas, and rural female youth had 4.40 suicides per 100,000 versus 2.39 in urban areas (Fontanella, et al. 2015). Suicide rates are particularly high for men working in rural industries such as farming, fishing and forestry (84.5 per 100,000), which researchers attribute to social isolation and income insecurity (McIntosh, et al. 2016). These patterns occur worldwide: suicide rates are much lower in cities in China (The Economist 2014) and India (Nolan 2012), causing national suicide rates decline with urbanization. Analysts sometimes suggest that high rural suicide rates reflect greater access to guns and pesticides (Zhang, et al. 2002), but that seems unlikely since urban areas offer many deadly alternatives, including handguns (in the U.S.), tall buildings and vehicle traffic, so these results probably reflect mental illness and unhappiness (Clay 2014).

**Figure 8**  Population Density Versus Suicide Rates, U.S. 1989-1998 (Wang, et al. 2013)

Suicide rates tend to decline with density, and are about twice as high in rural areas as in cities.

Suicides can be considered a health problem and an indicator of mental illness and unhappiness.
Summary
This analysis suggests that urban living has both positive and negative mental health effects. Studies cited in this report (e.g., Abbott 2012; Kwon 2016; Lederbogen, et al. 2012; Peen, et al. 2010; Vassos, et al. 2012) indicate that psychosis (e.g. schizophrenia) and mood disorder (e.g., stress and depression) increase with urbanization, but none account for all possible confounding factors such as the tendency of poor, mentally ill and socially alienated people to move to cities in order to access better services, and economic and social opportunities. In addition, urban areas may have better mental illness reporting. As a result, urban environments probably increase mental illness much less than these studies suggest.

Evidence that cities make people unhappy is also incomplete and biased. In many countries, self-reported happiness tends to be higher in cities than rural areas, and even in the U.S., geography has a small effect, with only three percentage points between the highest and lowest ratings. These differences may reflect other demographic factors and self-selection, so there is little basis to conclude that city living necessarily makes people unhappy.

Urban and rural areas both have significant but different substance abuse problems. Cocaine and heroin addiction rates are higher in large cities, while alcohol and methamphetamine abuse rates are higher in rural areas. Since alcohol abuse is more common than cocaine and heroin addiction, rural areas probably have higher overall abuse substance rates. Throughout the world, rural areas tend to have higher rates of dementia, particularly Alzheimer disease, and about twice the suicide rates, as in urban areas.

Table 2 summarizes how urban living tends to affect various mental health risks.

<table>
<thead>
<tr>
<th>Urbanization Mental Health Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Risk</td>
</tr>
<tr>
<td>Psychosis (e.g. schizophrenia) and mood disorders (e.g., stress and depression)</td>
</tr>
<tr>
<td>Self-reported unhappiness (in affluent countries)</td>
</tr>
<tr>
<td>Cocaine and heroin addiction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reduced Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported unhappiness (in poor countries)</td>
</tr>
<tr>
<td>Dementia and Alzheimer disease</td>
</tr>
<tr>
<td>Alcohol and methamphetamine abuse</td>
</tr>
<tr>
<td>Suicide rates</td>
</tr>
</tbody>
</table>

Urbanization tends to increase some and reduce other mental illness risks.

Many studies on these issues are limited in scope, and do not account for potentially significant confounding factors, so their results may reflect self-selection and cannot be considered universal. Few studies identify the specific mechanisms by which urban living affects mental health or happiness, and so provides little practical guidance for increasing urban sanity and happiness. The following section of this report explores these issues in more detail. It examines possible mechanisms by which urban living may affect mental health, and possible strategies that communities and individuals can apply to help achieve mental health goals.
Urban Mental Health Impact Mechanisms

This section examines specific mechanisms by which urban living may affect mental health, whether these are associated with or actually caused by urban living, and discusses appropriate responses for communities and individuals to help create saner, happier cities.

Concentrated Mental Illness Risks (Poverty, Subs stance Abuse, etc.)

Many cities areas have concentrations of people with elevated mental illness risk factors including poverty, homelessness, physical and mental disabilities, drug and alcohol abuse, and social alienation (Hartig, et al. 2014). This occurs, in part, because urban areas offer better services and opportunities, so disadvantaged groups rationally choose to live in cities (Glaeser, Kahn and Rappaport 2008). This can create a self-reinforcing cycle, called social drift, when certain areas have more poverty and mental-illness services, and become more tolerant of deviant lifestyles, which attracts high-risk residents and repels more affluent households. This concentration of disadvantaged residents, in turn, increases social disorder and crime which further increases mental illness risk (Lederbogen, Haddad, Meyer-Lindenberg 2013).

Some economic, social and policy trends contribute to the concentration of mental illness and poverty in cities, including weakening community networks which reduce traditional social control and support, mental illness deinstitutionalization (new drug therapies allowed many mental patents to be released from institutions, but with inadequate community services and enforcement, many stopped their treatment, resulting in large mentally ill homeless populations), and in some jurisdiction, reduced disability and unemployment support, resulting in more reliance on local services such as food banks.

Mental illness, and associated social problems such as substance abuse and crime, are problems themselves, and tend to reduce happiness. Sharpe, et al. (2011) found that a one-unit increase from the average of perceived mental health increases the proportion of individuals that are very satisfied with life by 17.5 percentage points, indicating a very strong relationship. Described differently, on average a one-unit increase in mental health raises happiness as much as a 309% increase in household income.

Association or Causation?

The concentration of higher risk groups in urban areas appears mainly to be an association rather than a cause of mental illness. This concentration may exacerbate some mental health problems, for example, vulnerable people may abuse drugs and alcohol more if surrounded by people with that propensity, but on the other hand, they may find more support, including economic opportunities, and specialized drug and alcohol treatment services, that reduce their risks. Although such areas may have higher than average mental illness rates, many residents may be better off than if they located in more isolated areas.

In recent years, some higher-risk people have moved from city centers to suburban areas. To the degree that urban mental illness results from concentrated poverty and associated social problems, suburban areas may experience more mental illness and unhappiness.
Potential Community Responses
Policies and programs can offer more community mental health intervention and support. In some situations it may be appropriate to discourage excessive concentration of social services and poor households in urban neighborhoods.

Cities should recognize that they tend to attract people with mental health risk factors, and so should provide appropriate support services including suitable housing, community-based mental health and addiction services, job training and placement that targets higher-risk groups, and targeted law enforcement.

Potential Individual Responses
Vulnerable people may want to avoid urban neighborhoods with concentrated poverty and social problems.

Alcohol and Drug Abuse
Substance abuse is both a cause and symptom of mental illness. As previously described, alcohol and drug abuse patterns differ by geography: cocaine and heroin addiction is more common in cities, while prescription drug, methamphetamine, and alcohol abuse rates tend to be more common in rural areas. Since alcohol and marijuana abuse is more common than heroin and cocaine addiction, total substance abuse rates tend to be higher in rural areas.

Association or Causation?
The relationships between geography and substance abuse are complex, including cultural traditions (some communities are more accepting of drug and alcohol use), ease of obtaining drugs and alcohol, and access to treatment. The concentration of substance abuse can create a self-reinforcing cycle as that area becomes more tolerant, and attracts more users and related services. To the degree that such areas attract people who would abuse drugs or alcohol regardless of where they live, this is association; to the degree that it enables addiction it may cause substance abuse; and to the degree that such areas attract treatment services it may reduce total abuse. Similarly, since rural areas tend to have high prescription drug, methamphetamine, and alcohol abuse rates, rural living may cause such abuse.

Potential Community Responses
Communities can provide targeted substance abuse prevention and treatment programs. For example, urban areas may focus on cocaine and heroin addiction risks, while rural areas may focus on methamphetamine, prescription drug and alcohol abuse prevention and treatment.

