Shared Use Path Data and Research in North Carolina

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Triad Pathways Summit

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SHARED USE PATH DATA

- Geospatial Trails Data in NC
- Collecting Bicycle and Pedestrian Counts

SHARED USE PATH RESEARCH

- Network planning
- Time of Day analysis
- Seasonal factors
- Economic Impact Analysis

The Pedestrian and Bicycle Infrastructure Network (PBIN) is a statewide Geographic Information System (GIS) inventory of existing and planned bicycling and walking assets in North Carolina.

Examples of Data:

- Sidewalks
- Paved shoulders
- Shared use paths
- Crosswalks
- Bicycle Routes
- Pedestrian Signals
- Bicycle Lanes
- Bike/Ped Signage

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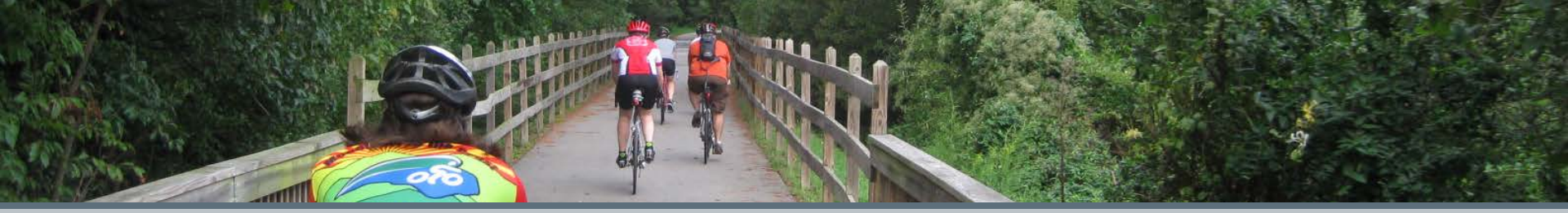

Creation of a GIS Framework

STORE DATA FROM EXISTING GIS ASSETS:

- Targeted collection from multi-jurisdictional stakeholders
  - 100 Counties
  - 37 Regional planning agencies
  - Municipalities greater than 5,000 residents
- NCDOT Supported Initiatives
  - Planning Grant Initiative (143 municipalities)
  - Comprehensive Transportation Plans
  - Regional Bicycle Plans
- Other adopted bicycle, pedestrian, or trail plans

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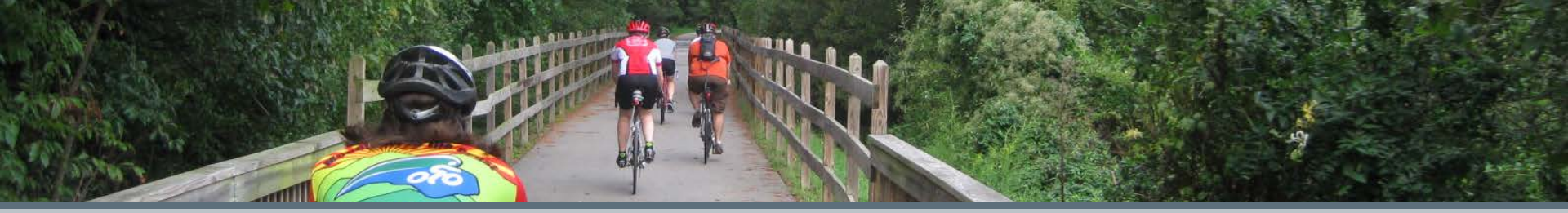

Creation of a GIS Framework

STORE DATA FROM EXISTING GIS ASSETS:

- All data independently created
- Integrated into PBIN using a standardized process
- Standardized terminology and formatting applied!!!
- Creation of a single data warehouse (PBIN)

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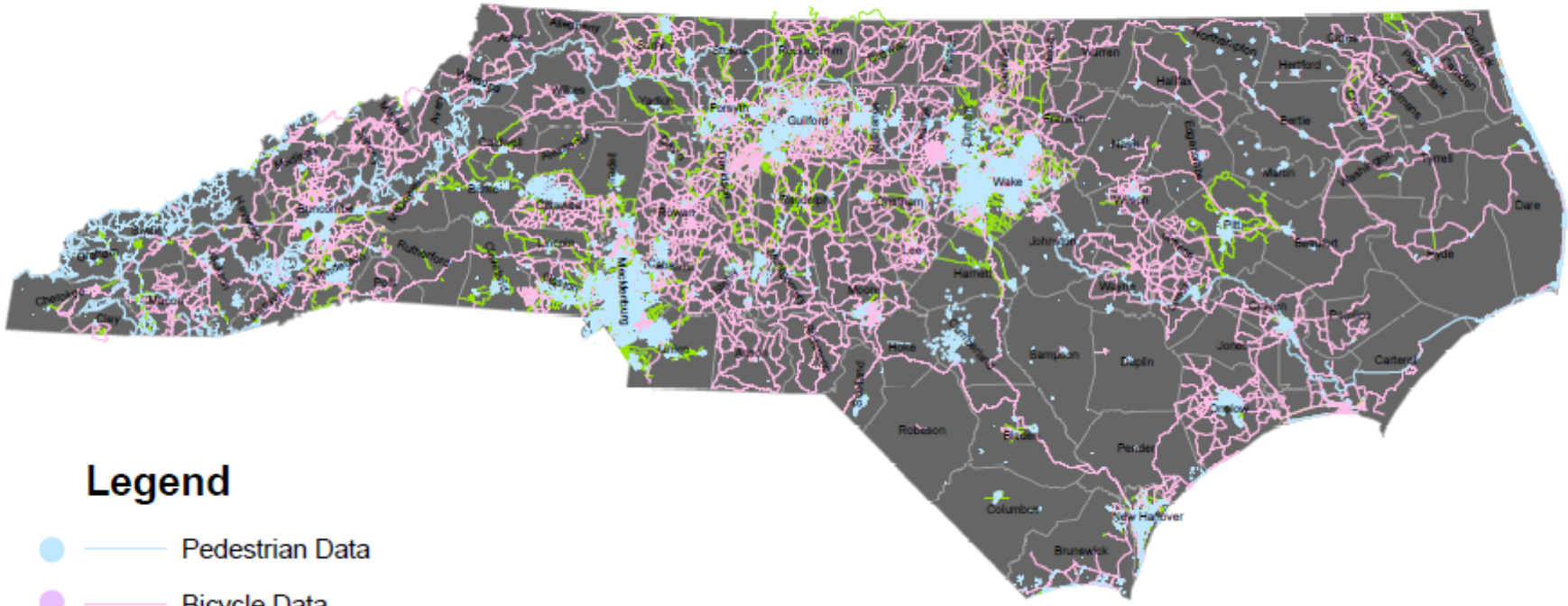
PBIN Data Coverage

