

Assessing and Planning for Healthier Community Environments

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Built environment patterns are essential for supporting the pedestrian experience in communities. Since the mid-twentieth century, the intertwined relationship between sprawling development patterns and auto dependence has left many communities with built environments that discourage people from walking in the community. With the shifting focus on people rather than cars, attention and interest in planning and design has brought about the need to bring back walkable communities to attain various goals and objectives including pursuing healthier lifestyles, engaging in more physical activities, and investing in attractive pedestrian focused environments.

Many communities have turned their efforts toward reintroducing and strengthening their pedestrian paths/networks and increasing connectivity in the community. Supportive built environment patterns can have other impacts on people’s everyday lives and lifestyles by providing a safe and attractive environment for outdoor activities. Sound and well-connected walkable environments can also directly influence a community’s economic health, place identity, and sense of community.

The goal for this document is to present and describe steps for assessing a built environment and to guide community groups on how to enhance their community’s walkability. Relevant for large

to small communities, it illustrates how a community can initiate a walkability and connectivity project to address community needs and visions. Trained volunteers can use the document to identify, assess, and develop actionable plans relevant for their community’s needs.

Step One. Identify and plan goals and objectives for the community project.

A proactive community can discuss and set goals and objectives for improving their built environment that would be supportive of walking and biking activities for everyday errands, recreation, commuting, or health goals. By addressing walkability or connectivity needs, a community can resolve other needs and visions of the community as a whole (Table 1).

By understanding the underlying direct and indirect causes and effects, a community can use a walkability or connectivity project to bring about a range of solutions as outcomes. However, it is essential for the community working group to clearly identify and define the goals and objectives of their project.

Step Two. Choose and conduct a walkability assessment or audit for your built environment.

Numerous walkability assessment tools exist which can be used to survey and analyze a community’s existing built environment conditions and ultimately transfer findings into actionable plans to improve the walking environment (Figure 1). Each survey instrument approaches assessing walkability in both similar and different ways depending on the developers’ intentions. Some tools are simple and concise while others are

Table 1. Example of goals and objectives of walkability and connectivity community projects

	Walkability	Connectivity
Goals	<ul style="list-style-type: none"> • Improve quality of life and health • Establish environment for alternative transportation users including pedestrians, bicyclists, and public transit riders 	<ul style="list-style-type: none"> • Increase and expand network of sidewalks and/or bike lanes • Aim for a fully connected network
Objectives	<ul style="list-style-type: none"> • Improve and establish sidewalks to be inclusive • Enhance and increase street amenities (vegetation, signage system, street furniture, etc.) • Increase pedestrian safety through traffic calming strategies • Reflect and/or apply Complete Streets principles • Update and upkeep attractive building facades facing the public right-of-way 	<ul style="list-style-type: none"> • Identify gaps in the network to efficiently link existing infrastructure such as sidewalks and/or bike lanes • Increase accessible areas and destinations by improving sidewalk networks • Enhance pedestrian experience with appropriate amenities to address safety concerns • Address infrastructure needs for wider user demographics and physical abilities
Outcomes	<ul style="list-style-type: none"> • Increased level of foot traffic, pedestrian safety and outdoor activities • Enhanced individual and community health and wellness • Enhanced built environment quality and aesthetics 	<ul style="list-style-type: none"> • Longer sidewalk segments and routes connected for safe and pleasant travel • Increased number of destinations accessible by pedestrians and bicycles

Take a walk and use this checklist to rate your neighborhood's walkability.

How walkable is your community?

Location of walk

Rating Scale:



1. Did you have room to walk?

- Yes Some problems:
- Sidewalks or paths started and stopped
 - Sidewalks were broken or cracked
 - Sidewalks were blocked with poles, signs, shrubbery, dumpsters, etc.
 - No sidewalks, paths, or shoulders
 - Too much traffic
 - Something else _____

Rating: (circle one) Locations of problems:
1 2 3 4 5 6 _____

4. Was it easy to follow safety rules? Could you and your child...

- Yes No Cross at crosswalks or where you could see and be seen by drivers?
- Yes No Stop and look left, right and then left again before crossing streets?
- Yes No Walk on sidewalks or shoulders facing traffic where there were no sidewalks?
- Yes No Cross with the light?

