

Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



Julie Walcoff

ODOT Bicycle Pedestrian and SRTS Program Manager

Tran Systems

EXPERIENCE | Transportation

Doug Lynch, GISP

GIS Practice Leader

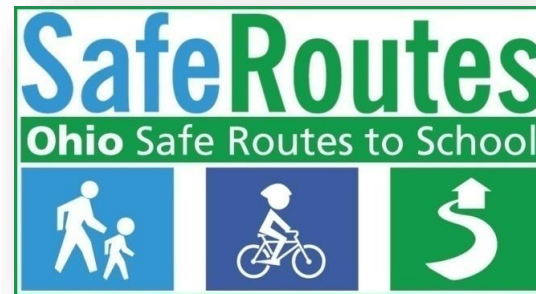


NYSGISA Webinar

June 5, 2015

What is Safe Routes to Schools (SRTS)?

- ▶ **International movement to promote active transportation**
- ▶ **Highway Transportation Bill since 2004**
- ▶ **Focuses on barriers/improvements to walking and biking**
 - Within 2 miles of any school (Grades K-8th Students)
- ▶ **Funds for Infrastructure and Non-Infrastructure Projects through MAP-21 under the Transportation Alternatives Program (TAP) and Surface Transportation Program (STP).**
- ▶ **Includes five components (5 E's)**
 - Education, Encouragement, Enforcement, Engineering, and Evaluation



Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



TranSystems

EXPERIENCE | Transportation

Why Does it Matter?



Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



TranSystems

EXPERIENCE | Transportation

Parents driving



Parents driving their children to school account for up to 25% of morning rush hour traffic.

Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



TranSystems

EXPERIENCE | Transportation

Typical Dropoff



Conflicts
Congestion
Confusion

A Brief History: SRTS in Ohio – Making a Difference



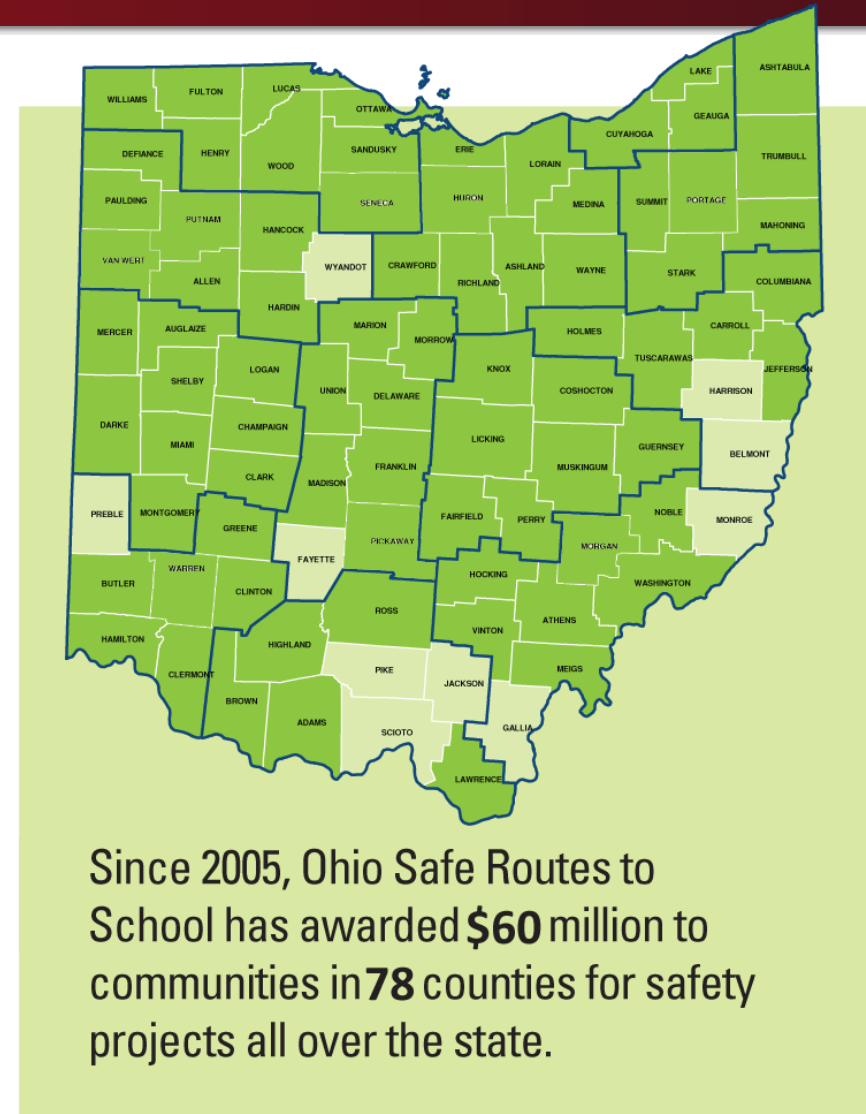
Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

Making a Difference: Ohio By The Numbers

- **SRTS Projects implemented in 78 of 88 Counties**
- **\$60 Million Awarded since 2005**
- **Over 200 infrastructure projects**
- **Over 300 non-infrastructure projects**