Potential Individual Responses
Individuals susceptible to substance abuse may avoid geographic areas with high availability and abuse rates, and may use various personal prevention strategies. For example, somebody prone to cocaine and heroin addiction may avoid living in urban neighborhoods where such drugs are easily available, and somebody prone to methamphetamine or alcohol abuse may avoid living in suburban and rural areas where their abuse is more common.
Social Isolation and Loneliness

Urban residents, particularly newcomers, sometimes experience social isolation, often described as “lonely in a crowd,” which may contribute to mental illness and unhappiness (Griffin 2016). Several factors may contribute to this.

Being in a committed relationship and growing up in a stable household tend to increase mental health and happiness. Previously, urban areas had significantly lower marriage rates and higher divorce rates than rural areas, which probably increased urban mental illness and depression, but in recent decades, urban-rural differences have virtually disappeared (Figure 9), which should reduce future differences in mental illness and unhappiness.

Figure 9  Urban (Metro) and Rural (Non-Metro) Divorce  (Tavernise and Gebeloff 2011)

Urban residents' are more likely to experience interregional migration (moving to a new community) than rural residents. Taylor, et al. (2008) find that only a third of urban residents spend their entire lives in one area, compared with half of rural residents, resulting in fewer local friends and family members: Americans who stay in their hometowns are more likely say they have many local friends, 33% compared with 24% for movers, while movers are more likely to say they have a below-average number of local friends. Urban residents are also more likely to live alone and be unmarried, which can also contribute to isolation and loneliness (Senior 2016).

Urban residents are often described as less welcoming than in smaller communities, possibly to avoid social overstimulation (Milgram 1970). Some research suggests that most people can only maintain 150-250 close relationships, called Dunbar’s Number after British anthropologist Robin Dunbar. Urban residents may seem standoffish to avoid social overstimulation, due to fear of crime, and because they are less likely to have future relationships with any individual they meet. However, these effects are probably superficial; urban residents may seem less friendly during incidental interactions, such as passing by people on sidewalks or in stores, but there is little evidence that urbanites are less friendly than rural residents under appropriate circumstances, such as meeting colleagues or neighbors.
On the other hand, smaller communities are often described as exclusive and unfriendly to outsiders, such as minority group members and non-conformists, while cities tend to accommodate more diversity. Small towns and rural areas tend to have much higher sexual minority harassment and assault rates (Figure 10), and rural residents express less concern about racial injustice (Patten 2013). Many cities contain dozens of language groups and hundreds of distinct subcultures, each with specific meeting places and activities. Members of these groups often find more social opportunities than they would in smaller communities.

**Figure 10  Biased Remarks, Harassment and Assault by Location** (GLSEN 2011)

Anti-gay remarks, harassment and assaults are more common in rural than suburban and urban schools. This is one indication that rural communities are less accepting of minority groups and non-conformists.

Compact, walkable urban neighborhoods provide excellent opportunities for daily, informal social interactions which can create ongoing relationships. These are particularly important for people with disabilities and low incomes. For example, describing why he plans to retire to a busy city, Spiegelman (2016) explains, “Chance encounters brighten the day. They’re like little love affairs without consequences. They keep you alert. This is what any senior citizen needs.”

Although urban social isolation and loneliness are common themes in popular literature and some academic studies (Milgram 1970), current research finds little evidence that these problems are more severe in cities than in smaller communities (Senior 2008). According to University of Chicago researcher John Cacioppo, city residents consistently rate less lonely than rural residents. He explains, “There’s a new sense of community in cities, an increase in social capital, an increase in trust. It all leads to less alienation.”

These issues are complex. For example, although rural areas have higher marriage rates that may reduce loneliness, cities’ larger social networks may provide similar benefits. A 1982 study by sociologist Claude Fischer found 40% larger friendship-based social networks in urban cores than in semi-rural areas. A more recent study (McPherson, Smith-Lovin and Brashears 2006) found that although social networks are declining overall, residents in large communities appear to have bigger networks than in smaller communities. Some experts suggest that high-rise housing isolates residents and disconnects them from street life; Jane Jacobs suggested this in her book, *The Death and Life of the Great American Cities*, and it has often been repeated (Loomans 2014). However, there is little quantitative research on this issue.
**Association or Causation?**

Some of the factors that contribute to urban loneliness are associations. Cities tend to have high rates of interregional migrants (people who moved from other communities), and people living alone, who tend to be vulnerable to these effects regardless of community size. Those people would experience similar isolation and loneliness if they moved to a rural area. Lower marriage rates and higher divorce rates probably reflect a combination of association and causation, but these differences are disappearing. Residents of smaller communities tend to be more welcoming to newcomers, due to less social saturation and fear of crime, but this friendliness can be superficial; smaller communities can be exclusive and oppressive, particularly to visible minorities and non-conformists. Cities offer more social opportunities, including specialized subcultures, which can reduce isolation and loneliness.

**Potential Community Responses**

Urban communities can encourage community cohesion (positive interactions among neighbors) by creating a welcoming public realm (public spaces where neighbors naturally interact) such as sidewalks and public parks, encouraging neighborhood social activities, and by providing inclusive community and sports events (Cohesion and Faiths Unit 2005; Litman 2007). Montgomery (2013) offers specific recommendations and examples, such as developing neighborhood parks, complete streets, and community festivals. It may be appropriate for communities to sponsor special programs to welcome and engage new residents, and monitor newcomers for possible isolation and loneliness.

Although there is little credible evidence that high-rise housing causes significant mental harm to most people, some people may be better suited to low-rise or single-family housing, so communities should try to provide diverse housing types that meet diverse needs, including affordable, low-rise housing designed to maximize community interactions through shared indoor and outdoor spaces.

**Potential Individual Responses**

People who move to a new community should recognize the risks of isolation and loneliness, and take advantage of appropriate social opportunities to create friendships. People who have severe difficulties making new friends may be better off staying in their original communities in order to maintain their familial and social networks, but most people who move to cities can create new social networks. Conversely, people who feel alienated in a small community may be less lonely in a city where they can find more people with similar interests.
**Noise and Light Pollution**

Urban areas tend to have more ambient noise and light pollution, which can induce stress and interrupt sleep (WHO 2011). Common urban noise sources include vehicle traffic (particularly trucks and motorcycles), sirens and alarms, construction, loud music and voices, barking dogs, landscaping and noisy sex (Jaffe 2015). However, these problems are not unique to cities; suburban areas also have landscaping and vehicle noise, and rural areas experience farming activities and highway traffic noise. Carvalho, Hidalgo and Levandovski (2014) found that rural residents experience about 10% more light-exposure but have less “social jet lag” (sleep and wake at times that are out of sync from their internal, biological clock) than urban residents.

**Association or Causation?**

Noise and light pollution exposure tends to increase with density, and so can be considered as inherent to cities, but can often be managed and reduced with improved design.

**Potential Community Responses**

Table 3 lists various community strategies for reducing ambient noise and light pollution. Many of these strategies provide co-benefits; for example, shifts from gasoline to electric motorcycles, and diesel to electric buses, reduce air as well as noise pollution, and double-pane windows reduce energy consumption.

<table>
<thead>
<tr>
<th>Noise</th>
<th>Light</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Regulations on household noise generation.</td>
<td>• Downward oriented street lighting.</td>
</tr>
<tr>
<td>• Restrict noisy vehicle (gasoline motorcycles and diesel trucks</td>
<td>• Sign and building lighting restrictions.</td>
</tr>
<tr>
<td>and buses) and reduce traffic speeds.</td>
<td>• High quality window covers.</td>
</tr>
<tr>
<td>• Restrictions on sirens and alarms.</td>
<td>• Sun glasses and eye shades.</td>
</tr>
<tr>
<td>• Restrict noisy industrial, construction and landscaping activities.</td>
<td>• Light design education.</td>
</tr>
<tr>
<td>• Establish building noise insulation standards.</td>
<td></td>
</tr>
<tr>
<td>• Develop street trees, walls, and other noise barriers.</td>
<td></td>
</tr>
</tbody>
</table>

Various strategies can reduce urban noise and light pollution.