Rating: (circle one) Locations of problems:
1 2 3 4 5 6 _____

2. Was it easy to cross streets?

- Yes Some problems:
- Road was too wide
 - Traffic signals made us wait too long or did not give us enough time to cross
 - Needed striped crosswalks or traffic signals
 - Parked cars blocked our view of traffic
 - Trees or plants blocked our view of traffic
 - Needed curb ramps or ramps needed repair
 - Something else _____

Rating: (circle one) Locations of problems:
1 2 3 4 5 6 _____

5. Was your walk pleasant?

- Yes Some problems:
- Needed more grass, flowers, or trees
 - Scary dogs
 - Scary people
 - Not well lighted
 - Dirty, lots of litter or trash
 - Dirty air due to automobile exhaust
 - Something else _____

Rating: (circle one) Locations of problems:
1 2 3 4 5 6 _____

3. Did drivers behave well?

- Yes Some problems: Drivers ...
- Backed out of driveways without looking
 - Did not yield to people crossing the street
 - Turned into people crossing the street
 - Drove too fastp
 - Sped up to make it through traffic lights or drove through traffic lights?
 - Something else _____

Rating: (circle one) Locations of problems:
1 2 3 4 5 6 _____

How does your neighborhood stack up? Add up your ratings and decide.

- | | | |
|---------------------|--------------|-------------------------------------------------------|
| 1. _____ | 26-30 | Celebrate! You have a great neighborhood for walking. |
| 2. _____ | | |
| 3. _____ | 21-25 | Celebrate a little. Your neighborhood is pretty good. |
| 4. _____ | | |
| 5. _____ | 16-20 | Okay, but it needs work. |
| Total: _____ | 11-15 | It needs lots of work. You deserve better than that. |
| | 5-10 | It's a disaster for walking! |

Now that you've identified the problems,
go to the next page to find out how to fix them.

Figure 1. Walkability assessment tools by Pedestrian and Bicycle Information Center (PBIC) (left) and Pedestrian Environment Data Scan (PEDS) (right)
Source: Pedestrian and Bicycle Information Center; Kelly J. Clifton, National Center for Smart Growth; used by permission

Name: _____

Date: _____

Study Area: _____



Segment Number: _____

Time: _____

Weather: _____

0. Segment type

Low volume road 1
 High volume road 2
 Bike or Ped path - skip section C 3

A. Environment

1. Uses in Segment (all that apply)

Housing - Single Family Detached 1
 Housing - Multi-Family 2
 Housing - Mobile Homes 3
 Office/Institutional 4
 Restaurant/Café/Commercial 5
 Industrial 6
 Vacant/Undeveloped 7
 Recreation 8

2. Slope

Flat 1
 Slight hill 2
 Steep hill 3

3. Segment Intersections

Segment has 3 way intersection 1
 Segment has 4 way intersection 2
 Segment has other intersection 3
 Segment deadends but path continues 4
 Segment deadends 5
 Segment has no intersections 6

B. Pedestrian Facility (skip if none present)

4. Type(s) of pedestrian facility (all that apply)

Footpath (worn dirt path) 1
 Paved Trail 2
 Sidewalk 3
 Pedestrian Street (closed to cars) 4

The rest of the questions in section B refer to the best pedestrian facility selected above.

5. Path material (all that apply)

Asphalt 1
 Concrete 2
 Paving Bricks or Flat Stone 3
 Gravel 4
 Dirt or Sand 5

6. Path condition/maintenance

Poor (many bumps/cracks/holes) 1
 Fair (some bumps/cracks/holes) 2
 Good (very few bumps/cracks/holes) 3
 Under Repair 4

7. Path obstructions (all that apply)

Poles or Signs 1
 Parked Cars 2
 Greenery 3
 Garbage Cans 4
 Other 5
 None 6

8. Buffers between road and path (all that apply)

Fence 1
 Tress 2
 Hedges 3
 Landscape 4
 Grass 5
 None 6

9. Path Distance from Curb

At edge 1
 < 5 feet 2
 > 5 feet 3

10. Sidewalk Width

< 4 feet 1
 Between 4 and 8 feet 2
 > 8 feet 3

If no sidewalk, skip now to section C.

