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Spring 2018

Neighborhood Effects on Anxiety and Depression

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NEIGHBORHOOD EFFECTS ON ANXIETY AND DEPRESSION

by

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A thesis submitted in partial fulfillment of the requirements
for graduation with Honors in the Political Science

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Spring 2018

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Neighborhood Effects on Anxiety and Depression

An Honor's Thesis by Hallee Haygood

The University of Iowa

4/30/2018

The number of people affected by mental health issues is on the rise. A recent study done by the Chartered Institute of Personnel and Development found that there has been an increase in the number of adults reporting mental health struggles, specifically anxiety and depression (RoSPA Occupational Safety & Health Journal, 2015). These statistics are not confined to adults, mental health among youths has also been increasing. Another study reports that internalized mental health problems have been on the rise, especially in adolescent girls (Hammarström, 2017). Young boys and girls were studied to see differences in their internalized and externalized mental health issues and in both boys and girls they found that depression and anxiety had increased from 1981 to 2014 (Hammarström, 2017).

At the same time that mental health has worsened, citizens have been moving from rural areas into the cities at higher rates than before. This phenomenon of urban sprawl has led to something called urbanization, which is the mass movement of people uprooting their lives and moving to towns with larger populations and more crowded spaces. Research suggests that trends of increasing mental health issues and urbanization are linked; levels of anxiety and depression are higher in urban areas compared with rural or suburban areas. Urban living has been linked to greater rates of mental health issues due to certain aspects of this living, such as excess trash because of the size of the city or a lack of green space (Wandersman et al. 1998).

I aim to look deeper into the link between urban planning and mental health outcomes. Specifically, I use the Chicago Community Adult Health Study 2001-2003 to explore how aspects of the social environment, such as neighborhood cleanliness, influences rates of anxiety and depression. I find that certain control variables make one more likely to be at risk for higher rates of depression and anxiety. For example, women were more likely to experience anxiety in a neighborhood, and Blacks were more likely to experience anxiety than other races. However, in

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the models that are run for anxiety each fails to meet statistical significance for variables of the built environment. But we can also see that if one neighborhood experiences one of the variables such as high noise levels, they are more likely to experience disorder and decay.

For depression the same can be found. Physical disorder is statistically significant on its own but not within the full model. But the control variables again behave as expected, showing which characteristics people may have that make them more susceptible to anxiety and depression in a neighborhood. This research is important because it suggests that city planners and policymakers can influence population health through the design and mapping of a city. It also shows that advocacy work can be done for individuals who are at higher rates of being impacted by the disorder, decay, or noise levels of their community.

The paper continues as follows. First, I review the literature that discusses the influence of urban areas on population health with a particular focus on mental health. Next, I discuss the dataset used to explore the determinants of anxiety and depression among Chicago dwellers. I end with a discussion about how city planners can contribute to the future of positive mental health for citizens in urban areas of the United States.

Urban Areas and Population Health

Scholars of public health have recently focused on how the neighborhood and built environment influence community health. The general conclusion is that health is not just about biology or individual level factors. Health is also impacted by where a person resides and where they work. In other words, health is socially determined. The neighborhood is also important for mental health. The way that a neighborhood is planned can impact the mental health of an entire community. Positive urban planning includes the resources that people need, which can decrease the rate of mental illness. This can be done when planners are more prepared for urban sprawl by

adding greater green spaces or more waste management, so that the community has better rates of positive mental health. Especially greater planning for public transportation to decrease the everyday stress of travel would be beneficial for citizens. All of these function in a way that can positively impact how a community and its residents exist.

A common finding in the literature is that people who reside in large cities are at a much greater risk for mental health issues. For example, for those who live in an urban area, the risk of anxiety disorder increases by 21% when one lives in a large city. Of course, those who may have the genetics for these mental health issues are more at risk than others for changes in mental health. It has been proposed by several studies that the social stress processing in these environments is the main cause of greater risk for mental illness in urban areas (Lederbogen et. al 2011).