**Potential Individual Responses**

Urban residents can choose home locations away from roads with high speeds and volumes (particularly heavy diesel vehicle routes), and homes with noise insulation and good window covers. People who are very noise or light sensitive may wear ear plugs or dark glasses. People who are very noise sensitive may need to avoid wood-frame multi-family housing.
Toxic Pollution
Exposure to some toxins may increase mental illness. Reyes (2014) found that high childhood lead exposure in some urban neighborhoods increased adolescent aggression and behavior problems, and adult criminal behavior. Fine particulate exposure is associated with increased anxiety (Power, et al. 2016), impaired cognition and depressive behaviors (Fonken, et al. 2011). Prenatal polycyclic aromatic hydrocarbons (PAH, an air pollutant) exposure increases children’s attention deficit disorder rates (Perera, et al. 2014). These impacts can increase mental illness directly, and indirectly by increasing crime rates (Reyes 2014). Because many of these toxins originate from industrial activities and vehicles, they tend to increase with density, highway proximity and highway travel. Suburban and rural residents also experience toxic pollutants, including motor vehicle travel, agricultural chemicals, and in some areas, wood smoke (Meyer 2013). Control programs are reducing some of these risks. For example, childhood lead exposure peaked in 1970 and subsequently declined after lead was phased out of gasoline and paint.

Association or Causation?
To the degree that toxic pollution exposure increases with development density and mix, it can be considered to be caused by urban living. Exposure to lead paint tends to be common in older, poorly maintained housing in both urban and rural areas. Suburban residents that frequently travel on major highways may also suffer from toxin exposure and resulting illnesses.

Potential Community Responses
Communities can reduce toxic emissions by reducing total vehicle travel and shifting to less polluting vehicles; locating houses, worksites, schools and playgrounds away from busy highways; and reducing the time people spend travelling on congested highways.

Potential Individual Responses
Individuals can reduce their exposure to potentially toxic pollutants by choosing homes, worksites and recreational areas away from busy highways; minimizing their travel on busy highways, and reducing exposure to other pollutants such as paint and contaminated foods.

Excessive Stimulation and Stress
Some people speculate that urban living causes “relentless” stimulation (also called cognitive overload) that imposes mental stress (Abbott 2012; Patil 2016; Palti and Bar 2015). This is understandable since urban environments tend to be busy and noisy, cities contain competitive industries and jobs, urban areas offer more economic and social opportunities than rural areas, and many people work in cities but live and recreate in suburban and rural areas, and so associate cities with responsibility and stress. However, these effects are largely associations rather than being unique to cities: a rural job can impose as much stress as an urban job, and except for ambient noise, there is no reason that urban residents cannot engage in relaxing activities, such as knitting and reading, as they could in rural areas.

Cities may also increase psychological stress by causing frequent interactions with unfamiliar, diverse and sometimes unfriendly people (Milgram 1970). During a typical day urban residents
interact with hundreds of unfamiliar people, which exceeds *Dunbar's Number*, the number of close relationships that most people can maintain, which is generally estimated at 150-250 people. Urban populations tend to be diverse, so many of these interactions involve very different, and therefore frightening, people. The large number and anonymity of these interactions may cause city residents to be less polite and friendly than they would in smaller communities. Although most urban social interactions are benign or positive, their large numbers and diversity of may cause discomfort and stress, particularly for urban newcomers unaccustomed to these social conditions (Freeman, et al. 2015). A survey of urban neighborhood residents by researchers Nematollahi, Tiwari and Hedgecock (2015) found that many, particularly older people, consider, “a diverse mix of people in the precinct” to be undesirable. Respondents indicated that they were afraid of increased density because it would increase unpredictable social interactions and possibly crime rates.

Differences between city and smaller community friendliness are probably largely superficial. Although city residents may seem less welcoming during fleeting interactions, here is no evidence that they are less friendly with ongoing relationships, for example, with colleagues and close friends. Smaller communities can be exclusive and oppressive, particularly to outsiders and non-conformists. Visible minorities probably experience less stress in cities than they would in smaller communities where other residents are less accustomed to diversity; for those groups, city living probably increases mental health and happiness (Ray 2003).

**Association or Causation?**

Much of the stimulation and stress in cities is association rather than causation; reflecting the types of people and activities that locate in cities rather than a unique condition of urban living. Except for additional noise, few relaxing activities are significantly more difficult in cities than smaller communities. Increased interactions with unfamiliar and diverse people may cause mental stress to some people, particularly urban newcomers, but this is likely to decline as residents become more accustomed to urban social conditions. Many minorities and non-conformists probably experience less stress in cities than in small communities.

**Potential Community Responses**

If cultural diversity increases stress, communities can support community cohesion programs that encourage people to become more familiar and comfortable with different groups. Planning can increase quiet and calm urban environments through noise reduction and greenspace development, and support calming and reassuring community activities such as local art and recreation programs (Patil 2016).

**Potential Individual Responses**

People who find diversity stressful can make an effort to become more familiar and comfortable with different groups in their community. Urban residents can organize their lives and homes to encourage calming and stress reducing activities.
Crime
Crime is both a cause and effect of mental illness. Real or perceived fear of crime tends to increase stress and distrust, which reduces mental health and happiness. Accounting for other family and economic factors, Newbury, et al. (2016) estimate that a quarter of the increased children’s mental illness found in cities is explained by lower levels of social cohesion and social control, and higher crime victimization rates common in urban neighborhoods.

Crime research can be challenging due to inadequate and inconsistent data. For example, the Bureau of Justice Statistics’ Criminal Victimization Report indicate larger differences in urban-rural crime rates based on crimes "Known to Law Enforcement" than for crimes "Reported By Victims," suggesting that rural victims are less likely to report crimes, which may significantly bias the data ("Urban and Rural Crime," BJS 2015). That report also indicates that smaller cities have higher forcible rape and property crime rates than larger cities, and cities have higher rape arrest rates, all of which contradict common assumptions about high urban crime rates.

Despite these challenges, there is evidence that crime rates tend to increase with city size, but this effect is declining. For example, U.S. urban crime rates peaked in 1992, when they were nearly ten times higher than rural areas, but subsequently declined significantly (Figure 11). If this trend continues cities will have about the same violent crime rate as rural areas by approximately 2022. A recent study by Humphrey, et al. (2017) found that population density is not significantly associated with violent crime and negatively associated with non-violent crime.

Figure 11   Rural Vs. Urban Violent Crime, USA (MPR News 2016)
Although crime rates declined in virtually all size communities, the reductions were particularly large in big cities, as illustrated in Figure 12.

**Figure 12  **Crime Rates Trends (FBI 1995-2012, Tables 16)

Crime rates declined significantly during the last two decades, particularly in cities with more than a million residents. Crime rates are now lower in large cities than in medium-size cities (250,000 to one million).

As a result of these trends, the largest cities now have significantly lower crime rates (23% lower for violent crimes and 32% lower for property crimes) than medium-size cities, as illustrated in Figure 13.

**Figure 13  **Crime Rates by Community Population Group (FBI 2012, Table 16)

Crime rates tend to increase as community population grows, peaks at 500,000-1,000,000 residents, and is significantly lower for cities with over a million population, which also have the highest transit ridership rates (AATPMPC = Average Annual Transit Passenger-Miles Per Capita).
There is considerable speculation and some research concerning why cities had high crime rates and why they declined in recent decades. Cities contain entertainment and commercial districts that have unique crime risks (fighting and assaults are more common in bars, and bank robberies occur at banks). Some researchers suggest that social isolation and anonymity in cities increase criminal behavior by reducing economic and social interdependencies that create community solidarity, that is, the chances that a crime will affect somebody the offender knows and cares about (Jeffery 1959). Glaeser and Sacerdote (1999) estimate that a quarter of cities higher crime rates reflect higher economic gains from criminal activities, for example, due to more banks and jewelry stores, and a fifth results from lower probabilities of arrest due to greater anonymity, and that a major portion reflects demographic factors such as concentrated poverty and more female-headed households. Some large cities have high rates of neuro-toxin (such as lead) exposure. Associative factors such as concentrated poverty, drug addiction and criminal gangs also increase crime in some urban areas.

