

# PJ Smith, AICP

Founder, xGeographic pjsmith@xgeographic.com 407-496-5463





# Regionally Integrated GIS Data

Integrated, scalable geographic databases now built for the Orlando Metro Area.

Digital Twin | Specialized geoprocessing flow generates end-state databases that update with changes to the urban environment.

Usable in ArcGIS | Usable in standard GIS file formats and across GIS desktop programs. The Wave Suite also includes custom-formatted maps and tools for use in ArcGIS.

# **One Data Language**

No artificial data boundaries between cities.

### **Universal & Elastic End Products**

Benchmark to municipal standards, etc.

# **Scalable to Other Regions**

Currently built for Metro Orlando

Roadway Characteristic Data

Future Land Use & Zoning Data

Property Appraiser Parcel Data

U.S. Census Demographic Data

School Zone/Grade Data

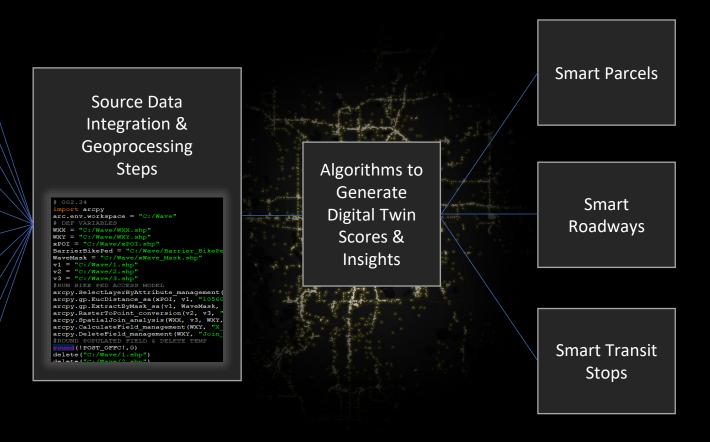
TAZ Data (Pop/Job Density)

50 + Point of Interest Types

Natural Hazard Data

CDC 500 Cities Health Data

Proximity & Access Substrates

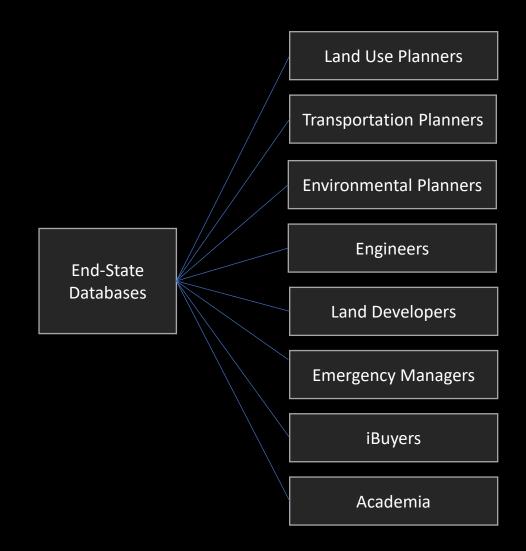




Regionally Integrated GIS Data | Integrated, scalable geographic databases now built for the Orlando Metro Area.

Digital Twin | Specialized geoprocessing flow generates end-state databases that update with changes to the urban environment.

Usable in ArcGIS | Usable in standard GIS or CAD file formats and across GIS desktop programs. The Wave Suite also includes custom-formatted maps and tools for use in ArcGIS.



