

North Carolina's Non-Motorized Volume Data Program Phase II Region Roll-out

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Project Objective

- Design and test a bicycle and pedestrian count collection protocol
- Recommend how to replicate the methodology across North Carolina





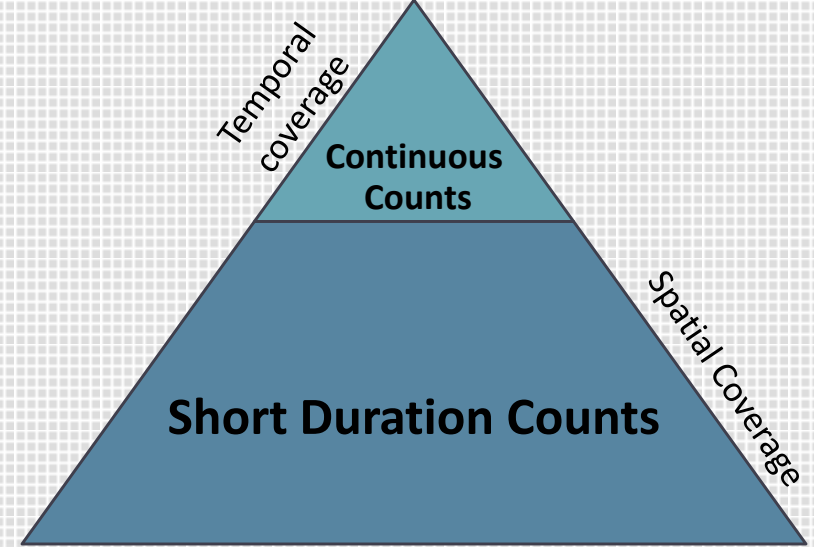
Background Motivation

- Need common, consistent system to measure volume to:
 - Understand current trends
 - Model future usage
 - Evaluate at different levels (site, corridor, region)
- This project is first step!



Background Motivation (cont.)

- Use of AADT estimations
 - Project Prioritization and Funding
 - Planning Decisions
 - Complete Streets Policy Implementation
 - Operations and Maintenance
- What get measured, gets done
- If you're not counted, you don't count!