Cities also have features the can reduce crime rates. All else being equal, crime rates decline in more compact, mixed, walkable neighborhoods, due to more passive surveillance (also called eyes on the street) by non-criminal by-passers (Christens and Speer 2005; Gilderbloom, Riggs and Meares 2015; Hillier and Sahbaz 2006; Humphrey, et al. 2017; Tang 2015), plus increased economic opportunities for disadvantaged residents, and more specialized policing. A comprehensive literature review suggests that high quality public transit tends to reduce local crime (Devries, et al. 2018).

The following factors may contribute to declining large city crime rates:

- Aging population, which reduced the portion of people in high crime ages.
- Less poverty concentration, increased security and economic opportunity (better schools and local job opportunities) as higher-income residents move into urban neighborhoods.
- Better policing and social services, including more specialists and targeted programs, and faster response times due to increased densities.
- More passive surveillance and community cohesion due to more mixed development and increased walking and cycling activity.
- Declining lead toxin exposure.
- Better education and employment opportunities for at-risk residents due to better public transport and targeted support programs.
- Lower vehicle ownership rates, which reduces vehicle-related crime, a major portion of crimes.

Many of these factors have more potential, so urban crime rates, and the contribution that crime makes to urban mental illness, is likely to decline in the future. To the degree that mental health impacts reflect perception rather than actual crime risk, and residents retain outdated, exaggerated information about crime risk, they may experience excessive but unjustified fears and risks.
Association or Causation?
High urban crime rates probably resulted from a combination of causal factors, such as the concentration of crime-inducing entertainment and commercial districts, and greater social isolation and anonymity, plus associations due to concentration of poverty, drug addiction and gangs. Urban crime rates are declining, and this is likely to continue as cities become more affluent and poverty moves to suburbs.

Potential Community Responses
Urban communities may be able to reduce crime risks through better intervention programs for at-risk residents, and urban design features that create more compact, mixed, walkable neighborhoods with passive surveillance. Because crime perception is a mental health risk, it may be helpful for communities to better communicate the decline in urban crime risks in order to reduce excessive fear that may contribute to mental illness and unhappiness.

Potential Individual Responses
Individuals can reduce their personal crime risk, and by learning about declining urban crime rates, reduce excessive fear and resulting stress.
Crowding and Reduced Privacy

Crowding (excessive people in confined spaces) can cause mental stress, particularly for youths (Solari and Mare 2012; Urist 2013), but it is difficult to isolate this effect from confounding factors such as poverty (Fitts 2016). Residential crowding (residents per room) is greater in poor rural states such as Alaska and Texas than in denser but more affluent states such as New York and Massachusetts (Census 2011). As previously discussed, evidence, such as Calhoun’s rat colony studies, are sometimes cited to argue that urban densities (people per acre or hectare) are harmful, but that conclusion is inappropriate since crowding is primarily associated with poverty, not density, and the rat colony studies were much more crowded than normal in human housing. There is no evidence that typical urban densities (20-60 residents per hectare or 8-25 residents per acre) cause social problems (1000 Friends 1999; Ramsden 2009). Urban density often involves tradeoffs with mental health consequences, for example, lower density housing may require longer and more stressful commutes, or reduce economic opportunities.

Increased densities and multi-family housing can reduce the privacy of activities such as loud arguments and outdoor parties, but small town residents may also lack privacy because “everybody knows your business” (Preston and D’Augelli 2013). Strategies such as sound-dampening building design and appropriate landscaping can increase urban privacy.

Considering all costs, including land, infrastructure, parking, construction, maintenance, utilities and transportation expenses, a mid-rise, wood-frame urban townhouse or apartment tends to have the lowest cost per square foot, and so allow households to purchase larger, less crowded housing (Litman 2016; USHUD and USDOT 2015). In the example illustrated in Table 4, a $65,000 annual-income household can afford a 2,000 sq. ft. urban townhouse or apartment, or a smaller crowded 1,200 sq. ft. single-family suburban house.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>City Versus Suburb Housing &amp; Transport Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>City (multi-family)</td>
</tr>
<tr>
<td>Land price per acre</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Houses per acre</td>
<td>20</td>
</tr>
<tr>
<td>Construction costs per square foot (ICC 2016)</td>
<td>$107</td>
</tr>
<tr>
<td>Infrastructure (driveway &amp; utility connections)</td>
<td>$20,000</td>
</tr>
<tr>
<td>Parking garage spaces</td>
<td>0.5</td>
</tr>
<tr>
<td>Cost per parking space</td>
<td>$20,000</td>
</tr>
<tr>
<td>House square feet</td>
<td>2,000</td>
</tr>
<tr>
<td>Total capital costs</td>
<td>$294,000</td>
</tr>
<tr>
<td>Annualized capital costs (5%, 25 yrs.)</td>
<td>$20,860</td>
</tr>
<tr>
<td>Maintenance, heating and cooling expenses</td>
<td>$4,000</td>
</tr>
<tr>
<td>Transportation expenses</td>
<td>$5,000</td>
</tr>
<tr>
<td>Total annual housing and transport costs</td>
<td>$29,860</td>
</tr>
</tbody>
</table>

Compared with suburban single-family housing, urban multi-family housing requires less land, has lower construction costs per square foot, lower infrastructure and parking costs, lower maintenance and heating/cooling costs, and lower household transportation costs. As a result, households can often afford a larger urban townhouse or apartment than a suburban single-family house.
Association or Causation?
High urban land prices tend to increase building space costs (dollars per square foot or meter) which can contribute to crowding, particularly for lower-income households in attractive cities such as New York and San Francisco, but many other factors can affect housing affordability (Litman 2015; Taylor 2015), and in many situations, households can afford larger houses in cities than in smaller communities.

Potential Community Responses
Policy reforms that increase affordable housing development can help reduce housing costs, allowing households to afford larger, less crowded homes (Burda and Collins-Williams 2015; Litman 2015). Since mid-rise (3-6 story) multi-family housing tends to have the lowest development costs per square foot, allowing more of this type of housing tends to reduce crowding, particularly if some units have three to five bedrooms to accommodate larger families.

Potential Individual Responses
Households can choose housing that has sufficient space for mental health, and amenities such as an attractive view. Researcher Jeni Cross emphasizes the importance of aesthetics and design, “In the hospital literature, people heal faster in hospital rooms when they have a view of nature. So if you’re thinking about affluent micro-housing and poor micro-housing, it’s not just ‘how many people per square foot,’ but, ‘do they have a view?’” (Fitts 2016).

Physical Fitness
Several studies suggest that physical exercise and fitness can increase mental health, and prevent mental illness such as dementia (Bingham 2009; Robertson, et al. 2012). For example, increased neighborhood walkability is associated with reduced symptoms of depression in older men (Berke, et al. 2007), and reduced frequency of dementia (Larson, et al. 2006). In a study of 299 U.S. older adults Erickson, et al. (2010) found significantly higher rates of grey matter volume and cognitive ability in those who previously walked more than 72 blocks a week.

