

Health Impact Assessment of Transit-Oriented Development within Nashville's  
Northeast Corridor:  
Rationale and Plan for Community Engagement

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*A Health Impact Assessment (HIA) is defined as “a combination of procedures, methods, and tools by which a policy, project, or program may be judged as to its potential effects on the health of a population and the distribution of those effects within the population (CDC, 2009).*

*The following document describes the process behind planning a Health Impact Assessment for the future transit development (and accompanying urban design) which has been proposed by members of the Nashville Metropolitan Planning Organization for Nashville’s Northeast Corridor along Gallatin Pike and Viet Nam Veterans Highway.*

## **Executive Summary and Overview**

This document outlines the creation of two community engagement pieces intended to enhance the writing of a Health Impact Assessment (HIA) for Nashville’s Northeast Corridor extending from Madison, Tennessee to Gallatin, Tennessee. The HIA will be completed after the implementation of focus groups and survey distributions: these tasks will be accomplished by fall 2011. The HIA will review the effects of the current design of the built environment in three radial areas surrounding proposed transit station sites in Madison, Hendersonville, and Gallatin. The development which we describe as “transit-oriented” is such that it has been designed to complement the use of mass transit as well as active transportation.

The paper which follows provides a general description of the Health Impact Assessment as a tool, the formation of the present study and the relatedness of the task to the Community Development Action program at Vanderbilt. Following these introductions, the paper will then describe the specific locations where the transit-oriented development has been proposed for each community, a brief history of the development of the area, and the demographic characteristics for each community. After the scene has been described briefly, I will then discuss the conceptualization of the man-made elements of the physical community’s design as it relates to public health outcomes, and finally, discuss the proposal for community engagement pieces intended to enhance this work.

It is hoped that the focus groups and community survey will enhance future transit development of the Northeast Corridor.

## **Health Impact Assessment**

### ***What is an HIA?***

The World Health Organization defines a Health Impact Assessment, or HIA, as “a combination of procedures, methods and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” (CDC, 2009). According to the CDC, HIAs can be either voluntary or regulatory processes which can focus on “health outcomes such as obesity, physical inactivity, asthma, injuries, and social equity” (CDC, 2009). As recognized by

multiple health organizations, HIAs are currently not put within a framework that considers a specific set of health criteria; additionally, there is no standard or reliable method for conducting an HIA (Lock, 2000).

Though there is not an agreed-upon rubric for evaluating the effectiveness of an HIA, there is a well-accepted system of conducting the process, including five important steps: screening, scoping, risk assessment, dissemination, and monitoring and evaluation (CDC, 2009). The screening process within the HIA requires the authors of an HIA to assess whether or not an HIA is necessary to evaluate a project, policy, or program. The scoping process, following the screening process, identifies which health effects to consider within the HIA; due to relevance in a particular setting. After deciding which variables are most pertinent to the study, researchers assess risks and benefits by identifying which people may be affected, and how they may be affected. Next, researchers and practitioners develop recommendations for changes to proposals which would promote positive, or, mitigate adverse health effects. In the final step of this process, researchers report or present the results of the study to decision-makers, and also determine the effects of the HIA on the decision in evaluating the HIA process.

### ***Formation of the present study***

For many years, planners within the Nashville Area MPO have been dedicated to finding equitable urban planning solutions for a multitude of communities within the greater Nashville Area. Planners among the MPO were already interested in engaging the community as planning efforts were being discussed for the Northeast Corridor. However, a new goal of studying the health implications of transit design within the built environment was beginning to emerge around a crucial curiosity: how the built environment either creates healthy opportunities, or, amplifies health disparities. One Senior Planner, Leslie Meehan, initially sought the assistance of two graduate interns in the fall of 2009 from the Community Development Action program at Vanderbilt University's Peabody College. These two students, Emily Stewart and Laura Stamm, began conducting a "pilot" HIA for the Northeast Corridor; working with architecture students from the University of Tennessee at Knoxville and Hawkins Partners Consulting in order to design a "healthy" prototypical community within the setting of Madison, Tennessee.

The "pilot" study reviewed the use of the HIA in urban planning, and included literature reviews which assessed the impact of the built environment on personal health outcomes. An online survey was distributed to community members from the Northeast Corridor who had attended public MPO meetings specific to the transit development design. At the conclusion of each public meeting, the participants had been encouraged to fill out a short survey. On this survey, 26 residents from East Nashville, Madison, Hendersonville, and Gallatin responded that they would like to answer additional questions regarding the relationship between the built environment and health, and followed up the meetings by answering questions relating to their personal experience within this context.

Additional respondents were from Goodlettsville, White House, Sylvan Park, North Nashville, and Brentwood. To create a more general picture of the issues along what has been defined by the MPO as the Northeast Corridor, we combined the responses of Madison with East Nashville, Hendersonville, and Gallatin.

The blending of these responses indicated that 25 of 26 of these Northeast Corridor residents actively do things in order to try to be healthy. Fourteen of these people stated that their environment encouraged physical activity; 11 stated that their environment discouraged physical activity. Though the slight majority indicated that generally their built environment was conducive to walking, biking, and the like, it is important to consider that a noteworthy number of respondents did not feel the same way about their environment.

In addition to the information given about the physical environment generally, these respondents were asked about the availability of “healthy” food in their specific community. When asked how easy or difficult it was to buy food in their community, 17 Northeast Corridor community members indicated that it was easy to purchase healthy food, and 9 indicated that it was difficult to purchase healthy food.