### Point of Interest Data

Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information





+23,000

Points of interest

55

Point of interest types

Q/A

Parcel, DOR, Google

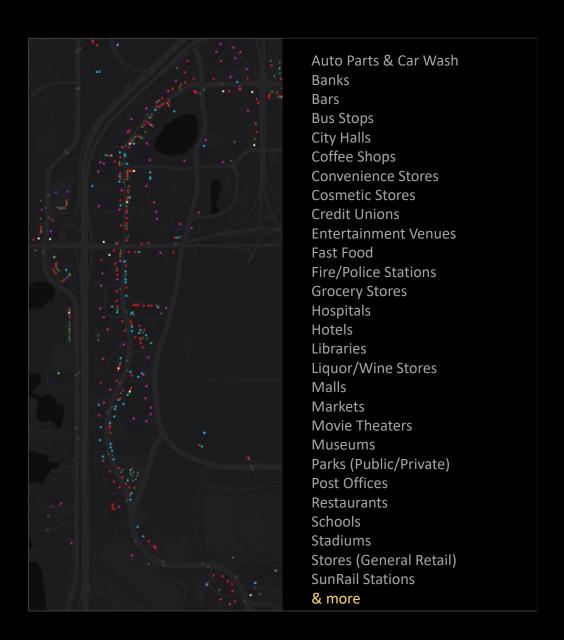
# 6-month

Updates

Next Update: November 2021

### Point of Interest Data

Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information





# wave

### **Feature Review**

### Point of Interest Data

Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information



# +1,300 Parks

Clipped to Water Features

# 2 Types

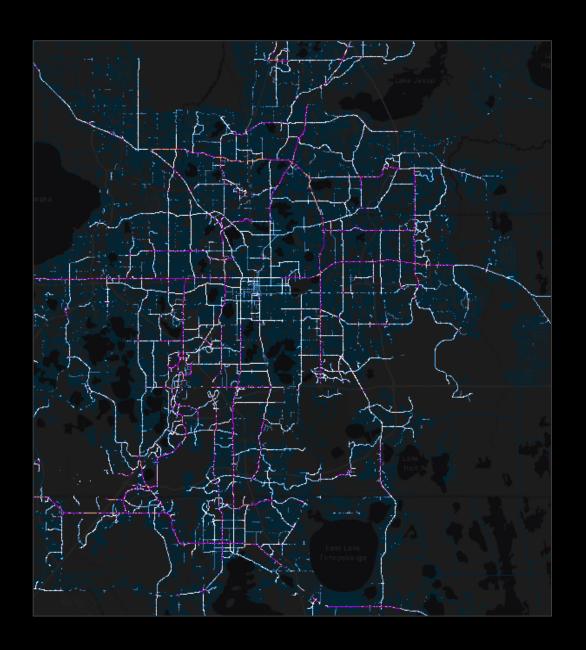
Public & Private

# **Trails & Paths**

10' Minimum Width for Trails



Point of Interest Data **Transportation Data** Proximity Data **Proximity Metrics Access Indices** Access Countermeasures **Mobility Indices** Mobility Countermeasures Demographic Insights **Smart Parcels** Environment/Land Use Insights Website Information



# **Data Integration**

Municipal, County, Regional

### **Stratified & Unified**

Wave Regional Data Language Now Code-Operable

# **Data Updates**

New Roads, Construction, I-4 TIP, PPL-Based Updates



Point of Interest Data

**Transportation Data** 

Proximity Data
Proximity Metrics

Access Indices

Access Countermeasures

**Mobility Indices** 

Mobility Countermeasures

Demographic Insights

Smart Parcels

**Environment/Land Use Insights** 

Wave Suite +

Website Information



**Speed Limits** Through Lanes Turn Lanes **Bus-Only Lanes Total Lanes** Travel Surface Width Median Width Median Type **Total Width** Bike Lanes **Bike Slots** Daily Traffic Percent Truck Traffic Sidewalk Coverage Flush Sidewalks Signalized (Y/N) **Functional Class Context Class** Jurisdiction **Level of Traffic Stress** FDOT Layers and FDOT ID Flood Zone & More

180,000 +

**Roadway Segments** 

20 +

Roadway Characteristics

**Pre-Formatted** 

**Output Maps Ready** 



Point of Interest Data Transportation Data

**Proximity Data** 

**Proximity Metrics** 

Access Indices

Access Countermeasures

**Mobility Indices** 

Mobility Countermeasures

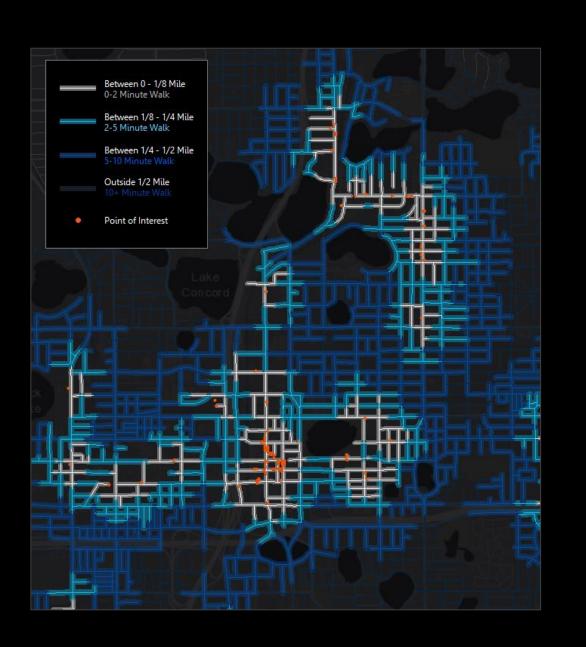
Demographic Insights

**Smart Parcels** 

Environment/Land Use Insights

Wave Suite +

Website Information





# Adds Proximity Data to Roads

Land Use + Mobility Link

# **66 Outputs**

55 POI + 11 POI "Bundles"

### **Pre-Formatted**

Using Planning Criteria (2, 5, 10 minute walks)