North Carolina Bicycle & Pedestrian Geodatabase Status Map

Data integrated as of December 18, 2015

Existing and Proposed Facilities



Shared Use Path Data

Linear

Facility Type – shared use path, sidepath, unimproved trail

Material – asphalt, concrete, gravel, brick/pavers, dirt/natural, boardwalk

Other details – surface condition, facility width, buffer width, facility name, associated geographic reference

Point

Amenities – motor vehicle parking, bench, restroom, water fountain

Access – trailhead, access point

Crossing Treatment - SUP signal, bollard, underpass, overpass

Signage – trail crossing, railroad crossing, destination and guide signs, etc.

Table 3 PBIN Inventory of Existing and Planned Shared Use Path Assets in NC

Shared Use Path Linear	Existing (Miles)	Proposed (Miles)
Shared Use Path	980	6300
Unimproved Trail	792	343
Sidepath	152	346
Unspecified (Plan-Level)	N/A	95

Note: There is currently no data in the PBIN for Informational Kiosks (Point).

Shared Use Path Point	Existing (Features)	Proposed (Features)
Seating	0	14
Water Fountain	0	14
Motor Vehicle Parking	35	1
Signage (total)	61	0
Restroom	2	0

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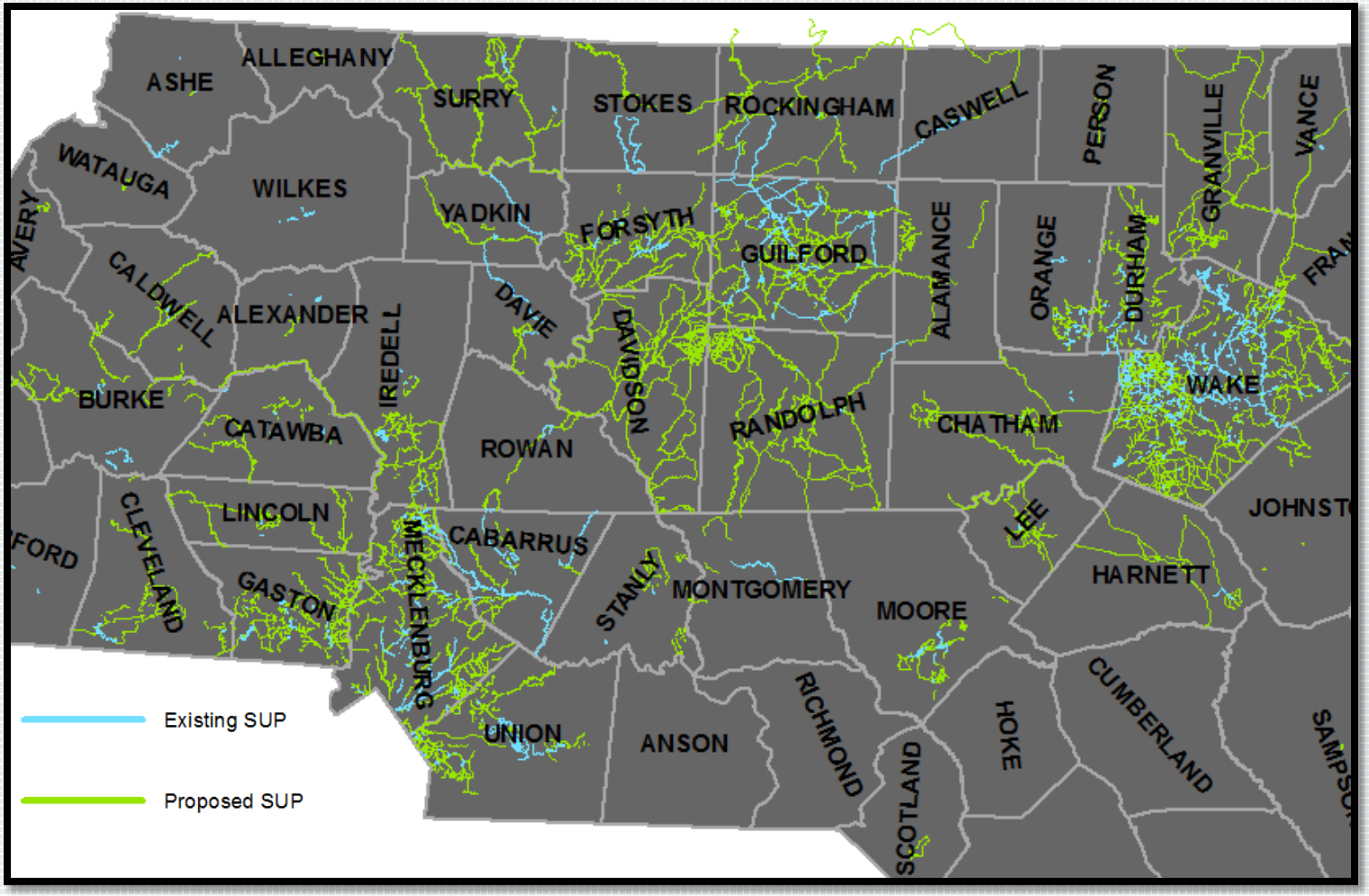
LOOKING AT THINGS REGIONALLY…



…WHAT COMES TO MIND?