11. Curb cuts

None 1
 1 to 4 2
 > 4 3

12. Sidewalk completeness/continuity

Sidewalk is complete 1
 Sidewalk is incomplete 2

13. Sidewalk connectivity to other sidewalks/crosswalks

number of connections 1

C. Road Attributes (skip if path only)

14. Condition of road

Poor (many bumps/cracks/holes) 1
 Fair (some bumps/cracks/holes) 2
 Good (very few bumps/cracks/holes) 3
 Under Repair 4

15. Number of lanes

Minimum # of lanes to cross 1
 Maximum # of lanes to cross 1

16. Posted speed limit

None posted 1
 (mph): 1

17. On-Street parking (if pavement is unmarked, check only if cars parked)

Parallel or Diagonal 1
 None 2

18. Off-street parking lot spaces

0-5	6-25	26+
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

19. Must you walk through a parking lot to get to most buildings?

Yes 1
 No 2

20. Presence of med-hi volume driveways

< 2 1
 2 to 4 2
 > 4 3

21. Traffic control devices (all that apply)

Traffic light 1
 Stop sign 2
 Traffic circle 3
 Speed bumps 4
 Chicanes or chokers 5
 None 6

22. Crosswalks

None 1
 1 to 2 2
 3 to 4 3
 > 4 4

23. Crossing Aids (all that apply)

Yield to Ped Paddles 1
 Pedestrian Signal 2
 Median/Traffic Island 3
 Curb Extension 4
 Overpass/Underpass 5
 Pedestrian Crossing Warning Sign 6
 Flashing Warning Light 7
 Share the Road Warning Sign 8
 None 9

24. Bicycle facilities (all that apply)

Bicycle route signs 1
 Striped bicycle lane designation 2
 Visible bicycle parking facilities 3
 Bicycle crossing warning 4
 No bicycle facilities 5

D. Walking/Cycling Environment

25. Roadway/path lighting

Road-oriented lighting 1
 Pedestrian-scale lighting 2
 Other lighting 3
 No lighting 4

26. Amenities (all that apply)

Public garbage cans 1
 Benches 2
 Water fountain 3
 Street vendors/vending machines 4
 No amenities 5

27. Are there wayfinding aids?

No 1
 Yes 2

28. Number of trees shading walking area

None or Very Few 1
 Some 2
 Many/Dense 3

29. Degree of enclosure

Little or no enclosure 1
 Some enclosure 2
 Highly enclosed 3

30. Powerlines along segment?

Low Voltage/Distribution Line 1
 High Voltage/Transmission Line 2
 None 3

31. Overall cleanliness and building maintenance

Poor (much litter/graffiti/broken facilities) 1
 Fair (some litter/graffiti/broken facilities) 2
 Good (no litter/graffiti/broken facilities) 3

32. Articulation in building designs

Little or no articulation 1
 Some articulation 2
 Highly articulated 3

33. Building setbacks from sidewalk

At edge of sidewalk 1
 Within 20 feet of sidewalk 2
 More than 20 feet from sidewalk 3

34. Building height

Short 1
 Medium 2
 Tall 3

35. Bus stops

Bus stop with shelter 1
 Bus stop with bench 2
 Bus stop with signage only 3
 No bus stop 4

Subjective Assessment: Segment...

Enter 1,2,3, or 4 for 1=Strongly Agree 2= Agree, 3=Disagree, 4=Strongly Disagree

.....is attractive for walking. 1
is attractive for cycling. 1
feels safe for walking. 1
feels safe for cycling. 1

