FAIRMONT CONNECTIVITY PLAN RAPID HEALTH IMPACT ASSESSMENT

Conducted January- June, 2014

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Executive Summary

The purpose of this rapid Health Impact Assessment (HIA) is to facilitate the integration of health into decision-making, especially where it relates to implementation of projects outlined in Fairmont's Connectivity Plan. It is geared towards local and state government leaders, planning officials, school leadership, health departments, and citizens. This HIA report provides background information about the Connectivity Plan and HIA conducted between January and June of 2014. Additionally, this report outlines the steps involved in conducting HIA, background data and literature about the relationship between the built environment and public health. Data collection methods and specific neighborhood results and recommendations are presented to facilitate decision-making processes among stakeholders.

Introduction

Figure 1 The Steps of HIA (Source: healthimpactproject.org)

The City of Fairmont, West Virginia was awarded a Growing Healthy Communities Grant by the West Virginia Development Office in January 2014. This grant enabled Main Street Fairmont to contract with Thrasher Engineering to develop a bicycle and pedestrian connectivity plan ("Connectivity Plan") to facilitate non-motorized movement in, around, and through the City by residents and visitors. The West Virginia University Health Research Center (HRC) was awarded a grant by the Association of State and Territorial Health Organizations (ASTHO) to conduct a rapid HIA from January to June, 2014. This HIA, the findings of which are reported in this document, provides the City of Fairmont and Main Street Fairmont supplemental information about the potential health impact of projects in the Connectivity Plan. The HIA was conducted using the steps outlined by the Health Impact Project: Screening, Scoping, Assessment, Recommendations, Reporting, and Monitoring and Evaluation (See Figure 1 for additional information about each of these steps).

Based on information from scientific literature about the health impact of connectivity and active transportation, this HIA report makes recommendations using community input collected by the HRC HIA team ("HIA team") during the HIA period. Input was solicited about the potential health impact of numerous types of projects and activities on walking and biking to downtown, schools, and parks. Summary and neighborhood-specific information was integrated with the Connectivity Plan to serve as a decision-making tool for policy leaders in Fairmont to determine which projects to prioritize moving forward (available: www.healthimpactproject.org).

Literature Review

Physical activity is vital for physical and mental health.[1] Achieving population-level increases in physical activity, especially among the previously sedentary, may have significant public health impacts in reducing chronic disease and unburdening healthcare systems.[2,3] The preponderance of evidence[1,4-11] suggests that different characteristics of the built environment – how, where, and what infrastructure is built – are associated with leisure and transportation physical activity. From an ecological perspective,[12] population-level interventions to increase physical activity should be multi-level and multi-disciplinary in changing the environments with which residents interact daily in their homes, neighborhoods, and cities (e.g., work, school, parks, roads). Further, policies and plans that affect the social, physical, natural, and built environments must integrate health as a factor in allocating resources to have the desired outcome on four areas of active living in the population: recreation, transportation, occupation, and household.[13]

Bicycling and walking are key components of Healthy People 2020, specifically increasing the proportion of short trips made by one of these modes.[14] Planning has a key role to play in encouraging bicycling and walking in that planning guides how the built environment is structured. Factors unique to each of these modes that can be incorporated into built environment decisions have been assessed extensively. Bicycling studies suggest that infrastructure/engineering (i.e., dedicated cycle routes or paths, separation of cycling from other traffic), planning/zoning (i.e., high population density, short trip distance, proximity of a cycle path or green space) and projects/promotions for children (i.e., Safe Routes to Schools [SRTS]) are significantly positively associated with cycling for transportation or leisure.[15] Conversely, traffic danger, long trip distance, steep inclines and distance from cycle paths are negatively associated with cycling.[15] A review of built environment literature revealed significant associations among walking and four of 10 Smart Growth Principles (http://www.smartgrowth.org/network.php). These findings suggest that walking is associated with having a range of housing choices for all income levels, encouraging mixed land use, development toward existing communities/encouraging infill, and promoting compact building design to encourage higher population density.[16] Thus, when incorporated into the policy and planning processes, these principles may have a profound effect on how we evaluate plans, the health impact of these plans, and how we develop new or redevelop existing communities.

Significant impacts of inactivity are felt in West Virginia, a health disparate population[14] characterized by geographic isolation, high rates of poverty, limited access to health care, and an older population.[17,18] The prevalence of inactivity among adults in WV is 35% higher than the national rate (31% vs 22.9%),[19,20] with rates highest among 55-64 year olds (36%) and those over 65 years old (40.3%). Correspondingly, rates of diabetes (12% vs 9.5%), obesity (32.4% vs 27.8%), cardiovascular disease (6.0% vs 4.1%), and poor health status (25.1% vs 16.9%) outpace national rates.[19,21] Based on the evidence, integrating health into planning decisions will likely result in significant population-level physical activity changes over time.

Primary HIA Data Collection

To identify potential health impact of connectivity improvements in the Fairmont area and to gauge parents' perceptions regarding their children walking and biking to local schools, parks, and downtown areas, the HIA team solicited community input from three sources:

1. Parents of children in Fairmont Schools (Jayenne Elementary, East Park Elementary, Watson Elementary, West Fairmont Middle School, and Fairmont Senior High School);

2. Community members who live within the city limits; and

3. Faculty, staff, and students at Fairmont State University.

Feedback from these sources was collected using an online survey in SurveyMonkey that included original questions, validated instruments,[22-24] and modifications of other instruments[1,2] to identify the impact that numerous potential improvements would have on walking and biking to downtown and allowing their children to walk or bike to school and their nearest park. Results from each neighborhood and Fairmont State University, as well as recommendations based on these findings, are provided in the HIA Neighborhood Analysis section below. The SurveyMonkey link was advertised through postcards sent home with school children, several community Facebook pages, and through the Fairmont State University email listserv.