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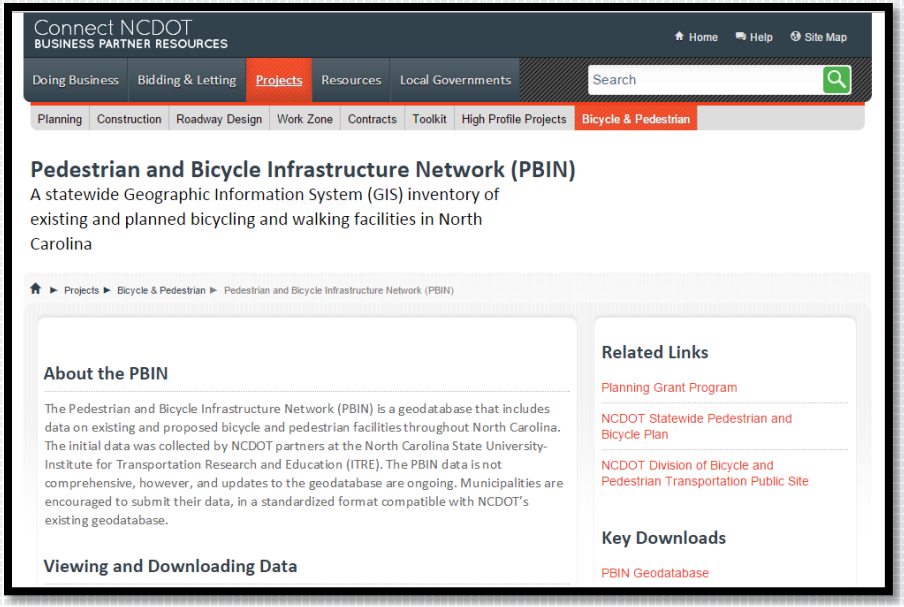
PBIN Resources

- PBIN Geodatabase with metadata
- Data Catalog
- NC Terminology for Active Travel
- Data Template
- Website: ConnectNCDOT



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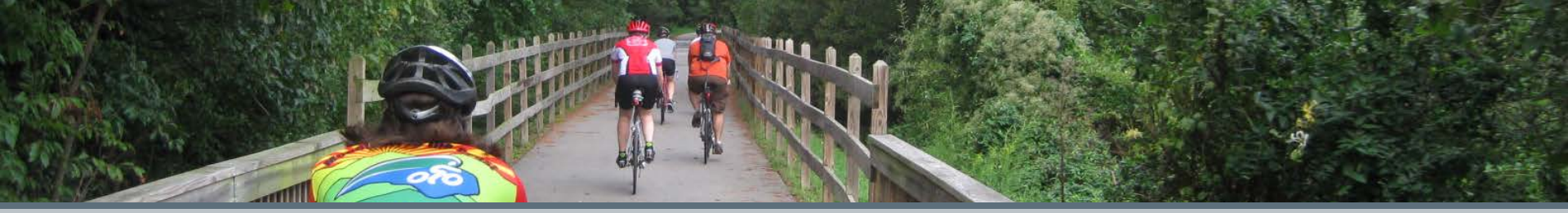
Understanding the agency role

- Data within the PBIN may eventually feed into planning and prioritization processes within NCDOT.
- The completeness and richness of data housed within the PBIN relies on agency support.
- Uses for PBIN data are extensive for both internal and external processes.
- Data uses and products promote interagency coordination.



Creation of a GIS Framework

EXISTING ASSETS

- Good baseline data for NC but not comprehensive coverage
- Agency protocols for bicycling and walking data varied (terminology, collection, storage)
- Some facilities have more detailed attribute information (surface type, width, etc.)
- Complete network of facilities in many jurisdictions is lacking
- Difficult to assign 'unimproved trails'

PROPOSED ASSETS

- Allows for collaboration at the scoping and project development level
- More difficult to define and store
- Planned assets often lack desired specificity
  - Example: exact alignment of greenway not yet known

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North Carolina's Non-Motorized Volume Data Program (NMVDP) is a research project to test a bicycle and pedestrian count protocol and replicate this methodology across the state.

What gets measured, gets done.

If you're not counted, you don't count!

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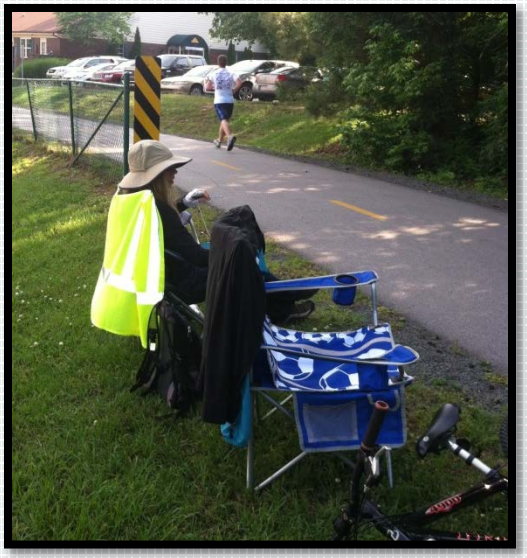
Non-Motorized Volume Counts