Table 2. Examples of walkability assessment tools

	Walkable Community	Pedestrian Environment Data Scan (PEDS) Audit	CDC Built Environment
Author/Organization	Originally by Partner for Walkable America housed in Pedestrian and Bicycle Information Center	Kelley Clifton, Andria Livi, Daniel Rodriguez	Centers for Disease Control (CDC)
Goals	Assessment of neighborhood walkability and bikeability	Assessment of neighborhood walkability and streetscapes	Assessment of streetscapes for all individual segments in an area
Number of Scoring Criteria	5 categories, 14 questions (walkability survey)	5 categories, 40 questions	4 sections, 19 sub-categories, 81 questions
Tool Format	1 page	1 page	9 pages
Instruction Format	3 pages	12 pages	32 pages
Evaluation Criteria Examples	Room to walk, cross streets, driver behavior, safety rules, pleasantness	Environment, pedestrian facility, road attributes, walk/bike environment, subjective assessments	Pedestrian facility, pedestrian conflict, crosswalks, maintenance, path size, buffer, universal aesthetics, shade
Pros	<ul style="list-style-type: none"> • Quick, general glance of a community's pedestrian environment • Specific to walking experiences • Short survey • Separate bike environment assessment 	<ul style="list-style-type: none"> • Detailed data collection • Comprehensive survey from number of lanes to street features • Separate subjective assessment for overall walkability and bikeability 	<ul style="list-style-type: none"> • Detailed data collection • Comprehensive survey from number of lanes to street features • Specific instructions for coding and data interpretation
Cons	<ul style="list-style-type: none"> • Mostly subjective questions • Interpretation of findings could be confusing • Assessment for overall neighborhood not specific to each segment 	<ul style="list-style-type: none"> • Lots of variables to fill out • Specific to each segment • Takes time if area is large and numerous paths exist • Survey does not accumulate into summed conclusion • Could be difficult for volunteers to make conclusions 	<ul style="list-style-type: none"> • Could take much time to conduct on site by volunteers for each segment of the network
Overall	<ul style="list-style-type: none"> • Convenient to use • Mostly qualitative survey 	<ul style="list-style-type: none"> • Provides detailed picture of existing environment • Mostly quantitative survey 	<ul style="list-style-type: none"> • Provides detailed picture of existing environment • Mostly quantitative survey

Sources: Pedestrian and Bicycle Information Center; Clifton, Livi, and Rodriguez; CDC

lengthy and detailed.

The specifics of questions may differ from objective to subjective, but the results often provide similar interpretations that could result in similar diagnoses and prescriptions for actionable strategies (Table 2).

Overall, the goals of pedestrian audits and walkability evaluations are to help improve, intervene in, or enhance community built environments to provide comfortable, safe, and efficient pedestrian and vehicular environments for people to travel about in their neighborhoods and communities. Collectively, the assessment findings can also improve the community's perception of their pedestrian environment and improve the overall quality of life.

After using the walkability assessment tools, it is important to analyze and interpret the findings to identify effective evidence to justify decisions related to why, where, what, and how to plan, design, and implement features that will enhance the built environment. Such interpretation can support community decisions to enhance walkable environments for citizens, improve safety, raise comfort levels for all travelers, and provide healthy outdoor activity settings. Also, by assessing the existing conditions, community groups can evaluate the quality of each segment and overall system or network which can lead to providing for more comfort, safety, and aesthetics of the walking environment (Figures 2 and 3).

Communities can improve the con-

nectivity of their walkable environment by identifying through assessments potential areas that are missing walkways and sidewalks. After identifying these gaps, communities can be better aware of their disconnected built environment and extend and expand walkable areas through further improvements to their pedestrian networks (Figure 4).

Step Three. Further inventory and analyze other aspects of your community context in relation to walkability and connectivity.

Inventory of Other Aspects

The inventory phase of a walkability and connectivity project can identify the



Figure 2. Walkability assessment of Warsaw, Kentucky, reflecting the range of walkability from Needs Improvement (red) to Good Quality (green) using PBIC’s Walkability Checklist to evaluate the travel experience
 Source: Base imagery from USDA FSA NAIP