Results

We received complete survey responses from 205 Fairmont residents, 70.3% of whom were female. The average age of respondents was 37.0 ± 15.7 years and 37.1% met physical activity guidelines. *Results suggest there is pent-up demand, interest, and ability to be physically active in a fairly large catchment area*: 86.1% were willing to walk up to two miles "to get somewhere, such as a mall, post office, work, or other place;" likewise, 75.4% were willing to bike up to five miles to get somewhere and 57.6% owned a bike. Roughly half (52.4%) reported never walking or biking to downtown but 79.2% would be willing to. Less than half agreed or strongly agreed that they walk less than they would like to because of traffic (47.1%) or crime (36.7%) in their neighborhood.

Fifty-seven respondents had children in one of the Fairmont City schools, spanning all grade levels from pre-kindergarten to 12. Nearly all of the children (93.1%) owned a bike; and 29.8% of the children achieved 60 minutes of physical activity per day. Only 25% reported they would never be comfortable allowing their child to walk or bike to school without an adult, with

[1]National Center for Safe Routes to School Parent Survey, available at http://www.saferoutesinfo.org/program-tools/evaluation-parent-survey.
[2] *Active Where?* Parent Survey, available at http://sallis.ucsd.edu/measure_activewhere.html.

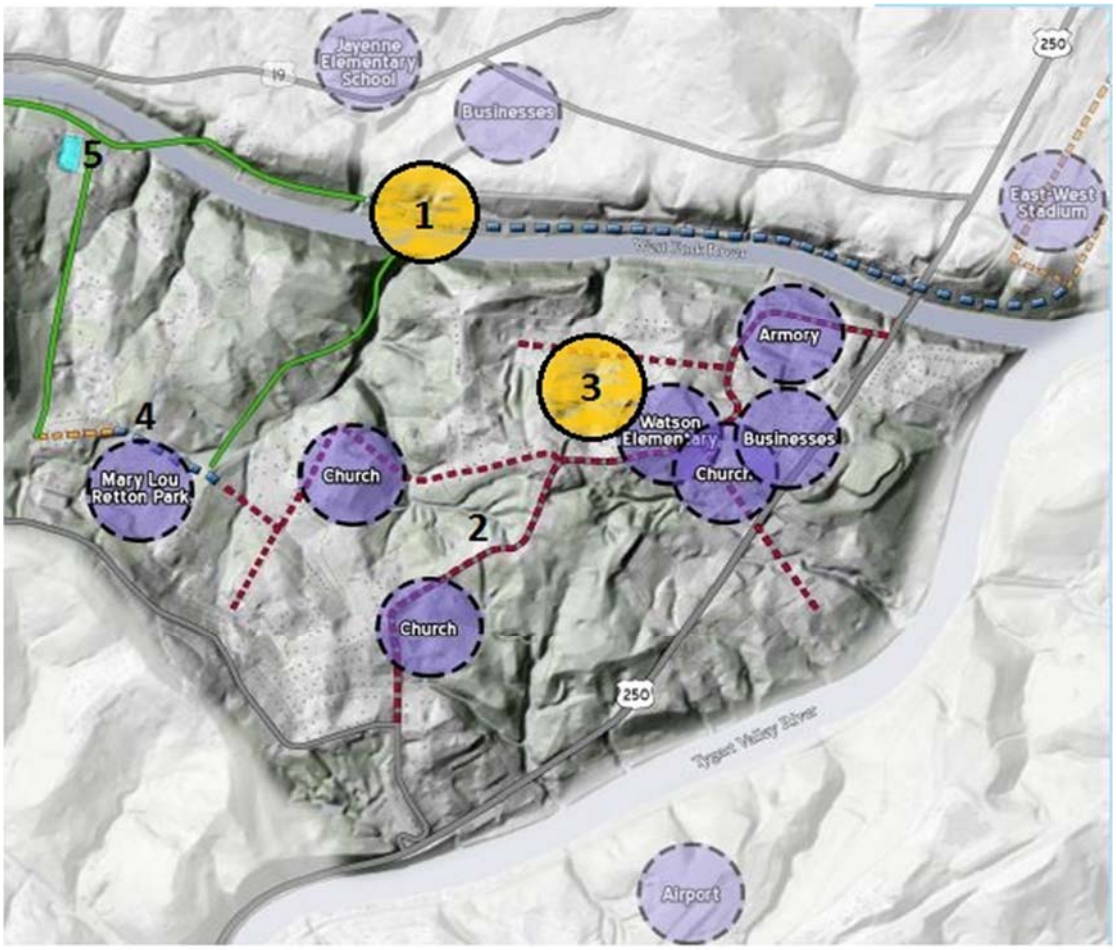
7th, 8th, and 9th grades the most commonly chosen grade at which parents would be willing to let their child walk or bike to school without an adult.

Each respondent was asked to provide their address or intersection near which they lived, what school their children attended, and their nearest park. This information was used to categorize respondents by each of the neighborhoods identified within the Connectivity Plan and the method for organizing the neighborhood analysis presented in the following sections.

HIA Neighborhood Analysis

HIA survey respondent location information was used to classify each response into one of the five neighborhoods identified in the Connectivity Plan. The following neighborhood sections review Thrasher Engineering's Connectivity Plan projects, neighborhood-specific results from the HIA community input survey, and make HIA recommendations. Recommendations are based on best practices from scientific literature about the health impact of connectivity and active transportation and Fairmont community input. All Connectivity Plan projects are numbered with HIA recommended projects highlighted to add additional geographic context.