Manual

Short Duration

Continuous

Project/Context Specific → Trends/Patterns

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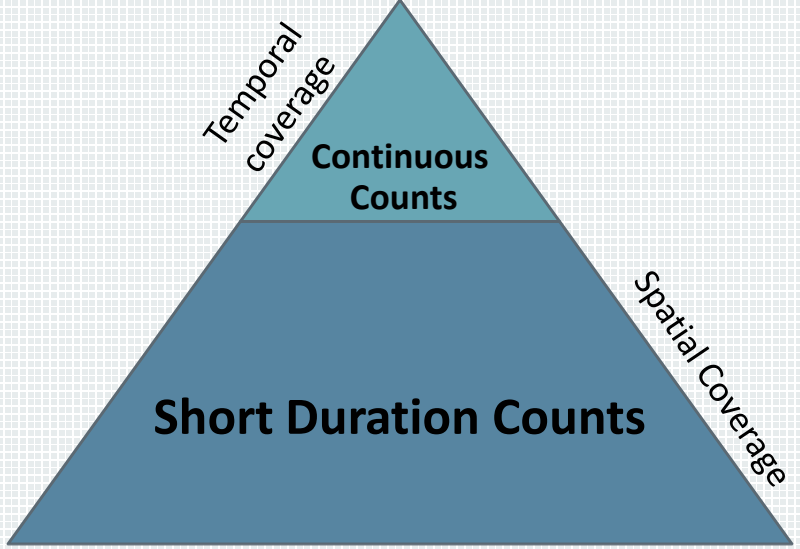

Continuous Count Stations *– Permanent counting sites that provide data continuously (24 hours per day, 7 days per week).*

Enough data should be collected to allow calculation of accurate adjustment factors (Time of Day, Day of Week, Monthly) to apply to ***Short Duration Counts****.*

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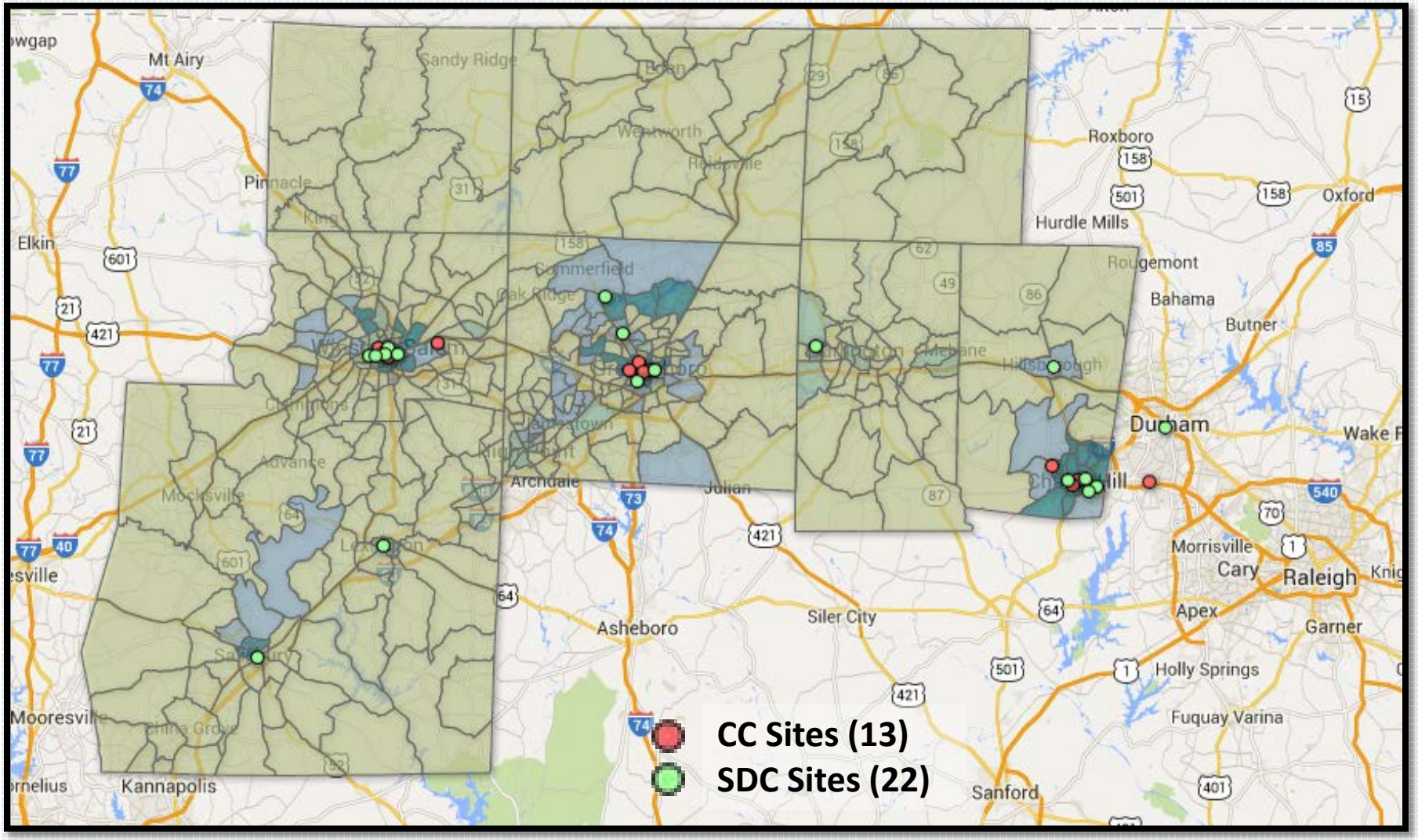
Pilot Region



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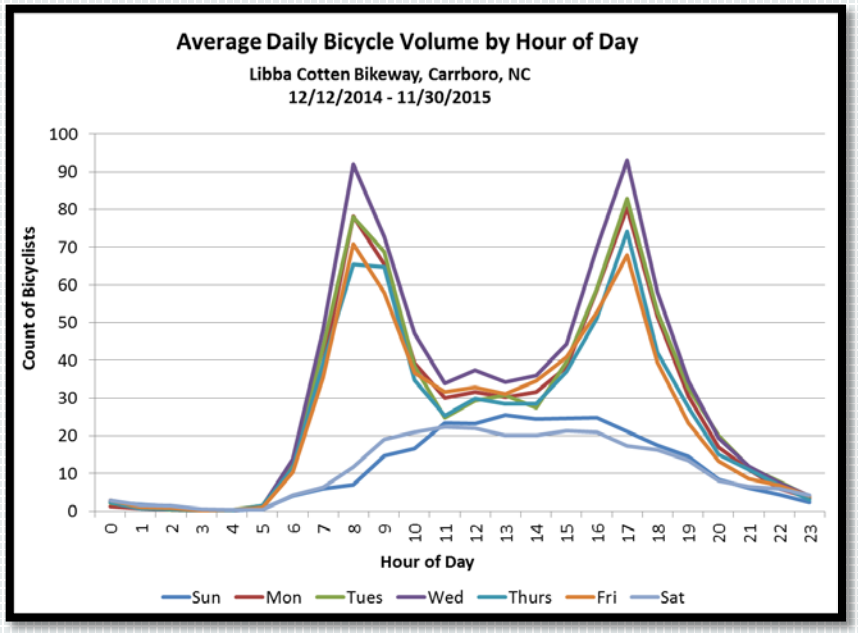