Point of Interest Data Transportation Data Proximity Data

## **Proximity Metrics**

Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information

### **Bicycle and Pedestrian Distance**

Allows for travel along roads, paths and trails

### **Automobile Trip Distance**

Allows for travel along roads

#### As-the-Crow-Flies Distance

Allows for unobstructed travel, except over lakes

### Number of "X" within ½ Mile

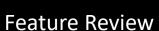
Counts number of points of interest (by type) within  $\frac{1}{2}$  mile

### Z-Distance "Fluidity"

Difference between bike/ped distance and auto distance R Distance = Z/W -- % of trip time saved

### U-Distance "Fluidity"

Proportion between bike/ped distance and crow distance



Point of Interest Data Transportation Data Proximity Data

**Proximity Metrics** 

Access Indices

**Access Countermeasures** 

Mobility Indices

Mobility Countermeasures

Demographic Insights

**Smart Parcels** 

**Environment/Land Use Insights** 

Wave Suite +

Website Information



Bicycle and Pedestrian Distance

Allows for travel along roads, paths and trails

**Automobile Trip Distance** 

Allows for travel along roads

As-the-Crow-Flies Distance

Allows for unobstructed travel, except over lakes

Number of "X" within ½ Mile

Counts number of points of interest (by type) within ½ mile

Z-Distance "Fluidity"

Difference between bike/ped distance and auto distance

R Distance = Z/W -- % of trip time saved

U-Distance "Fluidity"

Proportion between bike/ped distance and crow distance



Point of Interest Data Transportation Data Proximity Data

# **Proximity Metrics**

Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information



# **U** Fluidity

Bike-Ped Distance
As-the-Crow-Flies Distance



Calculated Relative to 11 Point of Interest "Bundles"



Point of Interest Data Transportation Data Proximity Data Proximity Metrics

**Access Indices** 

Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information

### **Food**

Recreation

Goods & Services

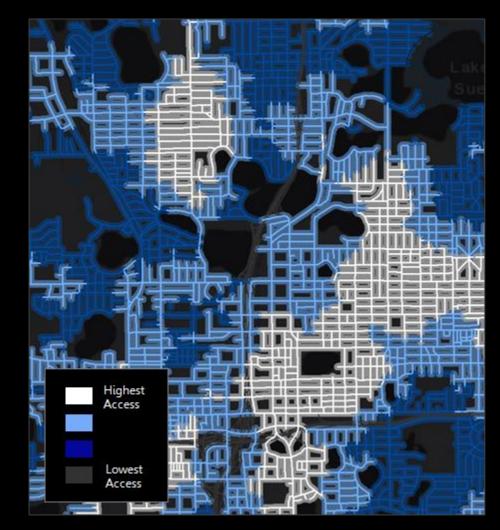
Entertainment

Night Life

**Transit** 

**Municipal Services** 

Custom





Point of Interest Data Transportation Data Proximity Data Proximity Metrics

**Access Indices** 

Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information

Food

Recreation

Goods & Services

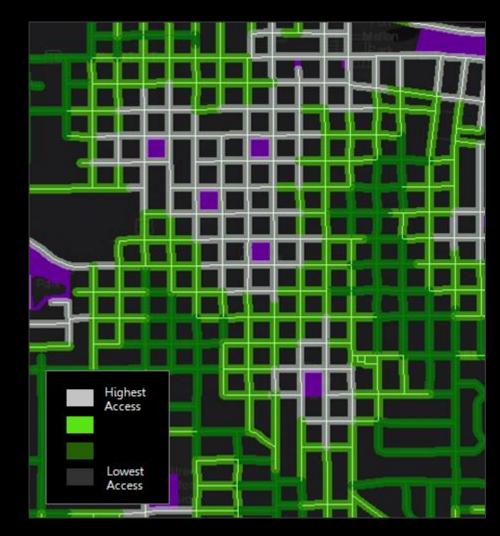
Entertainment

Night Life

**Transit** 

**Municipal Services** 

Custom





Point of Interest Data Transportation Data Proximity Data Proximity Metrics

**Access Indices** 

Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information

Food

Recreation

Goods & Services

Entertainment

**Night Life** 

**Transit** 

**Municipal Services** 

Custom

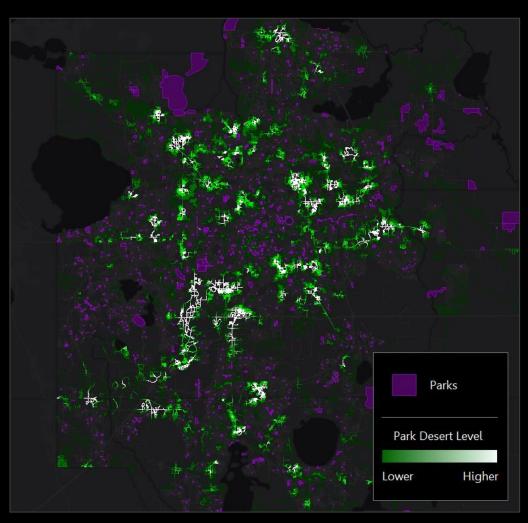




Point of Interest Data Transportation Data Proximity Data Proximity Metrics Access Indices

### **Access Countermeasures**

Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information



Park Deserts

# Calculates Land Use Gaps

Using Population Density, Access Indices, etc.