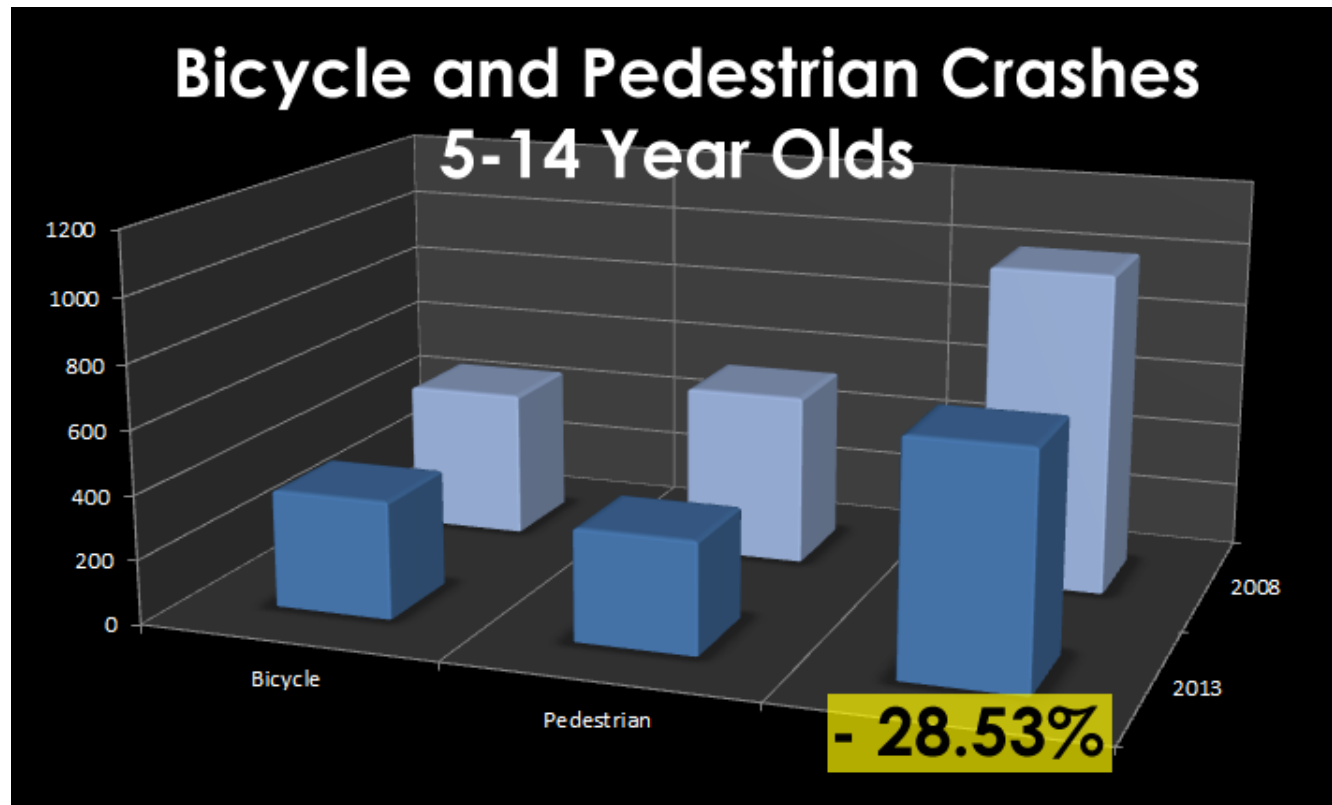
Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

Making a Difference: Ohio By The Numbers

- ▶ **Age 5-14 Year Olds Bicycle and Pedestrian Crashes down in Ohio 28.53% since 2008**



Planning Safe Routes to Schools for Children

► School Travel Plan

- Planning Document
- Addresses all 5 E's
- Team-based Approach
- Required to Access Further SRTS Funding