Watson Neighborhood



Source: Thrasher Connectivity Report

Key Connectivity Plan Projects

Project Name **Watson Neighborhood**	Approx. Location on the Map	Priority Scale & Description: (A-D)* **As described in Thrasher Engineering's Connectivity Report*
North Central Connector Trail (NCCT)	**1**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
Mary Lou Retton Dr. Sidewalk Connection	**2**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
Watson Elementary Safe Routes to School (SRTS)	**3**	**B:** Project is easily feasible and would impact most people within related neighborhood, but may rely on another project's completion
West Fork River Trail to Watson Neighborhood Connector	**4**	**C:** Project may have challenges, relies on another project to be completed first or acts as a recreational amenity rather than a need to make a safer connection
West Fork River Trailhead Improvements	**5**	**B:** Project is easily feasible and would impact most people within related neighborhood, but may rely on another project's completion

HIA Findings

We had 12 respondents from the Watson Neighborhood discuss the impact that numerous potential improvements would have on walking and biking to downtown Fairmont. Ten respondents (90.9%) said they would walk or bike to downtown Fairmont. The top three improvements respondents identified to help them increase active transport in this neighborhood were:

1) Improving or building new sidewalks, pathways, or bike lanes (91.7%)
2) Improving the safety of intersections and crossings (91.7%)
3) Improving the terrain barriers (stairs, bridges). (91.7%)

We had 10 residents with children who responded about schools in the Watson Neighborhood. Key findings about schools included:

- Only one respondent indicated his/her child usually walked to school.
- One-third responded that their children had asked them for permission to walk to or from school
- Only 20% of respondents indicated their children achieved 60 minutes or more of physical activity each day.
- All respondents indicated that “Having other kids to walk or bike to school with” would increase their willingness to let their children walk or bike.
- Several other issues were tied at 90% of respondents who said it would increase their willingness to let children walk or bike:
    1) Improving or building new sidewalks, pathways, or bike lanes;
    2) Reducing the speed of traffic along routes;
    3) Reducing the amount of traffic volume along routes;
    4) Improving the safety of intersections and crosswalks; and
    5) Improving the terrain barriers (stairs, bridges).

Eight respondents discussed their utilization and access to the park nearest to their place of residence (Mary Lou Retton Park). Important information from these items includes:

- Only 25% of respondents indicated they walked or biked to the nearest park.
- Residents indicated a number of factors that would increase their willingness to walk/bike to the local park.
    1) Reducing the distance required to walk/bike (100%)
    2) Improving the safety of intersections and crosswalks (100%)
    3) Improving the terrain barriers such as stairs and bridges (100%)

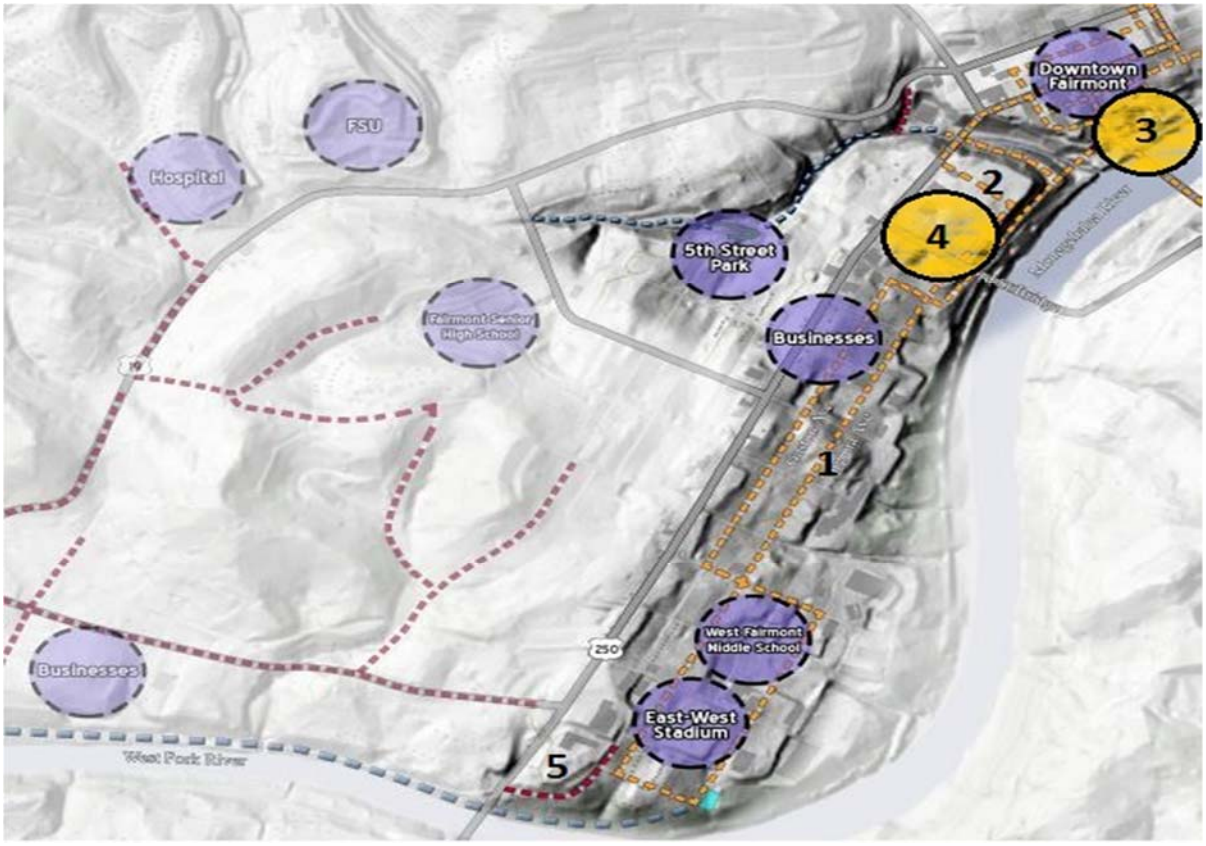
Recommendations

All five recommendations in the Connectivity Plan are targeted to areas identified by residents as important considerations for active transportation for adults to access downtown, for children to access schools, and for children and adults to access local parks. Based on the survey results, it is difficult to prioritize any one of these projects over the others. The trail and sidewalk connections will make access to downtown much easier, and based on these

responses will make adults much more likely to walk or bike downtown. Additionally, the infrastructure improvements and SRTS projects highlighted around Watson Elementary could have an immediate impact on the number of parents who encourage or allow their children to walk or bike to the school. Based on the potential health benefits of these proposals outlined in the introduction, we believe all of the recommendations presented would have a positive health impact. In terms of priority, fit, and future health impact the following two seem to have the greatest potential:

1) Watson Elementary SRTS
2) North Central Connector Trail

Beltline & Downtown



Source: Thrasher Connectivity Report

Key Connectivity Plan Projects

Project Name **Beltline & Downtown**	Approx. Location on the Map	Priority Scale & Description: (A-D)* **As described in Thrasher Engineering's Connectivity Report*
North Central Connector Trail Phase II	**1**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
North Central Connector Trail Phase III	**2**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
Downtown Loop Route	**3**	**B:** Project is easily feasible and would impact most people within related neighborhood, but may rely on another projects completion
Coal Run Greenway	**4**	**C:** Project may have challenges, relies on another project to be completed first or acts as a recreational amenity rather than a need to make a safer connection
Beverly Rd. Sidewalk	**5**	**D:** Project has low impact on majority of neighborhood population or acts as a secondary connection to a higher priority project

HIA Findings

We had 31 respondents from the Beltline/Downtown area discuss the impact that numerous potential improvements would have on walking and biking to downtown Fairmont. This area is closest to the Downtown business district. Not surprisingly, nearly all (96.8%) said they would walk or bike to downtown Fairmont. *Many issues important in other neighborhoods, notably traffic volume and speed as well as intersections and crossings were rated much lower in importance among Beltline/Downtown respondents*. Over 90% of respondents identified two key improvements to help them increase active transport:

1) Improving downtown (more or different types of events, businesses, etc) (96.7%);
2) Improving or building new sidewalks, pathways, or bike lanes (90.3%)

We had eight residents with children who responded about schools in the Beltline/Downtown area. Key information includes:

- Two (25%) respondents indicated their child usually walked to or from school.
- Two responded their child had asked them for permission to walk to or from school.
- Only two children achieved 60 minutes or more of physical activity each day.
- Respondents in the downtown area identified potential positive influences on walking or biking to school at a much lower rate than most other neighborhoods. The two highest rated changes were:
    - Reducing violence or crime (75%), and
    - Improving the safety of crossings and intersections (75%).

Seven respondents discussed their utilization and access to the park nearest their place of residence. Two (28.6%) indicated they walked or biked to the nearest park. Key factors that would increase their likelihood of walking or biking to the local park included:

1) Reducing violence or crime (100%),
2) Improving the park (updating/adding new equipment, lighting etc.) (85.7%),
3) Improving or building new sidewalks, pathways, or bike lanes (71.4%), and
4) Improving the safety of intersections and crossings (71.4%).

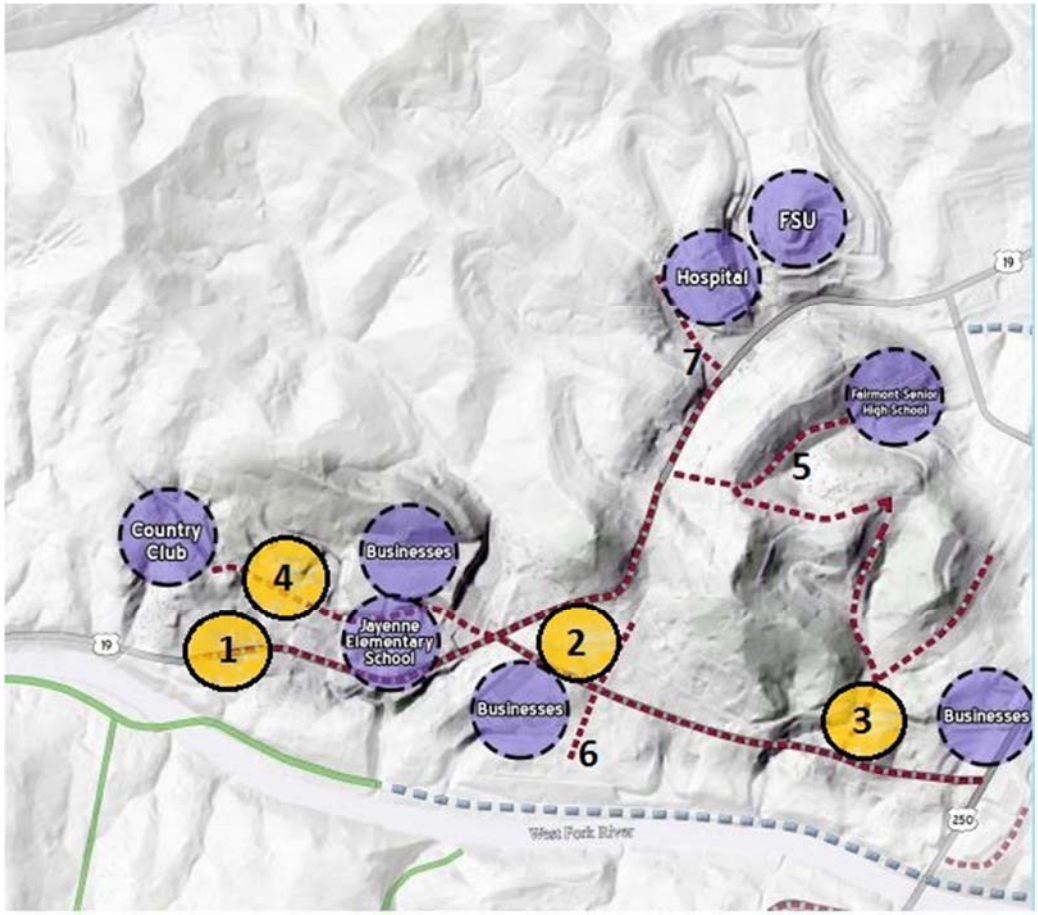
Recommendations

The North Central Connector Trail phases have important implications for other neighborhoods and access to downtown, so they should be considered priorities within other pieces of the Connectivity Plan. In agreement with findings reported in December, 2013 by Dr. Amy Sidwell, Assistant Professor of Health & Physical Education at Fairmont State University, in “City of Fairmont Beltline Loop Health Impact Assessment,” the poor condition of sidewalks is an impediment to being active in this area of Fairmont. Similarly, when looking at the feedback from citizens in the Beltline/Downtown area in the current project, some of the most important considerations have to do with additional pedestrian walkways or biking lanes and having more destinations and access to things to do downtown. The two projects that most seem to fit these descriptions and have potential to have a positive health impact are:

1. Downtown Loop Route Improvements
2. Coal Run Greenway

We additionally recommend the city look into issues of violence and safety from crime in the downtown area, as this was highly rated by respondents in our survey and in Dr. Sidwell's work in 2013. This issue also seems to be related to parks in the downtown area. Respondents suggested infrastructure repair/improvements to local parks would influence their use and promote active transit to the parks.