In this study, I focus on how the neighborhood influences two specific types of mental health issues: anxiety and depression. Below, I review the literature and present testable hypotheses.

Anxiety

It has been widely accepted that anxiety is the most "pervasive psychology phenomenon" and impacts a large amount of people, however there is no complete definition of what it is. This is because there are a variety of forms and experiences, which also makes measurement of anxiety difficult (Hoch et. al, 1950). Anxiety can be highly impacted by different aspects of urban living, although the findings are not always straightforward. For instance, one study shows that gender played a part in how the neighborhood influenced anxiety symptoms. Anxiety tended to increase more in women when they were living in an urban neighborhood (Srivastava 2009). And according to the American Psychiatric Association, women are more impacted by anxiety

than men. It also discusses that approximately 7-9% of the population suffers from a specific phobia. Some of this may be experienced in an individual's daily living based on where they are located.

Another study shows that risks for anxiety disorders increased by 21% when individuals became city-dwellers (Lederbogen et. al 2011). More specifically, this study suggests that some individuals develop anxiety as a consequence of not being able to process the aspects of a large city. This may be because there are many different stimulants to adapt to and this can be a stressful process. Those who have been raised in a large city and stayed there have also been impacted by this stress for a longer period of time and eventually the brain has too much to process in terms of the environment around it, which can also lead to an increase in anxiety for those who have lived in a city for a long time (Lederbogen et.al 2011). When one has been continuously experiencing many of the anxiety provoking variables in their daily life, it can impact them as they go through their daily life and daily tasks.

Both of these studies suggest that urban living can increase anxiety among its residents. It may be because people are unaware of how larger cities function when they first move there, or because they feel overwhelmed with these new environmental stressors. Thus, I expect that when someone moves to a larger city originally it can increase their anxiety. For example, deteriorating buildings or broken glass in the street may be new for people who move to an urban area, or something people have been exposed to for long periods and it eventually impacts their well-being.

Depression

According to the American Psychiatric Association, depression is "a common and serious medical illness that negatively affects how you feel, the way you think and act." The American

Psychiatric Association also says that 1 in 15 people experiences depression in a given year, and 1 in 6 people will experience depression in their lifetime. Because it can affect your mood, it is impacted by neighborhoods and the planning behind them. Here, the research primarily focuses on the quality of the built environment. For instance, Galea et al. (2002) finds that neighborhoods characterized by a poor quality built environment are associated with a greater likelihood of depression (Galea et. al 2002). The idea of urbanization, which was discussed previously, also leads to mass amounts of people moving to a larger city. This influx of people leads to less care of the area because it is more difficult to take care of as people are moving in and out.

Resources are also important to consider. In studies of mental health it has been found that depression is linked to a lack of resources in the community. Generally low income neighborhoods experience greater rates of depression within their community due to a lack of health care resources, retail stores, and recreational facilities (Cutrona et. al 2006). Depression also has higher rates in low income neighborhoods because of the lack of resources, as well as increased crime. Due to the lack of resources, these areas are generally cheaper to live, which adds to the crime rates within the community. Research has shown that crime within a neighborhood leads people to feel less safe about their community and fear for their family, which leads to increased depression (Wandersman et al. 1998).

Lack of green space and open spaces within the community are also associated with depression. These spaces supposedly give people more opportunities to go outdoors, as well as explore their neighborhood. Generally, self-reported results were that people felt their mental health improved after moving to an area with more open space (M.J. Koohsari et. al 2018). Others have found that even an increase in quantity of parks in a neighborhood can positively impact an individual's mental health (Wood et. al 2017). Another study looks at whether or not

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an increase of trees in urban areas can positively impact the mental health of those in the area. In the United Kingdom they found that in London areas that had more trees had a lower rate of antidepressant prescriptions. Although this may not prove causality, the UK is moving forward with this initiative and planting more trees in their larger cities (M.S. Taylor et. al, 2015).