► Typical Plan

- Up to four schools

► Large District Plan

- More than 15 schools

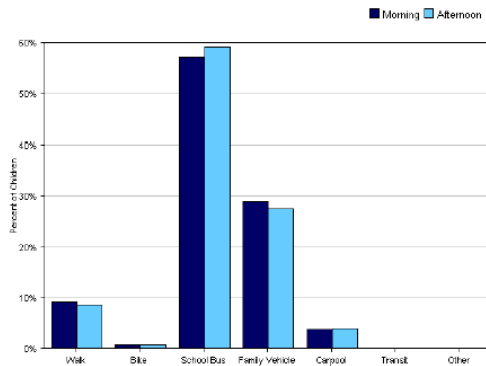


Developing a School Travel Plan

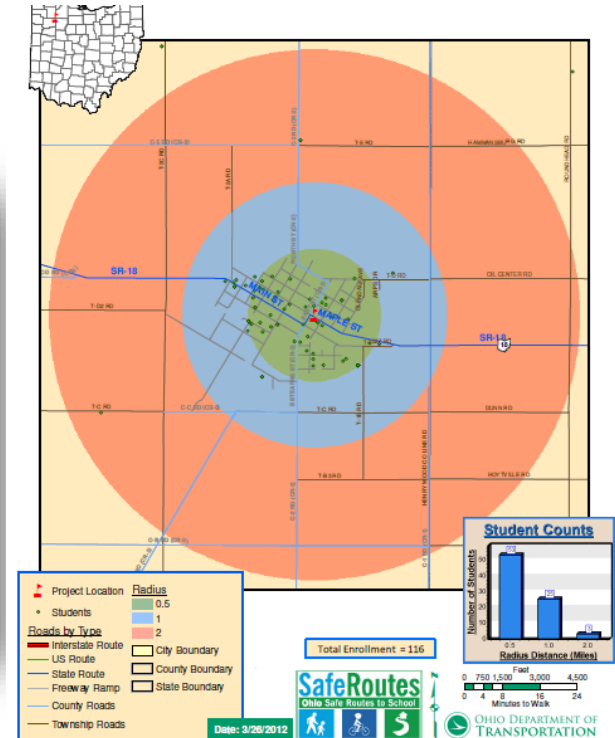
3 Key Items

- Where are the kids coming from?
- What travel mode are they using?
- And why?

Typical mode of arrival at and departure from school



School	SurveyID	Comments Section
Deisher Elementary School	320939	IT IS NOT POSSIBLE FOR ANY OF OUR CHILDREN TO WALK TO ANY SC RURAL LOCATION.
Deisher Elementary School	320940	MOST PEOPLE IN THIS DISTRICT LIVE IN THE COUNTRY & THESE QUR PERTAIN TO US. THE DISTRICT IS SPREAD AWAY.
Deisher Elementary School	320941	QUESTION #11 - OLDER CHILD NOT MY PRBSCHOOLER
Deisher Elementary School	320942	PK - MUST BE ACCOMPANIED TO THE DOOR BY AN ADULT.
Deisher Elementary School	320944	A LOT OF SEMI TRUCK TRAFFIC ON MY CHILDRENS ROUTE TO SCHOOL
Deisher Elementary School	320950	WE LIVE FAR ENOUGH FROM THE SCHOOL, I WOULDN'T LET THEM WA
Deisher Elementary School	320954	THE BUS WAS PICKING UP MY KIDS NOW IT DOESNT SO TO PRESSU AND TRANSPORTATION FOR NOW I HAVE TO BRAL THEM TO SCHOOL SO I WILL HAVE TO ASK SOMEBODY TO TAKE THEM TO SCHOOL.
Deisher Elementary School	320955	QUESTION #9 - NEVER LIVE TO FAR AWAY. QUESTION #12 #13 #14 - D
Deisher Elementary School	320960	WHEN I TALK ABOUT BU WALKING I MEAN WITH HIS OLDER BROTHER & SISTER TO HIS GRANDPARENTS.
Deisher Elementary School	320962	I DO FEEL THAT THE SCHOOL SHOULD HAVE A BUS ROUTE FOR KIDS IN TOWN. I FEEL THAT SOME PEOPLE DON'T HAVE THE TRANSPORTATION SO THEY HAVE TO WALK THEIR CHILD WALK TO PARTNER THE AGE.
Deisher Elementary School	320963	SCHOOL ARE PUT TOGETHER VERY POORLY. DEISHLER'S MAJORITY THE GRADES AND TRAVEL OF THE YOUNG KIDS IS WAY WRONG. WE WILL BE LEAVING THE DISTRICT WALKING TO SCHOOL. KIDS COME ALL THE WAY TO DEISHLER AND IN RETURN IS TO MUCH BUS RIDING!!
Deisher Elementary School	320969	THE MAIN REASON I WALK GRACIN TO SCHOOL IS THE INTERSECTION WHICH IS ST RT. 18 VERY DANGEROUS IN TRAFFIC. KNOWING THAT SHE IS SAFE IS A PLUS OF MINE.
Deisher Elementary School	320975	IF WE LIVED IN TOWN WE WOULD LET HER RIDE/WALK WHEN SHE GOT OLDER BUT WE LIVE TOO FAR AWAY.
Deisher Elementary School	320980	WE LIVE IN A RURAL AREA. THE SCHOOL IS 3 MILES FROM OUR HOME. BRING AND/OR WALKING TO SCHOOL IS NOT A PRACTICAL OPTION. HOWEVER WE DO WALK AND BIKE FOR FUN & EXERCISE.
Deisher Elementary School	320982	QUESTION #9 - 11 MILES IS TOO FAR!
Deisher Elementary School	320983	THIS IS TOTALLY IRRELEVANT FOR WHERE WE LIVE IN RELATION TO ANY OF OUR SCHOOLS.



