

# North Yahara Future Urban Development Area Health Impact Assessment

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## Executive Summary

Just like individual and population health, the health of a community is multifaceted and complex. Healthy community design is a comprehensive strategy for shaping and organizing our communities, taking into account the myriad factors, such as policies, plans, and programs, which affect physical and mental health and social well-being. Health Impact Assessment (HIA) are one way to help shape and organize our communities for health, focusing on the complicated intersection between health and social, economic and environmental factors in a systematic way, to see how various policies, plans and programs may positively and/or negatively affect health. One important advantage of HIA is that it can pinpoint and focus on the needs of disadvantaged populations, thus attempting to address some of the health disparities in a community.

The Wisconsin HIA Collaborative, the project lead, in conjunction with Capital Area Regional Planning Commission (CARPC) conducted this HIA in three communities in Dane County, Wisconsin (the Village of DeForest, Windsor, and Vienna). The Wisconsin HIA Collaborative is currently composed of non-profits, academic institutions, government agencies, and residents. The Wisconsin Public Health Association (WPHA) HIA Section, established in March 2011, has played a key role in convening and tracking Wisconsin HIA efforts; this was the first HIA conducted by the Section and will inform future HIAs conducted by the group. The other partner in this HIA process, CAPRC, was created in 2007 and is charged with the duty of preparing and adopting a master plan for the physical development of Dane County, and maintaining a continuing area wide water quality management planning process in order to manage, protect and enhance the water resources of the region, including consideration of the relationship of water quality to land and water resources uses.

The six main steps of an HIA were addressed in this rapid HIA process, though because the HIA is a demonstration project, some steps were addressed differently than a traditional HIA. Those steps include: Screening, Scoping, Assessment, Recommendations, Reporting and Monitoring & Evaluation.

During the Screening phase, the goals of the project were outlined, and background research was conducted on the policies being addressed in the HIA. These policies focused mainly on the FUDA process and alternatives and the Capital Regional Sustainable Communities Initiative.

The Scoping phase, due to time constraints, moved forward with the information already gathered. Scoping meetings were held during which the pathway diagram with prioritized health indicators and research question tables were generated. It was at this point

that the project focus prioritized the aging populations and physical activity and obesity as important health issues.

During the Assessment phase, research questions were developed based on the prioritized health areas outlined in the Scoping phase. Despite data limitations both in existing conditions of various health indicators and in lack of information available regarding the three original scenarios, the scenario that best fit each health determinant was discussed and a comprehensive impact analysis is provided ranking each scenario against the various health determinants. Based on these rankings, Scenario C (Compact Plan), ranked most highly when graded based on health determinants. The final impact analysis was determined based on the recommended hybrid scenario which was derived from community feedback and created by the steering committee. The recommended hybrid scenario will likely enhance public health through its denser land use plans.

The Recommendations chosen were prioritized based on the specific health issues the communities involved were most interested in addressing: aging populations and physical activity and obesity. The Recommendations were tailored to address the plans outlined in the recommended hybrid scenario and include the following (for full Recommendations, see pg. 54):

- ⊕ *Physical Activity – Pedestrian Walking:* In order to both encourage and protect the safety of pedestrians, it is recommended that sidewalks be incorporated into any redevelopment and new development plans, as well as being integrated into already existing neighborhoods.
- ⊕ *Physical Activity – Bicyclists:* In order to both encourage and protect the safety of bicyclists, it is recommended that designated bike lanes, bike sharrows and bike paths be integrated into the plan.
- ⊕ *Physical Activity – Aging Population:* To facilitate aging in place and encourage physical activity of senior citizens, walking paths should be created that incorporate the needs of seniors such as frequent benches for resting, water fountains for rehydrating, and shade trees to protect from the sun.
- ⊕ *Physical Activity & Social Cohesion:* Ensure that as part of the hybrid scenario, social gathering places and open spaces for recreational use are included in the design.
- ⊕ *Access to Healthy Foods:* The creation of a local food council could encourage more frequent farmers' markets with more local vendors, increasing access to healthy local foods.

The HIA report will be disseminated to public health professionals and will be through CAPRC's brochures, posters and public community meetings. The HIA section will create and disseminate a PowerPoint presentation and brief handout to the public through the Wisconsin Public Health Association (WHPA) and its HIA website. The report will be made available to stakeholders as well as the general public who will have ample time to review and comment.

Because this HIA was a demonstration project, the Monitoring and Evaluation steps are recommendations rather than having been conducted as they would have been if this had been conducted as a traditional HIA.

The HIA process helped shape and inform these communities' policies, plans, and programs for future growth and land use plans with a focus on health. The HIA process was able to accomplish this by looking at the complicated intersection between health and social, economic and environmental factors in a systematic way. The HIA process also provided these communities with the ability to focus on specific health, aging populations and physical activity and obesity issues, and address health disparities.

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## 1. Introduction: The Relationship between Health and Community Planning

The U.S. Department of Health and Human Services *Healthy People 2010* report describes a healthy community as one that is, “designed and built to improve the quality of life for all people who live, work, worship, learn, and play within their borders,” and in which there are a variety of options available that are healthy, accessible and affordable (CDC, 2009). Healthy community design is a comprehensive strategy for promoting public health and the creation of healthy communities (CDC, 2009). Healthy community design accomplishes this goal through planning, designing, developing, revitalizing, and building our communities with a lens towards health (CDC, 2009). Population health can be improved through healthy community design when comprehensive planning aims to improve physical and mental health, and social well-being.

Health Impact Assessment (HIA) has strong potential to promote healthy community design by sustainably integrating health factors into decision-making processes and fostering multidisciplinary, nontraditional partnerships. According to the International Association for Impact Assessment, an HIA is formally defined as a “combination of procedures, methods and tools that systematically judges the potential and sometimes unintended effects of a proposed project, plan or policy on the health of a population and the distribution of those effects within the population” (Human Impact Partners, 2006). HIA is a multi-step process that draws upon community input, prioritizes health concerns using multiple criteria, and utilizes data to project the health implications of a decision on a population and the distribution of impacts within a community (Human Impact Partners, 2006). HIA offers a flexible framework for timely application to inform proposed policies, plans or projects prior to their execution, placing an emphasis on multidisciplinary, non-traditional partnerships (e.g., land use planning, transportation, business, and environmental experts) and stressing consideration of vulnerable populations and health equity (Human Impact Partners, 2006). Based on the synthesis of the best available evidence, HIA then disseminates recommendations or mitigation strategies to ameliorate the negative and bolster the positive elements of a proposed policy, plan or project (Human Impact Partners, 2006). Finally, HIA entails monitoring and evaluating the utility and influence of the methodology on the decision-making process and health outcomes (Human Impact Partners, 2006).

The root causes of poor health are complex and extend beyond healthcare to a variety of community contextual factors. The UW Population Health Institute estimates that 50% of modifiable health determinants pertain to the social, economic, and environmental context (What Works for Health, 2010). If Wisconsin’s communities are to reduce chronic diseases, promote physical activity, secure access to basic community resources and eliminate health inequities, we must address the complicated intersection between health and social, economic,

and environmental factors. HIA, given its ability to look at complex issues in a systematic way, can address this need. With increased consideration of health factors in decision-making processes, many of the root causes of poor health outcomes and health inequities will begin to be addressed at the community contextual level, which can then have a significant impact on population health.

A Wisconsin HIA Collaborative has been in development and is currently composed of non-profits, academic institutions, government agencies, and residents. This project builds on recent HIA-related momentum in Wisconsin, moving the state closer to increasing health perspectives in decision-making processes and building capacity among local community leaders who can advocate for public health as a priority early in decision-making processes. The Wisconsin Public Health Association (WPHA) HIA Section is the project lead for this HIA.

The WPHA HIA Section was established in March 2011 and has played a key role in convening and tracking Wisconsin HIA efforts. This project is the first HIA conducted by the Section and will inform future HIAs conducted by the group.



## 2. Community Context

The communities participating in this project include the Village of De Forest, Town of Vienna, and Town of Windsor. All three communities are in Dane County, Wisconsin.

Community Information	Village or Township		
	DeForest	Vienna	Windsor
<b>Latitude &amp; Longitude</b>	43.25 N & 89.35 W	43.25 N & 89.41 W	43.22 N & 89.34 W
<b>Zip Codes</b>	53532, 53598	53911, 53529, 53597, 53532	53598, 53532, 53590
<b>2009 Population</b>	8,500	1,404	5,883
<b>Elevation</b>	884 feet	706 feet	902 feet
<b>Land Area</b>	4.83 sq miles	35.6 sq miles	3.17 sq miles
<b>Population Density</b>	1863 people per sq mile	41 people per sq mile	889 people per sq mile
<b>Estimated household income (2009)</b>	\$62,379 (WI \$49,993)	\$70,317 (WI \$49,993)	\$66,994 (WI \$49,993)
<b>Estimated per capita income (2009)</b>	\$27,007	\$31,432	\$29,316
<b>Racial Make-up (2000 data)</b>			
Total	7,368	1,294	5,286
White alone	6,935	1,278	5,087
Black alone	108	5	24
Hispanic	161	4	61
Two or more races	81	5	46
Asian alone	59	1	49
American Indian	20	1	17
Other	4	0	2
Minority % of total	5.9%	1.2%	3.8%
<b>Educational attainment (Population 25 yrs and over)</b>			
High school or higher	92.1%	92.6%	94.7%

Bachelor's degree or higher	24.7%	17.2%	31.2%
Graduate or professional degree	5.9%	3.7%	9.0%

(City-Data.com)

## 3. HIA Process

### 3.1 HIA Benefits

Health Impact Assessment can provide a mechanism for different sectors to consider potential positive and negative health impacts of decisions on communities and populations. HIA can help to advance the well-being of all individuals, by improving community health and focusing on the needs of disadvantaged populations (Gostin & Powers, 2006).

HIA was founded on the core values of democracy, equity, sustainable development, and the ethical use of evidence. In addition to clear implications for improving decision-making, particularly as decisions relate to health promotion and protection, HIA also improves evidence, raises awareness of policy-makers and the general public, provides a tool for cross-sector partnerships, and enhances the participatory nature of decisions (National Research Council “Improving the Health in the United States: the Role of Health Impact Assessment 2011). There are six main steps to an HIA process are outlined below.

- *Screening* - determines the added value and the potential impact of conducting an HIA
- *Scoping* - determines the focus of the HIA, including deciding on related indicators and research questions
- *Assessment* - gather information on the existing conditions and potential health impacts related to the proposed plan
- *Recommendations* – develop relevant and reasonable recommendations based on information gathered during assessment to avoid, minimize, or mitigate adverse effects and to optimize beneficial ones
- *Reporting* – disseminates the recommendations and/or mitigation strategies to decision-makers, stakeholders, and to community members
- *Monitoring* - evaluates the ways in which the HIA recommendations impact the proposed plan’s implementation, the process in which the HIA is conducted and the effect the results has on health outcomes

While there are varying degrees in which HIA’s are implemented in communities, this HIA was performed as a “rapid” HIA over the course of two months.

### 3.2 Health Equity

Addressing equity concerns within a HIA helps in identifying and responding to the requirements and needs of diverse communities within populations being served. HIA provides the opportunity to assess health equity concerns and to develop and implement measures to mitigate or eliminate negative health and maximize positive health opportunities for vulnerable and marginalized groups. These communities identified that they are particularly concerned about potential impacts on the aging population.

## **4. HIA Process: Screening**

The goals of this project are to: conduct a rapid HIA to assess potential impacts of the Future Urban Development Area (FUDA) alternate scenarios, provide recommendations to the community steering committee, and to disseminate this project as a case study to inform future partnerships between community planners and public health in Wisconsin.

### **4.1 Background of Policy**

#### **4.1.1 FUDA Process and Alternatives**

The Capital Area Regional Planning Commission (CARPC) was created in 2007 by Wisconsin Governor James Doyle. The creation was requested in the form of adopted resolutions by local units of government in Dane County representing over 87% of the population and equalized property valuation in the county. The territory of the CARPC is Dane County and the cities and villages with incorporated areas in Dane County. The Commission is composed of thirteen Commissioners appointed by the Mayor of the City of Madison (4), the Dane County Executive (3), the Dane County Cities and Villages Association (3), and the Dane County Towns Association (3). The Commission is charged with the duty of preparing and adopting a master plan for the physical development of the region, and maintaining a continuing area wide water quality management planning process in order to manage, protect, and enhance the water resources of the region, including consideration of the relationship of water quality to land and water resources and uses.

#### **4.1.2 Capital Region Sustainable Communities Initiative**

Last fall, the U.S. Department of Housing and Urban Development (HUD) awarded the Capital Region a \$2 million, three-year Sustainable Community Regional Planning Grant (SCRPG). The Sustainable Communities is a federal partnership initiative between the HUD, the Department of Transportation, and the Environmental Protection Agency (<http://www.epa.gov/smartgrowth/partnership/>). Twenty-seven governmental and private entities came together as Capital Region Sustainable Communities (CRSC) to successfully compete for these grant funds. CARPC serves as the lead agency for the CRSC. Recognizing that regional challenges - healthy environment, mobility, economic opportunities for all, and quality of life - require collaborative and integrated approaches, (CRSC) fosters regional collaboration, conducts planning and pursues demonstration projects for sustainable communities. One of the major projects is CARPC's Future Urban Development Area (FUDA) planning.

The intent of FUDA planning is to protect vital natural resources, promote efficient development, and preserve farmland through cooperative planning for long-term growth. The FUDA plans shall also consider other factors including the impacts on natural and built systems, the efficient use of land including urban densities, and the ability to efficiently provide services to support the development and farmland preservation planning. Though the grant specifies health as a key priority, health and public health partners have not been formal partners.

After months of conversations with CARPC staff, the FUDA plans emerged as an opportunity to collaborate with public health. A rapid HIA would add value to the FUDA process by bringing a health lens to the table. In addition, it would be feasible based on the number of people willing to contribute time to conduct the HIA. A local steering committee acts as the decision-maker in determining the scenario that would eventually be selected. After a brief presentation to the FUDA community steering committee, we received the go-ahead to conduct the rapid HIA.

## 5. HIA Process: Scoping

By the time the decision was made to include an HIA in the FUDA process, CARPC had been working with the community for over a year. During this time they had established a steering committee and conducted surveys to better understand the desires of the community. The information gathered from the steering committee and the community surveys informed the scoping process for the rapid HIA.