At the conclusion of each online survey, the respondents were asked if there were other ways that they felt community health was being affected by the built environment. This question raised specific concerns among some respondents. These concerns included the following: limited [connectivity], not enough sidewalks and bike lanes, widely dispersed neighborhoods, long distance[s] from commercial areas, schools are a long way from students and many with access only by car (Hendersonville); speed limits (specifically 45 MPH plus) and safety, disjointed connector roads, more sidewalks/bicycle lanes [needed], more greenways (Gallatin); no park, sidewalks aren’t wide enough, sidewalks not connected (Madison); urban density, lack of connectivity of public transit, air pollution, and a lack of general walkability (East Nashville).

Though the pilot study generated online survey data as well as recommendations for the future development within the region, the research team was interested in continuing the process of understanding the development implications of future planning efforts on the personal health outcomes of the individuals living in a certain radius of TOD sites in Madison, Hendersonville, and Gallatin.

In April 2010, our team received a grant from the Meharry-Vanderbilt Community Engaged Research Core to pursue this goal of generating more community input regarding future TOD design in each proposed location. The grant funding will support focus groups and survey distribution in these three sites – it is the research team’s hope that these focus groups and surveys will generate genuine discourse on the topic of community health and the built environment.

### ***Health as it relates to the community***

Most pertinent to this study is the discussion of variables which inhibit or encourage healthy community behaviors, as revealed by focus group and survey responses. These variables have been discovered through thorough evaluations of pertinent literature regarding the built environment, and other Health Impact Assessments which have reviewed the impact of relevant independent variables. The research interests of this study include factors which would promote or hinder community members from engaging in active transportation (e.g. walking, bicycling) as part of daily routine. Other issues include accessibility to healthy food destinations, connectivity of streets, green space, air quality, housing, and safety. The purpose of discovering these variables is to engage community voices and to be as comprehensive as possible in writing the Health Impact Assessment. These factors can be evaluated and possibly improved on the community level by conscious planning of transit-oriented development.

### **Summary of Northeast Corridor Transportation Development**

#### ***Transportation plans for Nashville: 2035***

The Northeast Corridor, as defined by the Nashville Area Metropolitan Planning Organization (MPO), is a 30-mile corridor between downtown Nashville and Gallatin, Tennessee. This rapidly growing area is more specifically defined along US 31 (Gallatin Road/Nashville Pike), Interstate 65, and SR 386 (Vietnam Veterans Boulevard), and it generally encompasses areas of East Nashville, Madison, Goodlettsville, Hendersonville, and Gallatin (Nashville Area MPO, 2008). Over the next 25 years, the Metro Nashville area expects to have an additional influx of nearly one million people; therefore, the MPO has made a broad-reaching goal of expanding networks of mass transit opportunities for the metro Nashville area. Additionally, the MPO has made another substantive goal of increasing “active transportation” (i.e. walking, bicycling) choices by assisting in creating healthier, more “walkable” communities and more “connected” streets.

Currently, Hendersonville and Gallatin are experiencing rapid population growth with newer residential and commercial development – which is occurring in less concentrated suburban development patterns (MPO, 2008). The need for transit development is specifically important to this area. According to the Northeast Corridor Mobility Study, (conducted by the MPO over the past few years) in 2004, the Nashville Metropolitan Transit Authority’s route between downtown Nashville and Rivergate Mall was the route with the overall highest ridership – and, in 2007, data showed a “substantial” increase in volume. A 2006 survey showed that 54 percent of MTA transit riders had no working vehicle, and that 74 percent of transit riders had incomes which were less than \$15,000 per year – which would indicate dependence on the MTA system. Most significant to the present discussion, no fixed route bus service exists between Davidson County and the City of Gallatin.

## **Transit-Oriented Development: Locations**

The MPO has focused on “Transit-Oriented Development” in these three outlying communities as a framework to expand service to the Northeast Corridor in the future: Madison, Hendersonville, and Gallatin. Transit-oriented development can be defined as higher-density mixed-use development which is usually within walking distance of transit stations. The Centers for Disease Control defines Transit-Oriented Development, or TOD, as compact, mixed-use development near transit facilities with high-quality walking environments. It is a common assumption that well-designed TOD will encourage active transportation and healthier community environments (CDC, 2009).

The proposed transit station in Madison for what may accommodate a bus-rapid transit (BRT) line is located in the middle of Gallatin Pike, just north of Neely’s Bend Road; and it is suggested that appropriate TOD accompany this and other stations within a small radial area. In Hendersonville, the proposed station for the Greenfield Prototype Area is on SR-386 (Viet Nam Veterans Highway) at the Indian Lake Village Development and just west of the Saundersville Road exit ramp. This Hendersonville development will incorporate slip ramps for the dedicated lanes, providing access to the development. And finally, the new station in Gallatin (proposed as the “end of the line”) is just south of Harris Lane, in-between Harris Lane and the CSX railroad tracks (south of the track is the Gap distribution center). It is possible that other stops will populate the line between the downtown Nashville stop and Gallatin in the future, but the document to follow will focus specifically on the stops between Madison, Hendersonville, and Gallatin. (See Appendix 1 to reference maps for each area of proposed transit-oriented development.) The focus of this paper is in regard to the Transit-Oriented Development surrounding, as well as transit service between, these three targeted transit stops.