# **Smart Overlay**

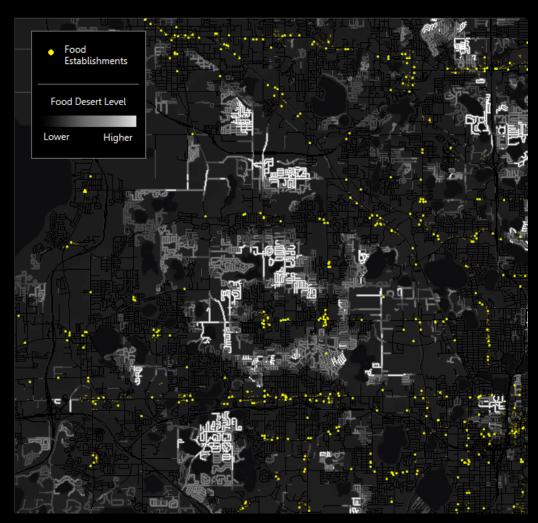
With publicly-owned parcels to alleviate the park shortage



Point of Interest Data Transportation Data Proximity Data Proximity Metrics Access Indices

### **Access Countermeasures**

Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information



**Food Deserts** 

# **Smart Overlay**

With vacant parcels to fill the food shortage

Data provides Leverage to Alter Future Land Use For Vacant Parcels



Point of Interest Data Transportation Data Proximity Data Proximity Metrics Access Indices

### **Access Countermeasures**

Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information



**Transit Opportunities** 

# **Smart Overlay**

With 2045 population density to plan for the long term



Wave Suite +

Website Information

Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights

### Roadway Feature Risk



# **Bike/Ped Obstacles**

Observed bike-ped crash rates associated with **roadway characteristics** in Metro Orlando feed into a 0-100 risk score

# Roadway Feature + Location Risk



### **Land Use Context**

Points of interest that are associated with higher bike-ped crash rates elevate the risk profile for nearby roadways. In short, where are people likely to cross a road?

Point of Interest Data

Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information

# High-Speed Sidewalk Gaps Near Transit



# High-Speed Sidewalk Gaps Near Schools







Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices

# **Mobility Countermeasures**

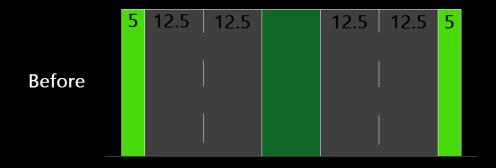
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information

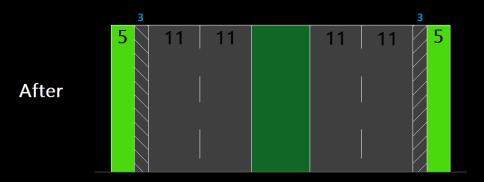
# Protectable Bike Lanes Using Context Classification

\*Absorb Bike/Ped Safety Project Costs into the Repave and Restripe Process

Retrofittability = Width - (# Lanes X Context Class Allowable Lane Width)

$$R = W - (L * Ac)$$





#### Scenario:

2 Bike Lanes Can Be Protected w/ 3-Foot Buffers



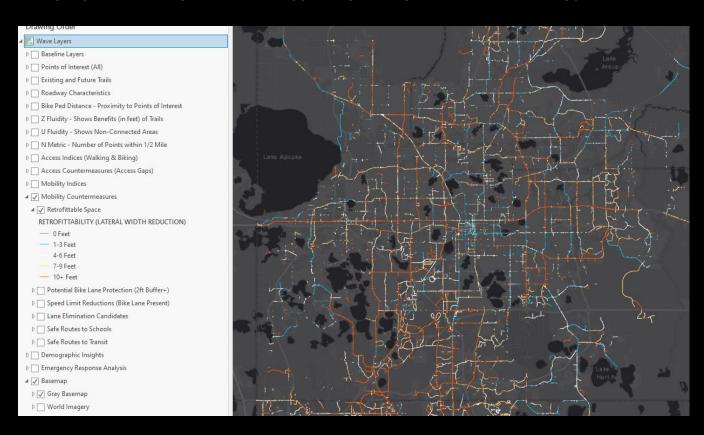
Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +

Website Information

# Protectable Bike Lanes Using Context Classification

\*Repave and Restripe

#### ALL ROADS IN THE METRO AREA ARE MEASURED FOR RETROFITTABILITY VIA THE ALGORITHM





Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices

# **Mobility Countermeasures**

Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information

# Protectable Bike Lanes Using Context Classification

\*Repave and Restripe

Speed Limit Reductions Where Bike Lanes are Present (40mph+)

\*Stratified data = 1 line of code

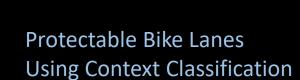
Travel Lane Removal Candidates (AADT < 20,000 and 4 Lanes)

\*Subject to future travel demand



Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures

Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +
Website Information



\*Repave and Restripe

Speed Limit Reductions Where Bike Lanes are Present (40mph+)

Travel Lane Removal Candidates (AADT < 20,000 and 4 Lanes)

<sup>\*</sup>Subject to future travel demand

<sup>\*</sup>Using FDOT Criteria

<sup>\*</sup>Instant identification of roadways meeting criteria



Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +

Website Information

Census
Tract ID

TAZ
Block ID

Zip
Codes



Point of Interest Data Transportation Data Proximity Data **Proximity Metrics** Access Indices Access Countermeasures **Mobility Indices** Mobility Countermeasures **Demographic Insights Smart Parcels** Environment/Land Use Insights Wave Suite + Website Information

Median Family Income % Fam. Below Poverty

School Zones & Grades

% Zero

Vehicle

Homes

Travel Time to Work

Median

Age

% Using Transit to Work

Travel

Time to

Work

Persons Per Acre (2020)

Jobs Per Acre Persons Per Acre (2045) Crude CV Dis. Rates

Crude Cancer Rates Crude Obesity Rates Crude Asthma Rates Crude High BP Rates



Point of Interest Data Low Income

Transportation Data **Food Deserts** 

Proximity Data

**Proximity Metrics** 

**Access Indices** Low Income

Access Countermeasures Park Deserts

Mobility Indices

Mobility Countermeasures

**Demographic Insights** Low Income

Smart Parcels Transit Deserts

Environment/Land Use Insights

Wave Suite +

Website Information

Low Vehicle

Ownership

**Transit Deserts** 

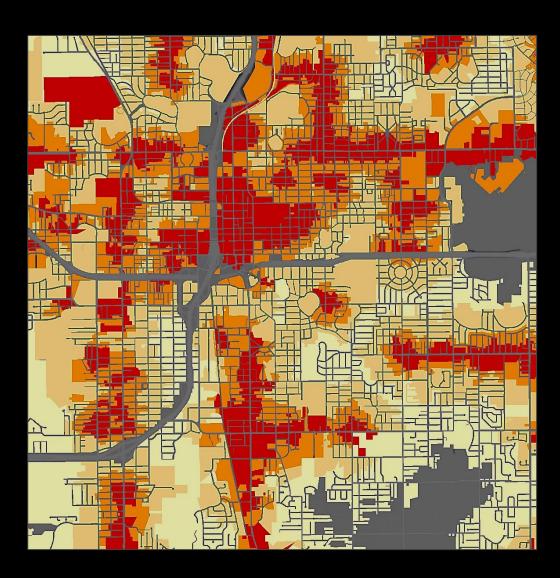
# **Access x Demographics**

Four standard outputs are provided. Users can generate other outputs by querying the Wave database.



Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels

Environment/Land Use Insights
Wave Suite +
Website Information



# **Links All Fields to Parcels**

Imbeds All Wave Fields

### **Includes Parcel ID**

Easy Link to Property Appraiser

### **Parcel Profiles**

**Numerous Indicators for Parcels** 



Point of Interest Data Transportation Data

Proximity Data

**Proximity Metrics** 

**Access Indices** 

Access Countermeasures

**Mobility Indices** 

Mobility Countermeasures

Demographic Insights

**Smart Parcels** 

**Environment/Land Use Insights** 

Wave Suite +

Website Information

Jade | Parcel Finder

Query the xGeographic Wave database parcels:

**SEARCH WHERE** 

Build Year = 0

AADT > 20,000

Parcel Size > 8 Acres

No Grocery Stores within 1 Mile

Area Median Family Income > 80,000

Food Desert Score > 0

7



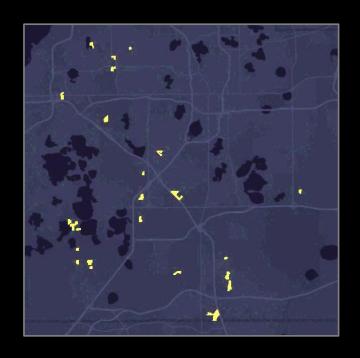
Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices
Mobility Countermeasures
Demographic Insights
Smart Parcels
Environment/Land Use Insights
Wave Suite +