Hypotheses

Given this research, I expect a variety of results. For example, because of the research on how the built environment can impact an individual I would expect that the level of noisiness, excessive litter/graffiti, and the amount of physical disorder to negatively impact mental health. The level of noise in an area can impact people's ability to focus and even their ability to sleep. I would expect that an excess amount of noise can lead to anxiety and/or depression among individuals as it prohibits them from doing certain things and is out of their own control.

The state of buildings in the area can also impact the mental health of individuals or the community. If buildings are in bad condition or seem to be abandoned it will make people feel as if they are not living in a desirable area and hope to someday move out. As people move away to avoid these buildings it leads to greater turnover in the neighborhood and less of a feeling of community. From the literature review, I would assume that a greater sense of community can lead to better mental health as people have a sense of belonging. Thus, I would assume that buildings which are in better condition have happier neighborhoods surrounding them.

This also can relate to the amount of trash and graffiti in the community. An excess of amount of trash, especially extremely undesirable trash like broken glass, can impact how people view their neighborhood. If resources and government are not ridding the area of this trash, individuals will assume that their neighborhood is not seen as a place that needs to be taken care

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of. The same can be said of graffiti, as it continues to take over an area, people may feel like their community is being overlooked.

Open and green spaces as well as trees are also looked at in the literature and in the research. These spaces can help people escape from the feeling of stress and hasty attitudes within the city. Parks are a great way to enjoy nature and distract oneself from the city atmosphere. Studies have shown that the quantity of parks and natural areas in a neighborhood can positively impact the mental health of those living there (Wood et. Al 2017). Even something as simple as more trees in an area can make one feel closer to nature. I would expect that an increase in these spaces, as well as an increase in trees would lessen feelings of depression within the community. All of these things together can greatly impact depression among individuals and communities in urban areas, and I expect this will be seen in the Chicago Community Adult Health Study. Specifically, I expect the following hypotheses:

H1: A large amount of noise in the community can increase anxiety and/or depression.

H2: An excess amount of litter and trash can increase anxiety and/or depression.

H3: An increase in physical decay of the neighborhood can increase anxiety and/or depression.

The Chicago Community Adult Health Study

To test my hypotheses, I use a unique dataset called the Chicago Community Adult Health Study (CCAHS). This was a survey conducted on 3,105 Chicago adults to see how the city of Chicago affected their well-being. This study consists of four different metrics for studying mental health in the community. These include (1) a face-to-face survey of adult health for a stratified, multistage, probability sample of 3105 adults, aged 18 and over and living in 343 neighborhood clusters (NCs) within the city of Chicago, including direct physical measurements

of their blood pressure and heart rate and of height, weight, waist and hip circumference, and leg length; (2) a biomedical supplement which collected blood and/or saliva samples on a subset of 661 survey respondents in 80 "focal" NCs; (3) a community survey in which individuals described aspects of the social environment of all survey respondents' neighborhoods; and (4) a systematic social observation (SSO) of virtually all (1664 of 1672) blocks in which potential survey respondents resided. I rely on the face-to-face survey coupled with the SSO to explore how the built environment influences anxiety and depression.

Measuring Anxiety and Depression

There are two dependent variables: anxiety and depression. Anxiety is a scale based on 5 questions that tap into anxious feelings or experiences (see Appendix for exact questions). Depression is also a scale based through a variety of questions asked of participants, which can be seen in the Appendix. Both scales were created by the scholars who created and collected the data.

Table 1 shows the average levels of anxiety and depression among the sample. For both variables, the higher the number the greater a level of anxiety and depression. Thus, depression is at a higher rate than anxiety is. However, when we are looking at each variable it is noticeable that in the codebook there is a higher percentage of individuals in urban areas of Chicago that struggle with these issues that in the general population. For example, in the Appendix, one statement on the survey is, "I had fear of the worst happening." 23% of individuals responded "some of the time" or "most of the time" whereas, according the National Institute of Mental Health cites that only 19% of the population in the United States had a fear of the worst happening.

For depression, the statement in the appendix, "Was there ever a time when you felt sad, blue, or depressed for two weeks or more in a row (during the last 12 months)?" allows a comparison between the general population. 21% of individuals said yes, whereas, according the National Institute of Mental Health found that 6.9% of individuals in the general population had a major depressive episode in the last year. Both variables show that individuals in this sample have greater levels of anxiety and depression.