### **Profile of the Northeast Corridor**

#### ***History of Madison, Hendersonville, and Gallatin***

Long after initial settlers came to the area once known as Madison Station in the late 1700s, Madison became a center of employment in the mid-20<sup>th</sup> century; and began offering suburban community retailers to supply its residents in 1956 (Discover Madison, 2011). Hendersonville was initially settled in the late 1700s, however, after the impounding of Old Hickory Lake and after the improvements made to Gallatin Road and new development of highway infrastructure in the 1960s, Hendersonville became a more populous area (Takacs, 1992). Gallatin, the county seat of Sumner County, also serves as a bedroom community to Nashville, although numerous industries make their homes here. Within the development of each community, the influence of the automobile is apparent – the use of cars among residents of the Northeast Corridor is quite prevalent.

As of 1960, there more people living in Davidson County than within what was then considered to be “Metropolitan Nashville” (NCDC, 2005). This means

that the majority of citizens in the area were living in the suburbs – and, that cars enabled people to commute between relatively inexpensive houses on less expensive land, neighborhood shopping centers, and industrial centers. As put by a historical account by *The Plan of Nashville*, “People who migrated to the suburbs were exchanging decaying urban neighborhoods for a brand new house, a green lawn, new schools and stores” (2005, p33). No plans which allowed for connectivity between areas were accommodated, as the city and Davidson County were divided by agency of legal authority and funding. In 1963, the conglomerated Metropolitan Nashville-Davidson County government came into its present existence, stabilizing the tax base of Davidson County’s suburbs and urban areas, and reducing the duplication of government services (NCDC, 2005, p. 34). Most appropriate to this paper is the consideration of the negative implications which resulted from a previously disjointed bureaucracy. The new “Metro” government had failed to recognize the implications of land use patterns, and never made it necessary to have development be “compact” or connected (NCDC, 2005, p. 34). The resulting “problem” as we see it today in 2011 is what is referred to as “sprawl.”

### ***Demographics***

In 2008, Madison was reported to have a total population of 35,529 individuals, occupying 15,937 households. Of these individuals, 68.5 percent were white, 21.6 percent were black, 9.2 percent were Hispanic, 1.5 percent were Asian alone, less than one percent were American Indian alone, 5.5 percent reported that they were of some other race, and 2.4 percent reported they were of two or more races. The median household income of Madison in 2008 was \$43,412 (U.S. Census Bureau, 2011).

Hendersonville was home to 46,218 people in 2006; which was a 12.8 percent increase from the 2000 U.S. Census. In 2000, 92.9 percent of residents were white, 4.1 percent were black, 1.7 percent were Hispanic or Latino, 1.1 percent were Asian, and less than one percent of individuals were American Indian, or reported two or more races. The median household income in 1999 for Hendersonville residents was \$50,108 (U.S. Census Bureau, 2011).

Gallatin is smaller than its neighboring communities of Hendersonville and Madison; in 2000, 23,230 people lived here. It was projected at this time that by 2010, 28,677 individuals would be living in Gallatin. The median household given in 2000 for Gallatin was \$34,737, with an estimated per capita income of \$18,550 (U.S. Census Bureau, 2011).

### ***Health Statistics***

Obesity, defined as a Body Mass Index equivalent to or greater than 30, is strongly associated with many chronic health conditions which are on the rise in the U.S. (Frank, Andresen, & Schmid, 2004). The measure of obesity is pivotal to the present topic of study: the calculation relies on the specific measure of weight in kilograms divided by the square of height in meters (Lopez-Zetina, Lee, & Friis, 2006, p.658). As healthcare and chronic health conditions are in the forefront of much public discourse, pertinent to our overall consideration is how

to improve individual health outcomes. Bell and Cohen (2009) purport this profound concept, especially as sedentary lifestyles influence the onset of chronic disease. Making our communities more conducive to active transportation options then holds great potential to foster healthier living.

***What is the health status of individuals in Metro Nashville?***

According to 2009 CDC BRFSS SMART data, Weight classification by BMI for Metro Nashville area residents was as follows: 34 percent were neither overweight nor obese; 38.9 percent were overweight (with a BMI between 25.0 and 29.9), and 27.1 percent were obese (CDC, 2009). Also in 2009, only 20.9 percent of Metro Nashville residents reported that they engaged in 20 or more minutes of vigorous physical activity, three or more days per week. (Nearly 60 percent said they did not take part in 30 or more minutes of moderate physical activity five or more days per week, or vigorous physical activity for 20 or more minutes three or more days per week.)

Nutrition appears to be of concern within the Metro Nashville area; only 27.7 percent of adult residents consume five or more servings of fruits and vegetables per day. According to the U.S. Department of Health and Human Services, it is recommended that one should eat two or more servings of fruit and three or more servings of vegetables each day. This may indicate the need for individual behavior change, but it also may indicate the need for an environment more supportive of the purchasing of fruits and vegetables.

Health conditions such as diabetes, hypertension, high cholesterol, asthma, and mental and physical disabilities affected individuals on a wide scale in 2009; 6.5 percent of residents reported that they had ever been told by a doctor that they had diabetes (non-pregnancy related); 2.6 percent were pre-diabetes/borderline diabetic, 26.3 percent of adults had been told they had high blood pressure (Hypertension awareness), 28.2 percent of adults who had their blood cholesterol checked were told it was high, 6.5 percent of adults had been told they currently have asthma, and 18.4 percent reported that they were limited in any activity because of physical, mental, or emotionally disabled. (6.1 percent reported the need for special equipment to assist with health problems) (CDC, 2009).