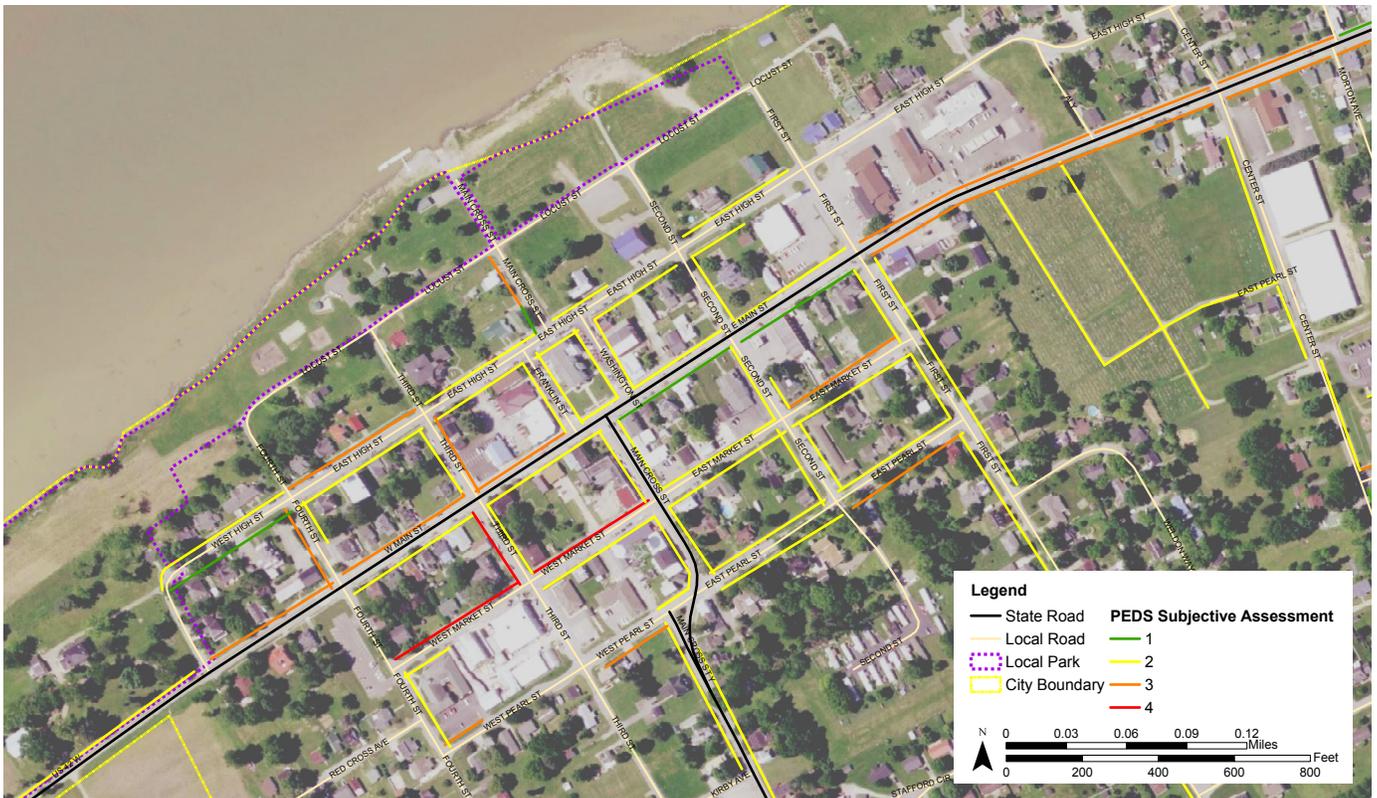


Figure 3. Walkability assessment of Warsaw, Kentucky, reflecting the range of walkability from Needs Improvement (red, 4) to Good Quality (green, 1) through the subjective assessment of each sidewalk segment within the PEDS audit tool
 Source: Base imagery from USDA FSA NAIP