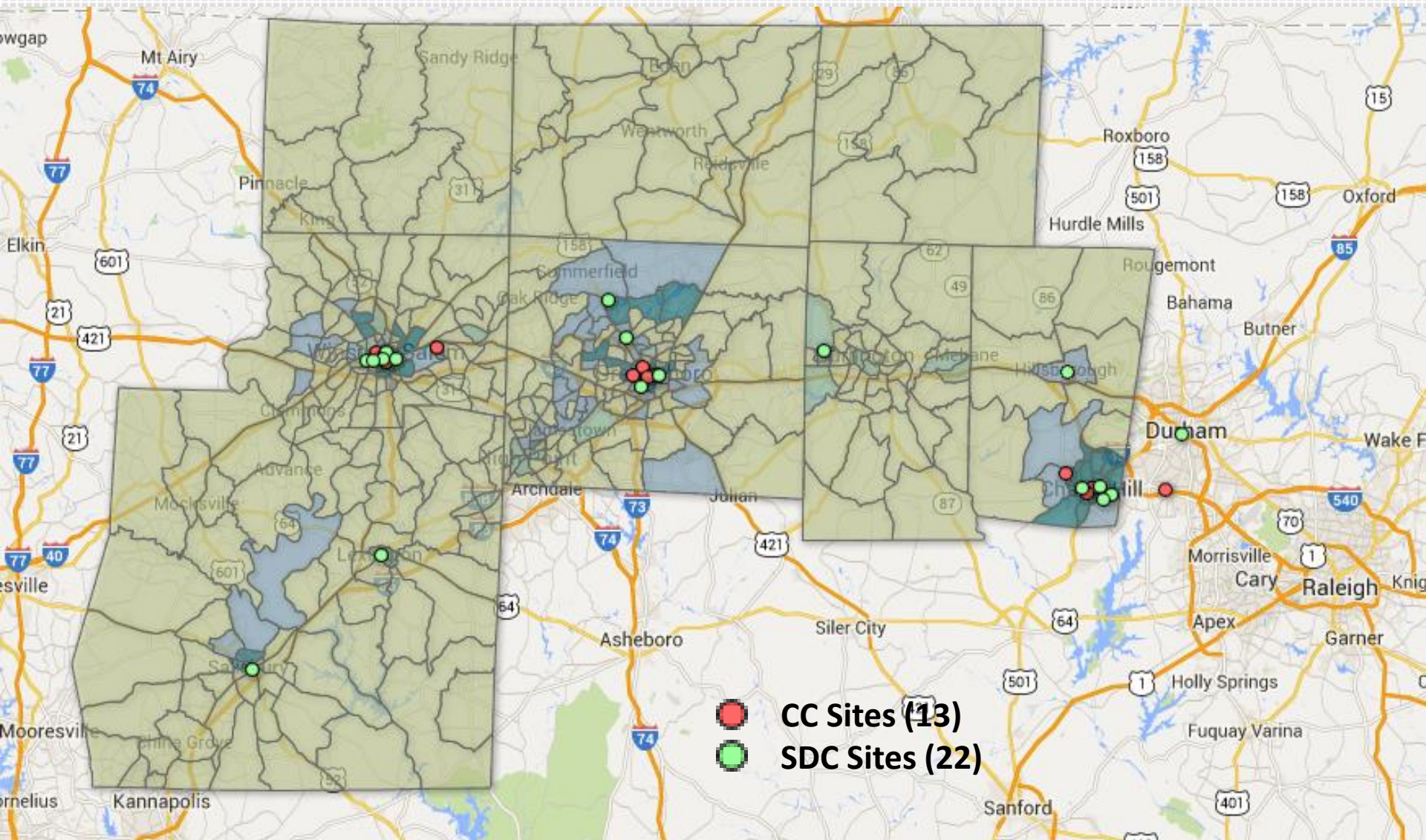


Continuous Count Stations – Permanent counting sites that provide data continuously (24 hours per day, 7 days per week).

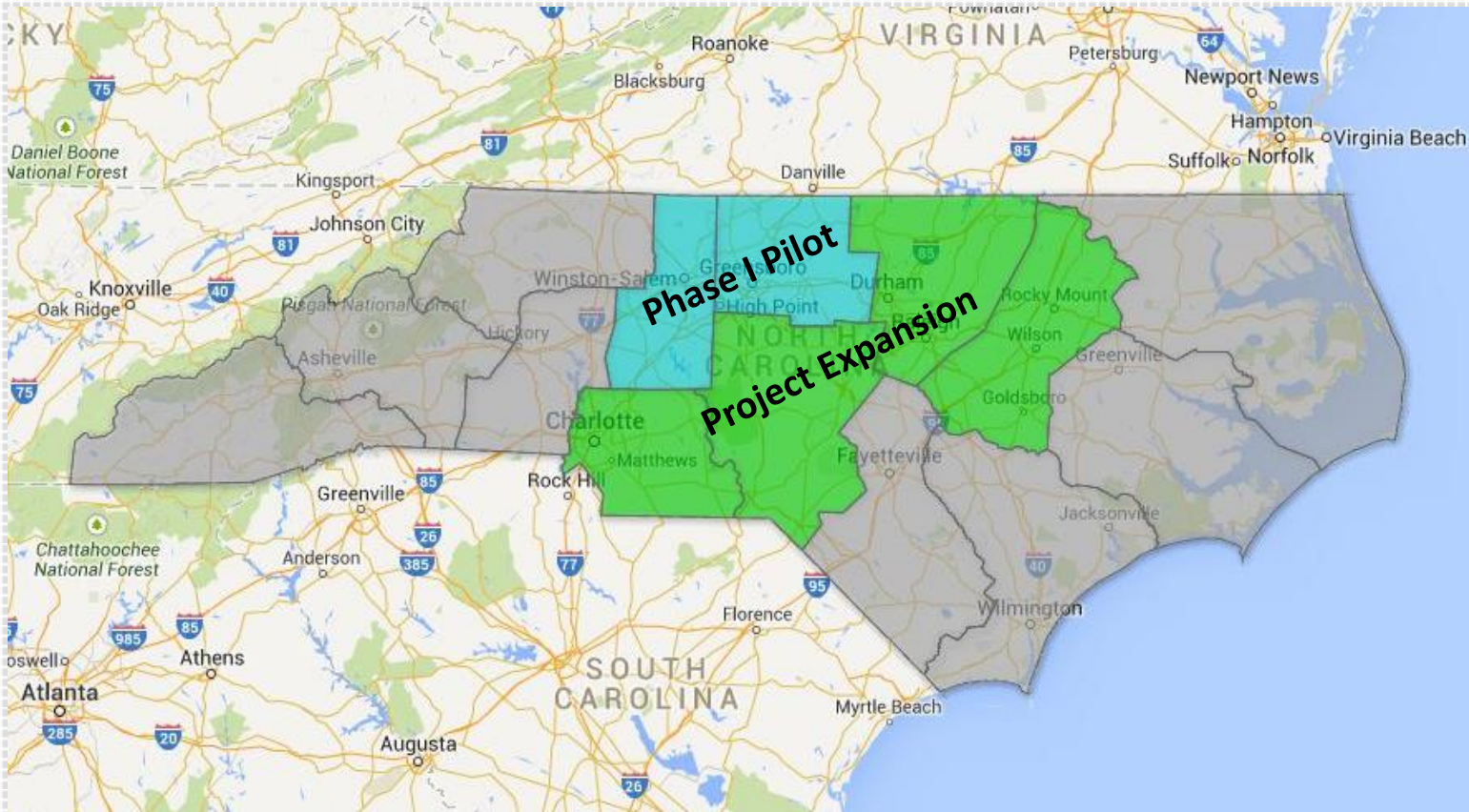
Enough data should be collected to allow calculation of accurate adjustment factors (Time of Day, Day of Week, Monthly) to apply to **Short Duration Counts**.