**Literature review: The Built Environment and Public Health**

There is perhaps a bit of imagination required to initially see the connection between the “built environment” of sidewalks, streets, and buildings, and, public *health*. It is necessary that we begin to make these linkages, as research shows that many of our health outcomes are indeed a product of our environment.

But, what *is* the “built environment?” Northridge et al. define this concept as “that part of the physical environment made by people for people, including buildings, transportation systems, and open spaces (2003, p.558). Any other element of the environment we see can then be considered the “natural”

environment. Our space has been altered by the choices of planners, engineers, developers, and the like. Choices which have been made to alter physical space are not often done with a more general comprehension of how spaces fit together. Development which ignores the community as a whole often creates disjointed patterns of sidewalks, bike paths, absences of fresh food markets in certain radiuses (and heavy concentrations of them in other locations), neighborhood streets which are secluded by cul-de-sacs, a dearth of healthy and equitable housing stock – and the list goes on. The community is thus designed to promote the use of the automobile – even if just to get to the supermarket around the corner.

The Centers for Disease Control has recognized that “healthy community design” can have positive health outcomes: increasing physical activity, reducing injury, increasing access to healthy food, improve air and water quality, decreasing mental health stresses, strengthening the social fabric of a community, and providing fair access to livelihood, education, and resources (2010). The “urban form” created by transportation planners and city engineers has a great deal to do with the connectivity of streets and the accessibility of walking to local businesses and community organizations. For example, safety, from car traffic beside an arterial highway, or the regularity of walking traffic (Miles, Panton, Jang, & Haymes, 2008) are considered as factors in the decision to commute by foot or car. Net residential density and mixed use zoning also come into play (Frank, Andresen, & Schmid, 2004): those who can walk to a grocery store or to church will perhaps be more likely to make the choice of walking. As much research explores, there is a growing list of factors which are being evaluated to specifically assess the impact of the built environment on physical activity and other healthy behaviors. Dannenberg et al. (2003) write that data shows that the proximity of recreational facilities, street design, housing density, and accommodation for safe pedestrian, bicycle, and wheelchair use play a significant role in promoting or discouraging physical activity. As our transportation infrastructure is increasingly planned for cars rather than pedestrians, the result is a car-dependent, sedentary population. Sedentary lifestyles have serious implications for serious consequences for individual health outcomes (Frumkin et al., 2004, p.90). Conditions such as overweight and type 2 diabetes have become epidemics in the United States.

Dannenberg et al. (2003) have explored neighborhood factors and community level factors which may be relevant to health – Neighborhood-level examples may include front porches, sidewalks, traffic calming measures and green space; Community-level examples may include residential density, housing features, land use mix, quantity and quality of space, connectivity, and transportation systems. Other community-level characteristics of relevant variables related to public health may also include proximity of recreational facilities, street design, housing density, and the accommodations made for safe pedestrian, bicycle, and wheelchair use (Dannenberg et al., 2003).

The level of social capital of a community is strongly affected by the design of the environment, also. Social capital in this case can refer to a

person's network of relationships, trust in others, a shared emotional connection and feeling of membership among people within the community. How might social capital be increased or reduced by the man-made elements which encapsulate a community? "Activity-friendly" communities reduce social isolation by providing opportunities to leave the seclusion of the home in order to interact with other people in informal and formal ways (ICMA, 2003, p.5). Certain physical characteristics enhance this probability for social engagement: Close proximity of residential units (especially when facing another unit), living on a busy street, or having a residence directly connected to major pedestrian paths or meeting areas (Evans, 2003, p.544). Sprawl influences social capital by reducing the opportunity for residents to engage in informal social interaction, restricts the time and energy people have for civic involvement, and segregates groups of ethnicities and incomes into separate and unequal neighborhoods (Frumkin et al., 2004, p.171-173). Research has shown that social capital prolongs life; and, that loneliness and isolation are toxic, and social relationships are health (Frumkin et al., 2004, p.166, p.29).

The amount of social capital perceived by an individual affects mental health, as do other factors pertinent to this study. Housing and neighborhood qualities have an inverse relationship with psychological distress in both adults and children (Evans, 2003, p.537-538). Moreover, people seem to feel better and have improved mental health when they perceive control related to their physical surroundings. Elements such as the presence of tall structures, absence of group meeting spaces, and poor visual surveillance capability reduce feelings of territorial control and ownership – and, these elements also have been associated with both the fear of crime and higher levels of actual crime (Evans, 2003, p.544).

According to Northridge et al. (2003), it is also important to consider the *distribution* of health determinants within and across social groups defined by age, gender, race and ethnicity, class, and sexuality (p.566). There is much literature which explores the effect of the built environment on the health of vulnerable groups. For example, it is likely that low-income and minority children stand to benefit more than their peers from interventions directed at Safe Routes to School and other interventions aimed at encouraging a safer built environment (by more connected sidewalks, traffic calming measures, reduced speed limits in areas of high pedestrian traffic, and more). In areas with high air pollution, asthma is highly prevalent among children especially – as children (particularly with low body weight) have narrower airways and breathe more rapidly than their adult counterparts (Frumkin et al, 2004). The ability to enjoy a healthy environment plays a large role in the obesity epidemic which has "fallen heavily" upon children – more so among African American and Hispanic children than their peers. Overweight children are said to face an increased risk of diabetes, and hyperlipidemia, and perhaps sleep apnea, polycystic ovaries and orthopedic ailments – and are much more likely to become overweight adults (Frumkin et al., 2004). On the other end of the age spectrum, the elderly have a high need for having pedestrian-friendly and safe areas. A younger adult may not consider the implication of having a crosswalk timed for