Though more in-depth community engagement would be ideal, due to time constraints the HIA team, including CARPC staff and members of the WPHA HIA Section, decided to move forward with the information already gathered.

### 5.1 Scoping Meeting

The Scoping Meeting to determine vulnerable populations, decide health pathways, and identify research questions occurred in February 2012. Present at this meeting were three CARPC staff and five WPHA HIA Section members. The process was informal and was informed by the knowledge the CARPC staff had of the community, work to date done by the CARPC team related to land use indicators, and information gathered by WPHA HIA Section members related to comprehensive planning and HIA. Much of the information gathered were resources and reports prepared by the Minnesota Department of Health.

The pathway diagram and research question table generated represents prioritized health areas. A broad overview of the potential links to health of the FUDA plan can be found in Appendix 1, pg. 70. The health areas included in the pathways are largely based on areas CARPC was considering and areas identified in previous related work done by the Minnesota Department of Health. Based on the knowledge of the community, CARPC staff felt strongly about prioritizing pathways that would impact the aging population and physical activity and obesity. Three alternatives would be compared for the assessment phase: (A) “Adopted Plans” reflecting current community comprehensive plans and are of medium sprawl, (B) “Dispersed Character” which includes the most sprawl of the three plans, and (C) “Compact Character”.

CARPC was already doing a significant amount of assessment and modeling regarding related impacts of each of the alternatives. In order to complement this work, the HIA team decided to conduct literature reviews to link existing CARPC indicators to health and then to fill in the gaps with existing data sources related to the two priority areas of aging populations and physical activity and obesity.

## 5.2 Economic Determinants

### Links to Health: Job Access

People of low socioeconomic status are more likely to suffer economic marginalization. Areas concentrated with low-income populations are also likely to suffer a migration of jobs, increasing the rate of unemployment in such populations (Giles & Liburd, 2007). Low income earners are also known to have lower perceived control over life events, resulting in higher levels of stress. This, coupled with a lack of resources to cope with stressful events, including lack of access to adequate health care, may result in such populations reverting to coping mechanisms which may consist of risky behaviors, such as alcoholism or smoking, which could adversely affect both mental and physical health (MMWR, 2003).

Negative health outcomes themselves can have severe impacts on economic development, since they can lead to economic inactivity, loss of productivity and loss of income due to ill health (Voskuil, Palmersheim, Glysch, & Jones, 2010). Providing opportunities for sustainable business growth and industrial diversity may bring new jobs to the area and thus aid in attaining a better quality of life for insecurely employed and low income earners living in the areas under consideration (Minnesota DOH, 2011).

Town	Current Employment and Poverty Conditions
DeForest	<ul style="list-style-type: none"><li>⊕ Unemployment in March 2011: 5.3%, (WI 8.1%)</li><li>⊕ Percentage of residents living in poverty in 2009: 4.9%</li><li>⊕ Workers who live and work in this village: 933 (22.5%)</li></ul>
Vienna	<ul style="list-style-type: none"><li>⊕ Unemployment in March 2011: 5.3%, (WI 8.1%)</li><li>⊕ Percentage of residents living in poverty in 2009: 3.3%</li><li>⊕ Workers who live and work in this village: n/a</li></ul>
Windsor	<ul style="list-style-type: none"><li>⊕ Unemployment in March 2011: 5.3%, (WI 8.1%)</li><li>⊕ Percentage of residents living in poverty in 2009: 12.2%</li><li>⊕ Workers who live and work in this village: n/a</li></ul>

The reason economic indicators were not included in this HIA was because the information CARPC will provide in their analysis will cover this area. We did not feel an additional analysis would add value. However, we included to information regarding the link to health so that it is clear that economic factors do shape health. In the future, considering the current employment and poverty conditions in each of the respective areas, as well as the impact of job access on health outcomes may be useful for the community, therefore the following research questions to assess current job opportunities in the area are provided.

### **Research Questions: Employment, Job Access and Economic Conditions**

1. What is the current level and security of employment in the area?
2. What is the proportion of area residents who are employed?
3. What is the proportion of area residents living in relative or absolute poverty?
4. Are there any hazardous employment conditions/work environments in the area?
5. What are the current employment quality or job benefits in the area?
6. Which share of jobs in the area meet health supporting criteria: self-sufficiency incomes, paid sick leave, health insurance, etc.?
7. What is the level of industrial diversity and resilience in the area?
8. What is the cost of new infrastructure?
9. What is the cost of including additional civic amenities?
10. What are the costs of public works/road maintenance?
11. What is the cost of emergency services?
12. What is the tax revenue in the area?
13. What will the potential cost savings to school districts be as a result of walking not bussing?
14. Do the FUDA plans promote economic opportunities for low income and underemployed or insecurely employed individuals?
15. What is the current consumer expenditure in the area and how will this be impacted by the FUDA plans?

(Adapted from CDPH, 2010, p. 14, 27)

### **5.3 Pathway diagram**

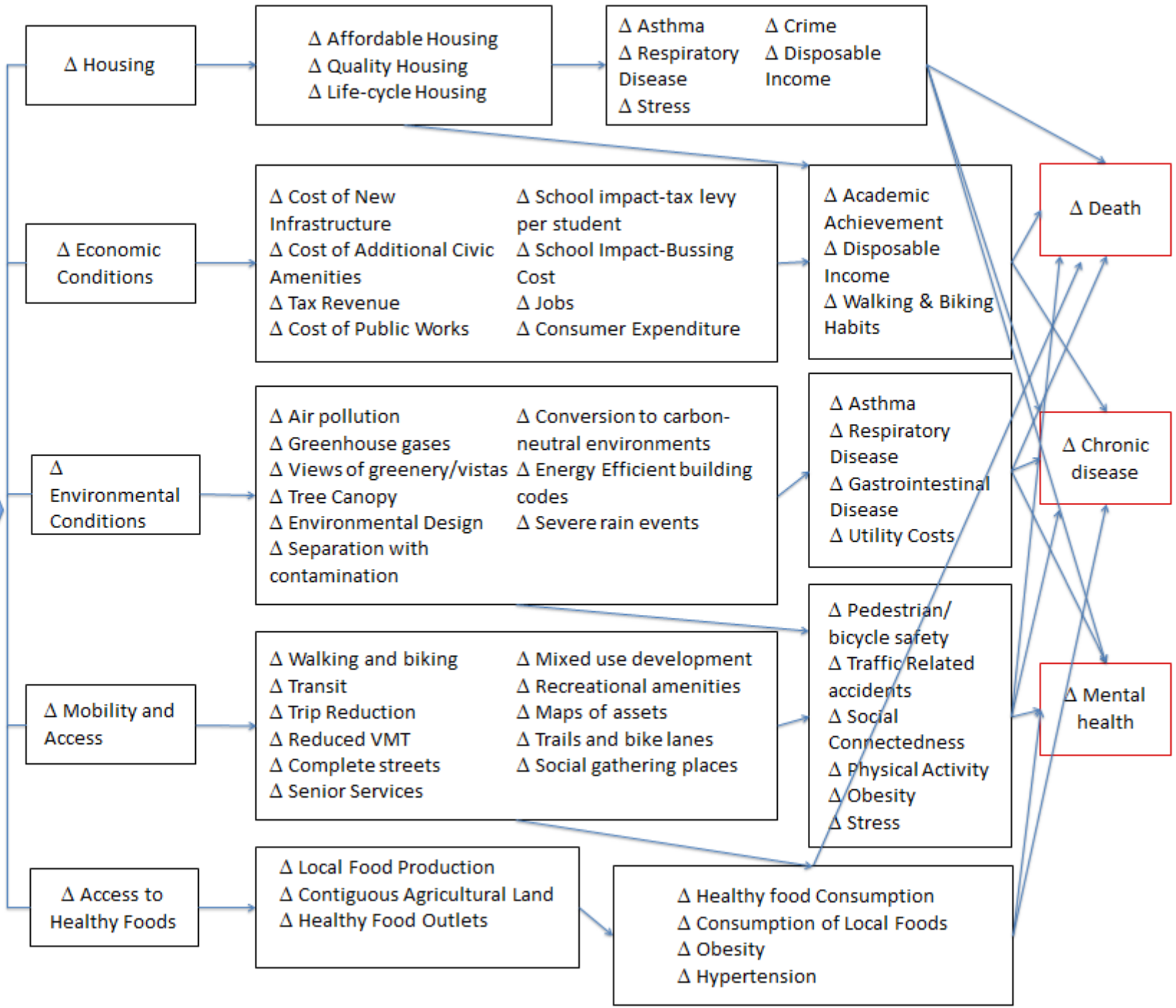
Scoping pathway diagram on following page



**A: Adopted Plans**

**B: Dispersed Character**

**C: Compact Character**



## 5.4 FUDA HIA Scope

Baseline Conditions				
Existing Conditions	Impact Research Questions	Indicators	Data Sources/ Methods	Notes
What are the existing demographics of the area?	How will the FUDA alternative plan impact the demographics of the area?	Age	CARPC	*Community has a particular interest in elderly population
		Income	CARPC	
		Employment	CARPC	
		Race/Ethnicity	CARPC	
What is the existing health status of the area?	How will the FUDA alternative plan impact the health status of the area?	Overweight/obesity	DPH	*Community Interest
		Common diseases	DPH	
		Health Insurance	DPH	
		Physical Activity	DPH	*Community Interest
		Elder Health	DPH	*Community Interest
		Mental Health	DPH	
		Social Cohesion	DPH	
		Respiratory diseases	DPH	
		Emergency Department data	DPH	
		Crime	DOC	

Baseline Conditions				
Existing Conditions	Impact Research Questions	Indicators	Data Sources/ Methods	Notes
		Traffic Related Injury	IRC	

Health Priority: Aging Populations				
Existing Conditions	Impact Research Questions	Indicators	Data Sources/ Methods	Notes
What is the current status of housing availability in the area?	How will the FUDA alternative plan impact housing availability?	Affordable housing (MN)	CARPC	Affordable housing goal
		Quality housing (lead, air quality, temperature, humidity)	DPH	
		Life-cycle housing (Douglas)		Town homes, senior housing, apartments, and rental unites
What are the current environmental (broadly defined) conditions of the area?	How will the FUDA alternative impact the area environmentally (broadly defined)?	Air pollution	CARPC	
		ED visits related to Asthma	DPH	
		Greenhouse gas	CARPC	
		Climate Change (CC) and allergic diseases	DPH	
		Developments have views of greenery/vistas for mental health (Douglas)		

**Health Priority: Aging Populations**

Existing Conditions	Impact Research Questions	Indicators	Data Sources/ Methods	Notes
		Tree canopy preservation (MN)	CARPC	
		Energy efficient building codes (LEED)	Local ordinances	
		Severe rain events or increased precipitation (MN) Storm water Generated (CARPC)	CARPC	
		Transit	CARPC	Portion of new residents within walkable (1/4 mile) distance to “high capacity” transit stop
		Trip Reduction	CARPC	Trips reduced due to proximate land uses
		Reduced VMT	CARPC	Reduction in VMT due to reduced trips
		Complete streets, shared streets, and traffic calming (Douglas)	Local ordinances	
		Senior Services (Douglas)		Hospitals, healthcare facilities, churches, shopping malls, and community centers
		Transit Oriented Development (MN)	CARPC	

<b>Health Priority: Aging Populations</b>				
<b>Existing Conditions</b>	<b>Impact Research Questions</b>	<b>Indicators</b>	<b>Data Sources/ Methods</b>	<b>Notes</b>
		Mixed Used Development (MN)	CARPC	
		Social Interaction or gathering places (MN)		
What is the current access to healthy foods in the area?	How will the FUDA alternative impact the area's access to healthy food?	Local food production (MN)		Community gardens, protection of agricultural land
		Contiguous Ag land	CARPC	
		Healthy Food Outlets	DPH	

<b>Health Priority: Physical Activity and Obesity</b>				
<b>Existing Conditions</b>	<b>Impact Research Questions</b>	<b>Indicators</b>	<b>Data Sources/ Methods</b>	<b>Notes</b>
What are the current environmental (broadly defined) conditions of the area?	How will the FUDA alternative impact the area environmentally (broadly defined)?	Air pollution	CARPC	
		ED visits related to Asthma	DPH	
		Greenhouse gas	CARPC	
		Developments have views of greenery/vistas for mental health (Douglas)		

**Health Priority: Physical Activity and Obesity**

Existing Conditions	Impact Research Questions	Indicators	Data Sources/ Methods	Notes
		Tree canopy preservation (MN)	CARPC	
What is the current state of mobility and access in the area?	How will the FUDA alternative impact the area's mobility and access?	Walking and Biking	CARPC	Portion of new residents within walkable (1/4mile) and bikable (2 miles) distance to one or more common destinations (schools, park, grocery store, employment)
		Trails and bike lanes	DPH	
		Pedestrian/bicycle safety (MN)		
		Trip Reduction	CARPC	Trips reduced due to proximate land uses
		Reduced VMT	CARPC	Reduction in VMT due to reduced trips
		Complete streets, shared streets, and traffic calming (Douglas)	Local ordinances	
		Maps of large recreational facilities, community gardens, schools, large parks and open space, trails and bike lanes (Douglas)		Will the final plan include this? Checklist
		Transit	DPH	
		Transit Oriented Development	CARPC	Transit: Portion of new residents within walkable (1/4 mile) distance to

**Health Priority: Physical Activity and Obesity**

Existing Conditions	Impact Research Questions	Indicators	Data Sources/ Methods	Notes
		(MN)		“high capacity” transit stop
		Mixed Used Development (MN)	CARPC	
		Social Interaction (MN)		
		Gathering places and recreational amenities (MN)	DPH	
What is the current access to healthy foods in the area?	How will the FUDA alternative impact the area’s access to healthy food?	Local food production (MN)		Community gardens, protection of agricultural land
		Contiguous Ag land	CARPC	
		Healthy Food Outlets	DPH	

## 6. HIA Process: Assessment

Building off of work completed in the Scoping Phase, research questions were developed based on the prioritized health areas to begin the Assessment Phase. To answer the research questions the following work plan was drafted.