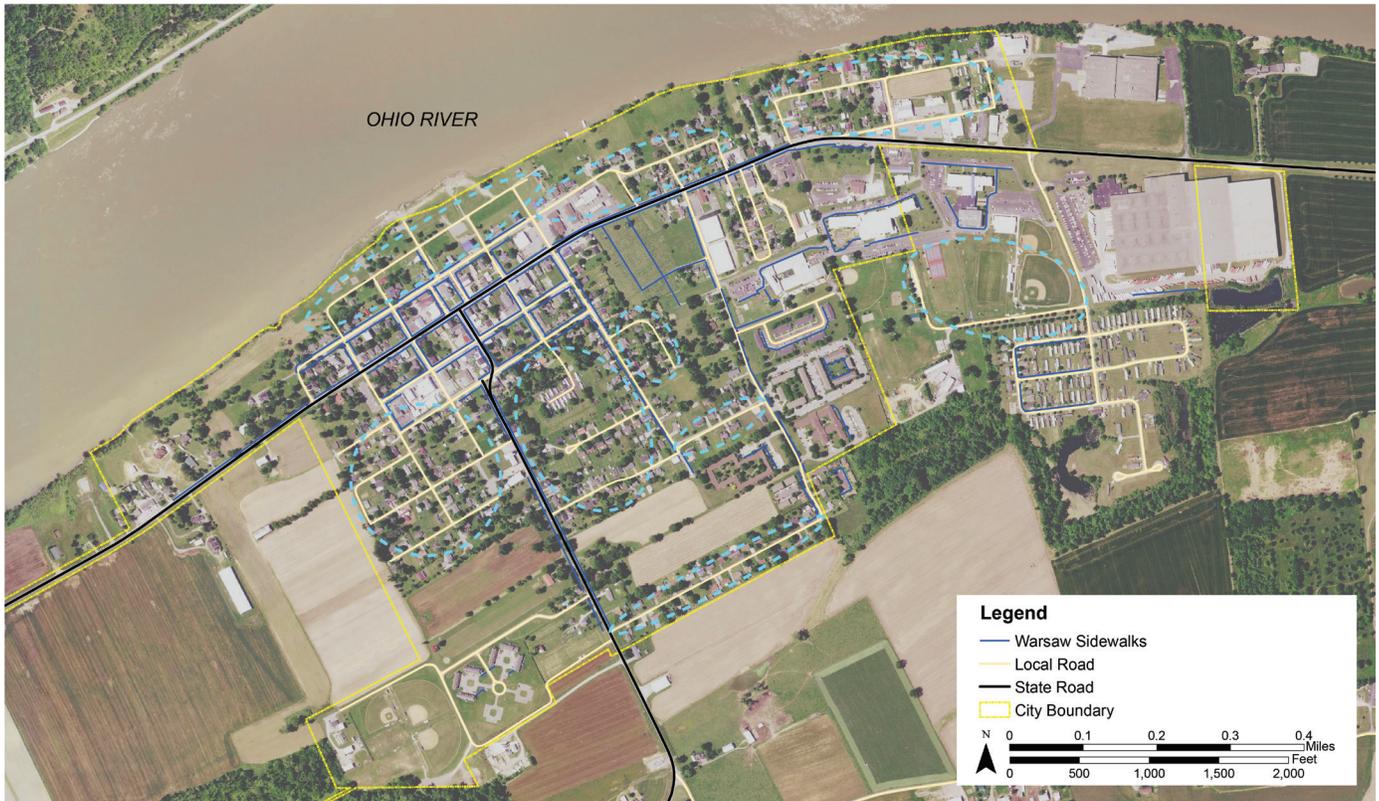


Figure 4. Sidewalk network connectivity assessment of Warsaw, Kentucky, highlighting areas with absent sidewalks (dotted lines)
 Source: Base imagery from USDA FSA NAIP

conditions that influence the walkable environment such as other infrastructure, vegetation, amenities, frequency of foot traffic, people engaged in activities, how interesting corridors are, and what and how spaces are used. Other inventory content should include biological/physical, social/economic, and historical/cultural information that will inform community members during the analysis phase of the project on how to effectively interpret and make decisions (Table 3). These types of data can be available through government offices (local, regional, state, federal), professional planning/design offices, and individuals from their personal resources. Nowadays, basic information such as maps, aerial imagery, and plan documents may be publicly available on the internet. Ultimately, all of these different types of information will enable working groups to fully interpret, understand, and address the constraints and opportunities for improving and re-envisioning quality walkable environments for communities.