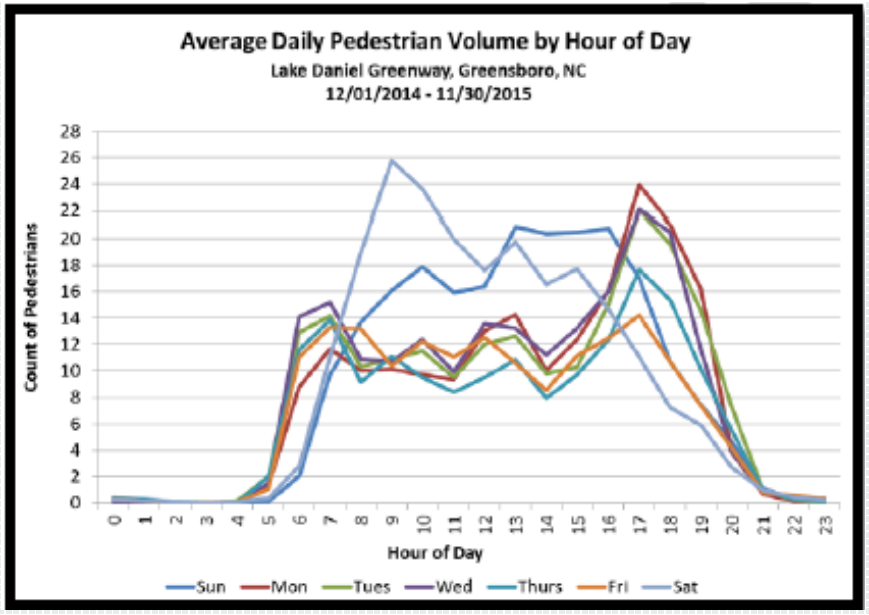

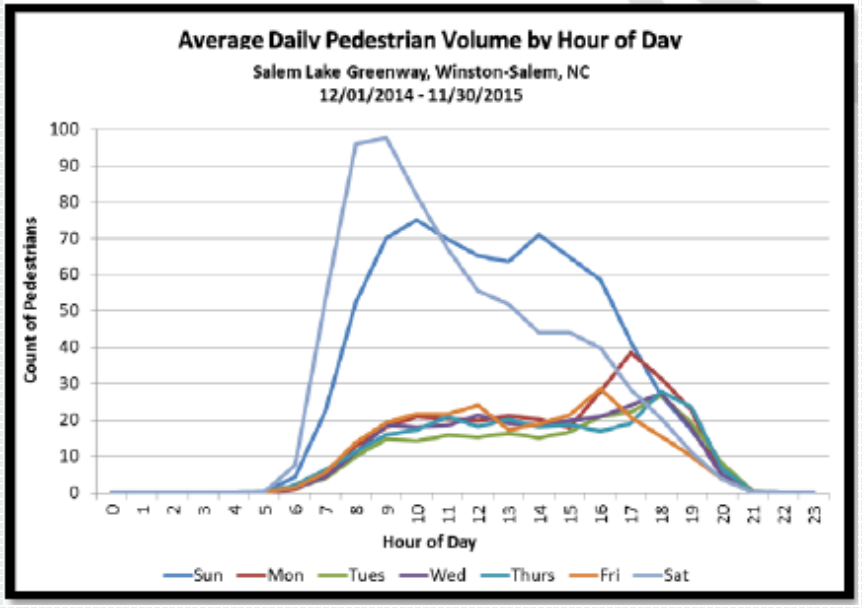

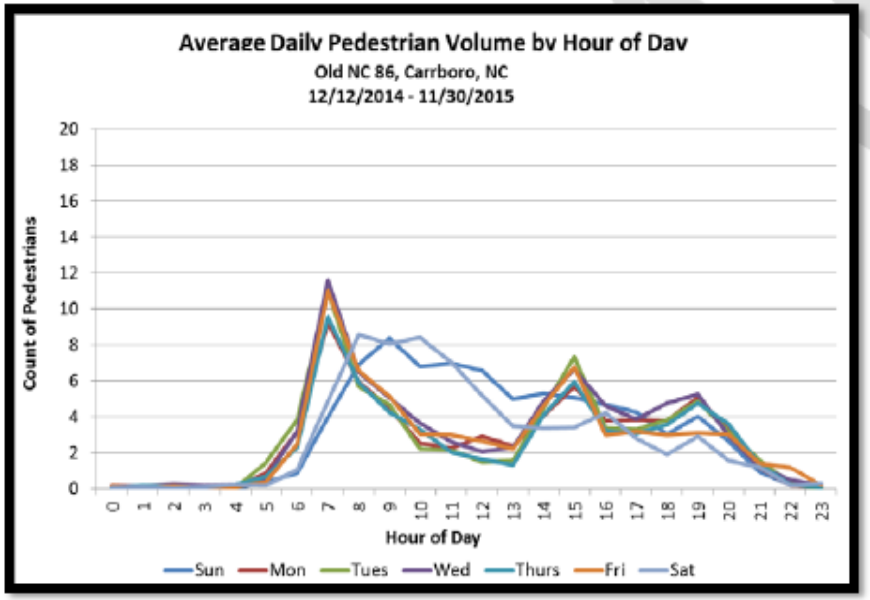

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Patterns!