Country Club / West Side / Fairmont State University



Source: Thrasher Connectivity Report

Key Connectivity Plan Projects

Project Name **Country Club & West Side**	Approx. Location on the Map	Priority Scale & Description: (A-D)* **As described in Thrasher Engineering's Connectivity Report*
Locust Ave Sidewalks	**1**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
Country Club Road	**2**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
West Side Connector	**3**	**B:** Project is easily feasible and would impact most people within related neighborhood, but may rely on another project's completion
Jayenne and Country Club Rd	**4**	**B:** Project is easily feasible and would impact most people within related neighborhood, but may rely on another project's completion
Coleman Ave and Sunset Dr.	**5**	**D:** Project has low impact on majority of neighborhood population or acts as a secondary connection to a higher priority project
Barry St. Sidewalks	**6**	**D:** Project has low impact on majority of neighborhood population or acts as a secondary connection to a higher priority project
Bell Run Road Sidewalks	**7**	**D:** Project has low impact on majority of neighborhood population or acts as a secondary connection to a higher priority project

HIA Findings

Fairmont State University

We had 129 respondents who were affiliated with Fairmont State University and answered our survey questions related to active transit to and around campus. Roughly one-fifth reported commuting to Fairmont State by walking (16.5%) or bicycling (1.9%) and *81.2% indicated the potential that they would walk or bike to/from FSU in the future*. Respondents reported the following improvements would make them more likely to walk or bike:

- Improving or building new sidewalks, pathways, or bike lanes (93.9%),
- Transportation incentives offered by FSU (such as bike share or free/reduced cost to park for infrequent drivers) (75.5%),
- Improving the lighting (71.9%),
- Improving the terrain (stairs, bridges etc) (69.9%),
- Improving the safety of intersections and crossings (69.5%), and
- Reducing violence or crime (67.0%).

West Side/Country Club

We also had 55 respondents from the West Side/Country Club neighborhood area discuss the impact that numerous potential improvements would have on walking and biking to downtown Fairmont. Four-fifths (80%) said they would walk or bike to downtown Fairmont. There were three improvements that roughly 90% of the respondents indicated would help increase their willingness/ability to walk downtown:

1. Improved sidewalks, pathways, or bike lanes (96.4%);
2. Improving downtown (More or different types of events, businesses, etc.) (92.7%); and
3. Improving the terrain barriers (stairs, bridges) (89.1%).

We had nine residents with children who responded about schools in the West Side/Country Club neighborhood. Nearly half of respondents (44.7%) indicated their children achieved 60 minutes or more of physical activity each day.

- Zero respondents indicated their child usually walked to school in the morning, but two respondents indicated their child usually walked home from school in the afternoon. One-third, however, responded that their children had asked them for permission to walk to or from school.
- Two potential changes would result in 100% of respondents being more likely to allow their children to walk or bike to school:
    - Improving or building new sidewalks, pathways, or bike lanes, and
    - Reducing the speed of traffic along school routes.

Three respondents discussed their utilization and access to the park nearest their place of residence. Only one indicated they walked or biked to the nearest park. Residents indicated seven factors that would make 100% of them more interested or able to walk or bike to the closest park:

1) Improved or new sidewalks, pathways, or bike lanes;
2) Reducing the speed of traffic along the route;

3) Reducing the amount of traffic volume along the route;
4) Having adults to walk or bike with to the park;
5) Improving the safety of intersections and crossings;
6) Improving the lighting; and
7) Reducing violence or crime.

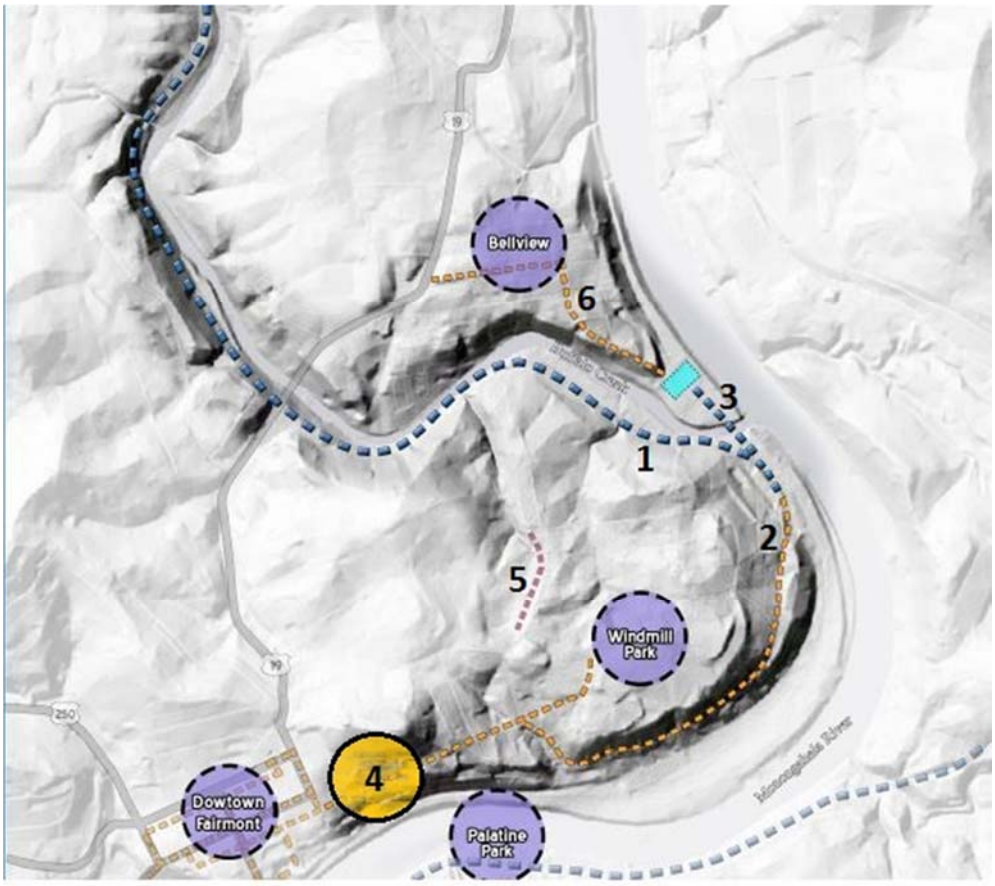
Recommendations

The potential projects listed in the Connectivity Plan for this neighborhood are all centered on sidewalk connectivity and several also discuss traffic volume and speed. Because the projects build on one another, health impact prioritization is similar to the project prioritization of the Connectivity Plan. The four highest priority projects are:

1. Locust Avenue Sidewalks
2. Country Club Road Connector
3. West Side Connector
4. Jayenne and Country Club Road (We believe extra priority from a health impact assessment could be placed on this suggestion as it would enable more active transit ability for school children, none of whom were reported to walk or bike to school)

Additionally, this is the second neighborhood that suggested improving the businesses, events, and other opportunities downtown which would significantly increase the likelihood of walking or biking to the city. This highlights the important connection between health and economic development. The city should also consider the large number of issues related to walking and biking to parks reported by respondents. There are obviously significant barriers to the usage of these locations. FSU also has a unique opportunity to impact walking and cycling to and from campus through policy change that it may want to explore.

Windmill Park & Bellview



Source: Thrasher Connectivity Report

Key Connectivity Plan Projects

Project Name **Windmill Park & Bellview**	Approx. Location on the Map	Priority Scale & Description: (A-D)* **As described in Thrasher Engineering's Connectivity Report*
Marion County Connector Trail	**1**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
Baltimore Road	**2**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
B&O Railway Turntable	**3**	**B:** Project is easily feasible and would impact most people within related neighborhood, but may rely on another project's completion
Ogden Ave. to Windmill Park	**4**	**B:** Project is easily feasible and would impact most people within related neighborhood, but may rely on another project's completion
Maple Ave. Sidewalk	**5**	**D:** Project has low impact on majority of neighborhood population or acts as a secondary connection to a higher priority project
Bellview Connector	**6**	**D:** Project has low impact on majority of neighborhood population or acts as a secondary connection to a higher priority project

HIA Findings

We had only 5 respondents from the Windmill Park/Bellview neighborhood area discuss the impact that numerous potential improvements would have on walking and biking to downtown Fairmont. Three (60%) respondents said they would walk or bike to downtown Fairmont. All five respondents said improving or building new sidewalks, pathways, or bike lanes would make them more likely or able to walk downtown. In addition, 80% of respondents (four of five) indicated the following improvements as important:

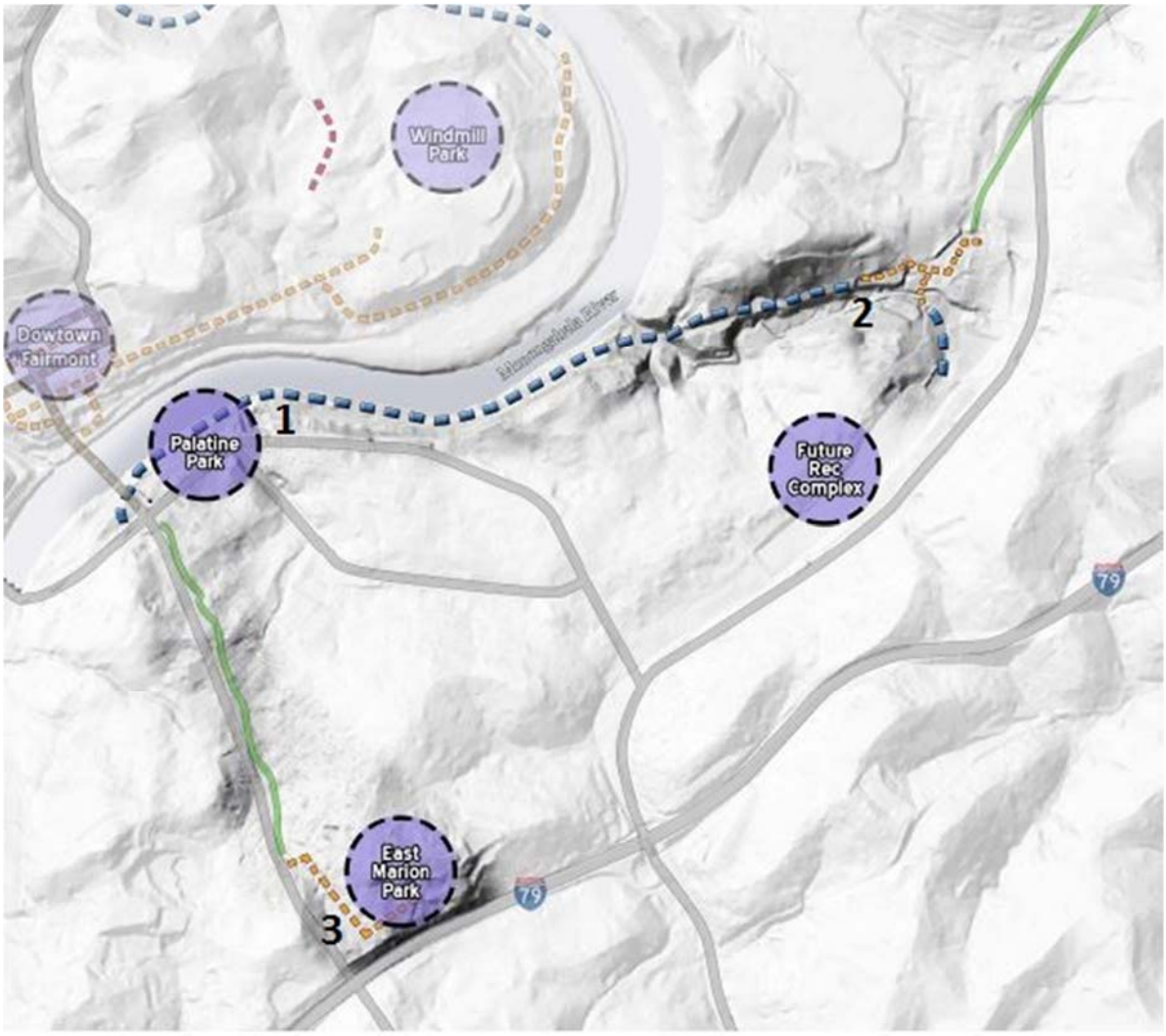
- Reducing the distance you would have to walk or bike,
- Improving the safety of intersections or crossings,
- Improving the lighting,
- Reducing violence or crime, and
- Improving downtown (more or different types of events, businesses, etc).