Although there are many ways to exercise, many, such as organized sports and gym workouts, require special time, money, and effort, which discourages use, particularly by people who are low income and sedentary. For groups that are most at risk of physical inactivity, neighborhood walking and cycling are among the most practical ways to increase daily, lifelong exercise. Urban living tends to increase physical activity compared with sprawled, automobile-dependent areas (Ewing and Hamidi 2014). Since most public transit trips include walking links, physical fitness tends to increase with transit travel (Lachapelle, et al. 2011). In a study of residents in 14 international cities, Sallis, et al. (2016) found that controlling for other factors, net residential density, intersection density, public transport density and number of parks were significantly, positively related to physical activity. Residents of the most activity-friendly neighborhoods reported about 75 more weekly minutes of physical activity, half the target recommended by experts to maintain basic fitness and health. This suggests that, to improve public fitness and health, cities should be designed for walkability and ensure that appropriate parks and recreational facilities are located within walking distance of most homes.
**Association or Causation?**
The positive mental health benefits of increased physical activity and fitness are largely caused by well-planned urbanization, which increase the portion of destinations (schools, shops, parks, etc.) located within walking and cycling distance, and improve walking and cycling conditions with more sidewalks and paths.

**Potential Community Responses**
Cities can be designed to maximize physical fitness with compact, mixed development, good walking and cycling conditions, pro-transit policies (since most transit trips include walking links), and appropriate parks and recreation facilities located close to most homes.

**Potential Individual Responses**
Residents can choose homes in walkable and bikeable neighborhoods with appropriate parks and recreation facilities nearby, and choose physically active transport and recreation options, for example, walking and cycling rather than driving for errands, commuting and social activities when possible.

**Economic Stress**
Economic stresses may contribute to mental illness and unhappiness (Tobin 2014; Winter and Li 2016). Rural and urban areas have different economic stresses. Rural areas tend to have higher poverty rates (Figure 14), and fewer education and employment opportunities (particularly for non-drivers), higher transportation costs, and less access to affordable goods and services, such as bulk retailers. Many cities have high living costs and economic disparity rates (differences between high and low income households), and concentrated poverty, and urban residents tend to have limited opportunities to build their houses and grow food. Although urban areas tend to have less absolute poverty, they may have more relative poverty (expectations concerning what income level is sufficient) because residents are exposed to wealthier neighbors and expensive commercial activities that make them feel poor.

**Figure 14  U.S. Poverty Rates by Residential Location** (USDA 2016)

Poverty rates tend to be lower in metro (urban) than in non-metro (rural) areas. Similar patterns are found in most countries throughout the world.

CPS poverty status is based on family income in the prior year, and ACS poverty status is based on family income during the last 12 months.
Association or Causation?
Some urban economic stresses, such as less ability to build houses and grow food, are inherent to urban areas, but because urban areas are more productive and provide more economic opportunities, particularly for physically and economically disadvantaged groups, urban living probably reduces economic stresses overall (Glaeser 2011). Relative poverty may currently be greater in urban areas, but this difference is likely to decline as rural residents become more exposed to consumer marketing.

Potential Community Responses
Communities can reduce financial stress by improving disadvantaged groups’ economic opportunities, and affordable housing and transport options (Litman 2015; Taylor 2015).

Potential Individual Responses
Individuals can choose affordable housing and transport options, and opportunities for increasing incomes. For workers, this often involves moving to urban areas to access better education and jobs; their higher incomes tend to offset higher living costs, particularly over the long run. Fixed income households may be better off choosing lower living cost locations.

Transport Conditions
Local transport conditions affect mental health and happiness (Montgomery 2013). Improved walking conditions and increased walking activity can increase community cohesion (positive interactions among neighbors), community security (more passive surveillance), public fitness, and health (Appleyard and Appleyard 2012). Reduced vehicle travel also reduces per capita traffic casualty and crime risks, which can cause mental stress to victims and their families.

Commute stress tends to be lowest for walkers and cyclists, higher for comfortable public transit travel, and highest for driving in congestion and uncomfortable public transit travel (Hilbrecht, Smale and Mock 2014; Wei 2015). Martin, Goryakin and Suhrcke (2014) used data from eighteen waves of the British Household Panel Survey to evaluate how commute mode and duration affects overall psychological wellbeing. The results indicate that after accounting for various potential confounding factors relating to work, residence and health, psychological wellbeing was significantly higher for active modes commuters compared to car travel or public transport. Switching from car travel or public transport to active travel was associated with an improvement in wellbeing when compared to maintaining car travel or public transport. Negative associations were identified between time spent driving and wellbeing. A UK Office of National Statistics study also found that commute duration is negatively related to personal wellbeing (ONS 2014). The data indicate that automobile commutes exceeding 15 minutes are associated with reduced happiness and increased anxiety, while public transport commuting does not reduce personal well-being until journey times exceeds 30 minutes.

The Gallup Healthways Index indicates that large, compact, multi-modal cities such as Boston, San Francisco, Chicago, New York and Washington D.C. have significantly higher rates of exercise, and significantly lower rates of depression, obesity, diabetes and smoking than sprawled, automobile-dependent cities such as Fort Wayne, Indianapolis, Oklahoma City, Tulsa and Durham-Chapel Hill (Gallup 2016). The Index indicates that, controlling for age, education,
and income levels, longer commutes reduce subjective well-being, as illustrated in Figure 15. Among employees with commutes exceeding 90 daily minutes, 40% experienced worry for much of the previous day -- significantly higher than the 28% among those with commutes of 10 minutes or less, and extremely long commuters were less likely to have experienced enjoyment for much of the previous day or report feeling well-rested.

**Figure 15** Self-Reported Wellbeing Versus Commute Duration (Crabtree 2010)

Commute duration (time spent commuting) tends to increase with city size, but suburban and rural home locations are associated with more total time spent traveling, much of which consists of non-commute travel. Melis, et al. (2015) conclude that improving local mobility and accessibility options tends to reduce rates of depression, and walking provides mental health and happiness benefits (Robertson, et al. 2012).

**Association or Causation?**
Transport can affect urban mental health and happiness in several ways. City living generally increases walking and cycling, and reduces total time spent driving, causing positive impacts, but commute duration tends to increase with city size, and public transit is sometimes crowded and dirty, causing negative impacts. Net impacts depend on the trade-offs between these factors.

**Potential Community Responses**
Cities can increase mental health and happiness by improving walking and cycling conditions, and enhancing public transit services, particularly reducing the most uncomfortable conditions such as excessive crowding, heat, and harassment. They can also improve housing options in accessible and multi-modal neighborhoods, which reduces the time residents spend driving.

**Potential Individual Responses**
Individuals can choose to live in areas with good walking, cycling and public transit services, and reduce their need to drive. They can also support policies and reforms that encourage active transportation improvements.
Inadequate Interaction With Nature

Some people argue that people require regular interactions with nature, and that urban living leads to nature deficit syndrome (Berto 2014; Hartig and Kahn 2016). Conservationist E.O. Wilson (1993) called the innate human affiliation to other living organisms biophilia, which he considers innate to humans.

Several studies find that exposure to nature (images, gardens, parks, rural landscapes) increases people’s wellbeing. For example, a review by Berto (2014) indicates that patients are calmer and have lower heart rates in clinics with murals of nature on their walls. Grazuleviciene, et al. (2016), randomly assigned twenty heart disease patients to seven days of walking in either a city park or street; recovery rates were better for park walkers. Using Wellbeing Index data and controlling for other geographic and demographic factors, Larson, Jennings and Cloutier (2016) found that U.S. residents’ wellbeing increases significantly with the portion of urban land devoted to parks (ranging from 2.0% to 23%), park quality (per capita parks spending) and accessibility (percentage of residents within ½-mile of parks). Sturm and Cohen (2014) found that Los Angeles residents’ physical and mental health ratings increased with proximity to public parks. Mhuireach, et al. (2016) find that airborne bacteria are more diverse in urban parks than parking lots, and suggest that this diversity may contribute to human wellbeing; if so, proximity to natural landscapes may improve mental health and happiness.