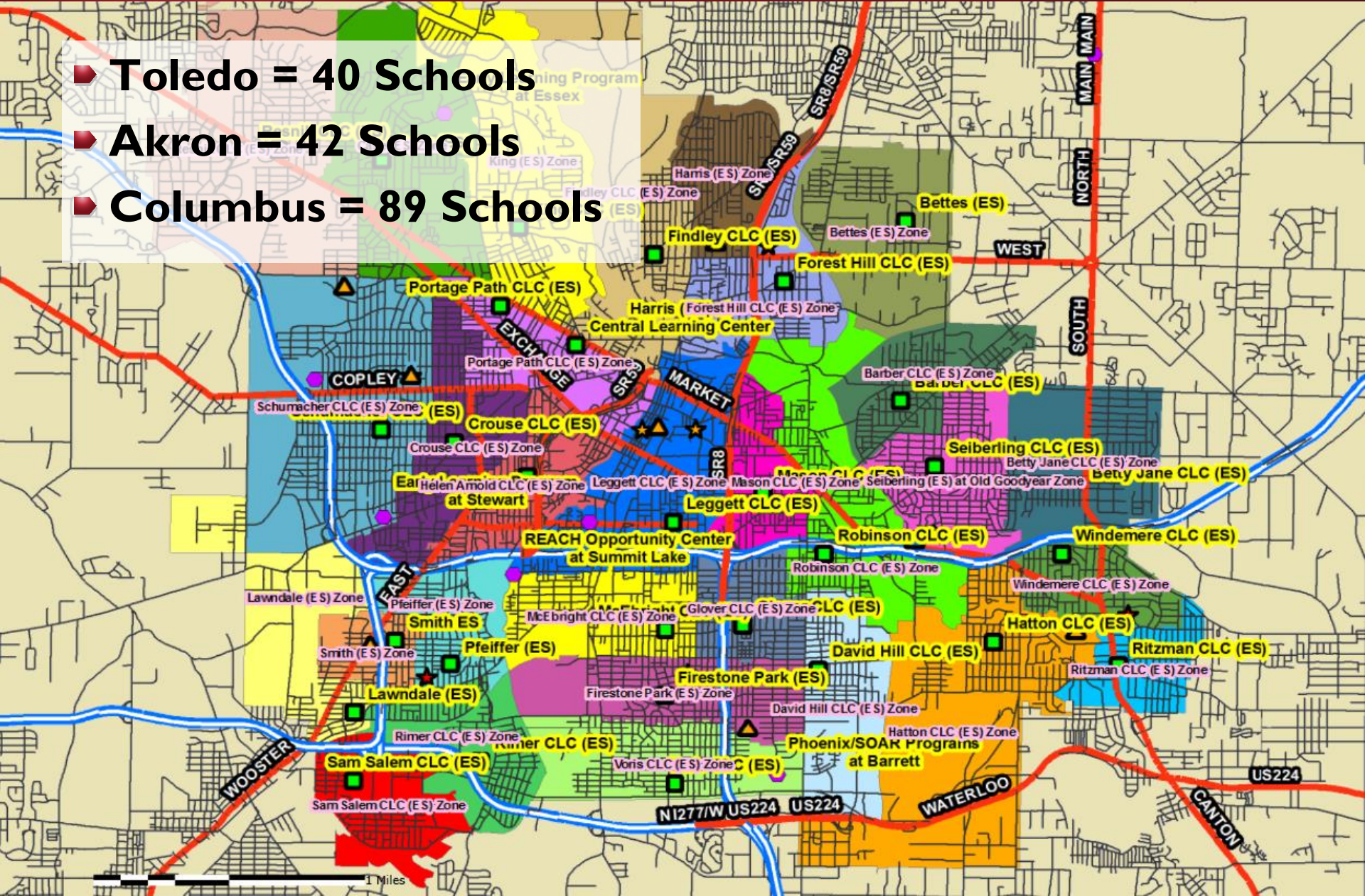
Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

Toledo, Akron, and Columbus School Districts

- ▶ Toledo = 40 Schools
- ▶ Akron = 42 Schools
- ▶ Columbus = 89 Schools



To Identify the Project Needs...Data is Needed

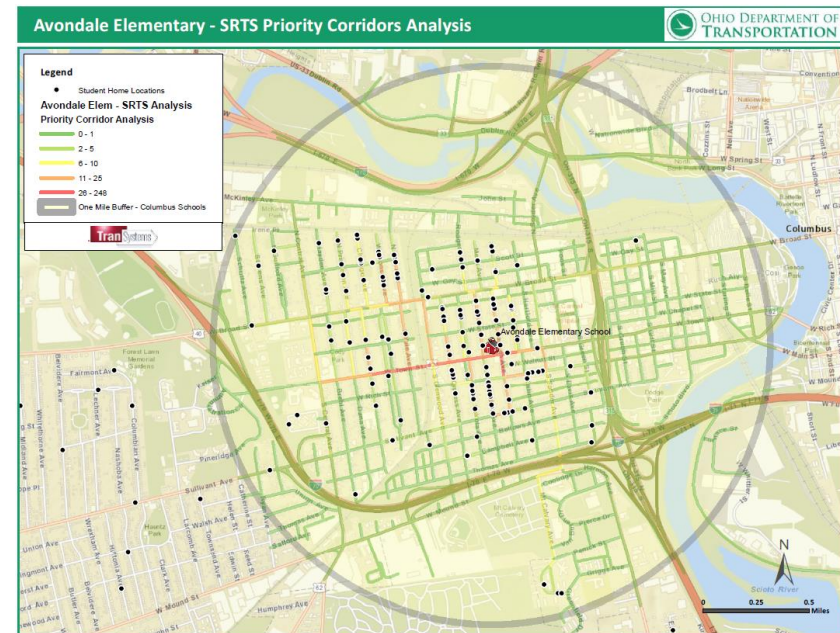
- **Student and school locations**
- **Attendance zones**
- **Buffer zones**
- **Crash data**
- **Shortest Shared Path road segment frequency to identify unique priority corridors for STP**