Pilot Region



Next Steps - Program Expansion



2015 Project Expansion: NCDOT Divisions 4, 5, 8 and 10



Training and Outreach

- Informational Webinar (June 2015)
 - <http://www.itre.ncsu.edu/Public/bikepedtrn.html>
- 1-Day Workshop
 - Phase 2 Region up Next
 - Audience: bike/ped coordinators, planners, greenway/parks and recreation managers, engineers, transportation professionals
- Installation Video
 - Audience: local coordinators, public works staff, contractors
 - <https://youtu.be/R7vOUHVoO5I>

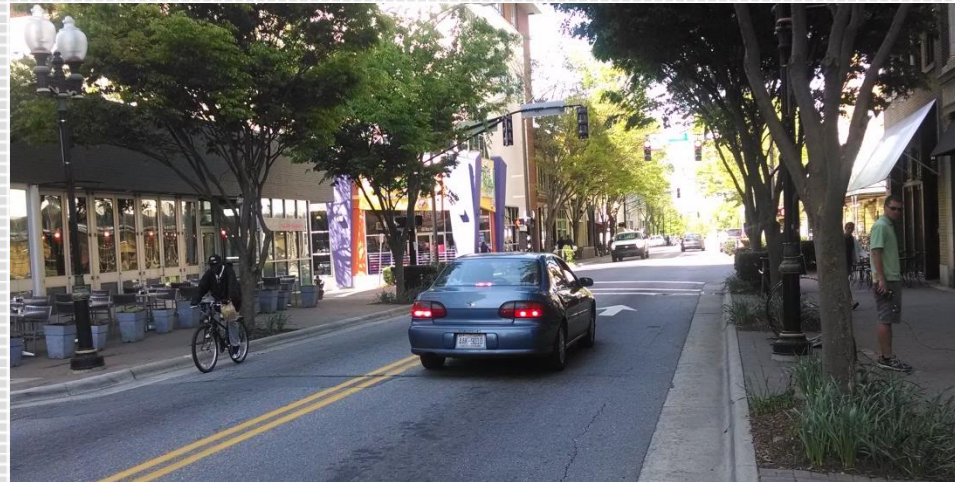


Pilot Project Training Field Exercise, Greensboro



Site Selection Process

- Survey local agencies for candidate sites
- Screen /prioritize sites based on sampling plan
 - Geographic distribution
 - Count type (bicycle or pedestrian)
 - Volume group
 - Travel pattern
 - Area type (urban, rural, university)