A major study by Younan, et al. (2016) of 1,287 Southern California adolescent twins found that, controlled for socioeconomic factors such as age, gender, race, and geographic factors such as neighborhood quality, traffic density and ambient temperatures, more greenspace (parks, golf courses and fields) within 1,000 meters of a subject’s home is associated with significant reductions on aggressive behaviors, equivalent of 2 to 2.5 years of behavioral maturation. They suggest that this results from increased physical activity, reduced pollution exposure, and possibly more exposure to positive microbial biodiversity that improves brain health.

These effects may reflect the physiological effects of reduced noise and air pollution exposure, and increased exposure to beneficial natural bacteria, or psychological benefits from the positive associations many people have with natural environments. Some of these effects may be superficial and so can be synthesized with images of nature, but others may be innate or require substantial interactions with real natural environments.

Association or Causation?

Although most cities have significant greenspace, including street trees, public parks, private gardens and indoor plants, they generally offer less access to nature than suburban and rural areas. Since suburban and rural living significantly increases land consumption, pavement area and energy consumption, suburban and rural residents can be considered to consume nature, while urban residents help protect and therefore produce nature. To the degree that people care about their global ecological impacts, urban residents can take pride in these positive effects.
Potential Community Responses
There are different and sometimes conflicting ways to provide urban residents access to nature, as summarized in the table below. To be biophilic, cities should devote sufficient area (generally more than 15% of their total area) to public greenspace, provide public parks and recreational facilities within a five-minute walk of most houses, incorporate landscaping such as street trees and planters, and offer community gardens, green infrastructure (such as plants incorporated into buildings), and nature visiting programs in order to ensure that residents have frequent and significant exposure to natural environments and associated benefits (Green 2016).

<table>
<thead>
<tr>
<th>Approach</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower density development, such as housing with large private gardens, or near farms and forests.</td>
<td>Private gardens tend to provide more privacy, plus physical and emotional involvement.</td>
<td>Increases per capita land consumption and costs associated with dispersed development.</td>
</tr>
<tr>
<td>Higher density development with public greenspace, such as apartments near urban parks.</td>
<td>Reduces land consumption per capita and provides benefits of compact urban development.</td>
<td>Increases costs associated with compact development. Requires more planning.</td>
</tr>
<tr>
<td>Green infrastructure, such as green roofs, and street trees.</td>
<td>Provides greenspace within developed areas.</td>
<td>Can increase infrastructure costs.</td>
</tr>
<tr>
<td>Natural area visiting, such as parks programs and holidays.</td>
<td>Allows more people to experience natural environments.</td>
<td>Tend to be infrequent. Increases transport costs.</td>
</tr>
</tbody>
</table>

*Table 5 Three Ways to Increase Interaction With Nature*

*There are several possible ways to increase people’s exposure to nature.*

Potential Individual Responses
Although suburban housing can provide more private greenspace and proximity to public openspace, denser development helps preserve natural lands, so people who value nature can choose urban homes with green infrastructure (e.g. rooftop gardens and street trees), proximity to public parks, indoor plants and images in their homes, and visit natural areas.
Impacts Summary

Table 6 summarizes the various mechanisms through which urban living can affect mental health and happiness, whether these are associations or inherently caused by urban conditions, and strategies for reducing negative impacts in order to create saner, happier cities.

### Table 6  Summary of Urban Mental Health Impact Mechanisms

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Causation or Association</th>
<th>Mental Health and Happiness Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentrated mental illness risk factors</td>
<td>Mainly association. May increase some problems but reduce others by improving economic opportunities and services.</td>
<td>Recognize that cities tend to attract people with elevated mental health risks, and so should provide appropriate services.</td>
</tr>
<tr>
<td>Substance (alcohol and drug) abuse</td>
<td>Mainly association. Cities have more cocaine and heroin addiction, rural areas more prescription drug, meth and alcohol abuse.</td>
<td>Provide targeted substance abuse prevention and treatment programs.</td>
</tr>
<tr>
<td>Social isolation and loneliness</td>
<td>Mixed. Affected by interregional migration. Rural residents may initially seem friendlier, but cities offer more social opportunities.</td>
<td>Encourage community cohesion (positive interactions among neighbors) and programs to welcome newcomers.</td>
</tr>
<tr>
<td>Noise and light pollution</td>
<td>Increases with density, but can be minimized with policy and design changes.</td>
<td>Regulations and designs that reduce noise and light pollution.</td>
</tr>
<tr>
<td>Toxic pollution</td>
<td>Increases with density but can be reduced.</td>
<td>Toxic pollution reduction strategies.</td>
</tr>
<tr>
<td>Excessive stimulation and stress</td>
<td>Mixed. Urban newcomers often experience stress, but this usually declines over time.</td>
<td>Support programs that help people to become more comfortable with diversity.</td>
</tr>
<tr>
<td>Crime</td>
<td>Mixed. Some urban areas have high crime rates, but this is declining.</td>
<td>Support crime reductions and more accurate crime risk information.</td>
</tr>
<tr>
<td>Crowding and reduced privacy</td>
<td>High housing costs can increase crowding, particularly for low income households.</td>
<td>Increase affordable housing supply in cities, including larger units for families.</td>
</tr>
<tr>
<td>Economic stress</td>
<td>Mixed. Urban areas tend to have high housing costs but better economic opportunities.</td>
<td>Support affordability and economic opportunities.</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Mainly causation.</td>
<td>Support active transport and local parks.</td>
</tr>
<tr>
<td>Transport conditions</td>
<td>Mixed. Urban residents usually experience more walking and cycling, and less driving, but sometimes unpleasant transit services.</td>
<td>Improve walking, cycling and public transit, and support Smart Growth policies.</td>
</tr>
<tr>
<td>Inadequate access to nature</td>
<td>Mainly causation, but can be reduced.</td>
<td>Increase greenspace and opportunities to visit natural areas.</td>
</tr>
</tbody>
</table>

*Urban living can affect mental health and happiness in several ways. Some are inherent to urban conditions, but many are associations related to confounding factors.*

This analysis suggests that urban conditions such as increasing noise, toxic pollution, crime, and social overstimulation may increase total mental illness and unhappiness, but these impacts are declining or can be reduced with appropriate planning. Other risk factors tend to be associated with rather than caused by urban conditions, including increased interregional migration (reducing nearby social support), concentration of people with elevated mental illness risks, and the tendency of people to move to urban areas during stressful periods in their lives.
Creating Saner and Happier Communities

This analysis suggests that the following urban policies and design strategies can help create saner and happier cities (CUDA; Montgomery 2013; Tam 2017):

- **Targeted social service.** Recognize that cities tend to attract people with elevated mental illness risks (poverty, mental and physical disabilities, minority and immigrant status, alienated, etc.), and provide appropriate social services, including programs to treat mental illness, homelessness and substance abuse (HUD 2016).

- **Affordability.** Improve affordable urban housing and transportation options (walking, cycling, public transit, taxi, etc.) to reduce residents’ financial stress.

- **Independent mobility.** Provide independent mobility options for diverse community members, including those who are poor, have disabilities or impairments, adolescents or seniors.

- **Pro-social places.** Create public spaces (streets, parks, public buildings, etc.) that promote community and encourage positive interactions among residents, particularly vulnerable groups including poor, people with disabilities, visible minorities, migrants, youth and seniors. Involve residents in creating public places and activities that meet their needs.

- **Community safety.** Create communities that minimize urban dangers including traffic, crime and harassment, and pollution exposure. This can involve traffic safety programs (particularly for vulnerable groups including pedestrians, cyclists, people with disabilities, etc.), crime prevention though environmental design (CPTED), appropriate lighting, passive surveillance by nearby residents and by-passers, and other community safety programs.

- **Design for physical activity.** Integrate physical activity by providing good walking and cycling conditions, high quality public transit (since transit travel complements walking and cycling), compact and mixed neighborhoods (so common destinations, such as schools and shops, are located within walking and cycling distance of most homes and worksites), local parks and recreational facilities, plus appropriate community sports and recreation programs.