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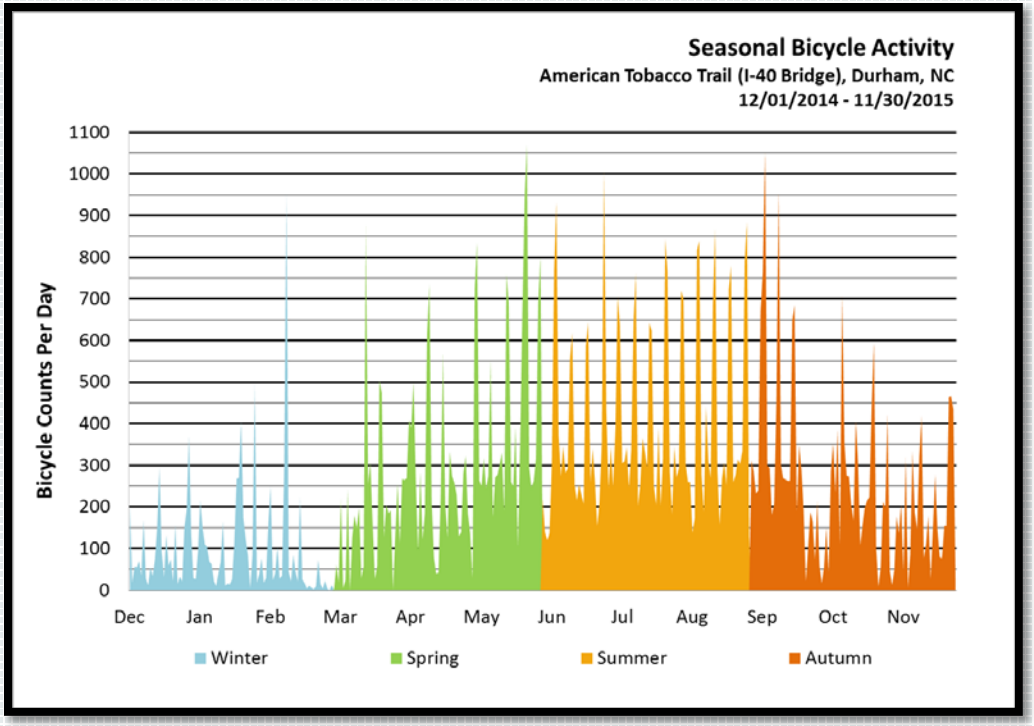
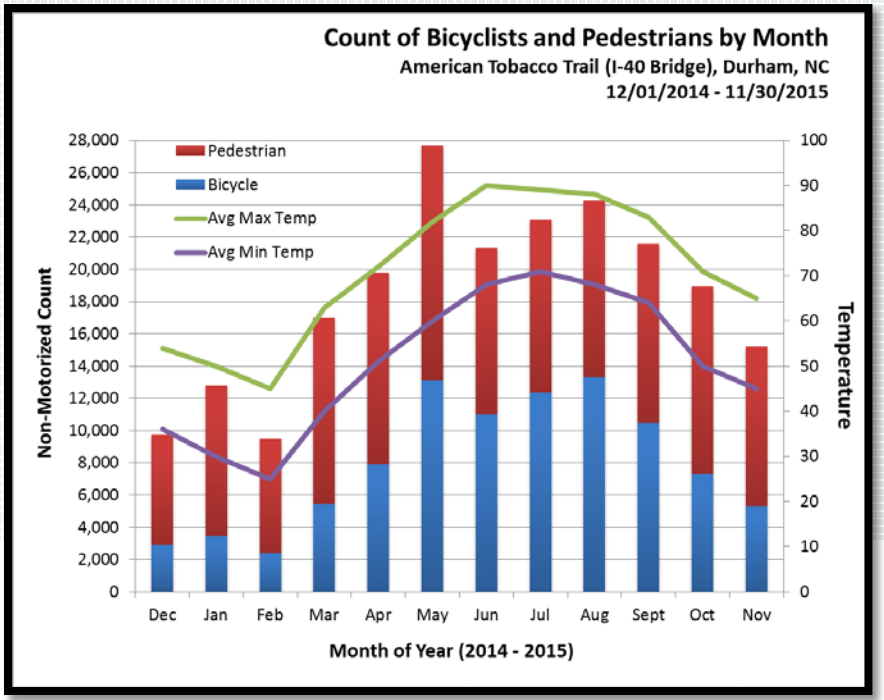
Day of Week	Bicycle Count
Sun	500
Mon	203
Tue	168
Wed	211
Thu	161
Fri	183
Sat	349
Average	249

Table 5. Average Bicyclist Count by Day of Week

Hour	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Avg
0	1	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	1	0	1	0	0	0	0
5	0	1	0	1	0	1	0	0
6	2	3	4	4	3	3	2	3
7	8	3	4	6	4	5	9	6
8	24	8	7	8	6	7	20	12
9	35	10	8	11	7	11	33	17
10	47	15	8	15	9	16	45	23
11	53	16	9	16	11	15	47	25
12	48	14	9	14	10	14	42	22
13	51	13	9	13	11	14	39	22
14	55	13	10	13	11	14	39	23
15	55	16	11	15	12	16	40	24
16	45	17	12	17	14	18	33	23
17	32	19	19	21	15	17	22	21
18	23	31	26	28	20	16	14	23
19	14	15	17	18	14	10	10	14
20	4	5	9	6	6	3	5	5
21	1	1	1	1	1	1	3	1
22	1	1	1	1	0	1	1	1
23	1	1	1	1	0	1	2	1
Avg	21	8	7	9	7	8	17	11

Table 6. Bicyclist Patterns by Day of Week and Hour of Day





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Elements of a Volume Data Program

It's more than just counting!