GIS IS KEY TO OBTAINING ALL THIS INFORMATION

GIS Technology Integration Overview

- **Esri ArcGIS Desktop software utilized**
- **Network Analyst extension**
- **Custom ModelBuilder and ArcToolbox applications developed to identify potential priority corridors**
- **Custom maps developed for each school**



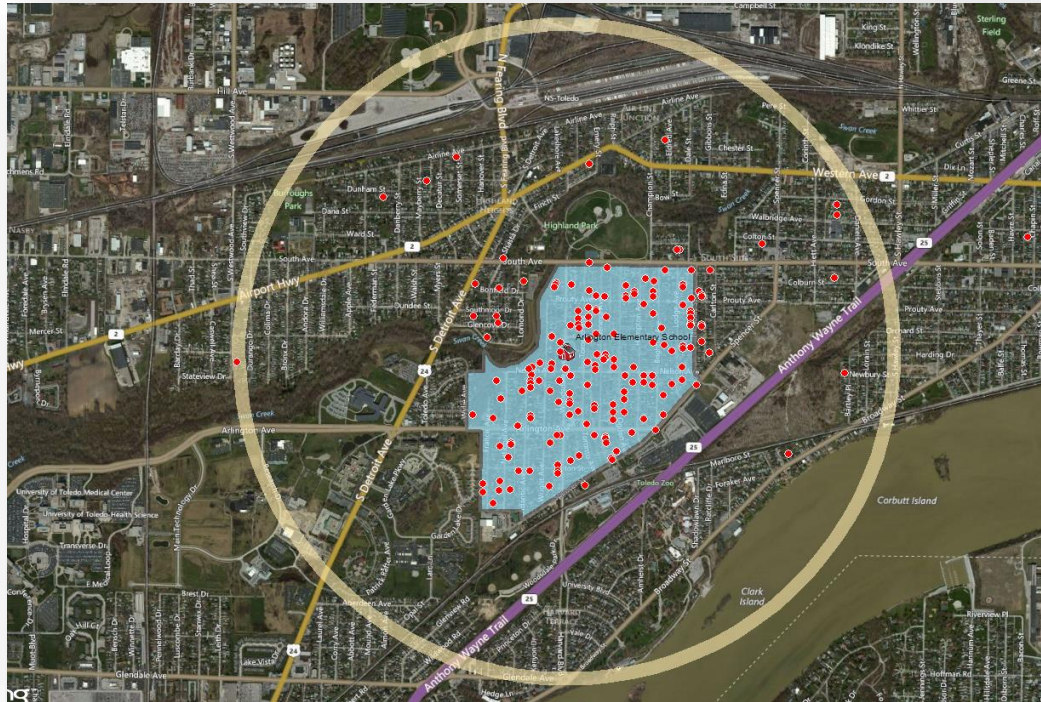
Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

GIS Sample Processing Steps: Basemap Setup

- ▶ **Geocode student locations**
- ▶ **Generate Buffer**
- ▶ **Develop Attendance Zone Boundaries**



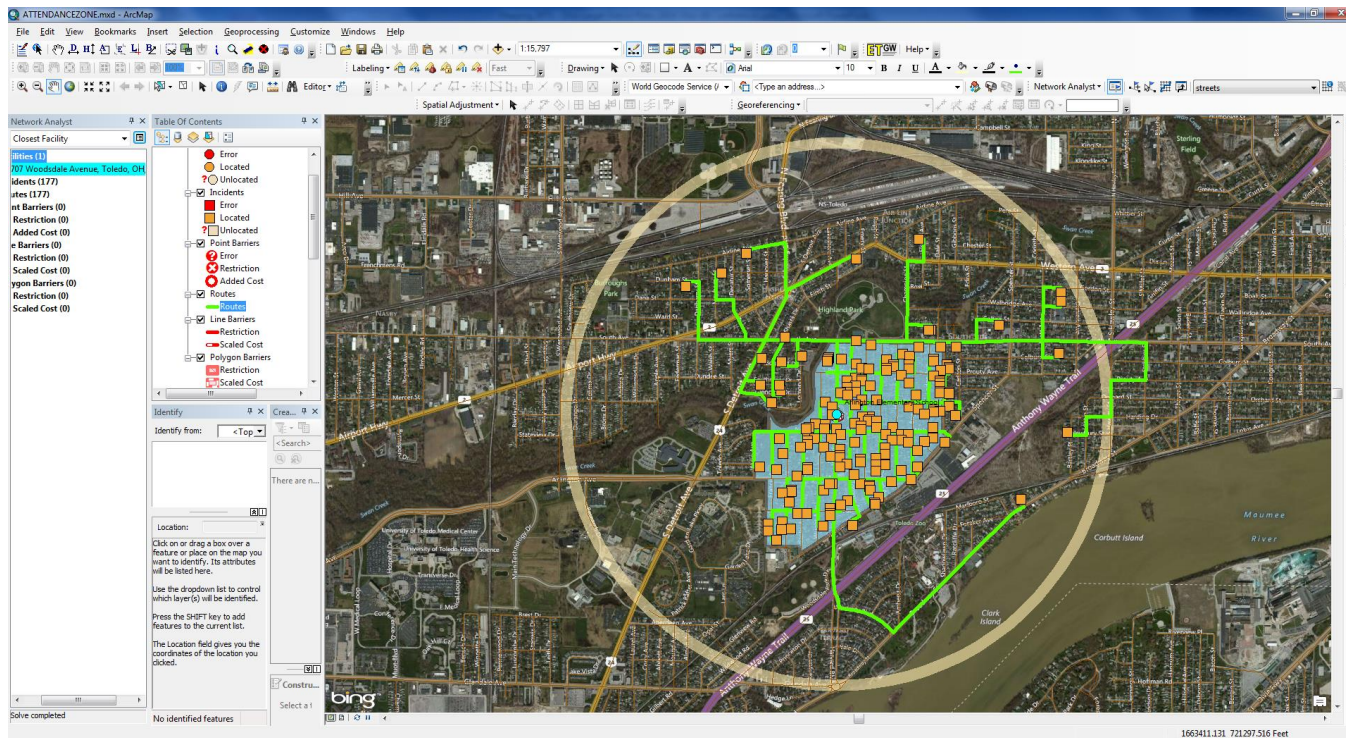
Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