Tasks	2012				
	February	March	April	May	June
Group Meetings				→	
Existing Conditions Data Collection	→				
Literature Review	→				
Data and Literature Synthesis		→			
Impact Analysis			→		
Recommendation Development			→		
Complete report					→

### 6.1 Baseline Conditions: Dane County

Dane County (WI) Population 2010: 488,073	
Factor	Population number 2010
<b>Age</b>	
0	5,933
1-14	83,054
15-24	80,121
25-44	143,637
45-64	125,184
65-84	42,370
85+	7,774



<b>Gender</b>	
Female	246,662
Male	241,411
<b>Race</b>	
White	430,790
Black	29,777
American Indian	2,666
Asian	24,840
<b>Ethnicity</b>	
Hispanic	28,925
Non-Hispanic	459,148

(<http://www.dhs.wisconsin.gov/population/10demog/dane.htm>)

<b>Baseline Conditions: Dane County</b>	<b>Dane County</b>	<b>Error Margin</b>	<b>National Benchmark*</b>	<b>Wisconsin</b>	<b>Rank (of 72 counties)</b>
<b>Health Outcomes</b>					9
Mortality					6
Premature death	4,753	4,542-4,964	5,564	6,230	
Morbidity					35
Poor or fair health	9%	8-11%	10%	12%	
Poor physical health days	3.2	2.8-3.6	2.6	3.2	
Poor mental health days	3.0	2.6-3.3	2.3	3.0	
Low birthweight	6.3%	6.0-6.5%	6.0%	6.8%	
<b>Health Factors</b>					3

Baseline Conditions: Dane County	Dane County	Error Margin	National Benchmark*	Wisconsin	Rank (of 72 counties)
<b>Health Behaviors</b>					2
Adult smoking	17%	15-19%	15%	21%	
Adult obesity	25%	22-29%	25%	28%	
Excessive drinking	24%	22-27%	8%	25%	
Motor vehicle crash death rate	11	10-12	12	15	
Sexually transmitted infections	325		83	375	
Teen birth rate	20	19-21	22	32	
<b>Clinical Care</b>					7
Uninsured adults	13%	10-15%	13%	11%	
Primary care physicians	464:1		631:1	744:1	
Preventable hospital stays	48	47-50	52	61	
Diabetic screening	91%	85-97%	89%	89%	
Mammography screening	74%	68-79%	74%	71%	
<b>Social &amp; Economic Factors</b>					6
High school graduation	90%		92%	89%	
Some college	79%		68%	63%	

Baseline Conditions: Dane County	Dane County	Error Margin	National Benchmark*	Wisconsin	Rank (of 72 counties)
Unemployment	5.7%		5.3%	8.5%	
Children in poverty	10%	8-12%	11%	14%	
Inadequate social support	14%	12-17%	14%	17%	
Children in single-parent households	25%		20%	29%	
Violent crime rate	263		100	283	
<b>Physical Environment</b>					<b>8</b>
Air pollution-particulate matter days	4		0	5	
Air pollution-ozone days	0		0	1	
Access to healthy foods	71%		92%	59%	
Access to recreational facilities	18		17	12	

(<http://www.countyhealthrankings.org/wisconsin/dane>)

<b>Dane County (WI) Poverty Status and Health Insurance Coverage, 2007-2009</b>		
Status	Estimated Number	Estimated Percent
<b>Dane County Population</b>	<b>445,000</b>	<b>100%</b>
<b>Poverty Status</b>		
Less than 100% of FPL	39,000	9%

100%-199% of FPL	59,000	13%
200% or more of FPL	349,000	76%
Unknown	9,000	2%
<b>Insurance Status</b>		
Insured all of the past year	414,000	91%
Insured part of the past year	13,000	3%
Uninsured all of the past year	28,000	6%
<b>Primary Insurance Type</b>		
Currently uninsured	39,000	9%
Employer-sponsored	347,000	76%
Private	16,000	3%
Medicaid	25,000	5%
Medicare	21,000	4%
Others	9,000	2%

(<http://www.dhs.wisconsin.gov/localdata/pdf/fhs/0709dane.pdf>)

**N.B.** The Wisconsin Family Health Survey is a random-sample telephone survey conducted each year by DHS. An adult in each sampled household answers the survey questions on behalf of all people living in that household. Survey data represent all household residents. **Persons living in group quarters such as nursing homes, dormitories, and jails are not represented by survey results.** More information about the survey is on-line:

<http://dhs.wisconsin.gov/stats/healthinsurance.htm>

## 6.2 HIA Process : 65+ Livability Indicators

Indicators Reviewed in this Section	
1	Affordable, Good Quality, Life-Cycle Housing and Energy Efficient Building Codes
2	Developments with Views of Greenery/Vistas for Mental Health and Tree Canopy Preservation
3	Outdoor Air Quality (Emergency Department Visits related to Asthma Climate Change and Allergic diseases Greenhouse Gases and Pollutants Trip Reduction & Reduced VMT)

## 6.2.1 Affordable, Good Quality, Life-Cycle Housing & Energy Efficient Building Codes

### ⊕ *Link to Health*

Affordable housing not only provides residential stability but also frees up family resources which can be used for other essential needs such as nutritious food and health care requirements (ECP Inc. &CHP, 2007). For example, homeless people are less likely to maintain treatment regimes for chronic diseases (such as HIV/AIDS and hypertension). Residential stability in itself reduces stress and can restore self-esteem. Evictions and frequent housing moves have been known to lead to feelings of helplessness and depression, with homeless children being at a greater risk of developing mental health problems. Crowding, such as doubling up with other families or living in very small homes, increases the risk for psychological distress, hypertension, and even acquiring infectious diseases (ECP Inc. &CHP, 2007).

Affordable housing also provides low income families and individuals with access to neighborhoods of opportunity and amenities (ECP Inc. &CHP, 2007). People removed from public housing in high poverty neighborhoods into low poverty neighborhoods were found to report significantly less distress than people who remained in high poverty neighborhoods (Leventhal & Brooks-Gunn, 2003). Affordable housing provides an opportunity for victims of domestic violence to leave abusive homes and not end up homeless in the process. It thus plays an important role in improving both the physical and mental health of such victims (ECP Inc. &CHP, 2007).

Good quality housing can improve health outcomes by reducing health problems generally associated with substandard housing (such as those arising from exposure to allergens and neurotoxins). The table found in Appendix 2, pg. 77, provides examples of indoor pollutants or elements associated with poor quality housing and their impacts on health.

Life-cycle housing incorporates fixed accessible and adaptable features which could easily be modified to meet the changing requirements of the home-owners overtime, thus ensuring that they maintain a good quality of life. Such changing needs may include old age, disability, having children, and caring for ageing parents (University of Kentucky). Life-cycle housing can thus reduce the strain on nursing homes by providing independent living alternatives for senior generations and for people with disabilities. They are also a means to provide safer working environments for home care workers (Disability Council of NSW).

Energy efficient building codes are useful for community design and building strategies because they aim to achieve sustainable site development. They focus on sustainable material selection for building projects, water-savings mechanisms and infrastructure, energy efficient design and infrastructure, and measures required to achieve a healthy indoor-environment quality. Energy efficient building codes establish minimum energy efficiency requirements for

buildings which provide energy savings throughout the lifetime of the building (U.S Department of Energy, 2011). An example of an energy efficiency certification mechanism is provided by LEED, the Leadership in Energy and Environmental Design (U.S. Green Building Council, 2011.)

Some of the environmental health benefits of ‘green’ building and energy saving building practices include:

- Protecting occupant’s health through appropriate physical and mechanical design as well as building materials;
- Protecting community health through sustainable land-use and transportation planning (reduction in vehicle trips);
- Promoting sustainable production thus reducing emission of a number of toxic pollutants including persistent/ bioaccumulative toxic compounds, carcinogens, endocrine disruptors; this leads to improved air and water quality, as well as a reduction in generated waste streams (including construction and demolition waste);
- Enhancing and protecting biodiversity and ecosystems;
- Conserving and restoring natural resources; and
- Limiting climate change impacts  
(San Francisco Department of Public Health, 2006; U.S. Department of Energy, 2011; U.S. Environmental Protection Agency, 2010).

Other benefits of energy efficient building code include:-

- Preventing long-term financial burdens for owners/tenants which can arise from short-term design and construction decisions;
- Optimizing the life-cycle economic performance of buildings;
- Monetary savings from consumer energy bill savings, air pollution remediation and reduction in greenhouse gas emissions. These can all improve the state’s economy by strengthening consumer spending power and through reducing environmental costs to the state.  
(U.S. Department of Energy, 2011; U.S. Environmental Protection Agency, 2010)
- Reduced energy expenditures which correlate to a reduced dependency on foreign oil which impacts national security (U.S Department of Energy, 2011).

**⊕ Existing Conditions**

<b>Good Quality Housing</b>	
<b>Child Lead Poisoning Prevalence, Dane County WI 2009</b>	
<b>Age</b>	<b>Lead Poisoning Prevalence</b>
0 - <1	0.19%
1 - <2	0.29%

2 - <3	0.81%
3 - <6 NPT	0.31%
3 - <6 PT	0.00%
Total	0.35%
<b>Carbon Monoxide Poisoning Emergency Department Visits, Dane County WI 2009</b>	
Rate per 10,000 population	4.96 – 10.62.

([http://www.dhs.wisconsin.gov/epht/CHP/Dane\\_profile.pdf](http://www.dhs.wisconsin.gov/epht/CHP/Dane_profile.pdf))

<b>Affordable Housing</b>			
<b>Community Information</b>	<b>Village or Township</b>		
	<b>DeForest</b>	<b>Vienna</b>	<b>Windsor</b>
<b>Mean prices in 2009:</b>			
<ul style="list-style-type: none"> <li>• All housing units</li> <li>• Detached houses</li> <li>• Townhouses or other attached units</li> <li>• In 2-unit structures</li> <li>• In 3-to-4-unit structures</li> <li>• Mobile Homes</li> </ul>	<ul style="list-style-type: none"> <li>• \$209,240</li> <li>• \$216,601</li> <li>• \$169,947</li> <li>• \$198,154</li> <li>• \$185,432</li> <li>• n/a</li> </ul>	<ul style="list-style-type: none"> <li>• \$327,995</li> <li>• \$329,545</li> <li>• \$333,783</li> <li>• \$150,997</li> <li>• n/a</li> <li>• \$299,345</li> </ul>	<ul style="list-style-type: none"> <li>• \$237,232</li> <li>• \$243,416</li> <li>• \$208,407</li> <li>• \$174,065</li> <li>• \$160,771</li> <li>• n/a</li> </ul>
<b>Median gross rent in 2009</b>	\$844	n/a	\$968
<b>Estimated median house or condo value in 2009</b>	\$194,995	\$260,555	\$225,511
<b>Percentage of residents living in poverty in 2009</b>	4.9%	3.3%	12.2%
<b>Estimated median household income in 2009</b>	\$62,379	\$70,317	\$66,994
<b>Estimated per capita income in 2009</b>	\$27,007	\$31,432	\$29,316

✦ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

<b>Indicator</b> <small>(outlined in Scoping Phase)</small>	<b>Best Fit FUDA Scenario</b>

<b>Affordable Housing</b>	Scenario C (Compact) provides the most affordable housing. It has the densest (6 units/acre) land use plan as well as the most multi-family housing, resulting in the greatest number of affordable housing units.
<b>Good Quality Housing</b>	It is not clear from the information provided on the scenarios which scenario would provide the best quality housing.
<b>Life-Cycle Housing</b>	It is not clear from the information provided on the scenarios which scenario would provide life-cycle housing.
<b>Energy Efficient Building Codes</b>	It is not clear from the information provided on the scenarios which scenario would provide energy efficient building codes.

✦ *Recommendations see Appendix 4, pg. 84*

## 6.2.2 Developments with Views of Greenery/Vistas for Mental Health and Tree Canopy Preservation

### ✦ *Link to Health*

Inclusion of green spaces into urban designs has been found to improve both social and cognitive functioning and result in decreased episodes of depression (Dannenberg et al, 2003). Research has shown that interactions with nature and natural environments have shown to lead to marked increases in cognitive control, as opposed to interaction with urban environments. Moreover, lack of access to natural environments in a community can lead to increased feelings of isolation and an increased incidence of mental illness. Inclusion of natural spaces and community gardens into urban designs can provide people with opportunities for socializing, thus overcoming feelings of isolation, and ultimately strengthening community cohesion (Maller et al, 2005).

Tree canopies play an important part in reducing air pollution by absorbing gaseous air pollutants (such as carbon dioxide) through their leaves. They have also been found to reduce concentration of ground level ozone, and airborne particulate matter (City of Covington, 2012; Nowak et al, 2006). Trees and tree roots conserve soil and prevent erosion into nearby water bodies thus maintaining high water quality (City of Covington, 2012). Extensive paving, typically occurring in urban environments for new roads and parking spaces and rooftops, can reduce the ground's natural absorption and filtering capacities which can lead to flooding and an accumulation of runoff pollutants in water supplies and associated negative health outcomes such as gastroenteritis (Dannenberg et al, 2003). Tree canopies provide shade for sidewalks and buildings, and can play a part in reducing the urban heat island effect through the process of transpiration whereby trees lose water by evaporation from leaves, which works towards cooling the urban environment (City of Covington, 2012).



✦ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

Indicator  (outlined in Scoping Phase)	Best Fit FUDA Scenario
	Scenario A (Adopted Plan), Scenario B (Dispersed Character), or Scenario C (Compact Character)
<b>Developments with Views of Greenery/Vistas for Mental Health</b>	The best Scenario for mental health based on views of greenery/vistas is Scenario A. This Scenario provides the most views of greenery/vistas through less dense development/redevelopment (4 units/acre residential) while limiting farmland development which also provides views of greenery/vistas.
<b>Tree Canopy Preservation</b>	Scenario C has the most Natural Resource Protection, preserving the most tree canopy. Scenario C also provides the densest redevelopment/ development plan thus preserving already existing tree canopies and reducing the need for new development that could potentially destroy existing tree canopies.

✦ **Recommendations see Appendix 4, pg. 84**

**6.2.3 Outdoor Air Quality (Emergency Department Visits Related to Asthma; Climate Change and Allergic Diseases; Greenhouse Gases and Pollutants; Trip Reduction & Reduced VMT)**

✦ **Link to Health**

- There is a body of literature that supports the association of ground-level ozone (O<sub>3</sub>) exposure and asthma exacerbation.
  - One study focused on emergency department (ED) rates of asthma in New York City and ground-level ozone levels to project future childhood asthma ED cases; it concluded that increased ozone levels would cause childhood asthma visits to increase by 7.3% in the region by the 2020s (Sheffield et al. 2011).
  - A different study examined the Olympic Game time period in Atlanta, Georgia, and found a significant reduction in childhood asthma events (hospitalizations, acute care visits) after a reduction in ozone pollution (Friedman et al. 2001).
  - A study by Bell et al. examined ozone concentrations in 50 US cities as related to predicted health impacts (2007). The study concluded that climate change-induced increases in ground-level ozone would increase hospital admissions for asthma.