- Geospatial sampling
- Site selection methods
- Data collection methods
- Equipment procurement
- Equipment installation
- Equipment validation
- Development of adjustment factors
- Technical support
- Maintenance troubleshooting
- Coordination with short duration count vendors
- Coordination of state and local agency partners
- Standardization of data inputs
- Quality assurance and quality control checks on data
- Data management and reporting
- Data analysis
- Development of annualized statistics

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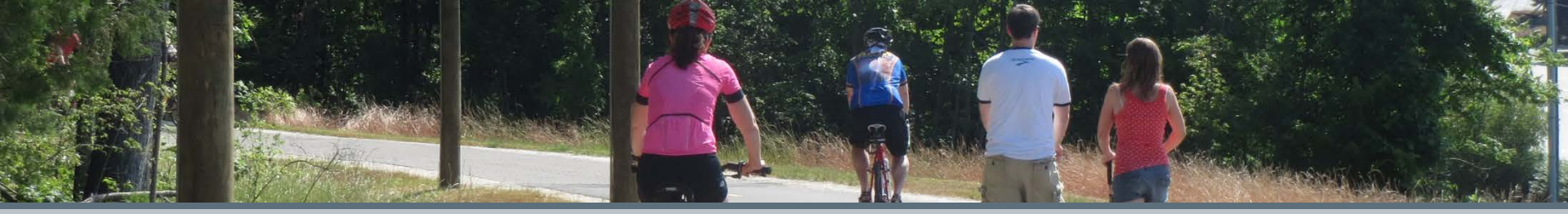

Economic Impacts of Shared Use Paths

Select Components of Value to Measure

CHANGES TO TRANSPORTATION

HEALTH EFFECTS

ECONOMIC CONTRIBUTION

VALUE

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Determine Research Methods

Impacts to SUP-Related business

- Trail User Expenditures
- Retail Sales Tax Benefits

Impacts to NC's Economy from SUP Investment

- Capital Expenditures
- Operational Expenditures

Impacts to Land Values from Properties within SUP Proximity

- Property Value Impacts
- Property Tax

User and Societal Benefits

- Health Benefits
- Congestion Benefits
- Pollution Reduction
- Safety Benefits

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Determine Data Required

- Geospatial data – trail, access points
- Geospatial data - property values
- Intercept Survey (origin and destination data, duration of trip, expenditures, etc)
- Automated Count
- Manual Count
- Tax Rates
- SUP Capital Expenditures
- SUP Operational Expenditures

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American Tobacco Trail Study

Use increased 233%

- 217,900 trips in 2013
- 508,100 trips in 2014

Trip distance increased 27%

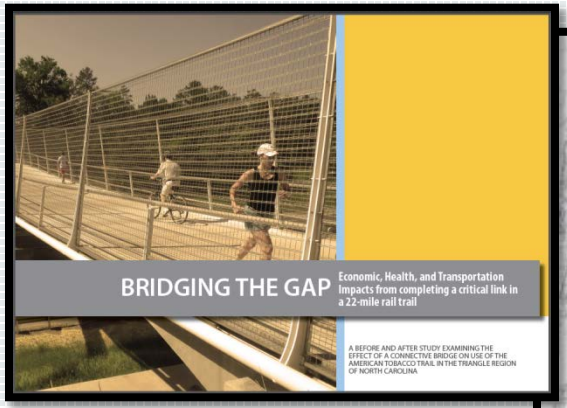
- 7.3 miles in 2013
- 9.3 miles in 2014

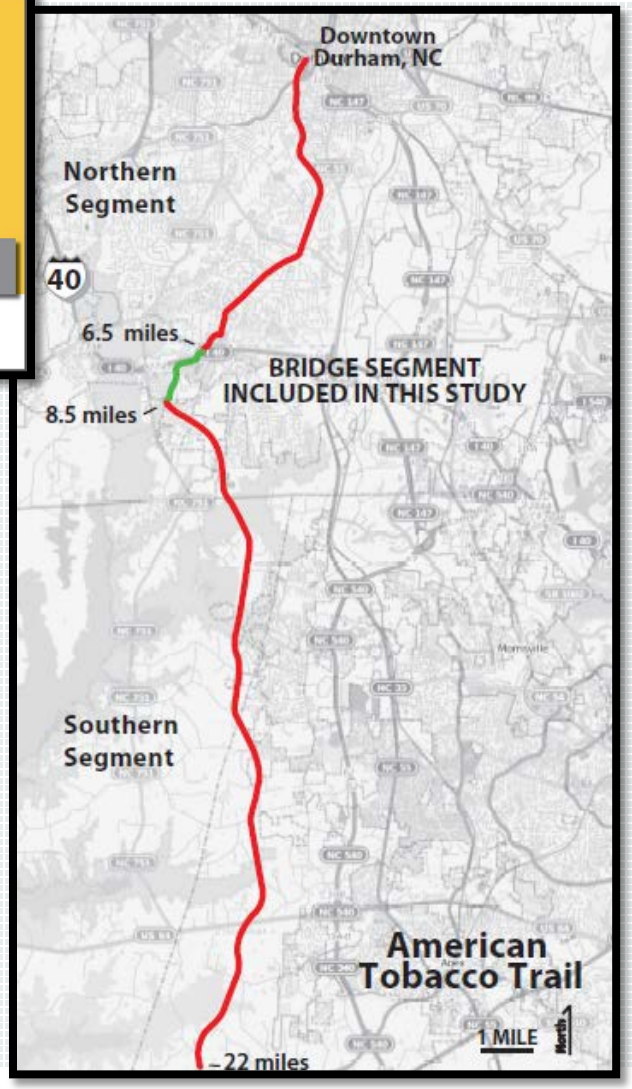
Direct trip related expenditures rose 61%

- $2.4 million in 2013
- $6.1 million in 2014

Estimated annual impacts from bridge alone:

- 43 jobs
- $1.3 million in employee compensation
- $4.9 million in total business gross revenues