Website Information

**Jade** | Parcel Finder

Query the xGeographic Wave database parcels:

WHERE ALL CRITERIA MET
Build Year = 0
AADT > 20,000
Parcel Size > 8 Acres
No Grocery Stores within 1 Mile
Area Median Family Income > 80,000
Food Desert Score > 0





Point of Interest Data **Transportation Data Proximity Data Proximity Metrics Access Indices Access Countermeasures Mobility Indices Mobility Countermeasures Demographic Insights** Smart Parcels - Jade **Environment/Land Use Insights** Wave Suite + Website Information



# PARCEL ANALYTICS REPORT | xGeographic

#### Parcel Overview

 County Parcel ID 1
 0320315010E000040

 Current Owner 1
 Piloian, John

 Address 1
 Lake Mary Boulevard

 Address (2)
 Sanford, FL

 Address (3)
 32773

 Municipality 1
 Seminole County

 Year Built 1
 Not Built

 Buildings on Site 1
 0

5.004

# Size (Acres) Valuation

Land Value 1 \$149,193
Building Value 1 \$0
Assessed Value 1 \$149,193
Taxable Value 1 \$149,193
Agriculture Exempt 1 No

#### Land Use

Current Zoning <sup>2</sup> A-1 (Agriculture-1)
Future Land Use <sup>2</sup> Industrial
Land Use Deviation <sup>3</sup> Potential for Up-Zone
M-1A (Industrial)
M-2 (Industrial)
M-2 (Industrial)

#### Transport Access

Daily Traffic 4 16,800 Daily Truck Traffic 4 840 % Truck Traffic 5.00% Functional Class Principal Arterial - Other Context Class \* Nearest Onramp 4.59 Miles Nearest Offramp 4.58 Miles Yes (2, Marked) Bike Lane Access 4 Sidewalks 3 Yes (2)







#### Environmental

FEMA Floodplain 5 None Storm Surge Zone 5 None NOAA High Sea Rise 5 None

#### **Demographics**

 Median Fam. Income
 \$54,457

 % Zero Vehicle HH
 4.42%

 Area Pop. Density
 0.10 Per Acre

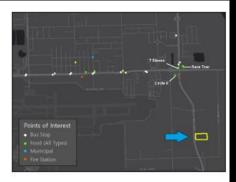
 Area Job Density
 0.5 Per Acre

 2045 Pop. Density
 0.40 Per Acre

 2015-45 Pop. Increase
 0.30 Per Acre

#### **Proximity and Access**

Nearest Bank > 2 Miles Nearest Bar 1.35 Miles Nearest Bar with Food 3 > 2 Miles Nearest Bus Stop 0.85 Miles Nearest Fast Food 0.86 Miles **Nearest Fire Station** 1.81 Miles > 2 Miles Nearest Hotel > 2 Miles Nearest Hospital Nearest Grocery Store 3 > 2 Miles Nearest Market/Gas 0.77 Miles Nearest Park 1.09 Miles Nearest Pharmacy > 2 Miles Nearest Police Station > 2 Miles Nearest Post Office > 2 Miles 1.99 Miles Nearest School (Elem) > 2 Miles Nearest School (Mid) > 2 Miles Nearest School (High) > 2 Miles Nearest SunRail Stop 3



# Grocery Stores Within 1/2 Mile # Hotels Within 1/2 Mile # Markets Within 1/2 Mile # Parks Within 1/2 Mile # Schools Within 1/2 Mile # Transit Stops Within 1/2 Mile Food Access Score 28.89 / 100 Entertainment Access Score 00.00 / 100 Goods & Services Access Score 08.04 / 100 Municipal Services Access Score 08.87 / 100 Night Life Access Score 00.00 / 100

# Dining Spots Within 1/2 Mile

Recreation Access Score

Transit Access Score

# Entertainment Within 1/2 Mile

Located within Food Gap <sup>3</sup> No Access Road Safety Index <sup>3</sup> 42.34 / 100

#### **Original Data Sources**

- 1 | Seminole County Property Appraiser's Office (2021)
- 2 | xGeographic Wave QA; Municipalities (2021)
- 3 | xGeographic Wave Analytics (2021)
- 4 | xGeographic Wave QA; FDOT and Municipalities (2020)
- 5 | Federal Emergency Management Agency (2021)
- 6 | United States Census Bureau ACS (2019)
- 7 | Central Florida Regional Planning Model (2015)