- Studies have shown that climate change could have an impact on aeroallergen concentrations. Since the development scenarios have an impact on climate change, by extrapolation they also could have an impact on allergic diseases. More research is needed to support the link between climate change and allergic diseases, but there is some literature that supports the link between climate change and aeroallergen concentrations:
  - Kinney’s paper reviewed pollen studies and found that there was consistent evidence supporting the link between the onset of pollen seasons and warming trends. However, Kinney cautioned that more evidence is needed to establish whether or not this relationship extends to the trends to allergic diseases (2008).
  - D’Amato and Cecchi’s review paper stated that airway mucosal damage induced from air pollution can make it easier for allergens to enter the immune system. Furthermore, climate change may cause the pollen season to be extended and warmer temperatures may produce stronger allergenicity in tree pollen (2008).
  - One experimental study compared pollen production of ragweed in warmed versus unwarmed plots and found that total pollen production increased by 84% in the warmed plots. This has implications for allergies since ragweed is an allergenic species (Wan et al. 2002).
- By mitigating greenhouse gases, air pollution can be reduced, which has a powerful impact on human health. Exposure to air pollution can contribute to negative health impacts such as premature death, asthma, bronchitis, lost days of work, restricted-activity days, and lung damage (Cifuentes et al. 2011).
- Short-lived greenhouse pollutants include sulphates, which have been researched in exposure studies that have linked them to increased mortality, specifically from all-cause mortality, cardiopulmonary and cardiovascular mortality, and lung cancer (Krewski et al. 2009).
- Another short-lived greenhouse pollutant, black carbon, is linked to negative health impacts (Smith et al. 2009).

#### ✦ **Existing Conditions**

- In a comprehensive report about asthma in Wisconsin, Dane County was ranked 62 (out of 72 counties) in terms of ED visit rate per 10,000 and was ranked 24 in terms of asthma hospitalizations (WI DHS, 2010). Note that lower ranks signify higher county rates.

- On a finer geographic scale there were 707 emergency department cases of asthma in 2010 for the zip codes of residence that were pertinent to this study (53532, 53598, 53590, 53911, and 53529). Cases of asthma were defined as those that used a principal diagnosis code of 493, the ICD-9 code for asthma. The total population of these five ZCTA's according to the 2010 Census was 55,793; thus, prevalence rates can be calculated. Furthermore, the 2010 asthma cases can be stratified by age:

Age (yr)	FUDA study area (zip codes of 53532, 53598, 53590, 53911, and 53529) in 2010	
	ED Asthma cases	Prevalence per 1,000 (cases/55,793)x1,000
<10	207	3.71
10-19	129	2.31
20-29	108	1.94
30-39	84	1.51
40-49	105	1.88
50-59	37	0.66
60-69	20	0.36
70+	17	0.30
All ages	707	12.67

- In addition to being able to stratify how many cases of asthma occur in particular zip codes by age, we can also characterize the cases by race, gender, and co-occurring morbidities. Likewise, other health outcomes (e.g., injuries) available in the emergency department dataset can be described in these categories. Furthermore, when linked with demographic data from the U.S. Census, rates can be calculated.

**✦ Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

Indicator	Best Fit FUDA Scenario
	Scenario A (Adopted Plan), Scenario B (Dispersed Character), or Scenario C (Compact Character)
ED visits	Scenario C provides the most affordable, multi-family housing, cutting back on exposure to asthma triggers through quality, affordable housing, reducing ED related

<b>related to asthma</b>	asthma visits. This scenario also provides for the densest plan, reducing the most VMT, thus reducing air pollutants, another asthma related trigger.
<b>CC &amp; Allergic diseases</b>	Scenario C provides the most affordable, multi-family housing, cutting back on exposure to allergic triggers through quality, affordable housing, thus reducing allergic diseases. This scenario also reduces VMTs, reducing green-house gas emissions which are linked to climate change which could have an impact on aeroallergen concentrations.
<b>Greenhouse gases and pollutants</b>	Scenario C provides for the densest plan, reducing the most VMT, thus reducing air pollutants, another asthma trigger, and reducing climate changing emissions which could impact aeroallergen concentrations.
<b>Trip Reduction</b>	Scenario C provides a mixed use plan with dense, connected street grids with that will decrease trips, and length of trips, reducing air pollution and green-house gas emissions. This scenario allows for more pedestrian and bike travel, thus reducing trips and increasing physical activity.
<b>Reduced VMT</b>	Scenario C provides a mixed use plan with dense, connected street grids with that will decrease trips, and length of trips, reducing air pollution and green-house gas emissions.

✦ *Recommendations see Appendix 4, pg. 84*

✦ *Comprehensive Impact Assessment: Scenario rankings based on indicators*

Indicator (outlined in Scoping Phase)	Rankings 1-3 (1 = best, 3 = worst)		
	Scenario A	Scenario B	Scenario C
<b>Affordable Housing</b>	2	3	1
<b>Good Quality Housing</b>	N/A	N/A	N/A
<b>Life-Cycle Housing</b>	N/A	N/A	N/A
<b>Energy Efficient Building Codes</b>	N/A	N/A	N/A

<b>Developments with Views of Greenery/Vistas for Mental Health</b>	1	3	2
<b>Tree Canopy Preservation</b>	2	3	1
<b>ED visits related to asthma</b>	2	3	1
<b>CC &amp; Allergic diseases</b>	2	3	1
<b>Greenhouse gases and pollutants</b>	2	3	1
<b>Trip Reduction</b>	2	3	1
<b>Reduced VMT</b>	2	3	1
<b>Total</b>	1.875	3	1.125

## 6.3 HIA Process : Physical Activity & Obesity Indicators

### Indicators Reviewed in this Section

1	Trails and Bike Lanes & Walking and Biking
2	Complete Streets and Pedestrian and Cyclist Safety
3	Transit and Transit Oriented Development
4	Neighborhood Characteristics (Social Interaction, Gathering places & Recreational Amenities, & Senior Services)
5	Mixed Used Development
6	Food Access: Local Food Production, Contiguous agricultural land, healthy food outlets

### 6.3.1 Trails and Bike Lanes & Walking and Biking

#### ⊕ *Link to Health*

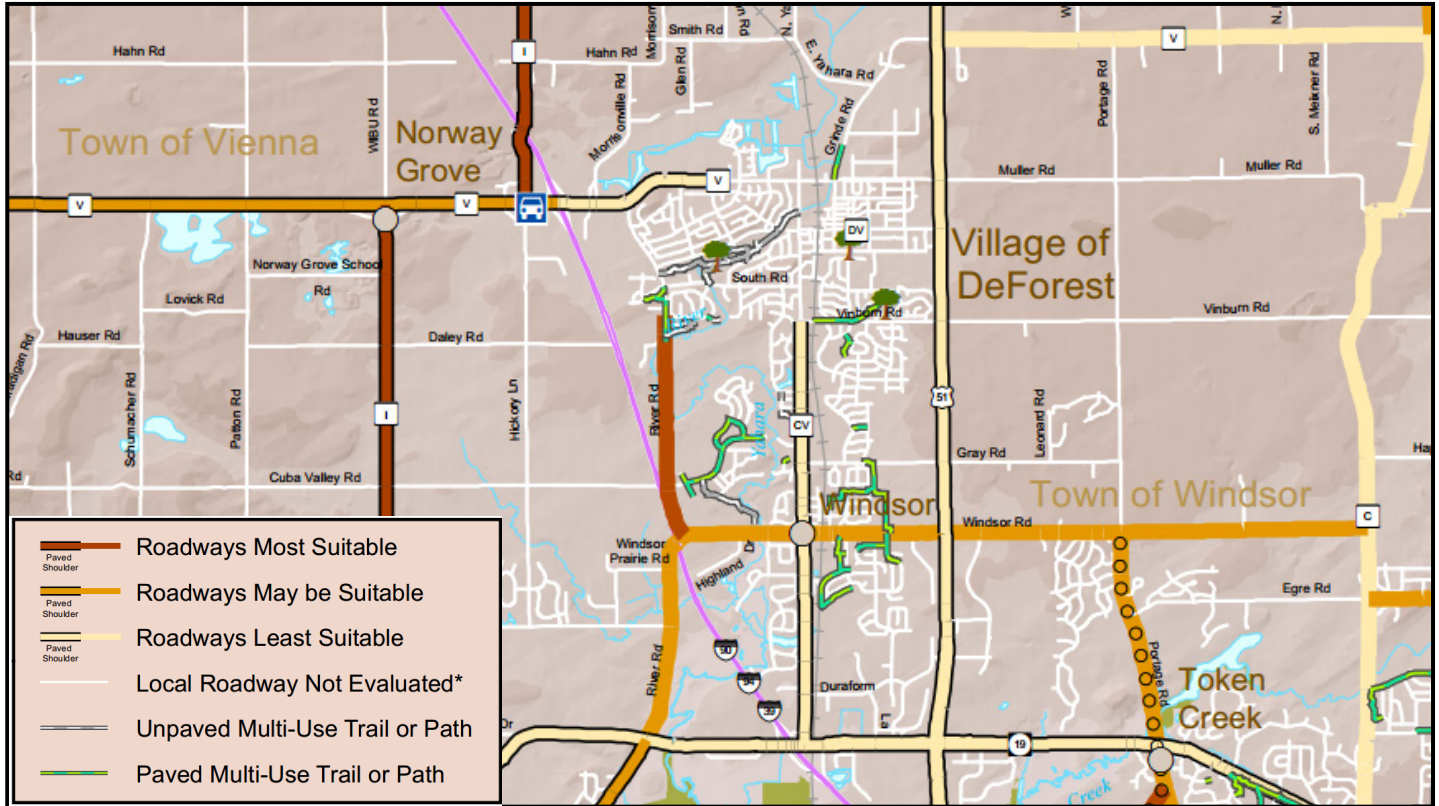
Outdoor physical activity yields both health benefits, such as reducing the incidence of chronic disease and social benefits, through providing opportunities for people to meet and thus strengthen community ties (Addy et al, 2004). Barriers to outdoor physical activity include lack of pedestrian oriented infrastructure, poorly maintained footpaths and dangerous street crossings and the volume of traffic passing through a neighborhood (Adyy et al, 2004; Pikora et al, 2003). Good neighborhood designs which include sidewalks, adequate street lighting and easily accessible public recreational facilities such as parks, playgrounds, walking and biking trails, tend to encourage outdoor physical activity (Pikora et al, 2003). Low traffic speeds and low volumes of traffic, as well as the presence of wide bicycle lanes have been found to be important determinants in using a bicycle as a means of transport (Pikora et al, 2003).

#### ⊕ *Existing Conditions*

Dane County Data	
<b>Overweight or Obese, 2010</b>	
Not overweight (BMI <25.0)	35.2%
Overweight (BMI 25.0-29.9)	45.3%
Obese (BMI 30.0 or greater)	19.4%
<b>Any Exercise, 2010</b>	
Yes	85.9 %
No	14.1 %
<b>Myocardial Infarctions (Heart Attack) Hospitalizations, 2009</b>	
Age-adjusted rate per 10,000 population	6.04 – 13.64

([http://www.dhs.wisconsin.gov/epht/CHP/Dane\\_profile.pdf](http://www.dhs.wisconsin.gov/epht/CHP/Dane_profile.pdf))

✦ Trails and Bike Lanes



([http://madisonareampo.org/maps/documents/public\\_bike\\_map\\_2012\\_new\\_design\\_web.pdf](http://madisonareampo.org/maps/documents/public_bike_map_2012_new_design_web.pdf))

✦ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

Indicator (outlined in Scoping Phase)	Best Fit FUDA Scenario
	Scenario A (Adopted Plan), Scenario B (Dispersed Plan), or Scenario C (Compact Plan)
<b>Trails &amp; Bike Lanes</b>	It is not clear from the information provided on the scenarios which scenario would provide the most trails and bike lanes.
<b>Walking and Biking</b>	Scenario C provides for the most compact street pattern, encouraging and best enabling walking and biking.

✦ **Recommendations see Appendix 4, pg. 84**

### 6.3.2 Complete Streets and Pedestrian and Cyclist Safety

#### ✦ *Link to Health*

Research has shown that vehicle volumes, traffic speeds exceeding 25 mph, and even high densities of curb-side parking are directly proportional to traffic collision rates as well as injury severity from such collisions (CDPH, 2010; IPH Ireland, 2006). Elderly people and children are particularly susceptible to pedestrian-traffic related injuries. High speed traffic may also discourage parents from letting children engage in outdoor physical activities, thus leading to more sedentary lifestyles. Such behavioral patterns set in childhood can result in negative health impacts in adulthood. Adequate and appropriate road design can be employed to reduce care speeds and in turn encourage outside physical activities and thus social interaction opportunities (IPH Ireland, 2006).

Complete street designs provide safe access of a number of users including pedestrians, bicyclists, motorists and transit riders of all ages and abilities (National Complete Streets Coalition, 2011; Wisconsin Department of Transportation, 2011). Enhancing street access to pedestrians and people with disabilities improves transportation equity within a community, particularly for people who cannot afford modes of private transport, and rely on walking, cycling and public transport for their transportation needs. This reduces the risk of social isolation (Minnesota complete Streets Coalition & Blue Cross Blue Shield, 2010).

Improving the convenience of alternative modes of transport, reduces dependency on automobiles, and encourages people to engage in outdoor physical activity, which reduces the risk of diseases associated with a sedentary lifestyle including type 2 diabetes and heart disease (Minnesota complete Streets Coalition & Blue Cross Blue Shield, 2010). Adequate and integrated bicycle and pedestrian features and facilities include sidewalks, striped bike lanes or wide paved shoulders, frequent pedestrian crossing signals and crosswalks, bicycle parking (bike racks) and adequate lighting (DHSS, 2010). Complete street designs may also contain the following elements: special bus lanes, comfortable and accessible public transportation stops, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts (National Complete Streets Coalition, 2011), and small block sizes to achieve good pedestrian street connectivity (DHSS, 2010).