- Only one resident with children responded about schools in the West Side/Country Club neighborhood. This respondent indicated a lengthy car commute to the school both ways, so we will not report on the school recommendations.
- Also, only one respondent answered questions about park access. (S)he indicated (s)he did not currently walk or bike, but indicated almost everything would make him/her more likely to walk or bike there alone or with children.

Recommendations

We did not receive a high enough response from this neighborhood to adequately assess needs related to schools or parks, but there is some indication from all respondents that distance is a considerable issue for walking and biking to destinations. Because of the distance issues and the responses to the walking downtown portion of our survey, the highest priority from a health impact assessment view would seem to be the connector between Ogden Avenue and Windmill Park.

Palatine & East Side



Source: Thrasher Connectivity Report

Key Connectivity Plan Projects

Project Name **Palatine & East Side**	Approx. Location on the Map	Priority Scale & Description: (A-D)* **As described in Thrasher Engineering's Connectivity Report*
North Central Connector Phase IV	**1**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
North Central Connector Phase V & Speedway	**2**	**A:** Project has a strong immediate impact to community wellbeing and economic opportunities
East Marion Connector	**3**	**C:** Project may have challenges, relies on another project to be completed first or acts as a recreational amenity rather than a need to make a safer connection

Findings from Survey

We had 34 respondents from the Palatine/East Side neighborhood area discuss the impact that numerous potential improvements would have on walking and biking to downtown Fairmont. Roughly three-quarters respondents (73.5%) said they would walk or bike to downtown Fairmont. Only two improvements were rated by more than 75% of respondents as making them more likely to walk or bike downtown:

1. Improving downtown (more or different types of events, businesses, etc) (82.4%); and
2. Improving or building new sidewalks, pathways, or bike lanes (79.4%)

We had 21 residents with children who responded about schools in the Palatine/East Side Neighborhood; 33.3% indicated their children achieved 60 minutes or more of physical activity each day. Zero respondents indicated their child usually walked to or from school, and only 14.3% responded that their children had asked them for permission to walk to or from school. Over 75% of respondents in the Palatine/East Side area rated three potential improvements that would make them more likely to allow their children to walk or bike to school:

1. Improving safety of intersections and crossings (85.7%)
2. Improving or building new sidewalks, pathways, or bike lanes (81.0%)
3. Reducing violence or crime (76.2%)

Eighteen respondents discussed their utilization and access to the park nearest their place of residence. One-third indicated they already walked or biked to the nearest park. Respondents did not rate a single item above 70% in increasing their willingness or ability to walk or bike to the nearest park.

Recommendations

Palatine and East Side residents seemed the least likely to indicate they would increase walking to destinations because of potential improvements, although one-third of respondents were already walking to the nearest park. Likewise, these residents seem to be the least likely to indicate they would increase walking if improvements were made. The Connectivity Report recommendations largely focus on trail-based improvements that are significant to the City as a whole, but less pertinent to this particular neighborhood. There is one area we want to highlight as a recommendation. This is the fourth community to rate improving downtown as an important factor in their willingness to walk or bike there from the neighborhood. This may indicate the necessity for economic development in the downtown area, perhaps coupled with special events or incentives to get people walking or biking such as an Open Streets event (http://openstreetsproject.org/) that the City and Main Street should consider collaborating on.

Step Five of the HIA Process: Monitoring and Evaluation

The objective of the monitoring portion of the HIA process is to track the impacts of the HIA on the decision-making process and the decision itself, as well as the impacts of the decision(s) on determinants of health and adoption of active transportation. Essential monitoring tasks include: (1) tracking adoption of recommendations (e.g. whether and to what extent recommendations in the Connectivity Plan/ HIA were implemented), (2) monitoring of decision making processes in the case that an HIA recommendation was considered but adopted with mitigations, and (3) monitoring of health outcomes including secondary data sources discussed in the literature review section above and outlined in Table 1.

In the short-term, process measures including the adoption of Connectivity Plan projects, project funding, and policy changes, can be tracked to evaluate progress towards specified goals. Additionally, primary data collection using corridor car, pedestrian, and cyclist counting techniques; community input and pedestrian/cyclist user intercept surveys; linear mileage of new or improved sidewalks, bicycle lanes, and trails; and other techniques can be used to evaluate the influence of project implementation. Longer term secondary data sources will inform the influence of projects and policies on population health and adoption of active transportation.

Table 1: County-Level Health Behavior and Outcome Measures accessible via http://www.cdc.gov/diabetes/atlas/countydata/atlas.html

Metric	Source
Adult obesity (percent of adults that report a BMI >= 30)	National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation
Physical inactivity (percent of adults that report no leisure time physical activity)	National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation
Diabetes (percent of adults aged 20 and above with diagnosed diabetes)	National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation

In addition to county-level data shown in Table 1, City-level pedestrian and cyclist commuting data from the U.S. Census Bureau's American Community Survey (http://www.census.gov/acs/www/) and crash data maintained by the WV Department of Transportation could be utilized to evaluate commuting rates, number of pedestrian and cyclist crashes and associated injuries, mortalities, and costs.

Conclusion

Through in-person and survey stakeholder engagement the HIA team was able to integrate health as a factor in prioritizing projects in the Fairmont Bicycle and Pedestrian Connectivity Plan. We ascertained that a combination of *Engineering*, *Encouragement*, and *Enforcement* activities (three of five “E”s, along with Evaluation and Education, used in SRTS projects) would positively impact walking and cycling for transportation to schools, parks, and downtown.