Table 1. Descriptive Statistics of Outcomes					
Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Anxiety	3,105	1.579114	.602122	1	4
Depression	3,105	1.86257	.57648	1	3.82

Measuring the Built Environment

For both outcomes, I expect for aspects of the social environment to matter. All of these variables are measured at the block level and come directly from the SSO portion of the survey. The main variables used to measure the built environment include the amount of noise in an area, a score to measure physical decay, and a score to measure physical disorder. The noisy streets variable is an ordinal variable that measures the amount of noise on the streets. Specifically, observers were asked to answer "how noisy is the street?" with answers ranging from very quiet (1) to very noisy (4).

The physical decay variable is a scale that measures components of the neighborhood with high values indicating higher disorder. Individuals living in an area with high values on the physical disorder score means that the buildings are in poor/badly deteriorated condition, houses are abandoned or burned out, and that conditions of the streets are fair or very poor. Finally, the physical disorder variable measures the degree to which the neighborhood has garbage, litter, or

broken glass, empty beer or liquor bottles, and graffiti. Again, high values indicate higher levels of physical decay. Descriptive statistics are shown in Table 2.

When comparing the noise, disorder, and decay levels in neighborhoods it is obvious that both noise levels and disorder are higher on the scale. For noise levels it falls more in the middle of the scale, meaning that this can in fact impact the environment of a neighborhood for the people living there. And for disorder, it is very high on the scale. This shows that things such as graffiti, litter, and general messiness in a neighborhood can also impact the mental health of those who are living in the area.

Table 2. Descriptive Statistics of Built Environment Variables					
Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Noisy	3,105	2.17	.315	1.41	3.38
Disorder	3,105	-1.84	1.45	-7.75	1.784
Decay	3,105	-3.17	1.14	-5.63	-.45

Control Variables

I control for a variety of individual characteristics that may impact overall levels of anxiety and depression including gender (1=female), age (in years), education (1=less than 8th grade, 2=9-11 grades completed, 3=high school grad, 4=13-15 years completed, 5=college grad, 6=college+), race (black=1, hispanic=1), and marital status (based on dummy variables).

Table 3. Descriptive Statistics of Control Variables					
Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Age	3,105	42.51	16.46	18	92
Education	3,105	3.48	1.44	1	6
Black	3,105	.42	.49	0	1
Hispanic	3,105	.14	.34	0	1
Married	3,105	.35	.48	0	1
Separated	3,105	.06	.23	0	1
Divorced	3,105	.13	.34	0	1

Widowed	3,105	.08	.28	0	1
Single	3,105	.38	.48	0	1
Female	3,105	.40	.49	0	1

Descriptive statistics on these variables are shown in Table 3. We can see that the mean of those participating in the survey is closer to middle age, and most have an education of high school graduate level. There are far more Black individuals than Hispanic individuals who were part of the survey, which can give insight into the demographics of the neighborhood. The most common relationship status is single, followed closely by married. And it appears that more men participated in the survey than women did.

Results

To explore the relationship between anxiety and depression and the built environment, I use OLS regressions. I start by isolating the effects of each neighborhood characteristic and then show a combined model. Results for anxiety are shown in Table 4 while results for depression are shown in Table 5.

I first start with the results for anxiety. As shown in Table 4, all three of the variables that tap into the built environment are related to increased levels of anxiety, however, fail to reach statistical significance in a full model. As shown in M1 in Table 4, a one unit increase in noisy streets increases anxiety by about .005, keeping all else constant. Table 4 also shows that a one unit increase in decay and disorder increases anxiety by .02 and .02, respectively (see M2 and M3). However, as shown in M4 in Table 4, these variables are no longer statistically significant at the conventional levels once all three are included in a model. The correlation between these three neighborhood variables is not inconsequential and range from .45 to .63. That is to say, neighborhoods that are noisy tend to also have high levels of disorder and decay. The

insignificance is likely due to multicollinearity as opposed to a null relationship between

neighborhood and anxiety.