#### ✦ *Existing Conditions*

Dane County Data	
<b>Number of traffic-related deaths, 2004</b>	
Total	49
15-44 age group	32
45-64 age group	10



65+ age group	5
<b>Number of Count of Injury Hospitalizations resulting from Motor vehicle traffic crash, 2010</b>	10

<http://wish.wisconsin.gov/results/>

✦ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

Indicator (outlined in Scoping Phase)	Best Fit FUDA Scenario
	Scenario A (Adopted Plan), Scenario B (Dispersed Plan), or Scenario C (Compact Plan)
<b>Complete Streets &amp; Pedestrian and Cyclist Safety</b>	Scenario C provides for the densest compact street grid which will require lower speed limits, increasing biker and pedestrian safety and thus encouraging bikers and pedestrians.

✦ **Recommendations see Appendix 4, pg. 84**

**6.3.3 Transit and Transit Oriented Development**

✦ **Link to Health**

Transit oriented development (TOD) facilitates transport access for community members by maximizing access to public transportation systems and services, and through creating walkable environments (TransitOrientedDevelopment.org). Adequate and easy access to employment and educational facilities as well as parks and health care facilities, is essential to maintain a healthy lifestyle. Those lacking private transport may find such access to be hindered (CDPH, 2010).

The design of a TOD neighborhood has a center with a transit bus-station, train station or a tram stop. Such a center is generally surrounded by high density development which becomes progressively less-dense away from the center (Victoria Transport Policy Institute, 2011).

Health and other benefits of TOD design include reduced traffic congestion and driving (and thus less air pollution), reduced car accidents and injuries, adoption a healthier lifestyle with more walking and less stress, reduced household spending on transportation, diversion of resources for more affordable housing, an increased incentive for compact development (less

urban sprawl), and increased foot traffic and customers to area businesses (TransitOrientedDevelopment.org).

✦ **Existing Conditions**

Community Information	Village or Township		
	DeForest	Vienna	Windsor
<b>Nearest Amtrak Stations</b>	<ul style="list-style-type: none"> <li>13 miles: MADISON (800 LANGDON ST.) - Bus Station. Services: enclosed waiting area, public payphones, public transit connection.</li> <li>19 miles: COLUMBUS (359 LUDINGTON ST.). Services: ticket office, partially wheelchair accessible, enclosed waiting area, public restrooms, public payphones, free short-term parking, free long-term parking, call for car rental service, call for taxi service.</li> </ul>	<ul style="list-style-type: none"> <li>12 miles: MADISON (800 LANGDON ST.) - Bus Station. Services: enclosed waiting area, public payphones, public transit connection.</li> </ul>	<ul style="list-style-type: none"> <li>11 miles: MADISON (800 LANGDON ST.) - Bus Station . Services: enclosed waiting area, public payphones, public transit connection.</li> <li>19 miles: COLUMBUS (359 LUDINGTON ST.) . Services: ticket office, partially wheelchair accessible, enclosed waiting area, public restrooms, public payphones, free short-term parking, free long-term parking, call for car rental service, call for taxi service.</li> </ul>
<b>Mean travel time to work</b>	27.6 minutes	20.8 minutes	30.7 minutes

✦ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

Indicator  (outlined in Scoping Phase)	Best Fit FUDA Scenario

<b>Transit</b>	It is not clear from the information provided on the scenarios which scenario would provide the best transit options, if any, though it can be assumed that Scenario C is most likely to provide the opportunity for transit because of its density, mixed use, and compact pattern.
<b>Transit Oriented Development</b>	It is not clear from the information provided on the scenarios which scenario would provide transit oriented development, though it can be assumed that Scenario C is most likely to provide the opportunity for transit oriented development because of its density, mixed use, and compact pattern.

✦ *Recommendations see Appendix 4, pg. 84*

### 6.3.4 Neighborhood Characteristics (Social Interaction, Gathering Places & Recreational Amenities; Senior Services; Maps of Large Recreational Facilities, Community Gardens, Schools, Large Parks and Open Space)

✦ **Link to Health**

Social support networks and social interaction can positively impact a community’s health by providing emotional, instrumental (such as residential resources), informational (such as knowledge how to access health care systems), and appraisal (a sense of belonging) support to communities (Chavez, 2008). This support can be particularly essential for low income and ethnically segregated community groups, who may experience a higher rate of negative health outcomes and social isolation (Cave & Coutts, 2002; CDPH, 2010). It prevents isolation, feelings of helplessness and ultimately depression (Chavez, 2008; CDPH, 2010). Instrumental support in the form of adequately planned and maintained neighborhoods ( which include the availability of recreational facilities such as parks, playgrounds and walking and biking trails, and adequate street and neighborhood lighting) are great incentives for communities to participate in outside physical activity and thus engage in social interaction (Addy et al, 2004).

Crime and fear of crime may prevent people from using public spaces and thus discourage outdoor physical activity and lead to social isolation. Other health impacts associated with fear of crime include loss of productivity related to continual anxiety and stress of being a victim of crime (Dolan & Peasgood, 2007; IPH Ireland, 2006). Fear of crime may also result in people being reluctant to use public transport. In such cases, people not having access to a private means of transport may become even more socially isolated (Cave & Coutts, 2002). Children living in neighborhoods deemed as unsafe may be at a greater risk of developing behavioral disorders such as hyperactivity, aggression or withdrawal (IPH Ireland, 2006). Social cohesion can thus serve to prevent crime and violence in a community (CDPH, 2010). Formation of clubs and neighborhood based organizations can create solidarity and mutual trust amongst community members (Benard, 2007).

✦ **Existing Conditions**

<b>Violent Crime Rates</b>	
<b>Dane County WI, 2010</b> (Population: - 491,677)	
Total violent crime	261 per 100,000 population
Murder	0.8 per 100,000 population
Forcible Rape	24.2 per 100,000 population
Robbery	87 per 100,000 population
Aggravated Assault	149 per 100,000 population
<b>DeForest WI, 2010</b> (Population: - 9,074)	
Total Violent Crime reported by the DeForest PD	66 per 100,000 residents
Murder	22 per 100,000 population
Forcible Rape	0 per 100,000 population
Robbery	44 per 100,000 population
Aggravated Assault	0 per 100,000 population

(<http://oja.wi.gov/docview.asp?docid=21985&locid=97>)

<b>Property Crime Rates</b>	
<b>Dane County WI, 2010</b> (Population: - 491,677)	
Total Property Crime	2,878 per 100,000 population
Burglary	511 per 100,000 population
Theft	2,236 per 100,000 population
Motor Vehicle Theft	113 per 100,000 population
Arson	18 per 100,000 population
<b>DeForest WI, 2010</b> (Population: - 9,074)	
Total Property Crime reported by the DeForest PD	1,345 per 100,000 residents
Burglary	220 per 100,000 population
Theft	1,113 per 100,000 population
Motor Vehicle Theft	11 per 100,000 population
Arson	0 per 100,000 population

(<http://oja.wi.gov/docview.asp?docid=21985&locid=97>)

<b>Open Spaces and Recreational Areas</b>	
<b>Location</b>	<b>Park/Conservancy</b>
Vienna	<ul style="list-style-type: none"> <li>✦ Wheeler Park</li> <li>✦ Hillcrest Park</li> </ul>
DeForest	<ul style="list-style-type: none"> <li>✦ Dahl Park</li> <li>✦ Fireman's Park</li> <li>✦ Hank's Hollow Park</li> <li>✦ Liberty Land Park</li> <li>✦ Meadowview Park</li> </ul>

	<ul style="list-style-type: none"> <li>✦ Sunnybrook Park</li> <li>✦ Veteran’s Memorial Park</li> <li>✦ Western Green Park</li> <li>✦ Yahara Park</li> <li>✦ Conservancy Commons Park</li> </ul>
Windsor	<ul style="list-style-type: none"> <li>✦ Morrisonville Children’s Park</li> <li>✦ Morrisonville Ballpark</li> <li>✦ Windsor Sports Commons – Linde Field</li> <li>✦ Oak Springs Park</li> <li>✦ Cradle Hill Park</li> <li>✦ Old Amsterdam Park</li> <li>✦ Bull Run Park</li> <li>✦ Sunset Meadows Park</li> <li>✦ Windsor Fireman’s Park</li> <li>✦ Grosbeak Glen Park</li> <li>✦ Terrace Park</li> <li>✦ Kimberly Way Park</li> <li>✦ Millstone Heights Park</li> <li>✦ Windsor Meadows Park</li> <li>✦ Windsor Hill Park</li> <li>✦ Windsor Gardens Park</li> </ul>

([http://www.vi.deforest.wi.us/index.asp?Type=B\\_BASIC&SEC={CD271F8F-D658-4626-BCA6-9241383CF112}&DE={8722BD10-D7FE-4B93-8FB3-A82527D27427}](http://www.vi.deforest.wi.us/index.asp?Type=B_BASIC&SEC={CD271F8F-D658-4626-BCA6-9241383CF112}&DE={8722BD10-D7FE-4B93-8FB3-A82527D27427}))

(<http://vienna-wis.com/>)

([http://www.windsorwi.gov/index.asp?Type=B\\_BASIC&SEC={E6C7753D-33BA-4887-B469-620FB72A57DF}](http://www.windsorwi.gov/index.asp?Type=B_BASIC&SEC={E6C7753D-33BA-4887-B469-620FB72A57DF}))

Gathering Places	
<b>Public Buildings/Spaces</b>	<ul style="list-style-type: none"> <li>✦ Vienna Town Hall</li> <li>✦ Yahara Elementary School</li> <li>✦ DeForest Village Hall</li> <li>✦ DeForest High School &amp; Baseball Field</li> <li>✦ Windsor Town Hall</li> <li>✦ Windsor Elementary School</li> </ul>
<b>Churches/Places of Worship</b>	<ul style="list-style-type: none"> <li>✦ Harvest Community Church</li> <li>✦ DeForest Evangelical Free Church</li> <li>✦ Christ Lutheran Church</li> <li>✦ St. Olaf’s Catholic Church</li> <li>✦ Lord of Love Lutheran Church</li> <li>✦ Windsor United Church of Christ</li> <li>✦ North Windsor United Methodist Church</li> </ul>
<b>Other Gathering Places</b>	<ul style="list-style-type: none"> <li>✦ Lake Windsor Country Club</li> <li>✦ DeForest Area Community Senior Center</li> <li>✦ DMB Windsor Neighborhood Center</li> </ul>

(Google Earth 6-27-12)

✦ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

Indicator  (outlined in Scoping Phase)	Best Fit FUDA Scenario
	Scenario A (Adopted Plan), Scenario B (Dispersed Plan), or Scenario C (Compact Plan)
<b>Social Interaction</b>	Scenario C provides the most opportunity for neighborly interaction with its denser residential patterns, mixed use compact design that will allow neighborhoods to meet one another walking and biking to various destinations.
<b>Gathering Places &amp; Recreational Amenities</b>	It is not clear from the information provided on the scenarios which scenario would provide the most gathering places and recreational amenities. It can likely be assumed that Scenario C is most likely to provide for gathering spaces and recreational amenities because of its density, mixed use, and compact pattern which will likely incorporate such spaces into its design.

✦ **Recommendations see Appendix 4, pg. 84**

**6.3.5 Mixed Used Development**

✦ **Link to Health**

Compact development, integration of different land uses (for example having retail outlets, food markets, drug stores and offices in close proximity to each other), and pedestrian oriented urban designs facilitate neighborhood accessibility and lead to a decrease in car dependency and associated air pollution (Krizek, 2003; & Kockelman, 2007) while sprawling developments and suburbs encourage use of automobiles (Dannenberg et al, 2003). The presence of destinations such as retail facilities and services in a neighborhood has been shown to serve as incentives for people to engage in walking activities (Pikora et al, 2003). Mixed use and pedestrian friendly neighborhood designs are thus more likely to promote social networking, by encouraging people to perform daily chores without the use of automobiles (Leyden, 2003). The quality of life amongst older generations can be improved by anticipating as well as responding to ageing-related needs in the community environment (WHO, 2007). Compact development can serve to address these needs.

✦ **Existing Conditions**

Community Information	Village or Township		
	DeForest	Vienna	Windsor

<b>Daytime population change due to commuting</b>	-1,395 (-18.9%)	n/a	n/a
<b>Workers who live and work in this town/village</b>	933 (22.5%)	n/a	n/a
<b>Nearest hospitals/medical centers</b>	<ul style="list-style-type: none"> <li>• UW Hospitals &amp; Clinics Authority (Acute Care Hospitals, Government - Hospital District or Authority, provides emergency services, about 13 miles away; MADISON, WI)</li> <li>• Meriter Hospital (Acute Care Hospitals, Voluntary non-profit - Private, provides emergency services, about 14 miles away; MADISON, WI)</li> <li>• St Mary's Hospital (Acute Care Hospitals, Voluntary non-profit - Other, provides emergency services, about 14 miles away; MADISON, WI)</li> </ul>	<ul style="list-style-type: none"> <li>• Madison VA Medical Center (Acute Care - Veterans Administration, Government Federal, about 13 miles away; MADISON, WI)</li> <li>• UW Hospitals &amp; Clinics Authority (Acute Care Hospitals, Government - Hospital District or Authority, provides emergency services, about 13 miles away; MADISON, WI)</li> <li>• Meriter Hospital (Acute Care Hospitals, Voluntary non-profit - Private, provides emergency services, about 13 miles away; MADISON, WI)</li> </ul>	<ul style="list-style-type: none"> <li>• UW Hospitals &amp; Clinics Authority (Acute Care Hospitals, Government - Hospital District or Authority, provides emergency services, about 11 miles away; MADISON, WI)</li> <li>• Meriter Hospital (Acute Care Hospitals, Voluntary non-profit - Private, provides emergency services, about 12 miles away; MADISON, WI)</li> <li>• St Mary's Hospital (Acute Care Hospitals, Voluntary non-profit - Other, provides emergency services, about 12 miles away; MADISON, WI)</li> </ul>

⊕ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

<b>Indicator</b> (outlined in Scoping)	<b>Best Fit FUDA Scenario</b>
-------------------------------------------	-------------------------------

Phase)	<b>Scenario A (Adopted Plan), Scenario B (Dispersed Plan), or Scenario C (Compact Plan)</b>
<b>Mixed Used Development</b>	Scenario C incorporates the most mixed used development into its plan.