individuals who are brisk walkers (Frumkin et al., 2004, p.195). The International City/County Management Association suggests that promoting active aging relies on a community's ability to provide safe and walkable streets, a range of transportation options, and land use patterns that permit easy access to services and amenities (2003). Independence among older adults is greatly influenced by being able to engage in "active living," which can be defined as a way of life that integrates physical activity into daily routines" (ICMA, 2003). Older adults sometimes do not walk due to the distance between destinations, difficulty walking, poor sidewalks, a lack of places to rest, or a fear of crime. Therefore, "smart growth" for older adults would include improving and maintaining sidewalks, ensuring safe street crossings, including streetscape amenities such as benches and resting places, signage which is legible, and appropriate lighting for all times of day (ICMA, 2003, p.11).

### **Community engagement: Focus groups, Surveys**

Most pertinent to this study are the discovery of variables which inhibit or encourage healthy community behaviors, as discovered by focus group and survey responses. The research interests of the researchers include factors which would hinder community members from engaging in "active transportation" (i.e. walking, cycling) as part of daily routine. Other issues include accessibility to healthy food destinations, connectivity of streets, green space, air quality, housing, and safety. The purpose of discovering these variables is to engage the voices of the people and to be as comprehensive as possible in the writing of an HIA. The team will utilize Action Research and Community Organizing principles as underpinning concepts within this process.

The types of responses from residents and community members (from Madison, Hendersonville and Gallatin) which this project seeks are related to health impacts of the available transportation options, and the "built environment" of the Northeast Corridor, including the presence or absence of: sidewalks, roads, buildings, homes, et cetera. As this project is intended to inform the development and design of the future Bus-Rapid Transit line which will be implemented in the Northeast Corridor area, the ultimate interest of this project is to discover how the built environment of this region will influence the healthy behaviors of individuals.

### ***HIA Focus Groups***

Focus group participants will be recruited from a variety of locations within each of the three communities. Since the plans of implementing Transit-Oriented Development around a Bus Rapid Transit system have impacts within a local setting, our research team has chosen to use convenience sampling – with special efforts to include voices among vulnerable groups in each community. We will conduct three focus groups, each with approximately 10-15 participants, in the Public Libraries of Madison, then Hendersonville, and finally, Gallatin. Within these focus groups, the moderator, Mary Beth Ikard (Communications Director for the MPO) will request feedback regarding the relationship between

the built environment and general community health concerns. No specific questions will be asked about personal health concerns; the intent is to discover barriers to engaging in healthy activities (i.e. walking, biking, accessing healthy foods, building social capital between fellow community members, et cetera).

The research team will conduct a “Community Tree” exercise in order to make the connection between the built environment and public health outcomes. This activity has been suggested by Jimmy Dills, who serves as the Health Impact Assessment Coordinator for the Metro Nashville Public Health Department – as a way to creatively engage the community in a way which would be constructive to the specific concerns of the HIA. (Please see Appendix 1 to review Focus Group Protocol.)

Findings from the focus group process will clarify the qualitative variables that influence healthy outcomes within each area, and how they may differ across different groups within the Northeast Corridor.

### ***HIA Surveys***

Approximately 1,000 surveys will be distributed among community members in Madison, Hendersonville, and Gallatin. The survey has been designed through collaboration between Jimmy Dills (Metro Health Department), Michael Skipper (MPO), Leslie Meehan (MPO), Yvonne Joosten (Meharry-Vanderbilt Community Engaged Research Core), and Laura Stamm (Vanderbilt Community Development Action). (Please see Appendix 3 to review the survey instrument.) The surveys will be distributed according to GIS maps which have been created for each area with the assistance of Max Baker from the Nashville MPO, Fred Rogers of the Hendersonville Planning Department, and Jim Svoboda of the City of Gallatin Codes/Planning Department. Addresses will be randomly selected from the lists of addresses compiled from these half-mile radial areas (a distance easily accessible by foot, or “active transportation” means) surrounding proposed TOD. A second mailing will be sent two weeks after the initial mailing, in order to reach a higher return rate. It is intended that the surveys will be returned within two weeks of the initial mailing. The research team expects approximately 20 percent of the surveys will be returned. (Please see Appendix 2 to review Survey Instrument.)

Results from the focus group and survey process will discuss the response rate, qualitative and quantitative variables which influence healthy outcomes within the areas of Madison, Hendersonville, and Gallatin, and make comparisons between the proposed TOD sites.

### ***Recommendations based on literature and research***

Based on literature reviews and research, the team intends to create recommendations for transportation design, as well as TOD elements desirable to

the residents in each area. The team intends to build connectivity between these three communities, as well as connectivity to the neighboring communities of Metro Nashville. The future design should build social capital and minimize adverse affects of negative social determinants of health. Perhaps most importantly, the team intends to create a plan which will preserve the positive elements of community in a sustainable fashion.

### **Next steps**

Following the completion of presenting this study to the faculty and students among the Community Development and Action program at Vanderbilt University for review, this plan of the Northeast Corridor HIA will be given to the Nashville Area MPO. It is hoped that the document will provide helpful community input to influence the transit development for the Northeast Corridor.