GIS Sample Processing Steps: Network Analyst

- Utilize Network Dataset
- Closest Facility Analysis – Student Home to School
- Shortest Path Identification – export as new layer



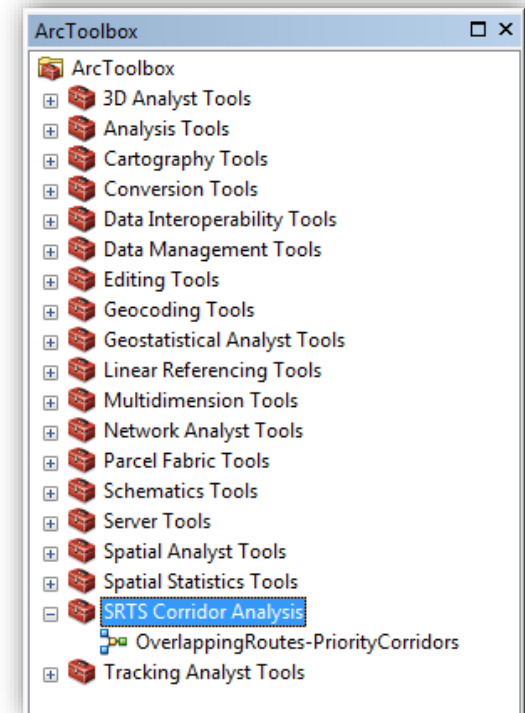
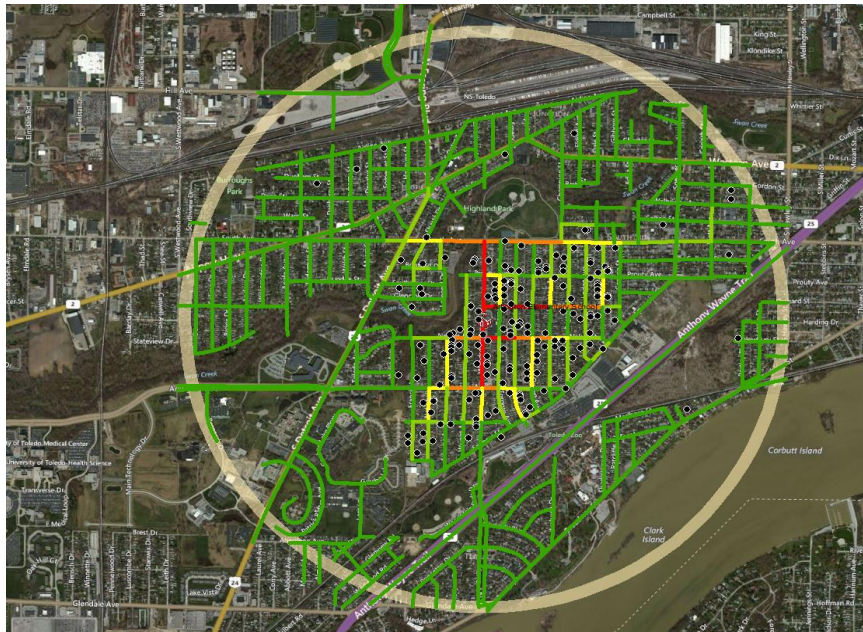
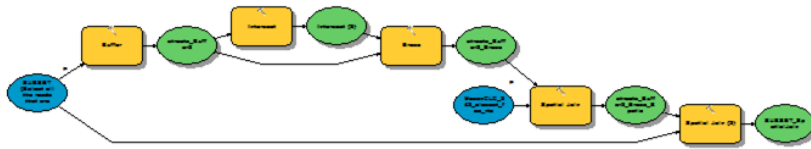
Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

GIS Processing Steps: ModelBuilder Integration

- ▶ Utilize Custom Model built within ModelBuilder
- ▶ Model creates a “heat ramp” of shared road segments based on shortest path analysis output within NA



Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts

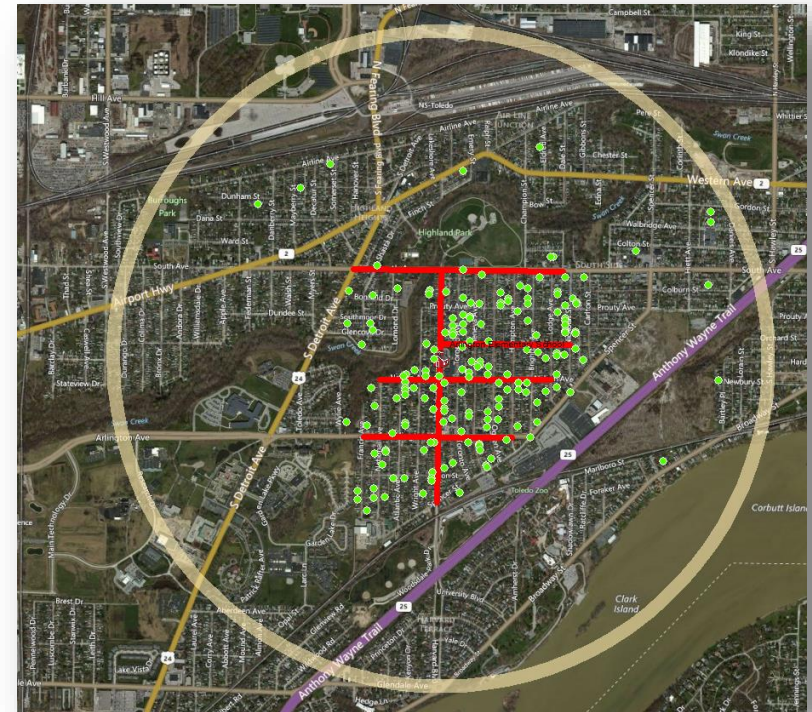


TranSystems

EXPERIENCE | Transportation

GIS Processing Steps: Finalize Priority Corridors

- ▶ **Draft Priority Corridors** mapped and vetted through stakeholder review and comments for concurrence.
- ▶ **Priority Corridors** used to determine specific countermeasures



Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts

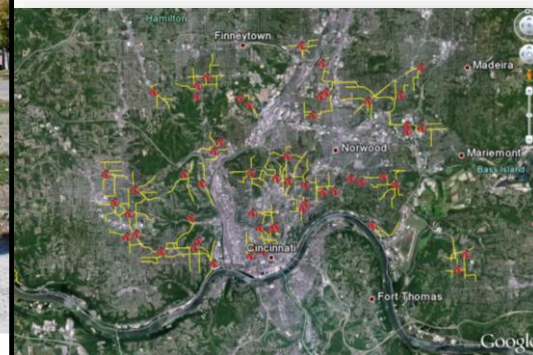
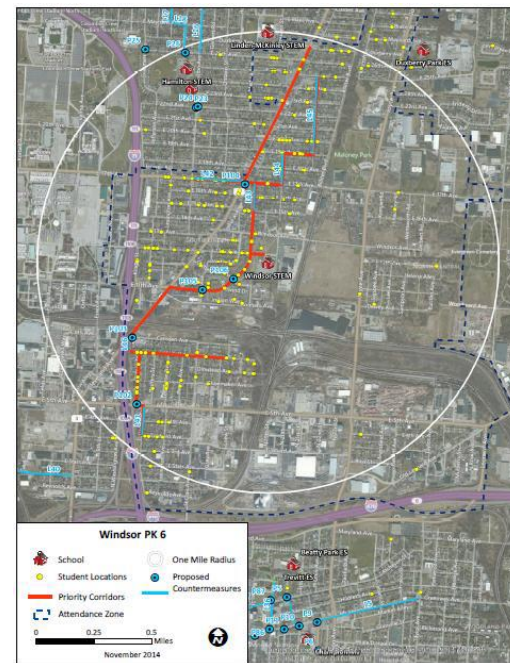


TranSystems

EXPERIENCE | Transportation

Infrastructure Methodology

- **Focused on Priority Corridors output**
- **Included info from: SRTS Team, Surveys (parents/principals), walk audits, existing city plans/policies, and other data**
- **DRAFT Countermeasures (conceptual) that will require further analysis, design, and public input prior to implementation**
- **Verification in ArcGIS**



Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

Non-Infrastructure Methodology

► Focused on Policies and Programs

- City, School District, Local, Parent/Caregiver Support for SRTS
- Pedestrian and Bicycle Safety Education
- On-Campus Pedestrian and Bicycle Accommodations
- Driver Awareness of School Zones/Driver Behavior
- Volume of Vehicular Traffic Along Student Walking/Biking Routes
- Student Safety and Comfort at Intersections and Crossings and along the School Route
- Arrival and Dismissal Procedures
- Adult Supervision/Personal Security