Biological/Physical Information

The biological/physical resources and data are important for walkability projects as they inform about the existing conditions of the built environment regarding travel, lifestyle, and activities at larger than a segment scale. Much information on biological/physical resources can be found and collected by utilizing a range of maps, reports, and site visits. The information can assist with the overall planning of potential walkable environments for both short-term and long-term projects. Such information can be retrieved online through information systems such as the Kentucky Geography Network (<http://kygeonet.ky.gov/>), USGS, The National Mapper, etc. Other information such as potential road/sidewalk projects, economic development projects, public work projects, wayfinding systems, street tree plans, and climate/weather or soil information can be found in reports and documents addressing the physical planning and design of community or economic development proposals (Figure 5).

Social/Economic Information

Social/economic data presents information about the community changes such as population and economic performances. Examples include demographics, housing units and occupancy, planning documents, and other data that can help strategically plan a community project. Data and information can be



Figure 5. Sign along East Main Street in Carlisle, Kentucky, supporting the walkable atmosphere by informing drivers about the presence of pedestrians and creating an awareness of safety concerns

Table 3. Further inventory information to support walkability and connectivity community projects

Biological/Physical	Social/Economic	Historical/Cultural
<ul style="list-style-type: none"> • Routes and conditions of sidewalks and streets • Pedestrian traffic counts and flows • Street vegetation location and conditions • Physical condition and location of public spaces, features, amenities • Origin and destination points • Climate and weather conditions • Types and locations of wayfinding system 	<ul style="list-style-type: none"> • Demographics (population, age, gender, ethnicity, etc.) • Economic indicators of the community, county, or region • Planning documents (land use, zoning ordinances, development projects, etc.) • Regulations, standards for street/road design in cities and counties • Health indicators (obesity, public health, etc.) 	<ul style="list-style-type: none"> • Historical maps, photos, journals, newspaper articles, etc. • Community programs, regular or temporary cultural/civic events • Recreational opportunities • Landmarks, preserved elements, etc. • Valued spaces, places, locations

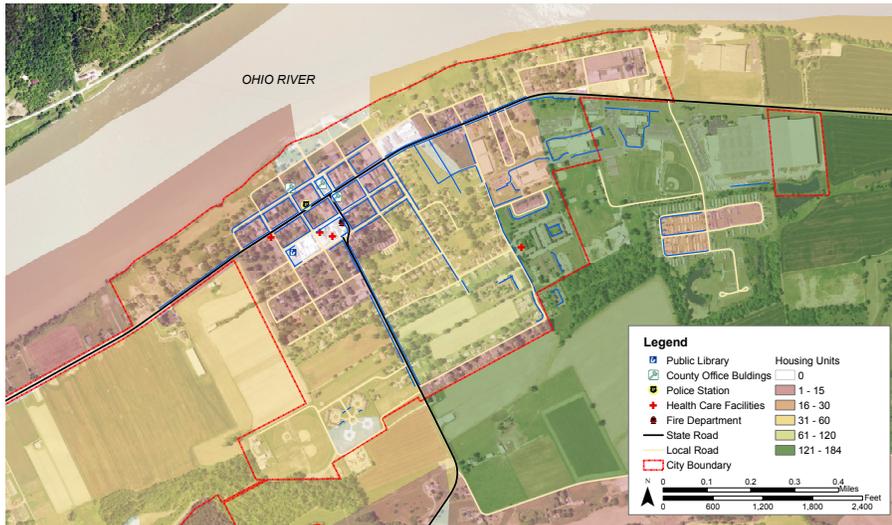


Figure 6. Housing unit density of Warsaw, Kentucky, illustrating concentration of built structures by block level and existing sidewalks that can inform the existing context of walkability of the community’s built environment
 Source: Data from U.S. Census Bureau; Base imagery from USDA FSA NAIP

found through federal government offices (U.S. Census Bureau, Ag Census); as well as state, regional, and local offices (Area Development Districts, state centers); and community or economic development organizations. These resources may also identify potential funding possibilities that may be available for sidewalks, green infrastructure (planters, street trees, etc.), and Complete Streets or trail enhancement projects, among others (Figure 6). Members of the community can help find and compile information to address community-wide issues such as health, quality of life, recreation, and community and economic development. This type of information is typically available at the block level or larger scales (block group, tract, district, neighborhood, community, etc.). The social and economic data can help groups understand the larger picture in order to enhance the overall walkable environment.