12.80 / 100

32.15 / 100



Point of Interest Data Transportation Data Proximity Data **Proximity Metrics** Access Indices Access Countermeasures **Mobility Indices** Mobility Countermeasures Demographic Insights **Smart Parcels Environment/Land Use Insights** Wave Suite + Website Information



Point of Interest Data Transportation Data Proximity Data **Proximity Metrics Access Indices** Access Countermeasures **Mobility Indices** Mobility Countermeasures Demographic Insights **Smart Parcels** Environment/Land Use Insights Wave Suite + Website Information



- Roadway Segment GIS File -- Polylines
- Point of Interest GIS File -- Points
- Park GIS File -- Polygons
- Smart Parcel GIS Files (3) Polygons
- Smart Stop GIS File -- Points
- Trails and Paths GIS File -- Polylines
- Barrier GIS Files (4) -- Polygons
- Pre-Symbolized ArcGIS Pro Project & MXD
- Toolsets 4 Simulation Tools + Parcel Finder



Point of Interest Data **Transportation Data** Proximity Data **Proximity Metrics Access Indices** Access Countermeasures **Mobility Indices Mobility Countermeasures** Demographic Insights **Smart Parcels** Environment/Land Use Insights Wave Suite + Website Information



# Toolset New Trail Simulation

Pictured: New 1-Mile Walk Zone Using Trail



Point of Interest Data **Transportation Data** Proximity Data **Proximity Metrics Access Indices** Access Countermeasures **Mobility Indices Mobility Countermeasures** Demographic Insights **Smart Parcels** Environment/Land Use Insights Wave Suite + Website Information



# Toolset New Trail Simulation

Pictured: Location of New Trail Placement (White Line)



Point of Interest Data Transportation Data Proximity Data **Proximity Metrics** Access Indices Access Countermeasures **Mobility Indices Mobility Countermeasures** Demographic Insights **Smart Parcels** Environment/Land Use Insights Wave Suite + Website Information



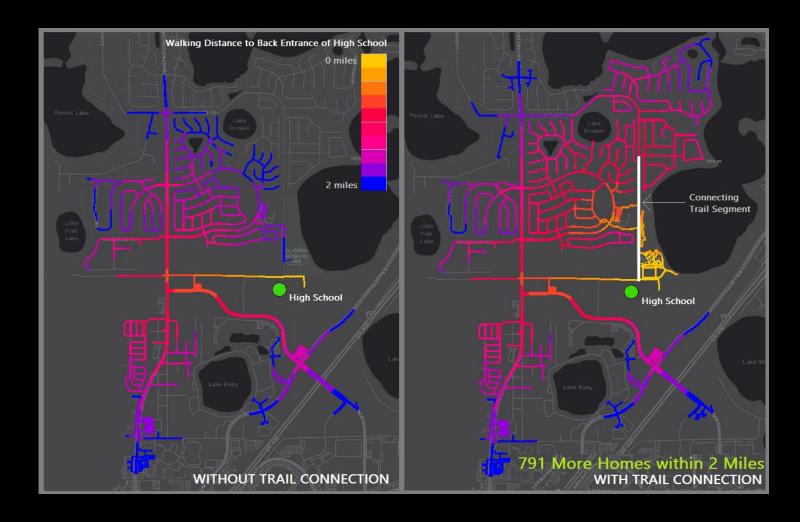
# Toolset New Trail Simulation

Pictured: New 1-Mile Walk Zone Using Trail

+ 234 homes within 1 mile of park due to new trail



Point of Interest Data Transportation Data **Proximity Data Proximity Metrics Access Indices** Access Countermeasures **Mobility Indices Mobility Countermeasures** Demographic Insights **Smart Parcels Environment/Land Use Insights** Wave Suite + Website Information



Point of Interest Data
Transportation Data
Proximity Data
Proximity Metrics
Access Indices
Access Countermeasures
Mobility Indices

Demographic Insights

Mobility Countermeasures

**Smart Parcels** 

Environment/Land Use Insights

Wave Suite +

Website Information



### Other Features

### 20 Hours of Technical Services for Annual Subscribers

- Integrate In-House Data with the Wave Database
- Custom Scoring Outputs (POI Types, Weights)
- 3 New Trail/Path Simulations (Impact on Access)
- MetroPlan PPL Integration
- MetroPlan TIP Integration
- Regional Trail Status Layer
- SmartStops