Table 4. Regression Analysis for Anxiety				
Variable	M1	M2	M3	M4
Age	-.0006 .0008	-.0005 .0008	-.0004 .0008	-.0005 .0008
Education	-.06 *** .01	-.05 *** .01	-.05 *** .01	-.05 *** .01
Separated	.09 .05	.08 .05	.08 .05	.08 * .05
Divorced	.14 *** .03	.13 *** .03	.13 *** .03	.13 *** .03
Widowed	.17 *** .05	.16 *** .05	.16 *** .05	.16 *** .05
Single	.13 *** .03	.13 *** .03	.13 *** .03	.13 *** .03
Black	.10 *** .02	.07 ** .03	.08 ** .02	.07 ** .03
Female	.08 *** .02	.08 *** .02	.08 *** .02	.08 *** .02
Hispanic	-.09 *** .04	-.10 ** .03	-.11 ** .04	-.11 ** .04
Noisy	.005 *** .03	N/A	N/A	-.05 .04
Decay	N/A	.02 * .01	N/A	.02 .01
Disorder	N/A	N/A	.08 * .01	.01 .01
_cons	1.71 *** .10	1.79 *** .06	1.75 *** .06	1.9 *** .12
*p < .10; **p < .05; ***p < .01				

All other variables behave as we might expect. Females and blacks tend to have higher

levels of anxiety as do those who are divorced, widowed or single. Table 4 also shows that

education has a negative relationship with anxiety.

Turning to depression in Table 5, we see that only physical disorder is statistically

significant, however, fails to reach statistical significance in the full model. Specifically, in M3

in Table 5, a one unit increase in disorder increases depressive symptoms by .02, keeping all

other variables constant. Noisy and decay are not statistically related to depressive symptoms at conventional levels. As before, control variables behave as expected. Marital status is related to levels of depression as is gender, race, and education.

		Table 5. Regression Analysis for Depression		
Variable	M1	M2	M3	M4
Age	-.002 * .0008	-.002 * .0008	-.01 * .0008	-.002 * .0008
Education	-.05 *** .01	-.05 *** .01	-.05 *** .01	-.05 *** .01
Separated	.19 *** .05	.19 *** .05	.18 *** .05	.19 *** .05
Divorced	.21 *** .03	.20 *** .03	.20 *** .03	.20*** .03
Widowed	.17 *** .04	.17 *** .04	.17 *** .04	.17 *** .04
Single	.20 *** .03	.19 *** .03	.19 *** .03	.19 *** .03
Black	.10 *** .02	.09 *** .02	.09 *** .02	.09*** .02
Female	.10 *** .02	.10 *** .02	.10 *** .02	.10 *** .02
Hispanic	-.07 * .03	-.08 * .03	-.08 * .03	-.09 ** .03
Noisy	.002 .03	N/A	N/A	-.03 .04
Decay	N/A	.013 .01	N/A	.004 .01
Disorder	N/A	N/A	.02 * .05	.02 .01
_cons	2.01 *** .09	2.06 .06	2.04 *** .05	2.13 *** .11
*p < .10; **p < .05; ***p < .01				

Conclusion

Although the three variables of the built environment that were being analyzed do not reach statistical significance in the combined models there are still takeaways from the research that has been done. As can be seen, when the three measures are analyzed individually there is more significance among them. This goes to show that if they were being analyzed at a more individual level we likely would have found greater statistical significance. Due to the results for certain control variables there are certain advocacy measures that can be taken for these groups to ensure that they are being given the attention they deserve in the planning departments of cities. For example, the control variable, women, can be seen to have more anxiety than men due to neighborhood planning. Thus, certain measures such as a women's clinic could assist in decreasing mental health issues for women as they would have greater access to resources.

Thus, when urban and regional planners are analyzing positive ways to change a neighborhood or community they should ensure that they are looking into the anxiety provoking additions or changes they may make, and how it will impact certain populations. Forums and surveys should also be planned by the city to make sure that populations are comfortable with levels of noise, disorder, or decay.