Historical/Cultural Information

Historical and cultural resources inform working groups about their community’s events, values, treasures, and experiences from the past that may further address and support the needs and visions for the future of a town’s walkable environment. These data help us interpret what mix of social and historical information to reflect in a walkability project while making the experience interesting and useful by identifying origins and destinations. Such information may include historical maps of buildings, corridors, community events, and change of public spaces and their uses over time. Valuable interpretive information can also be gained through personal interviews of those who experienced the historical and/or cultural events.

Step Four. Map and plan a network of connected pathways to improve your community’s walkability project.

Community groups can collaboratively work on short-term enhancements with the assessment and analyses information. Members can discuss and map locations for amenities such as benches for resting or identify locations to fill in missing sidewalk segments. Groups can also envision long-term projects such as developing a network of sidewalks, sidewalk widening, or streetscape corridor projects at the same time or later. Working groups should intentionally connect steps one through three in a coherent and consistent way when structuring an actionable plan. Some groups may plan an effective wayfinding system to direct people to points of interest or destinations where paths are visibly connected and the walkable environment is safe, clean, and pleasant. Other entities may prioritize addressing missing sidewalks by connecting existing segments so that they become a longer route. Still others may work on bicycle and pedestrian plans for their communities to address alternative transportation needs.

Step Five. Find ways to fund your project through collaboration and community discussions.

Communities can be strategic and plan for accomplishing the overall project by starting with the short-term, quick wins. Although funding infrastructure projects such as walkability can be challenging for many communities, planning ahead is the strategic way to address a community’s needs. With a plan in place, communities will find it easier to apply for funding opportunities when they become available. Communities should

continue their efforts to implement a shared, holistic vision or a master plan that addresses multiple community goals and objectives to enhance the quality of life through long-term improvements.

Conclusion

Walkability projects provide many benefits to the entire community—from healthier lifestyles to enhanced economic activity. It is important that communities fully interpret and plan for their community's needs and goals. By collaborating through the prescribed planning and implementation steps and clearly articulating targeted outcomes for a particular project, communities will have a better understanding and vision of their overall potential accomplishments toward building a quality walkable, connected environment.

Further Resources

- Pedestrian and Bicycle Information Center
<http://www.pedbikeinfo.org/>

Pedestrian and Bicycle Information Center is funded by the U.S. Department of Transportation, Federal Highway Administration, and is maintained by the University of North Carolina Highway Safety Research Center. The center provides walkability and bikeability resources including checklists to utilize in analyzing the walkability of a community. The organization aims to improve the quality of life in communities by increasing safe

walking and bicycling as a viable means of transportation and physical activity. Their resources can help communities identify issues related to walkability and further guide/direct toward improving specific areas/aspects of their neighborhoods to increase the community's walkability and bikeability.

- U.S. Department of Transportation, Federal Highway Administration, Office of Planning, Environment, and Realty, Bicycle and Pedestrian Program (US DOT, FHWA, HEP)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/

The Federal Highway Administration's Bicycle and Pedestrian Program advocates for inclusive quality walking and bicycling environments. It provides funding, policy guidance, program management, and resource development for pedestrian and bicycle transportation projects. State bicycle and pedestrian coordinators in each state work as points of contact for allocating funds in their respective states while also working with an FHWA bicycle and pedestrian coordinator in each FHWA division office.

- Kentucky Transportation Cabinet (KYTC), Bike Walk
<http://transportation.ky.gov/bike-walk/>

The Kentucky Transportation Cabinet (KYTC) distributes and implements federal transportation funds allocated for the state. The KYTC distributes and manages funds and grants to raise awareness of bicycle and pedestrian safety throughout Kentucky's towns and schools to encourage walking and/or biking to school and work by constructing safer routes. Also, the office awards training opportunities and funds to help communities improve and plan for the cultural, aesthetic, historic, and environmental aspects of local transportation infrastructure.

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