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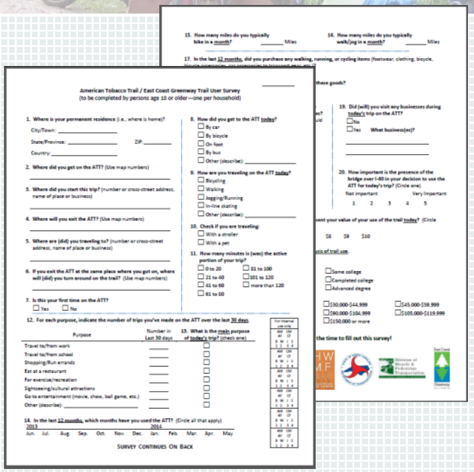
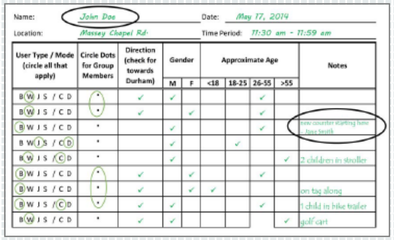
Importance of SDC Count Data



Intercept Survey

- Trip Origins and Destinations
- Access Points and Turn Around Point on Trail
- Trip Purpose
- Frequency of Trail Use
- Duration of Active Part of Trip
- Economic Data
- Mode
- Demographic Information



Count Data

- Mode
- Demographic Information

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Importance of CCS Count Data

Table 3: Summary of Key Inputs, Adjustment Factors, and Outputs When Estimating Annual Trail Use

	2013	2014
Southpoint (N) Saturday Counts	696	822*
Bridge Saturday Counts	NA	1,787
Fayetteville Rd. (S) Saturday Counts	807	832*
Total Saturday Counts	1,503	3,441
Round Trip Adjustment Factor	92.2%	90.2%
Saturday Unique User Trips	810	1,889
Estimated Annual Trips	217,900	508,100

*Adjusted based on survey data

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Economic Impact of Shared Use Paths

Selection Criteria

1. Have a state or regional significance.
2. Have good opportunities to capture economic revenue. (i.e. has commercial land uses adjacent or nearby)
3. Will not be impacted by new trail construction, significant maintenance, or be subject to detouring the trail due to intersecting road projects within the project period.
4. Be relatively ‘established’.
5. Have the ability to demonstrate a transportation function.
6. Have a good geographic dispersion across the state
7. Have a mix between urban and rural paths.

Economic Impact of Shared Use Paths

The following Shared Use Paths were selected for the first cut of trails for consideration to study based on criteria:

- Durham, NC - American Tobacco Trail – Longitudinal (2 CCS, 2014, 2015)
- Brevard, NC - Brevard Bike Path – Longitudinal (CCS 2015)
- Duck, NC – Duck Trail (CCS TBD 2016)
- Charlotte, NC - Little Sugar Creek Greenway (2 CCS 2014?)

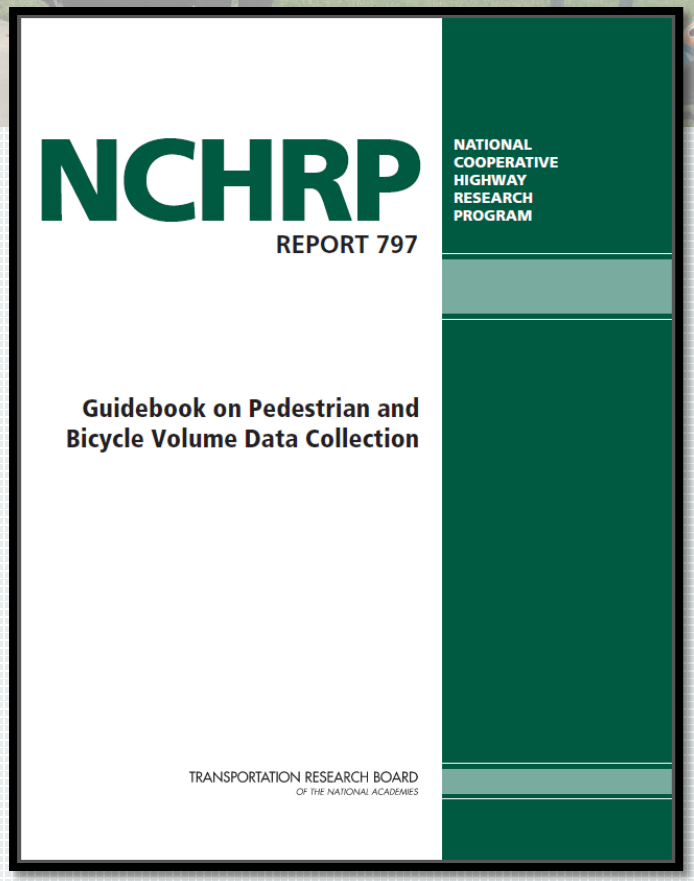
Substitutes:

- Raleigh, NC - Crabtree Creek Greenway (CCS TBD 2016)
- North Wilkesboro, NC - Yadkin River Greenway (CCS 2016)

Interim Report – July 2016

What You Can Do!

- Submit detailed trail data to the PBIN geodatabase!
- Consider installing a CCS to collect bicycle and/or pedestrian counts
- When collecting SDC Counts:
  - 7 consecutive days, 24/7 is recommended best practice
  - Count when volumes are expected to be high (spring, fall) and avoid bad weather
- Share data using TMG data format



Become familiar with the NCHRP 797 Guidebook

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What will you use the data for?

- Inventory statistics
- Route planning / Connectivity analysis
- Project planning and development
- Inter-agency coordination
- Project selection/prioritization
- Determining unmet need
- School siting
- Access to recreation amenities
- Relate spatial datasets (eg. crash data)
- Development of goals/benchmarks
- Data gaps/deficiencies
- Compare assets
- Facilities Maintenance
- Research
- Funding
- Promote physical activity

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Thank You!

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