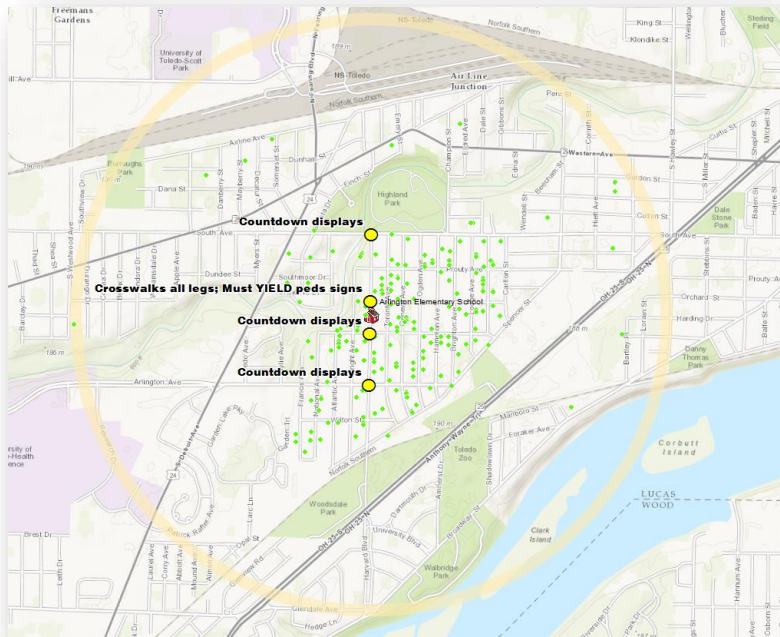
► Identified “Partners” through Outreach (Surveys)

Countermeasure Prioritization - Infrastructure

- **Ped/Bike potential, including proximity to a Priority Corridor and proximity to a K-8 School**
- **Ped/Bike deficiency (sidewalk gaps, roadway classification, and crashes)**
- **Feasibility (including estimated costs and ROW requirements)**
- **ODE School Demographics**
- **Support**
 - Local School Participation (Principal Surveys, Walk to School Day, Education)
 - Priorities identified by Steering Committee, Principals, and Study Team

Countermeasure Prioritization – Non-Infrastructure

- **Feasibility (including estimated costs and ROW requirements)**
- **Alignment with the Steering Committee’s Vision/Goals for the STP**



Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



EXPERIENCE | Transportation

Proposed Countermeasures Map Example

Delaware City Schools Proposed Countermeasures

A, B: Multi-use pathway.

C: Add sidewalk, move crossing location.

D, H, P, Q, T: Remote drop-off/pick-up location.

E: Raised crosswalk with appropriate signage.

F: Raised intersection.

G: Add pedestrian countdown timers.

I, O, R: Add or relocate 20 MPH flashing school zone beacons.

J: Add curbs and sidewalks.

K: Add sidewalk.

L: Upgrade crossing.

M, N, V: Add RRFB.

S: Add street lighting.

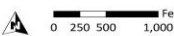
U: Enhance crosswalk with paint and signage; consider a raised crosswalk.

W: Enhance crosswalk with paint and signage.



EXPERIENCE | Transportation

- Legend**
- Proposed Multi-use Pathway
 - Proposed Sidewalk
 - Priority Corridors
 - 1/4-mile Buffer
 - 1/2-mile Buffer
 - 1-mile Buffer



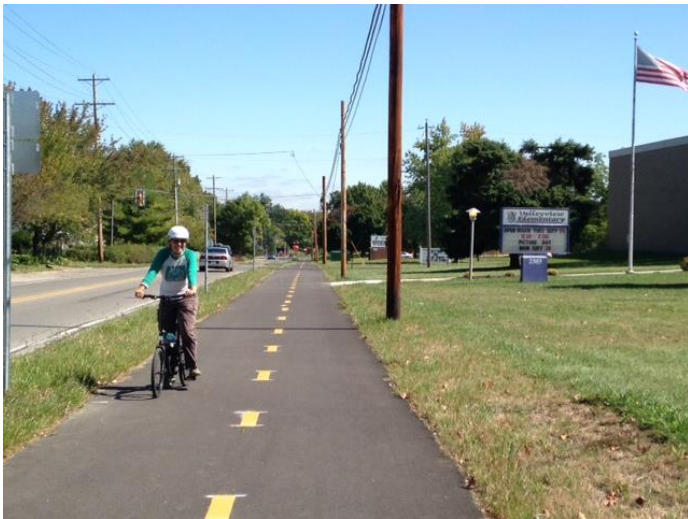
Finalizing the School Travel Plan

➤ Next Steps

- Incorporate Public Comments
- Finalize Countermeasures and Mapping
- Action Plan (Prioritization and Responsible Party)
- Endorsements



➤ Funding Request



Conclusions

- ▶ **Successful collaboration comes through clear, constant communication with stakeholders throughout the project**
- ▶ **Esri ArcGIS software and Modelbuilder is a valuable planning and mapping tool to analyze, identify, and map the existing conditions (needs blueprint) for any school**
- ▶ **Network Analyst extension provides powerful visual of student shortest path (Closest Facility)**



Mapping SRTS: An Ohio Collaboration Success Story from Toledo, Columbus, and Akron School Districts



TranSystems

EXPERIENCE | Transportation

Questions?



Julie Walcoff

Julie.Walcoff@dot.state.oh.us

(614) 466-3049

Douglas Lynch, GISP; TranSystems

dwlynch@transystems.com

(513) 345-2116

Tran Systems

EXPERIENCE | Transportation

NYSGISA Webinar

June 5, 2015