✦ *Recommendations see Appendix 4, pg. 84*

### 6.3.6 Food Access Impact: Healthy Food Outlets and Local Food Production

#### ✦ *Link to Health*

Good nutrition is essential for good health. It helps with disease prevention and is essential for children’s growth and development. Evidence shows that a diet of healthy, nutritious foods, in conjunction with physical activity, can help reduce the incidence of the leading causes of death in the United States, namely heart disease, cancer, and diabetes (CDC, 2010).

Access to healthy foods is a key issue, especially for individuals lacking private transport. To ensure access to healthy foods, supermarkets or fruit and vegetable stores need to be located within a mile of residents or convenient transit needs to be available within half a mile (.8 km) to go to such stores (Univ. Minn., 2007).

Evidence from numerous cross-sectional studies consistently demonstrates that some elements of food environments are associated with obesity. People who live in communities with easy access to healthy foods tend to have more healthful diets. Minority and low-income communities have disparities in access to healthful foods (Sallis & Glanz, 2009). The food environment thus plays role in peoples’ ability to access and purchase affordable, healthy and nutritious foods (Walker, Keane, & Burke 2010). Research shows that neighborhood residents with better access to supermarkets and limited access to convenience stores tend to have healthier diets and lower levels of obesity (Larson, Story & Nelson, 2009).

The current food production system puts financial pressures on food producers to grow cheap food which is linked to the current rise in obesity levels (O’Kane, 2011). Community foods systems might play an important role in mitigating the environmental, economic and social effects of the current food production system through the use of more sustainable food production which create fewer environmental impacts (reduced fuel consumption and pollution), develop local economies by creating local jobs, and foster ties between farmers and consumers, creating stronger social networks and healthier communities (Pederson RM, Robertson A, & deZeeuw H., 2000; O,Kane, 2011).



⊕ **Existing Conditions: Food Outlets**

Food outlets are licensed retail establishments that include gas stations and convenience stores that sell at least one perishable item such as dairy, as well as grocery stores and coffee shops or delis that sell milk or prepared foods (DPH, Licensed Food Estb.). There are a total of 226 Food Outlets in the five zip code area.

Type of Food Outlet	Number of Outlets	Additional Information
Farmers Market	2	
Primarily Restaurant	143	<ul style="list-style-type: none"> <li>⊕ 26: tavern, pub, pizza, burger, sports bar, saloon, hut, bowling alley</li> <li>⊕ 36: chain fast food restaurants (e.g., McDonald’s, Burger King, Subway, Taco Bell, KFC, etc.)</li> <li>⊕ 4: travel center, snack bar, pool</li> <li>⊕ 6: schools</li> <li>⊕ 7: apartment/inn/hotel/motel</li> <li>⊕ 64: other</li> </ul>
Restaurant Mobile Base/Cart	9	
Retail Food Establishment	72	<ul style="list-style-type: none"> <li>⊕ 24: travel/gas station</li> <li>⊕ 10: drug store/convenience store</li> <li>⊕ 2: hardware store</li> <li>⊕ 8: grocery store</li> <li>⊕ 4: liquor store</li> <li>⊕ 15: specialty store</li> <li>⊕ 4: dollar store</li> <li>⊕ 4: other</li> </ul>

(Wisconsin DPH, Licensed Food Establishments)

⊕ **Existing Conditions: Local Food Production**

This area of Wisconsin is rich in commercial farming. In the five zip code region under investigation, there are commercial farms that produce animal products (beef, poultry, eggs, lamb, etc.), berries, fruit and tree nuts, milk and other dairy, orchard products, and vegetables. The table below provides a break-down of the number of each type of commercial farmer in the area:

Type of Product	Number of Farms
Animals	300
Berries	2
Fruit & Tree Nuts	5
Milk & Other Dairy	139
Orchards	5

Vegetables	56
Total	507

[USDA Agricultural Statistics Survey](#)

This five zip code area of Wisconsin also contains three CSAs (Community Supported Agriculture). They are: Equinox Community Farm, Forest Run Farm, and JenEhr Family Farm. There are two farmers markets in the area.

✦ **Impact Assessment: Which of the 3 different scenarios best fits each indicator?**

Indicator (outlined in Scoping Phase)	Best Fit FUDA Scenario
	Scenario A (Adopted Plan), Scenario B (Dispersed Character), or Scenario C (Compact Character)
<b>Healthy Food Outlets</b>	Scenario C will provide the most access to healthy food outlets because of its mixed used layout and compact nature that allows for multiple modes of transportation to access food outlets.
<b>Local Food Production</b>	Scenario C plans for the least new development, thus providing for the most farmland preservation, allowing for the most local food production.

✦ **Recommendations see Appendix 4, pg. 84**

✦ **Comprehensive Impact Assessment: Scenario rankings based on indicators**

Indicator (outlined in Scoping Phase)	Rankings 1-3 (1 = best, 3 = worst)		
	Scenario A	Scenario B	Scenario C
<b>Trails &amp; Bike Lanes</b>	N/A	N/A	N/A
<b>Walking and Biking</b>	2	3	1
<b>Complete Streets &amp; Pedestrian and Cyclist Safety</b>	2	3	1

<b>Transit</b>	2	3	1
<b>Transit Oriented Development</b>	2	3	1
<b>Social Interaction</b>	2	3	1
<b>Gathering Places &amp; Recreational Amenities</b>	2	3	1
<b>Mixed Used Development</b>	2	3	1
<b>Healthy Food Outlets</b>	2	3	1
<b>Local Food Production</b>	2	3	1
<b>Total</b>	2	3	1

## 7. Impact Analysis

FUDA planning intends to empower local jurisdictions with a set of tools and resources to make informed planning decisions and facilitate local comprehensive planning, intergovernmental coordination, the USA amendment review process and regional plan updates. In order to do within the current HIA for Vienna, Deforest and Windsor, the FUDA process initially began with three scenarios for future growth and land use. The creation and evaluation of these three growth scenarios were based on findings in the Environmental Conditions Report (ECR), adopted local land use plans and community and steering committee input. Scenarios were derived from the 'Future Northern Urban Service Area' in DeForest's Comprehensive Plan, which also reflects planned urban development in Windsor's and Vienna's comprehensive plans. Those original scenarios included Scenario A (Adopted Plan), Scenario B (Dispersed Character), and Scenario C (Compact Character) and were presented to the public who were given the opportunity to vote on each scenario and whose input helped inform steering committee decisions. The health impacts and outcomes discussed in this rapid HIA were based on the original three scenarios laid out by the steering committee. However, the public polling process and community input resulted in a recommendation by the steering committee of a hybrid scenario, incorporating elements of both Scenario A and Scenario C, called the "Recommended North Yahara FUDA Scenario." Because the process moved forward with the "Recommended North Yahara FUDA Scenario," the Impact Analysis in this section is based on the recommended hybrid scenario rather than any of the original three scenarios.

Impact Analysis – FUDA Hybrid Scenario	
Determinant	Effect of Hybrid Scenario on Indicators
<b>Housing Impact</b>	Higher density housing districts adjacent to frequent destinations encourages more physical activity through more walking and biking. Sensitive environmental areas will be preserved, allowing for views of greenery and tree canopy preservation, increasing mental health. Higher density reduces trip length, increasing air quality and reducing asthma triggers. More affordable housing options increases health through better quality housing, reducing exposure to allergen triggers, and reducing stress associated with unaffordable housing or low-income housing.
<b>Environmental Impact</b>	Higher density reduces trip length, increasing air quality, reducing air pollutants and greenhouse gas emissions. Sensitive environmental areas will be protected, and a balance will be created between preserving farmland and open space and

	maintaining small village character, increasing mental health and social cohesion.
<b>Mobility and Access</b>	Interconnected street patterns allow for direct trips and encourage walking and biking. Reduction in need for road space per person provides cost savings to home owners, business owners and municipalities, reducing financial stress and increasing disposable income available for other health related activities/issues/etc. as well as for public services. A long-term desire for transit service, which higher-density mixed-used areas in the plan will support, will decrease VMTs and encourage more walking and biking to and from transit stations.
<b>Density</b>	Increases residential density, preserving farm and open spaces, providing green space beneficial to mental health. Infill and redevelopment will not increase density, not providing any health benefits; however, infill and redevelopment preserve green space, benefiting mental health. A mix of higher density residential and commercial land encourages more physical activity through more walking and biking. Higher density reduces trip length, increasing air quality and reducing asthma triggers. Increases in the tax base and employment opportunities increase quality and quantity of public services and increases income which promote health. Local jobs decrease VMTs, improving air quality and reducing greenhouse gas emissions.
<b>Food Access</b>	Mix of higher-density residential and commercial land uses will increase food access. Preservation of farmland will protect local food production. Dense residential areas may encourage an increase in farmer's markets, increasing access to healthy foods.

## 8. HIA Process: Recommendations

Prioritized Health Impact	Recommendation to Maximize Health Gain/Reduce Health Loss	Party responsible for Implementing the Recommendation
<b>Physical Activity: Pedestrian Walking</b>	<p>In order to both encourage and protect the safety of pedestrians, it is recommended that sidewalks be incorporated into any redevelopment and new development plans, as well as being integrated into already existing neighborhoods. Priority should be given to putting sidewalks and bike paths into areas with senior and multi-family housing as well as into denser neighborhoods that have convenient access to destinations to maximize usage and provide the most benefit. In busy commercial districts, consider a “road diet” of decreased speed limits for vehicles, longer stop lights and more stops signs and bump outs for shorter pedestrian crossings.</p>	CARPC
<b>Physical Activity: Bicyclists</b>	<p>In order to both encourage and protect the safety of bicyclists, it is recommended that designated bike lanes, bike sharrows and bike paths be integrated into the plan. To encourage and facilitate biking, bike racks should be incorporated into commercial districts to encourage trips by bike. Community outreach be conducted with information on proper bike safety, biker signals and road rules, and bike helmet awareness.</p>	CARPC
<b>Physical Activity: Aging Population</b>	<p>To facilitate aging in place and encourage physical activity of senior citizens, walking paths should be created that incorporate the needs of seniors such as frequent benches for resting, water fountains for</p>	CARPC

	<p>rehydrating, and shade trees to protect from the sun. In addition, these walking paths could include low impact exercise structures to encourage increased physical activity. Create bump outs at busy intersections and longer stop lights to facilitate pedestrian crossings. Make sure road signs and traffic signals are clear and easy to understand for pedestrians who may possibly have limited faculties (eye-sight, hearing, etc).</p>	
<p><b>Physical Activity and Social Cohesion</b></p>	<p>Ensure that as part of the hybrid scenario, social gathering places and open spaces for recreational use are included in the design. Social gathering places will increase social cohesion and open spaces that provide greenery and vistas will not only increase mental health but will also provide space for physical activity and social cohesion. Emphasize that these open spaces be located near senior and multi-family housing where density may limit open space and where there may be less financial ability to participate in private recreational facilities.</p>	<p>CARPC</p>
<p><b>Access to Healthy Foods</b></p>	<p>The creation of a local food council could encourage more frequent farmers' markets with more local vendors, increasing access to healthy local foods. This food council could also provide community outreach and information on how to obtain, store, prepare and enjoy healthy foods. Emphasis should be placed on locating farmer's markets in areas otherwise not well served with healthful food outlets and near senior and multi-family housing where need for access to healthy foods may be greatest.</p>	<p>CARPC</p>

## 9. HIA Process: Reporting

### Capital Area Regional Planning Commission (CARPC)

- ⊕ To ensure The HIA report will be widely and appropriately disseminated, the report will be shared with our partner, CAPRC. CARPC will include the HIA report in their dissemination to the community by including it in their Future Urban Development Area (FUDA) report and presentations.

### Wisconsin HIA Collaborative

- ⊕ The Wisconsin HIA Collaborative will create a brief PowerPoint presentation as well as a brief brochure to be disseminated through Wisconsin Public Health Association (WPHA) and online via the WPHA HIA website. Additionally, the HIA section created a case study (see below) for further dissemination.

### Case Study

**Case Study:** Capital Area Regional Planning Commission: Public Health in Regional and Local Comprehensive Planning

**Sector:** Government Agency

**Taking steps to:** Implement Strategies

### Organizational Description

The Capital Area Regional Planning Commission (CARPC) was created in 2007 by Wisconsin Governor James Doyle. The creation was requested in the form of adopted resolutions by local units of government in Dane County representing over 87% of the population and equalized property valuation in the county. The territory of the CARPC is Dane County and the cities and villages with incorporated areas in Dane County. The Commission is composed of thirteen Commissioners appointed by the Mayor of the City of Madison (4), the Dane County Executive (3), the Dane County Cities and Villages Association (3), and the Dane County Towns Association (3). The Commission is charged with the duty of preparing and adopting a master plan for the physical development of the region, and maintaining a continuing area wide water quality management planning process in order to manage, protect,



and enhance the water resources of the region, including consideration of the relationship of water quality to land and water resources and uses.

### **Capital Regional Sustainable Communities Initiative**

In the fall of 2010, the U.S. Department of Housing and Urban Development (HUD) awarded the Capital Region a \$2 million, three-year Sustainable Community Regional Planning Grant (SCRPG). The Sustainable Communities partnership is a federal initiative between the HUD, the Department of Transportation, and the Environmental Protection Agency (<http://www.epa.gov/smartgrowth/partnership/>). Twenty-seven governmental and private entities came together as Capital Region Sustainable Communities (CRSC) to successfully compete for these grant funds. CARPC serves as the lead agency for the CRSC. Recognizing that regional challenges - healthy environment, mobility, economic opportunities for all, and quality of life - require collaborative and integrated approaches. CRSC fosters regional collaboration, conducts planning and pursues demonstration projects for sustainable communities. One of the major projects is CARPC's Future Urban Development Area (FUDA) planning.

### **Need for Public Health Lens**

The Sustainable Communities Regional Planning Grant prioritizes livability principles (<http://www.epa.gov/smartgrowth/partnership/index.html#livabilityprinciples>) and all have important public health implications; however, the CRSC does not have formal public health partners. After ongoing outreach, the Wisconsin Public Health Association's Health Impact Assessment (HIA) Section and CARPC staff went through an informal assessment process to understand how each partner might benefit from working together.