Another example of this would be for the black population of cities. This study was done in Chicago, and as can be seen 1,304 individuals identified in this category and this control variable shows that blacks have higher rates of anxiety and depression based on aspects of planning in the built environment. If cities took greater care of their neighborhoods and focused more on noise, decay, and disorder, this could be less of a problem. Decay was analyzed in communities based on buildings that were deteriorating or not well kept, or older areas of housing.

Individuals who live in these areas may feel like the city or planners do not care about where they live or their well-being because of the lack of upkeep. This can make one feel inferior to others, or even that no cares about where they live, which can increase these symptoms of anxiety and depression. Therefore, if once a neighborhood has been planned out, city managers and city councilors focus on better maintenance of areas, this can positively benefit the community. Individuals can also advocate for their own community or a neighborhood to be more recognized and taken care of if no one else has taken the matter into their own hands.

This type of advocacy can be done in a variety of ways. One way that individuals can advocate for their neighborhood or area is by attending public forums or City Council meetings. This is a way to express one's opinion and make change to their area. Another way to get involved is by joining a group that focuses on making these kinds of changes. There are a variety of different neighborhood organizations. Although these do not always exist in urban cities, a great way to join is by starting one yourself. Running for office is always another way to impact direct policy. There are many organizations that are supporting people who want to run for office on a local level and create beneficial change within the area that they care about.

On a more planning level, there are also different ways to impact mental health. For the topic of noise levels, this can be positively changed by being better prepared for urbanization. As more people come to an area it is bound to get louder. However, by making buildings with thicker windows, or bedrooms on the other side of the street where there are higher amounts of people walking around late at night, this can be a great way to ensure that noise levels are not to the point where people cannot go through their regular routine. Even siren sounds should be considered when designing buildings, as this can wake people up, and should not be a hassle in nightly life.

Public transportation should also be thought about when taking noise into consideration. Trains and buses often times can be near residential areas in urban communities. This leads to individuals being woken up in the middle of the night from the sounds that go along with these forms of transit. They are essential for the betterment of society, but looking into ways to make it easier for those living nearby is essential. Possibly adding warning labels for leases so that people know what they are signing into, putting windows away from transit, or even making windows thicker can be a benefit for those who leave near these areas.

In regards to decay, simple upkeep of buildings can influence this. If local government leaders focused more on buildings in more crowded or older areas, people would not have as many complaints about decay levels in certain communities. When buildings are deteriorating, individuals feel like their area is not being regarded well by city leaders. But by creating incentives for businesses to go to these deteriorating buildings and start companies there, it can revitalize the area. However, one negative outcome of this could be gentrification. Therefore, if there are incentives for companies or organizations to go there it should first be surveyed among the residents on if they would support this addition. They should also focus on not making prices increase for housing due to this change. If it can be proven that this will not lead to gentrification then these changes can be considered, but should not be made if it could lead to gentrification of neighborhoods.

Disorder is another major way that individuals mental health can be impacted through very small details of a community. For example, if there is an excess amount of trash in the area it can be seen as a disorderly. By ensuring that trash is taken care of in areas, or sending volunteers to clean up the trash it can positively impact the mental health of individuals. Anxiety can be impacted as the trash may be seen as something uncontrollable for an individual, and it

can also impact depression as it makes someone feel like their area is not worthy of being kept clean.

Another way to influence disorder is by creating green spaces in neighborhoods that have generally been poorly kept by local officials. It is an incentive to keep the area clean, and will also be beneficial for people's mental health. And on top of that it will show people that their community is truly cared for and seen as an attribute to the local area. As was seen in the literature, green spaces assist in decreasing the depression rates for those urban areas, and make urbanization levels feel less severe in impacted or crowded spaces. When one has a way to feel like they are not surrounded by a "concrete jungle" it can allow for a way to escape from the mundane activities of everyday life.