- **Pollution reductions.** Implement noise, air, light and toxic pollution reduction programs.

- **Greenspace.** Design cities with appropriate greenspaces, including local and regional parks (15-25% of urban land should be devoted to public parks, and most homes should be within a five-minute walk of neighborhood parks or appropriate recreational facilities), green infrastructure (such as street landscaping and rooftop gardens), and out-of-city wilderness access programs.

The following strategies are particularly important in suburban and rural areas:

- Since many suburban and rural areas have high poverty and substance abuse rates, they need social services that respond to those needs, including affordable housing and transport options.

- Because residents are isolated, residents are vulnerable to loneliness and depression, and so require suitable places to socialize, and options for accessing those places.

- Because some smaller communities can be exclusive and oppressive, they may require targeted programs to include minorities and non-conformists.

- Because transport systems more automobile-dependent, it is particularly important to improve walking and cycling conditions.
Some critics argue that pro-urban, “Smart Growth” policies force people into crowded cities (Cox 2012), but in fact, most Smart Growth policies reduce rather than increase regulations, and respond to growing consumer demands for affordable housing in compact, multi-modal urban neighborhoods (Levine 2006; Litman 2012).

Many current policies, particularly in North America, favor lower-density suburban development over compact, urban development (Glaeser 2010). These include limits on urban infill density and mix, minimum parking requirements, development and tax policies that favor home ownership over renting, and transportation investment and planning practices that favor automobile travel (particularly urban-fringe roadway expansion) over improvements to space-efficient modes such as walking, cycling and public transit. Lewyn and Jackson (2014) analyzed land use regulations in 25 typical jurisdictions. They found that sprawl-inducing regulations, such as density limits and minimum parking requirements, are far more common than sprawl-reducing regulations such as urban growth boundaries and density minima (Table 7).

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Development Impacts of Common Public Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favors Compact Urban Development</td>
<td>Favors Lower-Density Suburban Development</td>
</tr>
<tr>
<td>Urban growth boundaries</td>
<td>Restrictions on development density, building heights and multi-family housing</td>
</tr>
<tr>
<td>Public transit subsidies</td>
<td>Minimum parking requirements</td>
</tr>
<tr>
<td>Urban growth boundaries</td>
<td>Parking facility subsidies</td>
</tr>
<tr>
<td>Public transit subsidies</td>
<td>Transportation funding and planning practices that favor roadway investments (particularly urban fringe highways) over other types of transportation improvements</td>
</tr>
<tr>
<td>Tax policies that favor single-family housing ownership over multi-family and rental housing</td>
<td></td>
</tr>
</tbody>
</table>

Many current policies favor lower-density, suburban development over compact, urban development.

Similarly, many developing countries have policies intended to restrict urbanization, such the hukou household registration system which limits rural-to-urban migrations in China. However, these efforts are generally unsuccessful, indicating that huge numbers of people consider themselves better off overall in cities.

These anti-urban policies contributed to self-reinforcing cycle of urban outmigration and disinvestment by economically successful households, concentrated urban poverty and associated social problems, and urban mental illness and unhappiness. Current economic and demographic trends are increasing demand for urban living; to the degree that Smart Growth policy reforms can respond to that demand and allow more economically successful household to live in cities, such policies can increase urban sanity and happiness.
Who is Most Suited to Urban Living?

People’s needs and preference vary. Some people are more or less suited to urban living, as summarized in Table 8. Many of these factors can change over a person’s life, so an individual may be happier in a city during some periods more than others.

<table>
<thead>
<tr>
<th>More Suited To City Living</th>
<th>Less Suited to City Living</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Poor, with good education and employment opportunities in cities.</td>
<td>• Has strong suburban or rural social and family networks, and has difficulty making new friends.</td>
</tr>
<tr>
<td>• Is alienated from their original community, and is likely to find a supportive community in cities.</td>
<td>• Owns large animals (large dogs, horses, etc.) or enjoys large-scale gardening.</td>
</tr>
<tr>
<td>• Is comfortable with and enjoys cultural diversity.</td>
<td>• Is uncomfortable with cultural diversity.</td>
</tr>
<tr>
<td>• Enjoys walking, cycling and public transit.</td>
<td>• Is very sensitive to noise and crowding.</td>
</tr>
<tr>
<td>• Enjoys stimulation and is likely to take advantage of new economic and cultural opportunities.</td>
<td>• Enjoys automobile travel.</td>
</tr>
<tr>
<td>• Can respond effectively to urban mental health risks.</td>
<td>• Is vulnerable to cocaine and heroin addiction, and not to alcohol abuse.</td>
</tr>
</tbody>
</table>

*People are diverse; some are more mentally suited to city living than others.*

This suggests that many people are suited to city living, and this can increase with strategies recommended in this report. For example, people who are sensitive to ambient noise can choose urban homes designed with noise dampening features, and those who have difficulty making new friends can make a concerted effort to participate in urban social activities. Even people who find some aspects of urban living to be stressful may be better off overall in a city due to offsetting benefits. For example, even people who initially find urban living lonely and over-stimulating may be better off overall if they are able to earn more money, particularly over the long run as they make friends and become more comfortable with urban conditions.

**Healthy Skepticism**

Be skeptical of urban mental health and happiness studies that:

- Only mention negative impacts and ignore ways that urban living can increase sanity and happiness.
- Fail to account for confounding factors related to the types of people who locate in urban areas, such as concentrated poverty, disabilities and minority status, and so assume that associations reflect causation.
- Imply that studies of specific areas, times and groups apply everywhere to everybody.
- Imply that risk factors are unchangeable, ignoring changes in factors such as urban crime and poverty rates.
- Confuse crowding (people in confined spaces) with urban density (people per acre or hectare).
- Imply that all urban households must live in high-rise apartments and forego private car ownership.
- Use inappropriate evidence (such as rate colony studies) and biased terms, such as “relentless stress.”
Conclusions
The human experience is increasingly urban, so it is important to understand how city living affects our sanity and happiness, and incorporate mental health and happiness objectives into urban planning. There is considerable debate about these issues. It is common to hear people cite irrelevant research (such as Calhoun’s rodent colony studies) or anecdotes about urban social problems as evidence that city living endangers residents’ mental health and happiness. Such attitudes are understandable; people often move to cities during periods of personal or economic stress, urban environments tend to be busy and noisy, and many people work in cities and recreate in rural areas so they associate urban areas with responsibility and rural areas with relaxation. As a result, cities are considered stressful and depressing, and rural areas healthy and happy. However, that does not really mean that cities increase mental illness and unhappiness, and that a typical person will become insane and depressed by living in a typical urban neighborhood.

This analysis indicates that city living has mixed mental health impacts: urban residency tends to increase some people’s risk of psychosis such as schizophrenia, mood disorders such as depression, drug addiction, and unhappiness, but reduces dementia, some substance abuse, and suicide rates, and increases many people’s happiness. Urban living can also improve mental health by increasing economic opportunities, physical fitness and access to healthcare services.

Higher mental illness and unhappiness rates in cities result largely from the concentration of risk factors such as poverty and disability in urban areas, due to the better services and opportunities they provide. This can create a self-reinforcing cycle of urban poverty and mental illness, and associated social problems, called social drift. Higher urban mental illness rates may also partly reflect better reporting. As a result, the association between cities and mental illness does not really mean that cities cause these problems. In fact, many people are saner and happier living in cities than they would be in smaller communities that offer less opportunity and support.

This report examines various mechanisms by which urban living can affect mental health and happiness. Urban conditions can increase some mental illness risk factors including noise, toxic pollution, crime and social over-stimulation, but these impacts are declining or can be reduced with appropriate planning. Urban residents tend to have less absolute poverty, but may experience more relative poverty due to exposure to more affluent neighbors. It is hyperbola to claim that cities cause “relentless” stress. Urban newcomers may find the abundance of activities, opportunities and social interactions to be over-stimulating, but these effects generally decline over time. Urban residents tend to have larger social networks. For visible minorities, increased cultural diversity in cities can reduce stress and increase happiness.