### **Action Steps Highlight**

- ⊕ **Assess Needs & Resources** Nationally, urban growth continues to accelerate and mixed-use land redevelopment initiatives proliferate. Increasingly, public health practitioners need evidence-based methodologies to effectively engage in the policy-making process and encourage informed decision-making about critical public health strategies for reducing chronic disease, promoting physical activity, and securing access to basic community resources, among others. Wisconsin's public health community is no exception to the national trends. The public health community faces an intensifying need to measure the health impact of the built environment as it evolves with community growth and public policy. In fact, Wisconsin passed legislation requiring municipalities to develop "smart-growth" plans (includes public participation) to comprehensively plan for policy or infrastructure changes in both urban and rural settings.<sup>1</sup> Historically, public health was missing in conversations on community

planning. Thus, this is an optimal time for Wisconsin public health practitioners to seek new partnerships with municipalities, agencies and organizations at many levels to engage in this comprehensive planning process and begin evaluating health impacts from changes in the built environment.

Insert Quote

- ⊕ **Pick Priorities** Understanding the potential for planners and public health, the HIA Section and CARPC staff determined that conducting rapid HIAs (<http://www.dhs.wisconsin.gov/hia/>) on the FUDA scenarios would be an opportunity to partner. The purpose of FUDA planning is to protect vital natural resources, promote efficient development, and preserve farmland through cooperative planning for long-term growth. Dane County's Water Quality Plan will identify the 25-year FUDA and will consider other factors including the impacts on natural and built systems, the efficient use of land including urban densities, and the ability to efficiently provide services to support the development and farmland preservation planning.
- ⊕ **Find Programs & Policies That Work** HIA is a combination of procedures, methods and tools that systematically judges the potential, and sometimes unintended, effects of a policy, plan, program or project on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects (International Association for Impact Assessment, 2006). The purpose of the HIAs is to provide a public health lens to inform the communities' decision-making processes as they select their FUDA plans.
- ⊕ **Implement Strategies** The HIAs will be conducted from February 2012- April 2012 and will focus on potential health impacts on the aging population and determinants and outcomes related to physical activity.
- ⊕ **Evaluate Efforts** Intended outcomes for this process include: (a) assessing the health impacts of two future urban development area pilot projects to aid in the decision of the selection of a final scenario and associated implementation measures; and (b) the development of a case study to guide future public health and planning partnerships.

## 10. HIA Process: Monitoring & Evaluation

Because this rapid HIA was a demonstration project, the monitoring and evaluation processes were enacted differently than they would have been for a full HIA. That being said, there is still important monitoring and evaluation information that can be shared through this rapid HIA process to get a better understanding of how these steps of an HIA are important to the overall process.

### Monitoring Plan

In general, a monitoring plan for a full HIA is done for the following reasons and should be done in the following ways:

- ⊕ To determine whether the recommendations set forth were actually implemented.
- ⊕ The monitoring plan should include provisions on how to report monitoring findings to decision makers and HIA stakeholders.
- ⊕ Indicators required for monitoring and measuring the health impacts and long-term effects of the proposal need to be determined and set up during the scoping stage, rather than at the end of the HIA process. Monitoring of the proposal's implementation should be a continual process.

### Evaluation Process

In general, the evaluation process is meant to accomplish the following:

- ⊕ To determine whether the HIA was effective in carrying out its objectives and ultimately achieving its health goals.
- ⊕ To determine whether the methodologies employed were effective or suitable.
- ⊕ To determine the HIA's usefulness as seen by its target audience(s).
- ⊕ To assess the accuracy of predictions made during appraisal stage of the HIA.
- ⊕ To establish how effective the process was in influencing decision-making processes and developments.

More specifically, had this HIA been conducted as a full HIA rather than a rapid demonstration HIA, various process, impact and outcome questions would be asked as part of the evaluation process. Examples of these evaluation questions appear below:

- ⊕ **Process Evaluation:**

- Where the individuals in the communities that the identified health priorities focus on (the aging population and overweight/obese populations) fully incorporated into the HIA process to ensure that their needs, concerns, and comments were heard and addressed?
- Where the health needs of the communities that the identified health priorities focus on (the aging population and overweight/obese populations) addressed in the hybrid scenario because of the HIA process?

⊕ **Impact Evaluation:**

- Does the chosen hybrid scenario disproportionately affect the health of one or more groups of individuals? If so, what groups of individuals and how are they disproportionately affected?
- Were the recommendations for the aging population, specifically to create walking paths and cross walks that address their needs, as well as recommendations for physical activity, such as including more sidewalks and biking facilities enacted? If not, why?

⊕ **Outcome Evaluation:**

Because of the long term time frame of these growth plan scenarios, it is difficult to track the long term health impacts of HIA recommendations. Typical HIAs are better able to determine the long-term health effects of HIA recommendations because the time frame they are working with is generally shorter than a 20+ year comprehensive plan such as is the case with the particular rapid demonstration HIA.

If this were a full HIA, the following outcome questions could be asked as part of the outcome evaluation:

- Did levels of physical activity increase due to better sidewalks, walking paths and bike paths/facilities as recommended by the HIA? If so, can this increase in physical activity be linked to any decreases in overweight/obesity?
- Did the health of the aging populations increase do to better access to recreation and better access to healthful foods?

## 11. Discussion

### ⊕ *Strengths*

The rapid HIA conducted was able to add value to the FUDA process by bringing a health lens to the table. It did so by assessing potential impacts of the Future Urban Development Area (FUDA) alternate scenarios, providing recommendations to the community steering committee, and to disseminating this project as a case study to inform future partnerships between community planners and public health in Wisconsin. The HIA was also able to bring attention to the specific health concerns of the community members in the FUDA area (the aging population and physical activity and obesity) and provide recommendations to help address these specific health concerns.

The partnership created between CAPRC and DPH has value outside of this HIA process. There are many projects the two organizations can partner on in the future that incorporate plans, policies or programs that focus on both planning and health issues.

Finally, as a demonstration project, this HIA adds value to the HIA community because it provides experiences and information on how HIA can be used in the field of community planning to help bring a health lens to the planning process.

### ⊕ *Limitations*

Due to the time constraints associated with this project, this HIA was conducted as a rapid HIA. This means that the data collection process was less intensive than in a traditional, longer term HIA.

There were limitations in ability to obtain data which restricted the impact analysis. Some data limitations were related to data on existing conditions, while other data limitations were related to details about how the three original scenarios related to each health indicator.

For example, some data limitations on existing conditions were related to affordable housing, good quality housing, life-cycle housing, and energy efficient building codes: no data was obtained regarding the percent of families/individuals in the analyzed FUDA area who live in affordable housing, and no data was obtained and/or available on good quality housing, life-cycle housing, and energy efficient building codes in the FUDA area. Other existing conditions data that was lacking related to emergency department (ED) visits related to asthma and climate change (CC) and allergic diseases: no data was available on how many asthma ED visits in the FUDA area are due to housing quality and/or air pollution versus other asthma triggers, and no data was available on how many allergic diseases in the FUDA area are attributable to CC. Finally, other existing conditions data that was not available related to healthy food outlets and local food production: no data was available on the “healthiness” of foods at local foods

outlets, and no data was available on what percent of locally produced foods are sold and/or consumed locally.

Some of the data limitations were related to lack of detailed information in the three original scenarios related to the prioritized health determinants. It was not possible from the information provided on the three scenarios to determine which scenario would have the most views of greenery/vistas for mental health or which would provide for the most tree canopy preservation. This was also true for health indicators such as trails and bike lanes, transit, transit oriented development and gathering places and recreational amenities. In these cases, it was necessary to make a recommendation based on the limited information related to these health indicators or to make no recommendation at all.

Because this rapid HIA was conducted in conjunction with a long-term comprehensive plan for these communities, the monitoring phase will not be followed through to completion. This type of long-term comprehensive plan is usually a 20 to 50 year plan and thus makes it difficult to evaluate the long term outcomes of conducting an HIA.

## 12. Conclusion

Just like individual and population health, the health of a community is multifaceted and complex. Healthy community design is a comprehensive strategy for shaping and organizing our communities, taking into account the myriad factors, such as policies, plans, and programs, which affect physical and mental health and social well-being. HIA is one way to help shape and organize our communities for health, by looking at the complicated intersection between health and social, economic and environmental factors in a systematic way, to see how various policies, plans and programs may positively and/or negatively affect health. One important advantage of HIA is that it can pinpoint and focus on the needs of disadvantaged populations, thus attempting to address some of the health disparities in a community.

This rapid HIA addressed the traditional six steps of the HIA process in a slightly different fashion than a traditional HIA because it was a demonstration project. After deciding to move forward with an HIA, the goals of the HIA were articulated, certain health pathways were prioritized, and vulnerable populations were identified. This rapid HIA was able to provide the communities involved with information on which of the original three scenarios best fit each health determinant, to help inform and educate community members on how various health determinants are affected by different land use plans. The HIA process was also able to provide these communities with recommendations on how to best promote health and mitigate any potential negative health effects of the recommended hybrid scenario.

This demonstration HIA will help inform future HIA projects. The partnership that has been established between CARPC and the Wisconsin HIA Collaborative will be beneficial in the future.

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## Appendix 1 Additional FUDA HIA Scoping

Existing Conditions	Impact Research Questions	Indicators	Data Sources	Methods	Priority	Notes
What are the existing demographics of the area?	How will the FUDA alternative plan impact the demographics of the area?	Age	CARPC			*Community has a particular interest in elderly population
		Income	CARPC			
		Employment	CARPC			
		Race/Ethnicity	CARPC			
What is the existing health status of the area?	How will the FUDA alternative plan impact the health status of the area?	Overweight/obesity	DPH			*Community Interest
		Common diseases	DPH			
		Health Insurance	DPH			
		Physical Activity	DPH			*Community Interest
		Elder Health	DPH			*Community Interest
		Mental Health	DPH			
		Social Cohesion	DPH			
		Respiratory diseases	DPH			
		Emergency Department data	DPH			
		Crime	DOC			

Existing Conditions	Impact Research Questions	Indicators	Data Sources	Methods	Priority	Notes
		Traffic Related Injury	IRC			
What is the current status of housing availability in the area?	How will the FUDA alternative plan impact housing availability?	Affordable housing (MN)	CARPC			Affordable housing goal
		Quality housing (lead, air quality, temperature, humidity)	DPH			
		Life-cycle housing (Douglas)				Town homes, senior housing, apartments, and rental unites
What are the current economic conditions of the area?	How will the FUDA alternative impact the area economically?	Cost of new infrastructure	CARPC			
		Cost of additional civic amenities	CARPC			
		Cost of public works/road maintenance	CARPC			
		Cost of emergency services	CARPC			
		Tax revenue	CARPC			
		School impact: Assessment	CARPC			Comparison of tax levy per student
		School impact: Bussing	CARPC			Potential saving to school districts due to walking not bussing

Existing Conditions	Impact Research Questions	Indicators	Data Sources	Methods	Priority	Notes
		Jobs	CARPC			New employees added between 2010 and 2035, and between 2010 to “build out)
		Job Access (Douglas)				Does the plan promote economic opportunities for low income and underemployed or insecurely employed individuals
		Consumer Expenditure	CARPC			Additional Spending by new residents
What are the current environmental (broadly defined) conditions of the area?	How will the FUDA alternative impact the area environmentally (broadly defined)?	Air pollution	CARPC			
		Asthma/ Respiratory diseases	DPH?			
		ED visits related to Asthma	DPH?			
		Greenhouse gas	CARPC			
		Developments have views of greenery/vistas for mental health (Douglas)				
		Tree canopy preservation (MN)	CARPC			
		Crime Prevention through environmental	Local ordinances			



Existing Conditions	Impact Research Questions	Indicators	Data Sources	Methods	Priority	Notes
		community design				
		Separation of potentially contaminating land used with residential areas and natural resources (MN)	CARPC			
		Conversion of community facilities, fleets and operations to carbon-neutral environments (MN)	Local ordinances			
		Energy efficient building codes (LEED)	Local ordinances			
		Severe rain events or increased precipitation (MN) Storm water Generated (CARPC)	CARPC			
What is the current state of mobility and access in the area?	How will the FUDA alternative impact the area's mobility and access?	Walking and Biking	CARPC			Portion of new residents within walkable (1/4mile) and bikable (2 miles) distance to one or more common destinations (schools, park, grocery store, employment)

Existing Conditions	Impact Research Questions	Indicators	Data Sources	Methods	Priority	Notes
		Pedestrian/bicycle safety (MN)				
		Transit	CARPC			Portion of new residents within walkable (1/4 mile) distance to “high capacity” transit stop
		Trip Reduction	CARPC			Trips reduced due to proximate land uses
		Reduced VMT	CARPC			Reduction in VMT due to reduced trips
		Traffic related accidents (Douglas)	IRC			
		Complete streets, shared streets, and traffic calming (Douglas)	Local ordinances			
		Senior Services (Douglas)				Hospitals, healthcare facilities, churches, shopping malls, and community centers
		Linking existing and future housing development with employment and services (Douglas)				

Existing Conditions	Impact Research Questions	Indicators	Data Sources	Methods	Priority	Notes
		Recreational amenities (Douglas)				Parks, open space, and recreational facilities
		Maps of large recreational facilities, community gardens, schools, large parks and open space (Douglas)				Will the final plan include this? Checklist
		Trails and bike lanes (Douglas)				
		Clustered activities (Douglas)	CARPC			Mixed-used developments, planned unit develops, transit-oriented developments
		Transit Oriented Development (MN)	CARPC			
		Mixed Used Development (MN)	CARPC			
		Social Interaction or gathering places (MN)				
What is the current access to healthy foods in the area?	How will the FUDA alternative impact the area's access to healthy food?	Local food production (MN)				Community gardens, protection of agricultural land
		Contiguous Ag land	CARPC			
		Healthy Food Outlets	DPH			

Existing Conditions	Impact Research Questions	Indicators	Data Sources	Methods	Priority	Notes
What is the current level of preparedness for emergencies?	How will the FUDA alternative impact the area's level of preparedness for emergencies?	Documented Risks	SOVI			Extreme heat, winter weather, chemical spills
		Documented plans or resources	SOVI/DPH?			