Community feedback suggests that *engineering* improvements to the built environment - specifically sidewalks, paths, and/or bike lanes, and intersection improvements - would be most likely to positively impact walking or bicycling to downtown, schools, and parks. Over half of survey respondents were willing to walk up to one mile to get places, and the vast majority (86.1%) were willing to walk up to two miles and ride their bicycles up to five miles (75.4%) to get places (i.e., for transportation), suggesting pent-up demand for projects outlined in the Connectivity Plan. These ranges - 2 miles for walking and 5 miles for cycling - should guide the types of engineering improvements in the Connectivity Plan around the key “nodes” in the City. Thus, sidewalks, intersection improvements, or walking trails should prioritize a radius of one-to-two miles from schools, parks, and downtown, whereas cycling infrastructure improvements could be focused on connecting up to five miles from these key destinations. A key step the City may take in the immediate term is to pass a Complete Streets ordinance to ensure the City redesigns their streets to accommodate all types of users (cyclists, pedestrians, transit users, older citizens, and those with disabilities).

Encouragement, through events, promotions, and improvements to parks and downtown, was also consistently endorsed across neighborhoods as an important factor in walking or bicycling to these destinations. This supports the necessity of economic development in the downtown area, investment in parks, and conducting promotions or events as methods to simultaneously improve economic, health, and quality of life outcomes for the residents of Fairmont. The City and Main Street should strongly consider how to simultaneously foster health and economic development in Fairmont.

Lastly, police *enforcement* to reduce violence and crime was consistently rated by parents as an improvement that would lead them to be more likely to let their children walk or bike to schools and parks. The City and school district should collaborate on enforcement initiatives to encourage walking or cycling to school, especially at middle schools - the grade level when most parents indicated they would be willing to let their children walk or bike to school. Similarly, the addition of crossing guards, a potential SRTS intervention activity, was among the top three most endorsed potential activities that would lead parents to allow children to walk or bike to school.

References

1. Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report, 2008. Washington, DC: U.S. Department of Health and Human Services; 2008.
2. Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. The Lancet 2012;380:9-19.
3. Sari N. Physical inactivity and its impact on healthcare utilization. Health Econ 2009;18:885-901.
4. Ding D, Gebel K. Built environment, physical activity, and obesity: What have we learned from reviewing the literature? Health & Place 2012;18:100-105.
5. Frost SS, Goins RT, Hunter RH, et al. Effects of the Built Environment on Physical Activity of Adults Living in Rural Settings. American Journal of Health Promotion 2010;24:267-283.
6. Rothman L, Buliung R, Macarthur C, To T, Howard A. Walking and child pedestrian injury: a systematic review of built environment correlates of safe walking. Inj Prev 2014;20:41-49.
7. Ferdinand AO, Sen B, Rahurkar S, Engler S, Menachemi N. The Relationship Between Built Environments and Physical Activity: A Systematic Review. Am J Public Health 2012;102:e7-e13.
8. Sallis JF, Floyd MF, Rodríguez DA, Saelens BE. Role of Built Environments in Physical Activity, Obesity, and Cardiovascular Disease. Circulation 2012;125:729-737.
9. Brownson RC, Kelly CM, Eyler AA, et al. Environmental and policy approaches for promoting physical activity in the United States: a research agenda. J Phys Act Health 2008;5:488-503.
10. Transportation Review Board, Institute of Medicine. Does the Built Environment Influence Physical Activity? Examing the Evidence. Washington, D.C.: U.S. Government Printing Office; 2005.
11. World Health Organization. Pedestrian safety: a road safety manual for decision-makers and practitioners. Geneva, Switzerland: WHO Press; 2013.
12. Stokols D. Establishing and maintaining healthy environments. Toward a social ecology of health promotion. Am Psychol 1992;47:6-22.
13. Sallis JF, Cervero R, Ascher W, Henderson K, Kraft MK, Kerr J. An ecological approach to creating active living communities. Annu Rev Public Health 2006;27:297-322.
14. United States Department of Health and Human Services Office of Disease Prevention and Health Promotion. Healthy People 2020. Washington, DC; 2012.
15. Fraser SDS, Lock K. Cycling for transport and public health: a systematic review of the effect of the environment on cycling. The European Journal of Public Health 2011;21:738-743.
16. Durand CP, Andalib M, Dunton GF, Wolch J, Pentz MA. A systematic review of built environment factors related to physical activity and obesity risk: implications for smart growth urban planning. Obesity Reviews 2011;12:e173-e182.
17. United States Census Bureau. U.S. Census Bureau Fact Finder: Population Finder. 2012.

18. Metzler M, Kanarek N, Highsmith K, et al. Peer Reviewed: Community Health Status Indicators Project: The Development of a National Approach to Community Health. Prev Chronic Dis 2008.
19. Behavior risk factor surveillance system: 2012 prevalence data. 2012. (Accessed January 31, 2014, at http://apps.nccd.cdc.gov/brfss/.)
20. Behavior risk factor surveillance system: 2013 prevalence data. 2013. (Accessed June 9, 2014, at http://apps.nccd.cdc.gov/brfss/.)
21. Behavior risk factor surveillance system: 2010 prevalence data. Centers for Disease Control and Prevention,, 2010. (Accessed November 16, 2013, at http://apps.nccd.cdc.gov/brfss/)
22. Kiernan M, Schoffman DE, Lee K, et al. The Stanford Leisure-Time Activity Categorical Item (L-Cat): a single categorical item sensitive to physical activity changes in overweight/obese women. Int J Obes 2013; 37(12):1597-1602.
23. Cerin E, Saelens BE, Sallis JF, Frank LD. Neighborhood Environment Walkability Scale: validity and development of a short form. Med Sci Sports Exerc 2006;38(9):1682-91.
24. Cerin E, Conway TL, Saelens BE, Frank LD, Sallis JF. Cross-validation of the factorial structure of the Neighborhood Environment Walkability Scale (NEWS) and its abbreviated form (NEWS-A). Int J Behav Nutr Phys Act. 2009;6(32).