## Appendix 1: Focus Group Protocol

### Focus Group Script

#### Community Tree Exercise:

- First, I'd like for us to do an exercise which will connect how land use impacts many community issues – and will make connections between our concerns and different components of "Transit-Oriented Development"
- We will use a flip chart and markers.

(The facilitator will draw a large tree on the flip chart, with many roots and branches, including plenty of space around the trunk as well.)

(To get conversation started, the facilitator will ask the following questions)

- How many of you are concerned about your community becoming less affordable for you and your family?
- How many of you wish the environment was better protected- preserving open space and parks and/or better air quality in your neighborhood?
- How many of you are concerned about regional issues such as sprawl and traffic congestion?

The MPO is trying to gain more knowledge about what else it can achieve through future development – such as healthier and more engaged communities.

- Now, let's fill out this community tree to determine what sorts of concerns planning can address!
- Let's start with some concerns about your neighborhood. We identified some of your concerns already, but let's talk a little bit further. What are some concerns that you and your family have in your community?

Write out the community concerns on the branches. *Examples can include traffic, crime, lack of jobs, lack of diversity, poverty, asthma, obesity, heart disease, substance abuse, depression/mental health, injuries (pedestrian, auto, bicycle), diabetes, access to health care (language barriers), etc.*

- Well, there must be causes of these problems. What are causes of some of these concerns, e.g. what causes asthma?

Write out causes on the roots on the tree picture. *Examples can include too many cars, not enough police, not enough jobs, mold in my house, pollution from nearby industry, etc.*

- If we don't understand and address the causes of these concerns, these problems will continue. Oftentimes, we react to the problems that

already exist, but we can address our concerns in a proactive way by planning healthy, safe, and vibrant communities.

- So if you're planning a community- the buildings and services and how land is used- what pieces would make a good transit station area plan? What would you like to see?
- On the bottom, I'm going to reveal the components of a station area plan, like the one that's being developed in your neighborhood. This will provide the base of our tree- because that's what we have to work with. (This refers to a Community Health Tree that was created ahead of time by the facilitator)

Uncover the tree to show the components already written on the bottom.

- Some of the components of a station area plan are: Housing, Transportation, Community Benefits, Public Spaces, Design, Traffic and Circulation.
- How are these concerns and causes linked to planning? For example, in order to address pollution that causes asthma, we must have better air quality. What components of the station area plan are related to having better air quality? Having better air quality can be related to the following elements: traffic and circulation and public space.

Ask the participants to help you make the appropriate connections. Draw lines from roots to branches to make those connections.

- What other concerns outside of our community can be linked to planning and these other local problems? What issues in our community contribute to larger issues at a regional, or even global scale?
- Now, there are a few more questions I'd like for us to discuss while we're here tonight.
- First, do you all live in Madison? Or work in Madison? (Or Hendersonville, Gallatin for second and third focus groups)
- Do you belong to any groups or organizations related to transportation, physical activity, access to healthy food, green environments, etc?
- Are there things you try to do to be healthy? If so, what?
- Do you feel your community's environment encourages or discourages physical activity? How?
- How easy or difficult is it for you to buy healthy food in your community?
- Are there other ways that you feel your community's health is being affected by the built environment?

### COMMUNITY SURVEY

*Thank you for your interest in completing this survey. The information you provide will help to inform community planners who are considering future transportation options for your area.*

*This first set of questions will give a basic understanding of your household and your community.*

#### About your Household:

|  |           |  |
|--|-----------|--|
| <b>How many years have you lived in the Madison area?</b>                      |           |  |
| <b>Including yourself, how many people live in your household?</b>             |           |  |
| <b>&gt;&gt;Of those, how many are <u>under the age of 16 years</u>?</b>        |           |  |
| <b>&gt;&gt;Of those, how many are <u>65 years or Older</u>?</b>                |           |  |
| <b>How many vehicles in working condition are available to your household?</b> |           |  |
| <b>What is the nearest intersection to your residence?</b>                     |           |  |
| Street 1:  | Street 2: |  |

#### About your Community:

| <b>Please rate your community for each of the following:</b> |                       |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
|  | <b>Poor</b>           | <b>Fair</b>           | <b>Good</b>           | <b>Excellent</b>      |
| Friendly Neighbors   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Public Schools   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| A Place to Raise a Family                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Personal Safety from Crime                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Recreational Opportunities                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Number of Community Events                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Proximity to Places you Want to Go                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ease of Walking or Bicycling                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Presence of Litter or Trash                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Landscaping or Natural Beauty                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Amount of Open Space or Parks                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Community Character or Charm                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## Transportation Issues:

*This next set of questions will relate to your transportation activities.*

| <b>How often do you use any of the following types of transportation:</b>  |                          |                       |                       |                       |                       |
|--|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|  | <b>Daily</b>             | <b>Weekly</b>         | <b>Monthly</b>        | <b>Rarely</b>         | <b>Never</b>          |
| Drive Alone in Private Auto  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ride with Someone in Private Auto  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Public Transit Bus or Train  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Walk – For Exercise or Recreation  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Walk – To Go Somewhere   | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Bicycle – For Exercise or Recreation   | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Bicycle – To Go Somewhere  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Taxi or Hired Car  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (Specify _____)  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <p><b>Please indicate the following three factors that would make you more likely to use TRANSIT more often or to start using transit.</b></p> <p><i>Please select your top three options, so that we might target changes; and rank them 1, 2, or 3 with 1 being most important, and 3 being least important.</i></p> |                          |                       |                       |                       |                       |
|  | <b>SELECT ONLY THREE</b> | <b>#1</b>             | <b>#2</b>             | <b>#3</b>             |                       |
| More Direct Service to Where I Want to Go  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| More Frequent Service – Less Wait Times  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| Friendlier Drivers   | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| More Comfortable Seating   | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| Bus Stops Closer to My Home  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| More Bike Racks at Stops   | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| Easier to Walk to and From Bus Stops   | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| If It Were Safer from Crime  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| Other (Specify _____)  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |

**Please indicate the following three factors that would make you more likely to WALK more often to place you want to go.**

| <i>Please select your top three options, so that we might target changes; and rank them 1, 2, or 3, with 1 being most important, and 3 being least important.</i> |                       |                       |                       |
|---|-----------------------|-----------------------|-----------------------|
| <b>SELECT ONLY THREE</b>  | <b>#1</b>             | <b>#2</b>             | <b>#3</b>             |
| More Sidewalks  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| If Sidewalks were in Better Condition   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Safer Intersections (e.g., Crosswalks, Signals, etc.)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Better Automobile Driver Behaviors  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Speed Limits for Cars   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Improved Personal Safety from Crime   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| More Visually Appealing Surroundings  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| More Time in My Personal Schedule   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Less Distance to My Preferred Destinations  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Better Weather Conditions   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Better Knowledge of Area  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (Specify _____)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Please indicate the following three factors that would make you more likely to BICYCLE more often to place you want to go.</b>                                 |                       |                       |                       |
| <i>Please select your top three options, so that we might target changes; and rank them 1, 2, or 3, with 1 being most important, and 3 being least important.</i> |                       |                       |                       |
| <b>SELECT ONLY THREE</b>  | <b>#1</b>             | <b>#2</b>             | <b>#3</b>             |
| More Bike Lanes   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| If Bike Lanes were in Better Condition  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Safer Intersections (e.g., Crosswalks, Signals, etc.)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Better Automobile Driver Behaviors  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Speed Limits for Cars   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Improved Personal Safety from Crime   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| More Visually Appealing Surroundings  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| More Time in My Personal Schedule   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Less Distance to My Preferred Destinations  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Better Weather Conditions   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

|                          |                       |                       |                       |
|--------------------------|-----------------------|-----------------------|-----------------------|
| Better Knowledge of Area | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (Specify _____)    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**Health Issues:**

*We'd also like to know a little more about your health and what is available to you and your community.*

| How would you rate your overall health?   | Poor                  | Fair                  | Good                  | Excellent             |                       |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| How easy or difficult is for you to buy fruits and vegetables in your community?  | Very Difficult        | Somewhat Difficult    | Somewhat Easy         | Very Easy             |                       |
|   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| How would you rate your overall diet?   | Poor                  | Fair                  | Good                  | Excellent             |                       |
|   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| Which of the following three factors would increase your chances of eating healthier?   |                       |                       |                       |                       |                       |
| <i>SELECT ONLY THREE</i>  |                       |                       |                       |                       |                       |
| <i>Please select your top three options, so that we might target changes; and rank them 1, 2, or 3, with 1 being most important, and 3 being least important.</i> |                       | #1                    | #2                    | #3                    |                       |
| If there was a supermarket closer to my house   |                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| If there was healthier food in the grocery stores near my house   |                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| If healthy food was more affordable   |                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| If I had more time to plan out my meals   |                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| If I had more time to shop for healthier food   |                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| If I had better transportation to/ from grocery stores  |                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| Other (Specify _____)   |                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| How often do you do any of the following:   |                       |                       |                       |                       |                       |
|   | Daily                 | Weekly                | Monthly               | Rarely                | Never                 |
| Eat out or Eat Fast Food  | <input type="radio"/> |
| Visit a convenience store or quick market   | <input type="radio"/> |
| Visit a full grocery or supermarket   | <input type="radio"/> |
| Visit a farmer's market or fruit stand  | <input type="radio"/> |
| Eat a home-cooked meal at home  | <input type="radio"/> |

|  |  |
|--|--|
| <b>In the past year, how many times have you visited a medical doctor or emergency room?</b> |  |
|--|--|

**About You:**

Please remember that this survey will remain anonymous – None of this information will ever be linked to your name. We are just interested in doing a good job of representing your community.

|  |                       |
|--|-----------------------|
| <b>What is your Age?</b>                                       |                       |
| <b>What is your Gender?</b>                                    | M      F              |
| <b>Are you of Hispanic Ethnicity?</b>                          | Y      N              |
| <b>Which best describes your race?</b>                         |                       |
| White/ Caucasian   | <input type="radio"/> |
| Black/ African American  | <input type="radio"/> |
| Asian  | <input type="radio"/> |
| Pacific Islander   | <input type="radio"/> |
| Native American  | <input type="radio"/> |
| Other  | <input type="radio"/> |
| <b>What is your estimated annual <u>Household</u> Income ?</b> |                       |
| Below \$10,000 per year  | <input type="radio"/> |
| Between \$10,000 and \$25,000                                  | <input type="radio"/> |
| Between \$25,000 and \$50,000                                  | <input type="radio"/> |
| Between \$50,000 and \$75,000                                  | <input type="radio"/> |
| Between \$75,000 and \$100,000                                 | <input type="radio"/> |
| More than \$100,000  | <input type="radio"/> |