Potential CCS site in Winston-Salem: urban, bicycle & pedestrian count, medium/high volume, commuter/mixed pattern, roadway/sidewalk (loops and IR)



Site Selection Process – Field Visits

- Verify site feasibility
- Check for interference
- Determine equipment specification/configuration needs
- Collect preliminary counts



Testing for Interference on Old NC 86 in Carrboro



Selection Process – Field Visits

- Look at Origins and Destinations
- Evaluate Site Conditions
 - Funneling – choke points, bridges, underpasses
 - Parked Vehicles / Utilization
 - Vehicle Cueing
 - Interference
- Determine Baseline Activity Levels
- Make Additional Site Observations, not limited to:
 - Goat Paths
 - Transit Stops
 - Turning Lanes
 - Bike Parking areas
 - Behaviors (i.e. sidewalk riding, midblock crossing)



Select Short Duration Count Sites

- Some sites naturally lend themselves to being considered as SDC Sites.
 - Lower ranking: Not enough money to install all the desired CCS Stations
 - Seasonal activity only
 - Not enough information to make investment in CCS
 - Specific need for non-intrusive technology



Local Agency Coordination

- Partnering with local agencies is important to:
 - Garner support for program
 - Make aware of data collection timeframes
 - Gather and review past count data (if any)
 - Get input on sites, get approvals
 - Assist with equipment installation
 - Assist with equipment monitoring



Auditing a site in Winston-Salem with City staff



Local Agency Coordination

- What's In It For Agency?
 - Equipment
 - Technical assistance / Training
 - “Free” SDC's
 - Access to data
- What's In It For NCDOT?
 - Installation assistance
 - Monitoring/maintenance assistance
 - Established relationships



Installed CCS on Lake Daniel Greenway, Greensboro



Spring Garden St. Site

- Location: Greensboro (GUAMPO)
- Area Type: University
- User Type: Mixed
- Count Type: Pedestrian (Sidewalk) and Bicycle (Roadway)
- Install Type
 - 2 Infrared + 4 Loops
 - 2 Urban Post
 - No loop interference
 - Parking utilization high – so locate loops in street outside of parking zone



✓ Bicycling ▾

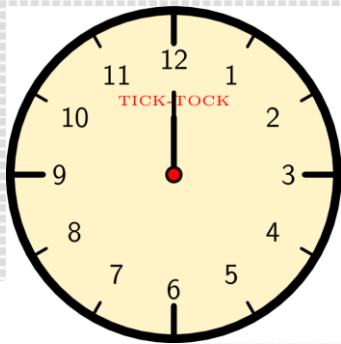
- Trails
- Dedicated lanes
- Bicycle friendly roads

Weatherspoon Art Museum - The University of North Carolina at Greensboro





			Sum of P_G		Sum of P_G		GAP		ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS			Sum of P_G		Sum of P_G		GAP		ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS			Sum of B_G		Sum of B_G		GAP	ZERO SB						
1	Row Labels	IT	Sum of P_G	Sum of P_G	GAP	ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS		Row Labels	IT	Sum of P_G	Sum of P_G	GAP	ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS		Row Labels	IT	Sum of P_G	Sum of P_G	GAP	ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS		Row Labels	IT	Sum of B_G	Sum of B_G	GAP	ZERO SB	
98	2014_12_22		70	73	OK	OK	OK	OK	VALID			2014_12_22	52	32	OK	OK	OK	OK	VALID				2014_12_22	14	21	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
99	2014_12_23		72	70	OK	OK	OK	OK	VALID			2014_12_23	40	42	OK	OK	OK	OK	VALID				2014_12_23	12	7	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
100	2014_12_24		57	55	OK	OK	OK	OK	VALID			2014_12_24	20	18	OK	OK	OK	OK	VALID				2014_12_24	5	8	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	
101	2014_12_25		64	64	OK	OK	OK	OK	VALID			2014_12_25	21	11	OK	OK	OK	OK	FLAG				2014_12_25	10	5	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	
102	2014_12_26		59	68	OK	OK	OK	OK	VALID			2014_12_26	25	28	OK	OK	OK	OK	OK	VALID				2014_12_26	21	16	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	





Get Those Counts!