## Appendix 2 Additional Good Quality Housing Information

### 1. Good Quality Housing

Indoor Air Pollutants and their Health impacts	
Indoor Pollutant/Element	Impacts in Health
<b>Air Pollutants (Elderly people, children and people with respiratory conditions/diseases are particularly susceptible to indoor air pollution)</b>	
Lead (from lead-based paint)	<ul style="list-style-type: none"> <li>⊕ Lead exposure in fetuses and children can lead to delays in their physical and mental development</li> </ul>
Radon: radioactive gas released from the ground that can migrate into buildings	<ul style="list-style-type: none"> <li>⊕ Damages lung cells and can lead to lung cancer</li> </ul>
Volatile organic compounds (VOCs): emitted by furniture and building materials, as well as when using household cleaning products	<ul style="list-style-type: none"> <li>⊕ Some are carcinogenic</li> <li>⊕ Other health impacts include: -               <ul style="list-style-type: none"> <li>• Eye, nose, and throat irritations</li> <li>• Headaches</li> <li>• Dizziness</li> <li>• Visual disorders</li> <li>• Memory impairment</li> </ul> </li> </ul>
Asbestos: used in fire proof materials	<ul style="list-style-type: none"> <li>⊕ Causes mesothelioma and cancer</li> </ul>
<b>Indoor Temperature</b>	<ul style="list-style-type: none"> <li>⊕ Low indoor temperatures increases the risk of elderly mortality</li> <li>⊕ Temperature extremes can exacerbate negative health conditions and lead to increased morbidity.</li> </ul>
<b>Humidity</b>	<ul style="list-style-type: none"> <li>⊕ Dampness and mold growth in homes can cause respiratory diseases, allergies as well as skin problems. Other negative health impacts include fatigue, headache, chronic anxiety and depression.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>⊕ Exposure to noise pollution can lead to depression and may have negative impacts on cardiovascular, respiratory musculo-skeletal systems in adults.</li> <li>⊕ In elderly people, exposure to noise pollution has been associated with increased risk of stroke.</li> </ul>

	<ul style="list-style-type: none"> <li>⊕ Exposure to noise pollution in children has been associated with an increased risk of respiratory disease.</li> <li>⊕ Exposure to noise pollution has also been linked to asthma, due to an inability to open windows as a means to minimize noise impacts.</li> </ul>
<b>Light</b>	<ul style="list-style-type: none"> <li>⊕ Lack of adequate daylight has been associated depression.</li> </ul>
<b>Space</b>	<ul style="list-style-type: none"> <li>⊕ Inadequate space inside the home has been associated with poor mental health outcomes.</li> <li>⊕ Children living in high rise housing may be at a greater risk of developing behavioral problems and have poor mental and general health outcomes than children living in low rise or single family housing due to overcrowding and a restricted access to play areas.</li> </ul>
<b>Pests such as dust motes, rats and cockroaches</b>	<ul style="list-style-type: none"> <li>⊕ These are all sources of allergens that can lead t asthma and other respiratory diseases.</li> </ul>
<b>Unsafe condition inside the home</b>	<ul style="list-style-type: none"> <li>⊕ Can lead to an increased risk of accidental burns and injuries.</li> </ul>

(IPH Ireland, 2006; US EPA, 2011).

## Appendix 3 Additional Considerations per Indicator

### Affordable, Good Quality, Life-Cycle Housing & Energy Efficient Building Codes

- ⊕ What current proportion of the population in the area is living in overcrowded conditions?
- ⊕ Does the plan incorporate a variety of housing densities? Variety of housing cost?
- ⊕ Are at least 50% of residential units affordable to persons at or below the medium household income, and/or is there at least a 20% ownership and 20% rental unit housing mix in a neighborhood or census tract?
- ⊕ How many of the existing buildings in the area are LEED or Green Point certified? Map the locations of life-cycle housing (i.e. town homes, senior housing, apartments, and rental units).
- ⊕ Do current development plans include integrated pest management plans, allergen removal plans and lead-paint testing and removal?
- ⊕ Are housing vouchers available to help families move to healthier and safer housing?
- ⊕ Do all homes have smoke detectors and window guards?

### Developments with Views of Greenery/Vistas for Mental Health and Tree Canopy Preservation

- ⊕ What is the quality, proximity to and the current number of acres of natural spaces, habitats and parks in the area under consideration?
- ⊕ What is the current proportion of population living within ¼ mile of neighborhood or regional park, open space, or publicly accessible shoreline?
- ⊕ Is a tree canopy provided in parks, open space, and streetscapes to establish a 50% to 100% canopy coverage in the development area?

### Trails and Bike Lanes & Walking and Biking

- ⊕ Is an off-street trail system planned to serve all residential areas, preferably within 400-600m of all residential areas?

### Traffic-Related Accidents, Complete Streets and Pedestrian and Cyclist Safety

- ⊕ What are the current number, type, and location of traffic collisions, in the area?
- ⊕ Are all residential areas, schools, day care facilities, playgrounds and sports fields required to be more than at least 200 m (656 ft) from a major road?
- ⊕ What is the current hazard or frequency of transportation related accidents?

- ⊕ What are the current vehicle volumes or speeds and how shall these be impacted by the plan?
- ⊕ Are any of the following features or traffic calming measures included in the current and /or future street plans? :

<b>Accessible pedestrian signals</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Police Enforcements</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Bike Lanes (or wide paved shoulders)</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Raised Crossings</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Bump Outs</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Roundabouts</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Center Islands</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Sidewalks (five feet wide)</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Comfortable and accessible public transportation stops</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Signage</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Curb extensions</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Small block sizes</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Frequent and safe crossing opportunities</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Special bus lanes</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Landscaping</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Speed Humps</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Median Islands/Barriers</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Striping</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure
<b>Narrower travel lanes</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Sure	<b>Other</b>	

(Douglas County PH & Minnesota PH Department, 2011; DHSS, 2010; National Complete Streets Coalition, 2011)

- ⊕ Does the development plan supporting cycling and walking? How will it impact the number of walking and bicycling trips?
- ⊕ How will the plan impact the current vehicle miles traveled (VMTs) in the area?

### Transit and Transit Oriented Development

- ⊕ What is the current availability and convenience of public transit services? Are the current public



transport services reliable and frequent (including services at night and at weekends)?

- ⊕ What is the current transit access to jobs, goods, services, and educational resources?
- ⊕ What is the current proportion of households commuting to work by public transit?
- ⊕ Are there existing or planned transit stops for all residential areas in urbanizing and redevelopment areas as well as in employment areas (preferably within 1200m of all such areas)?
- ⊕ Are there a variety of nearby destinations for residents (e.g., employment, health care, grocery stores, etc.) and can these destinations be reached by a variety of transportation modes (e.g., bicycling, walking, automobile, transit)?
- ⊕ What is the proportion of new residents living within walkable (1/4 mile) distance to a “high capacity” transit stop?
- ⊕ Are there sufficient specialized transport services available for people with disabilities?
- ⊕ Are public transit vehicles age-friendly (e.g. have floors that lower, have low steps, have wide seats, have clear signage indicating vehicle number and destination)?
- ⊕ Are the current public transport services affordable to all older people?
- ⊕ Do the current public transport services enable older people to reach key destinations such as hospitals, health centers, public parks, shopping centers, banks and senior centers?
- ⊕ Are all areas well-served with adequate, well-connected transport routes within the city (including the outer areas) and between neighboring cities?
- ⊕ Are current transport routes well-connected between the various transport options?
- ⊕ Are designated transport stops located in close proximity to where older people live?
- ⊕ Are transport stops provided with seating and with shelter from the weather, are they clean and safe, and are adequately lit?
- ⊕ What is the current proportion of the senior population living within ½ mile of regional transit stop and ¼ mile of local public transit stop?
- ⊕ What will be the proportion of new residents living within walkable (1/4 mile) distance to a “high capacity” transit stop?

### **Neighborhood Characteristics (Social Interaction, Gathering places & Recreational Amenities, Senior Services)**

- ⊕ What is the current quality or frequency of contacts with friends, family members, and neighbors?
- ⊕ What are the current attitudes towards or stereotypes of racial, social, and ethnic groups in the area?
- ⊕ What is the current residential segregation by race/ethnicity and income, in the area?
- ⊕ What is the current proportion of voting age population participating in elections in the area?

- ⊕ What is the current level of and access to participation in voluntary organizations and activities?
- ⊕ What is the current degree of inequality in income or wealth, or segregation by race, ethnicity, or income?
- ⊕ What is the current degree or quality of participation in public decision making?
- ⊕ What is the current perceived level of safety and “trust” of neighbors in the area?
- ⊕ Are there sufficient specialized transport services available for people with disabilities?
- ⊕ Are public transit vehicles age-friendly (e.g. have floors that lower, have low steps, have wide seats, have clear signage indicating vehicle number and destination)?
- ⊕ Are the current public transport services affordable to all older people?
- ⊕ Do the current public transport services enable older people to reach key destinations such as hospitals, health centers, public parks, shopping centers, banks and seniors’ centers?
- ⊕ Are all areas well-served with adequate, well-connected transport routes within the city (including the outer areas) and between neighboring cities?
- ⊕ Are current transport routes well-connected between the various transport options?
- ⊕ Are designated transport stops located in close proximity to where older people live?
- ⊕ Are transport stops provided with seating and with shelter from the weather, are they clean and safe, and are adequately lit?
- ⊕ What is the current proportion of the senior population living within ½ mile of regional transit stop and ¼ mile of local public transit stop?
- ⊕ What will be the proportion of new residents living within walkable (1/4 mile) distance to a “high capacity” transit stop?
- ⊕ What is the current proportion of the senior population living within a 30 minute transit or walking commute of a hospital or health care facility?
- ⊕ Are residential care facilities, such as retirement homes and nursing homes, located close to services and residential areas so that residents remain integrated in the larger community?
- ⊕ Are home care services offered in the community, such as health services, personal care and housekeeping?
- ⊕ Does current emergency planning include the needs of older people, taking into account their capacities in preparing for and responding to emergencies?
- ⊕ What will be the proportion of new residents living within walkable (1/4mile) and bikable (2 miles) distance to one or more common destinations (schools, park, grocery store, employment)?
- ⊕ Does the plan allow for clustering of different activities together (to make it easier to access a variety of services at one stop via public transit, bicycling, walking, and by car)?
- ⊕ Does the plan link existing and future housing development with employment and services?

## Mixed Used Development

- ⊕ Are there appropriate ordinances or policies used for mixed-use design of neighborhood, village, town, and city centers?
- ⊕ What is the proportion of new residents living within walkable (1/4mile) and bikable (2 miles) distance to one or more common destinations (schools, park, grocery store, employment)?
- ⊕ Are services clustered as well as located in close proximity to where older people live?
- ⊕ Can services be easily accessed by elderly customers (e.g. are located on the ground floor of buildings)?
- ⊕ What is the current proportion of the senior population in the area living within ½ mile of a full-service grocery store or fresh produce, shopping malls, community centers, places of worship?
- ⊕ What is the current proportion of the senior population living within a 30 minute transit or walking commute of a hospital or health care facility?
- ⊕ Are residential care facilities, such as retirement homes and nursing homes, located close to services and residential areas so that residents remain integrated in the larger community?
- ⊕ Are home care services offered in the community, such as health services, personal care and housekeeping?
- ⊕ Does current emergency planning include the needs of older people, taking into account their capacities in preparing for and responding to emergencies?
- ⊕ What will be the proportion of new residents living within walkable (1/4mile) and bikable (2 miles) distance to one or more common destinations (schools, park, grocery store, employment)?
- ⊕ Does the plan allow for clustering of different activities together (to make it easier to access a variety of services at one stop via public transit, bicycling, walking, and by car)?
- ⊕ Does the plan link existing and future housing development with employment and services?

## Appendix 4 Recommendations per Indicator

### Affordable, Good Quality, Life-Cycle Housing & Energy Efficient Building Codes

- ⊕ The development plan must include at least 50% of residential units affordable to persons at or below the medium household income.
- ⊕ The development must include at least a 20% ownership and 20% rental unit housing mix in a neighborhood or census tract.
- ⊕ The development plan should include an evaluation program of lead-bearing substances in exposed surfaces of dwelling units (as well as child care facilities, schools, or recreation facilities) used by children. The program should also include assistance schemes for lead-paint testing, removal, coverall or tenant relocation.
- ⊕ The development plan should also include integrated pest management plans, and assistance programs provided for allergen-testing, removal (for example carpet replacement etc), coverall or tenant relocation.
- ⊕ Household quality evaluations should include assessments for heavy metals, inorganic solvents, pesticides, crowding and transportation noise, and required safety standards such as smoke detectors.
- ⊕ The development plans should also include schemes/policies which facilitate the transfer rental housing from neglectful owners to owners who take their maintenance and management responsibilities seriously.

### Developments with Views of Greenery/Vistas for Mental Health and Tree Canopy Preservation

- ⊕ The development plan should require that all developments have views of greenery for mental health benefits.
- ⊕ The development plan should strive to incorporate greenways to provide natural, non-motorized open space corridors (often following roadways, ridge tops and waterways).
- ⊕ The plan should require that at least a small amount of green space be provided for all development.
- ⊕ The development plan should encourage the inclusion and maintenance of the natural environment in the area.
- ⊕ The development plan should include a tree planting/tree canopy plan. The tree planting/ tree canopy plan should cater for 50% to 100% tree canopy coverage in the development areas,

provided in parks, open spaces, and streetscapes.

### **Traffic-Related Accidents, Complete Streets and Pedestrian and Cyclist Safety**

- ⊕ Speed limits in the locality should be set at or below 35 mph (optimally 20 mph) for 70-90% of streets, to ensure pedestrian/bicyclist safety.
- ⊕ The development plan should ensure that adequate street lighting is provided along all major streets.
- ⊕ All residential areas, schools, day care facilities, playgrounds and sports fields should be required to be located more than at least 200 m (656 ft) from a major road.
- ⊕ The development plan should make use of pedestrian overlay zones. The pedestrian overlay zones should include policies that encourage walking and bicycling through streetscape amenities, such as benches, trash receptacles, planters, pole lights, kiosks, telephones, news-stands, drinking fountains and bike racks. Pedestrian plans should also provide protection through parallel parking and street trees as features.
- ⊕ Traffic calming measures should also form part of the development plan.

### **Transit and Transit Oriented Development**

- ⊕ The development plan should ideally incorporate neighborhood commercial and/or mixed use development to encourage transportation related walking.
- ⊕ The development plan should also include a multimodal transportation plan that connects all residential areas to services (i.e. employment centers, grocery stores, hospitals, etc), as well as policies/plans that prioritize the transportation needs of underserved populations (e.g., seniors, children, persons with disabilities, low-income residents, etc.).

### **Neighborhood Characteristics**

- ⊕ Planned residential areas should be located with 600m (preferably 400m) of playing areas, parks, and trails.
- ⊕ Adequate lighting should be provided in parks so that pedestrians on paths see other pedestrians at least 200 meters away.