When there is disorder in an area, the community is more likely to experience greater turnover as people consistently aspire to move away and get out of the community. However, continued residency can lead to a greater sense of community, which leads to decreased rates of depression. Therefore, if areas were better taken care of, more people would stay, there would be less turnover, communities would form within neighborhoods, and this would hopefully lead to a decrease in depression because of greater bonds. As we take note of neighborhoods that have high turnover rates and focus urban planning changes there, higher rates of consistent residency will occur and lead to happier residents.

One way to decrease disorder in a community is by making a better system for organized public transportation. In larger, urban areas, it can be difficult to plan out a successful model for local transit. However, with urban sprawl and massive population size it is getting harder to move around and more essential for cities to have successful public transportation. When buses are delayed, or there are not enough bike lanes, it can lead to stressors for individuals within the

population. Thus, life would be less chaotic for individuals if there was better planning for public transportation in a city.

Resources are also a way to decrease decay and disorder in an area. These aspects of the built environment play a large role into the general well-being and happiness of individuals in the community. As discussed in the literature review, lower income neighborhoods experience higher rates of depression because of the lack of "health care resources, retail stores, and recreational facilities" (Cutrona et. al 2006). This can be because of a lack of care from public officials, or those in charge of upkeep for other neighborhoods. But this poor care of the area and lack of resources leads people to feel that they are not viewed as important and can lead to higher levels of depression. If populations living in areas with less resources are advocated with for more of these opportunities hopefully this can be achieved. Resources are extremely important for the cause of less urban disorder as they help to organize communities, and create fundamental resources.

Despite the lack of statistical significance from the individual models, this helps researchers to better understand how the built environment can impact people living in an area on a smaller scale. It also is a way to learn more about changes that can be made to decrease noise levels, decay, and disorder in a neighborhood. These findings also allow us to see different groups and communities that are impacted by these variables through control groups that were tested. Through a better understanding of this, more advocacy work can be done with those who are more likely to be impacted by urban and regional planning.

There is a lot of work and research to be done from here to learn more about these models that were run in the data presented. Hopefully someday the models can be further analyzed and understood so that multicollinearity does not impact the data and show them as insignificant.

With this data and research hopefully changes can be made in the ways that cities are planned and maintained. As individuals continue looking into changes that can be made, hopefully they will see the benefits of green spaces, increased resources for communities, and better maintenance of cities.

If individuals believe that their interception in a neighborhood and how it is being treated can truly make a difference, then more changes can be made at a local level as people begin to realize the power of their advocacy. Once these changes occur from an increase in activism for neighborhoods, this will lead to better mental health for communities around states, nations, and eventually the globe.

Works Cited

Corburn, Jason. Toward the Healthy City : People, Places, and the Politics of Urban Planning,
MIT Press, 2014. ProQuest Ebook Central.

Employers report increase in mental health problems in the workplace. (2015). *RoSPA
Occupational Safety & Health Journal*, *45*(11), 3.

Galea S, Ahern J, Rudenstine S, *et al.* (2005). Urban built environment and depression: a
multilevel analysis. *Journal of Epidemiology & Community Health*; 59: 822-827.

Hammarström, A., Korhonen, J., *et al.* (2017) Increase of internalised mental health symptoms
over the last 33 years among adolescents. *European Journal of Public Health;* 27: 271-
272.

Hoch, P., Zubin, J., *et al*. (1950) Anxiety. *The American Psychological Association*.

Koohsari, M., Badland, H., *et al.* (2018)*.* Are public open space attributes associated with
walking and depression?. *Science Direct*; 74: 119-125.

Lederbogen, F., Kirsch, P., Haddad, L., Streit, F., Tost, H., Schuch, P., et al. (2011). City living
and urban upbringing affect neural social stress processing in humans. *Nature*, *474*, 498-
501.

Srivastava, K. (2009). Urbanization and mental health. *Industrial Psychiatry Journal*, *18*(2), 75–
76. http://doi.org/10.4103/0972-6748.64028

Taylor, M., Wheeler, B., *et al.* (2015)*.* Urban street tree density and antidepressant prescription
rates—A cross-sectional study in London, UK. *Science Direct;* 136: 174-179.