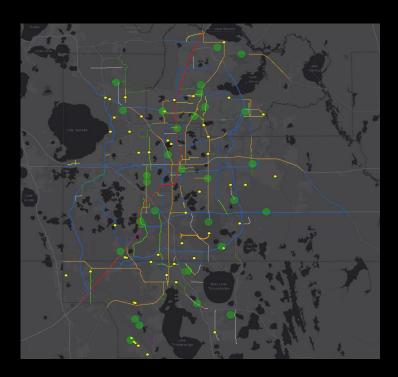


Point of Interest Data Transportation Data Proximity Data **Proximity Metrics** Access Indices Access Countermeasures **Mobility Indices** Mobility Countermeasures Demographic Insights **Smart Parcels** Environment/Land Use Insights Wave Suite + Website Information

### Other Features

### 20 Hours of Technical Services for Annual Subscribers

- Integrate In-House Data with the Wave Database
- Custom Scoring Outputs (POI Types, Weights)
- 3 New Trail/Path Simulations (Impact on Access)
- MetroPlan PPL Integration
- MetroPlan TIP Integration
- Regional Trail Status Layer
- SmartStops





Point of Interest Data Transportation Data Proximity Data **Proximity Metrics Access Indices** Access Countermeasures **Mobility Indices** Mobility Countermeasures Demographic Insights **Smart Parcels** Environment/Land Use Insights Wave Suite + Website Information

# Other Features 20 Hours of Technical Services for Annual Subscribers

- Integrate In-House Data with the Wave Database
- Custom Scoring Outputs (POI Types, Weights)
- 3 New Trail/Path Simulations (Impact on Access)
- MetroPlan PPL Integration
- MetroPlan TIP Integration
- Regional Trail Status Layer
- SmartStops

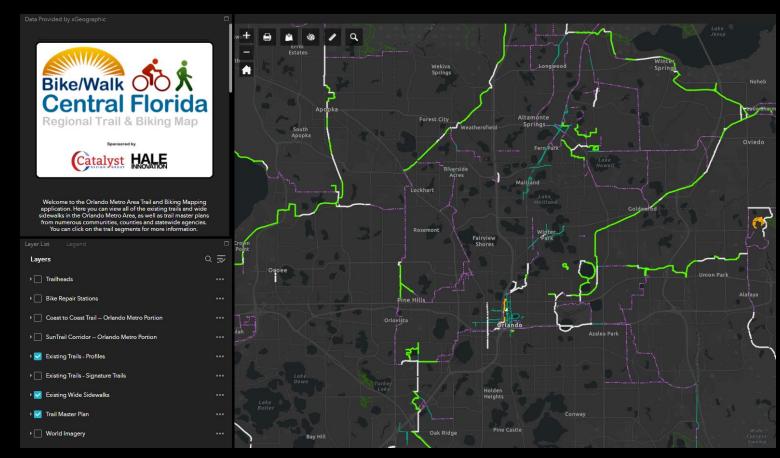




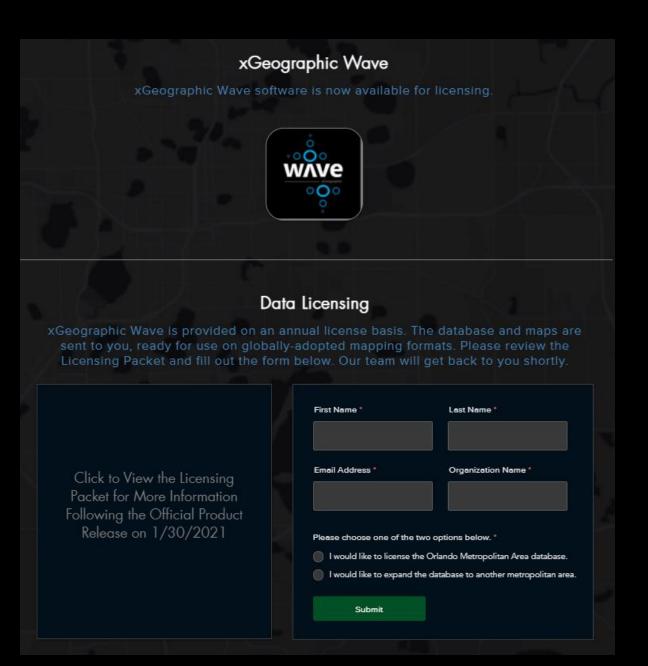
Point of Interest Data **Transportation Data** Proximity Data **Proximity Metrics Access Indices** Access Countermeasures Mobility Indices Mobility Countermeasures Demographic Insights **Smart Parcels Environment/Land Use Insights** Wave Suite + Website Information

# **Regional Trail Mapping Application**

Using Wave data, in collaboration with Bike/Walk Central Florida



Point of Interest Data Transportation Data **Proximity Data Proximity Metrics** Access Indices **Access Countermeasures Mobility Indices** Mobility Countermeasures Demographic Insights Smart Parcels Environment/Land Use Insights Wave Suite + Website Information



· O O O



xgeographic.com/wave