In most countries, surveys find higher self-reported happiness in cities than in smaller communities. In the U.S., large city residents report slightly lower (up to three percentage points) happiness rating than rural residents, but this probably reflects other factors related to differences between urban and rural populations and U.S. urban conditions, and so would not apply to successful people and non-distressed urban neighborhoods.
Lower (about half) urban suicide rates suggests that city living increases overall mental health and happiness. If urban living double residents’ lifetime psychosis risk, from about 1% to 2%, as some researchers suggest (others estimate much smaller effects) this approximately equals the higher rural suicide rates. Since psychosis is generally transitory and treatable, while suicides are permanent and devastating, cities’ increased psychosis risk is generally preferable to higher rural suicide risk.

A critical issue is the degree that urban conditions actually cause mental illness and unhappiness to increase, in which case individuals may suffer by moving to cities, and total mental illness and unhappiness increase with urbanization, or whether these problems result from conditions often associated with but not inherent to cities, in which case urbanization is not harmful overall. Table 9 categorizes mental illness risk factors identified in this study. Demographic factors affect individuals regardless of where they live. Economic and lifestyle factors are associated with but not necessarily inherent to cities, and often change over time. Only the geographic factors can be considered to actually be caused by urbanization.

### Table 9 Factors Affecting Mental Health and Happiness

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Economic and Lifestyle</th>
<th>Geographic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are geographic factors to the degree that higher-risk groups concentrate in cities.</td>
<td>Are geographic factors to the degree that higher-risk economic and lifestyle conditions concentrate in cities.</td>
<td>Are inherent to urban conditions and so increase when people move to cities.</td>
</tr>
<tr>
<td>• Education, income and wealth</td>
<td>• Interregional migration</td>
<td>• Crime opportunities</td>
</tr>
<tr>
<td>• Age and lifecycle stage</td>
<td>• Economic (education and employment) opportunities</td>
<td>• Population density</td>
</tr>
<tr>
<td>• Family and marriage status</td>
<td>• Cost of living</td>
<td>• Noise and pollution exposure</td>
</tr>
<tr>
<td>• Family and social networks</td>
<td>• Transport activity</td>
<td>• Transport options (walking, cycling and transit quality)</td>
</tr>
<tr>
<td>• Health status</td>
<td>• Crime rates</td>
<td>• Increased physical activity</td>
</tr>
<tr>
<td>• Drug and alcohol abuse</td>
<td>• Social status of urban locations</td>
<td>• Exposure to nature</td>
</tr>
<tr>
<td>• Minority status</td>
<td>• Physical activity and fitness</td>
<td>• Better reporting of problems</td>
</tr>
<tr>
<td>• Personal attitudes and beliefs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Many factors can affect mental health and happiness. Some are associations related to the types of people and activities that locate in cities rather than an inherent risk of urban living.

This indicates that most mental illness risk factors are associated with rather than caused by urbanization. Risk factors such as concentrated poverty and substance abuse, and urban out-migration by affluent households can create the self-reinforcing cycle of social drift, but these factors often change. For example, urban and rural divorce and crime rates are converging, and many urban areas are attracting more affluent residents. In addition new technologies and planning practices can improve urban mental health, for example by reducing noise exposure and increasing housing and transportation affordability. As urban residents become more affluent, urban environmental quality will probably become more important for mental health and happiness, and as poverty becomes more suburban, so will mental illness risks. It is therefore important to track how risk factor and mental health needs evolve in the future.
This is an emotional issue; many people assume that cities are either good or bad, and search for supporting evidence. This is understandable. Cities tend to be crowded, noisy and busy, and many have unattractive and unpleasant features including concentrated poverty, social problems and decay which can cause discomfort and fear. Because city living (particularly apartments and public transit) is often stigmatized, many people work hard and commute long distances so their families can live in suburban homes; they may feel threatened by evidence that city living can be healthy and enjoyable, which would question the value of their sacrifices.

There is good evidence that city living increases most people’s overall happiness, including worldwide rural-to-urban migrations, and the high housing costs in cities; these would not occur if billions of people did not consider themselves better off overall in cities. Many people say that, given unlimited resources, they prefer a large home and automobile travel over an urban apartment and public transport, but when confronted with realistic trade-offs between housing and transportation costs many households choose compact urban housing, provided it is affordable, accessible and located in an attractive neighborhood.

Much of the evidence that cities increase mental illness and unhappiness is specific to North America where policies tend to be anti-urban and cities have severe social problems; these results do not apply to economically successful urban neighborhoods. This suggests that better policies and design strategies can increase urban mental health and happiness. These include policies that improve mental health services, more affordable urban housing and transport options, improved walking and cycling conditions, improved public realm, social inclusion programs that welcome newcomers and integrate visible minorities, plus appropriate public parks and recreation facilities. Such policies are important in both developed countries that currently under-support existing cities, and in developing countries where new cities are developing rapidly.

This is not to suggest that everybody should live in dense urban neighborhoods; some people are unsuited due to their lifestyle or temperament, for example, because they own large pets, engage in noisy activities, or are uncomfortable with cultural diversity. However, because cities tend to improve economic and social opportunities, many people benefit overall from urban living because their gains in income, social connections and physical activities offset any incremental mental stresses, particularly over the long run as urban benefits increase and disadvantages decline. Since urban living reduces per capita land consumption and transportation costs, it tends to provide additional, indirect benefits.

Many people should find this research reassuring: it suggests that most people can take advantage of urban living benefits without sacrificing their sanity or happiness.
References


Lloyd Alter (2017), How Should We Measure the Happiness of Cities? Tree Hugger (www.treehugger.com); at www.treehugger.com/urban-design/how-should-we-measure-happiness-cities.html.


Paula Bude Bingham (2009), Physical Activity and Mental Health Literature Review, Minding Our Bodies (www.mindingourbodies.ca); at www.mindingourbodies.ca/about_the_project/literature_reviews/physical_activity_and_mental_health.
Biophilic Cities Network (http://biophiliccities.org).


CUDMH (Centre for Urban Design and Mental Health) (www.urbandsignmentalhealth.com) is an academic organization that investigates how cities can be better designed for mental health.


Community and Faiths Unit (2005), Community Cohesion: Seven Steps; A Practitioner’s Toolkit, UK Home Office (www.tedcantle.co.uk); at http://bit.ly/1XVARGX.


Reid Ewing and Shima Hamidi (2014), *Measuring Urban Sprawl and Validating Sprawl Measures*, Metropolitan Research Center at the University of Utah for the National Cancer Institute, the Brookings Institution and Smart Growth America (www.smartgrowthamerica.org); at www.arch.utah.edu/cgi-bin/wordpress-metroresearch.


Claude Fischer (2982), *To Dwell Among Friends: Personal Networks in Town and City*, Chicago University Press.


Jo Griffin (2016), *The Lonely Society?*, Mental Health Foundation (www.mentalhealth.org.uk); at www.mentalhealth.org.uk/sites/default/files/the_lonely_society_report.pdf.


OCFP (2005), The Health Impacts Of Urban Sprawl Information Series: Volume Four Social & Mental Health, Ontario College of Family Physicians (www.ocfp.on.ca); at http://bit.ly/2m5mXpR.


Brian Ray (2003), The Role of Cities in Immigrant Integration, Migration Policy Institute (www.migrationpolicy.org); at www.migrationpolicy.org/article/cities-immigrant-integration.


Theresa Tam (2017), Designing Healthy Living, Public Health Agency of Canada (www.cip-icu.ca); at www.cip-icu.ca/Files/WTPD/2017-designing-healthy-living-eng.aspx.


www.vtpi.org/urban-sanity.pdf