Wandersman, A., & Nation, M. (1998). Urban neighborhoods and mental health: Psychological
contributions to understanding toxicity, resilience, and interventions. *American
Psychologist, 53*(6), 647-656.

Wood, L., Hooper, P., *et al.* (2017) Public green spaces and positive mental health –

    investigating the relationship between access, quantity and types of parks and mental

    wellbeing. *Science Direct;* 48: 63-71.

Appendices

Anxiety

Statement	Question	Code/Frequency
I had fear of the worst happening.	Would you say you felt this way never, hardly ever, some of the time, or most of the time during the past week?	Never..........1 1693 Hardly ever..........2 695 Some of the time..........3 558 Most of the time..........4 127
I was nervous.	Would you say you felt this way never, hardly ever, some of the time, or most of the time during the past week?	Never..........1 1250 Hardly ever..........2 722 Some of the time..........3 963 Most of the time..........4 170
I felt my hands trembling.	Would you say you felt this way never, hardly ever, some of the time, or most of the time during the past week?	Never..........1 2218 Hardly ever..........2 487 Some of the time..........3 331 Most of the time..........4 69
I had a fear of dying.	Would you say you felt this way never, hardly ever, some of the time, or most of the time during the past week?	Never..........1 2356 Hardly ever..........2 375 Some of the time..........3 295 Most of the time..........4 79
I felt faint.	Would you say you felt this way never, hardly ever, some of the time, or most of the time during the past week?	Never..........1 2404 Hardly ever..........2 405 Some of the time..........3 272 Most of the time..........4 24

Depression

Statement	Question	Code/Frequency
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	During the past 12 months, was there ever a time when you felt sad, blue, or depressed for two weeks or more in a row?	Yes..........1 664 No..........5 2441

For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	During that time, did the feelings of being sad, blue, or depressed usually last all day long, most of the day, about half the day, or less than half the day?	All day long..........1	1
		Most of the day..........2	190
		About half the day..........3	160
		Less than half the day..........4	15
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	During those two weeks, did you feel this way every day, almost every day, or less often?	Everyday..........1	141
		Almost every day..........2	161
		Less often..........3	42
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	During those two weeks did you lose interest in most things?	Yes..........1	243
		No..........5	59
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	Did you feel tired out or low on energy all the time? (Note: If R asks: "Are we still talking about the same two weeks?" Answer: Yes).	Yes..........1	249
		No..........5	52
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	Did you gain or lose weight Without trying, or did you stay about the same? (Note: If R asks, "Are we still talking about the same two weeks?" Answer: Yes).	Gain..........1	59
		Lose..........2	101
		If volunteered: Both gained And lost weight..........3	2
		Stay about the same..........4	138
		If volunteered: R was on a diet..........5	1
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	About how much did (you gain/ you lose/ your weight change)? (Note: If range given, code midpoint. Round fraction down to the whole number.)	**Weight in Pounds Frequencies**	
		1	1
		2	6
		3	6
		4	8
		5	21
		6	5
		7	4
		8	4
		10	32
		12	4
		14	1
		15	13
		20	23
		25	2

		26	1
		27	2
		30	10
		32	1
		35	3
		40	4
		41	1
		50	3
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	Did you have more trouble falling asleep than you usually do? (Note: If R asks, "Are we still talking about the same two weeks?" Answer: "Yes").	Yes……….1 No……….5	230 71
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	Did that happen every night, nearly every night, or less often during those two weeks?	Every night……….1 Nearly every night……….2 Less often……….3	96 96 37
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	Did you have a lot more trouble concentrating than usual?	Yes……….1 No……….5	263 37
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	People sometimes feel down on themselves, no good, or worthless. Did you feel this way? (Note: If R asks, "Are we still talking about the same two weeks?" Answer: "Yes").	Yes……….1 No……….5	201 101
For the next few questions, please think of the two-week period during the past 12 months when these feelings were the worst.	Did you think a lot about death—either your own, someone else's, or death in general?	Yes……….1 No……….5	180 122