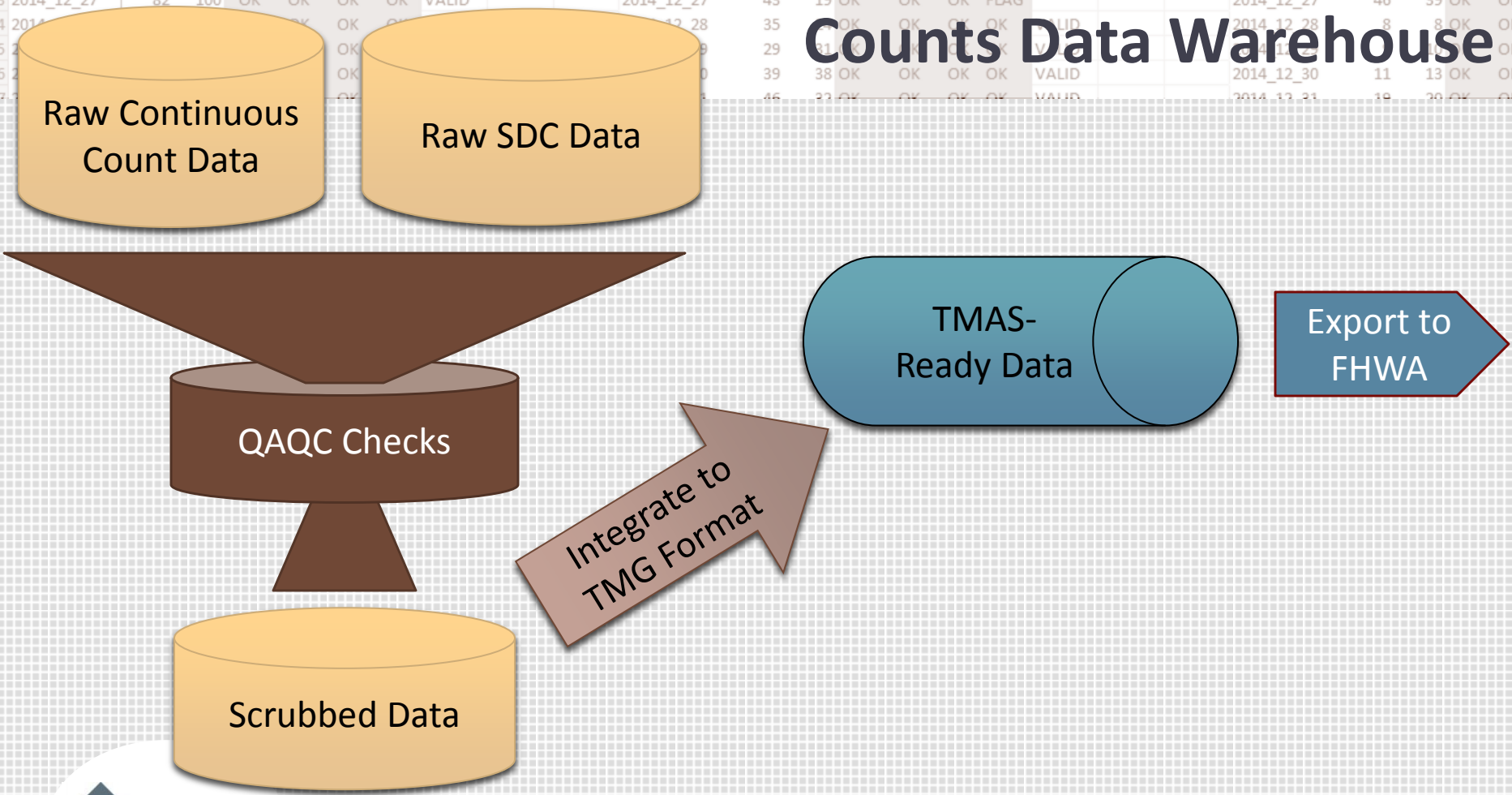
- Contract out SDC needs
 - Assign sites
 - Check collected data
- Retrieve / compile data
 - Monitor equipment
- Conduct validation study
 - Precision and accuracy of the count