- Bell, J., Cohen, L., Polan, S., Kolian, T., Malekafzali, S., Litman, T., Handy, S., Ross, C.L., Swanstrom, T., Pothukuchi, K., Wallace, R., Srikantharajah, J, & Mikkelsen, L. (2009). *Healthy, Equitable Transportation Policy: Recommendations and Research*. Oakland, CA: PolicyLink.
- Centers for Disease Control (2009). Health Impact Assessment. Retrieved February 19, 2011 from <http://www.cdc.gov/healthyplaces/hia.htm>
- Centers for Disease Control (2010). Designing and Building Healthy Places. Retrieved February 5, 2011 from <http://www.cdc.gov/healthyplaces/>
- Dannenberg, A.L., Bhatia, R., Cole, B.L., Heaton, S.K., Feldman, J.D., & Rutt, C.D. (2008). Use of Health Impact Assessment in the U.S.: 27 Case Studies, 1999-2007. *American Journal of Preventive Medicine*, 34(3), 241-256.
- Dannenberg, A.L., Jackson, R.J., & Frumkin, H. (2003). The impact of community design and land-use choices on public health: a scientific research agenda. *American Journal of Public Health*, 93, 1500-1508.
- Discover Madison, Inc. (2011). Madison, Tennessee: A community rich in history. Retrieved March 9, 2011 from [http://www.discovermadisontn.com/Discover\\_Madison,\\_Inc./Madison,\\_TN\\_History.html](http://www.discovermadisontn.com/Discover_Madison,_Inc./Madison,_TN_History.html)
- Evans, G. (2003). The built environment and mental health. *Journal of Urban Health*, 80, 536-555.
- Frank, L. D., Andresen, M. A., & Schmid, T. L. (2004). Obesity relationships with community design, physical activity, and time spent in cars. *American Journal of Preventive Medicine*, 27, 87-96.
- Frumkin, H., Frank, L., & Jackson, R. (2004). *Urban Sprawl and Public Health*. Washington, DC: Island Press.
- International City/County Management Association (ICMA). (2003). Active living for older adults: Management strategies for healthy and livable communities, E-43140. [bookstore.icma.org](http://bookstore.icma.org).
- Jackson, M. I. (2008). *Model City blues: Urban space and organized resistance in New Haven*. Philadelphia: Temple University Press.
- Lock, K. (2000). Health impact assessment. *British Medical Journal*, 320(7246), 1395-1398.
- Lopez-Zetina, J., Lee, H., & Friis, R. (2006). The link between obesity and the built environment. Evidence from an ecological analysis of obesity and vehicle miles of travel in California. *Health & Place*, 12, 656-664.

- Madison Rivergate Chamber (2008). About our community: Demographics. Retrieved February 6, 2011 from <http://www.madisonrivergatechamber.com/exploremadison/demographics.html>
- Miles, R., Panton, L. B., Jang, M., & Haymes, E. M. (2008). Residential context, walking and obesity: Two African-American neighborhoods compared. *Health & Place*, 14, 275-286.
- Metro Nashville Police Department. (2008). Crime Statistics by Zip Code, 2008. Retrieved February 20, 2011 from [http://www.police.nashville.org/docs/stats/2008\\_Annual\\_UCR\\_by\\_Zipcode.pdf](http://www.police.nashville.org/docs/stats/2008_Annual_UCR_by_Zipcode.pdf)
- Molotch, H. L. (1993). The political economy of growth machines. *Journal of Urban Affairs*, 15(1), 29-53.
- Nashville Area Metropolitan Planning Organization (2008). Northeast Corridor Mobility Study. Retrieved February 1, 2011 from <http://www.nashvillempo.org/northeast.html>
- Nashville Civic Design Center (2005). *The Plan of Nashville: Avenues to a Great City*. Nashville: Vanderbilt University Press.
- North American HIA Practice Standards Working Group (2009). Practice Standards for Health Impact Assessment (HIA), Version 1. Available at: [www.sfphes.org](http://www.sfphes.org).
- Northridge, M. E., Sclar, E. D., & Biswas, P. (2003). Sorting out the connections between the built environment and health: A conceptual framework for navigating pathways and planning healthy cities. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 80, 4, 556-568.
- Peet, R. & Hardwick, E. (2009). *Theories of development* (2<sup>nd</sup> ed.). New York, NY: The Guilford Press.
- Reason, P. & Bradbury, H. (2006). *Handbook of Action Research: Concise paperback edition*. London: Sage Publications.
- Takacs, Timothy L. (1992). *The city by the lake: a history of Hendersonville, TN, 1780-1969*. Baltimore, MD: Gateway Press.
- U.S. Census Bureau. (2011). State and County QuickFacts: Nashville-Davidson (balance), Retrieved March 3, 2011 from <http://quickfacts.census.gov/qfd/states/47/4752006.html>
- U.S. Department of Health and Human Services (2009). HHS HealthBeat. Retrieved February 20, 2011 from <http://www.hhs.gov/news/healthbeat/2009/12/20091202a.html>

U. S. Department of Housing and Urban Development (2010). Housing Problems of Low Income Households. Retrieved February 20, 2011 from <http://www.huduser.org/tmaps/LI-household/chas.html>

World Health Organization (2011). Health impact assessment. Retrieved February 5, 2011 from <http://www.euro.who.int/en/what-we-do/health-topics/environmentalhealth/health-impact-assessment>.