Installed CCS on Lake Daniel Greenway, Greensboro

1	Row Labels	Sum of P_G	Sum of P_G	GAP	ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS		Row Labels	Sum of P_G	Sum of P_G	GAP	ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS		Row Labels	Sum of B_G	Sum of B_G	GAP	ZERO SB
98	2014_12_22	70	73	OK	OK	OK	OK	VALID			2014_12_22	52	32	OK	OK	OK	OK	VALID			2014_12_22	14	21	OK	OK
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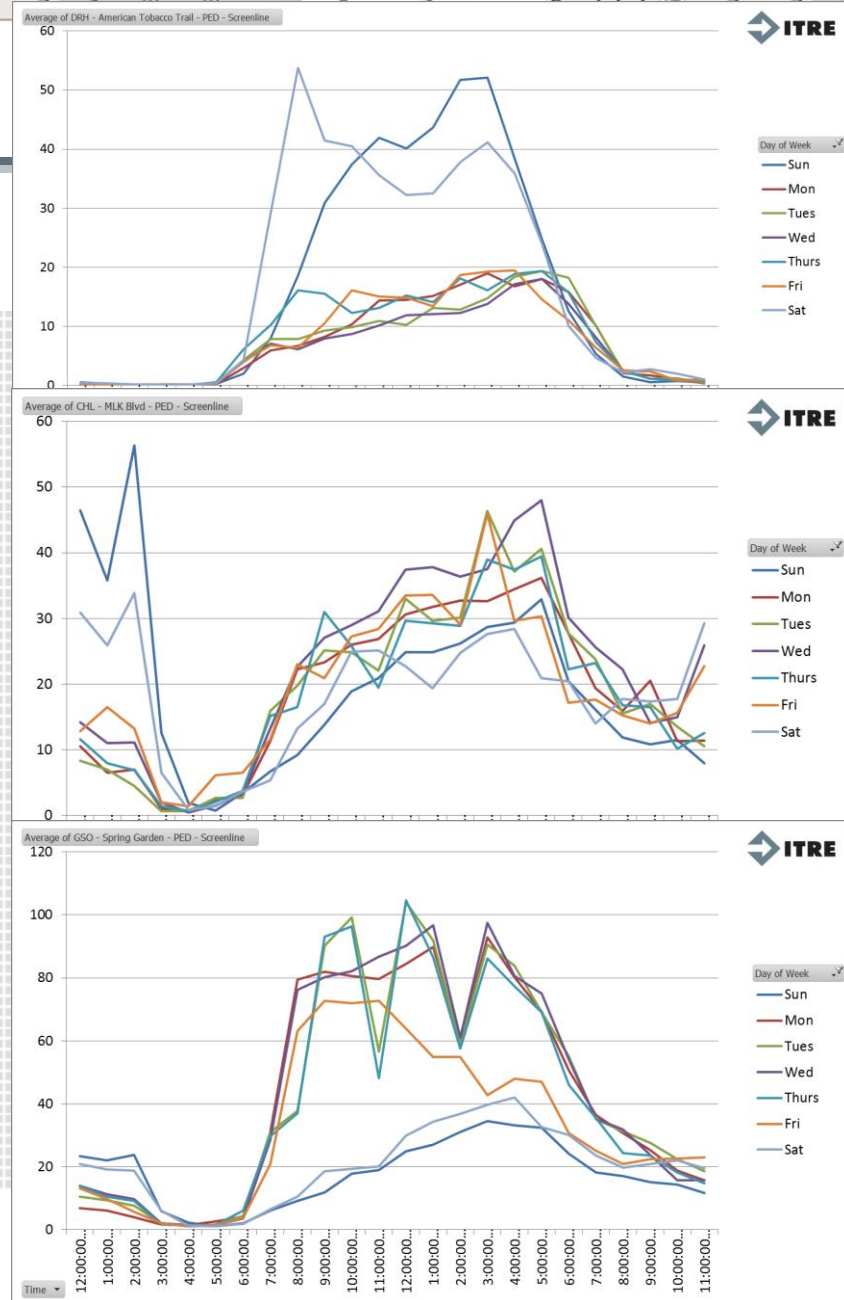
Counts Data Warehouse



1	Row Labels	Sum of P_G	Sum of P_G	GAP	ZERO SB	ZERO NB	P DIR SAME	ACTION	INITIALS	Row Labels	Sum of P_G
98	2014_12_22	70	73	OK	OK	OK	OK	VALID		2014_12_22	52
99	2014_12_23	72	70	OK	OK	OK	OK	VALID		2014_12_23	40
100	2014_12_24	57	55	OK	OK	OK	OK	VALID		2014_12_24	20
101	2014_12_25	64	64	OK	OK	OK	OK	VALID		2014_12_25	21
102	2014_12_26	58	68	OK	OK	OK	OK	VALID		2014_12_26	25
103	2014_12_27	82	100	OK	OK	OK	OK	VALID		2014_12_27	43
104	2014_12_28	68	90	OK	OK	OK	OK	VALID		2014_12_28	35
105	2014_12_29	58	55	OK	OK	OK	OK	VALID		2014_12_29	29
106	2014_12_30	66	65	OK	OK	OK	OK	VALID		2014_12_30	39
107	2014_12_31	65	63	OK	OK	OK	OK	VALID		2014_12_31	46

Analyze Data Collected

- Derive adjustment factors from continuous count data
- Derive expansion factors from sampling plan for each site type
- Develop AADT numbers
 - Apply adjustment factors
 - Apply error correction factors
 - Extrapolate observed counts for short-duration site AADTs
- Explain any statistical uncertainties





Timeframes

- Phase II Site Solicitation Survey – **Closes September 25!!**
- ID sites and conduct field visits - Nov. 2015-Feb 2016
- Install CCS's, collect SDC's - March-June 2016
- Draft Report (Pilot) – April 2016
- Final Report (Phase II) – October 2017





What You Can Do!

- 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)
 - Avoid bad weather
- Share data using TMG data format

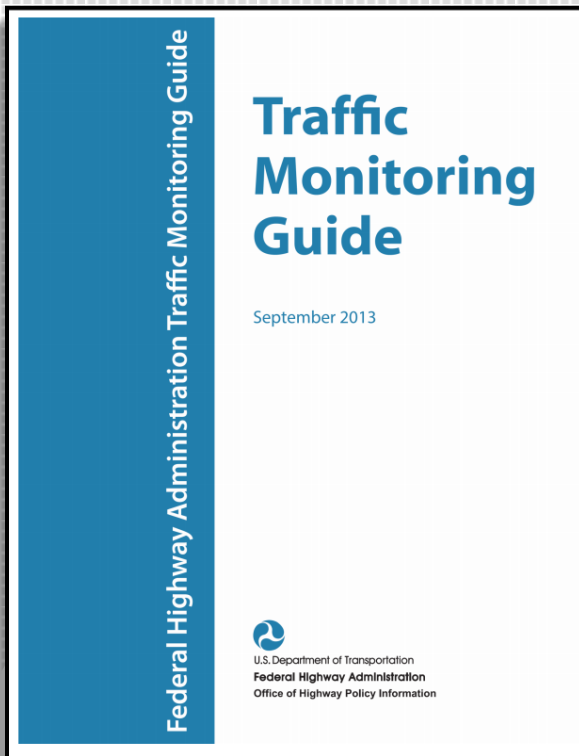


What You Can Do!

- Become familiar with NCHRP 797 Guidebook
 - Steps for planning
 - Purpose
 - Resources
 - Locations and timeframe
 - Methods/technologies
 - Steps for implementing
 - Procurement and equipment set-up
 - Installation and validation
 - Calibration and maintenance
 - Train staff
 - Data management, QAQC, analyses

National State of Practice

- FHWA Traffic Monitoring Guide (Ch. 4)
- NCHRP Report 797 & Web Only Doc. 205



Questions? and Thank You!

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