Kim Korejko | Data Coordination Manager
Ben Gruswitz | Office of Long-Range Planning
December 18, 2018

PSAP 2020
SDC Network Webinar

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Agenda

- About us
- 2010 PSAP Experience
- Approach for 2020
- New Criteria
- Pursuing Alignment
- Identifying Nesting Relationships
- Examples of Opportunities
- Questions

About Us

Metropolitan Planning Organization (MPO) for Greater Philadelphia

- 2 States
- 9 Counties
- 351 Municipalities
- 1,379 tracts
- 4,073 block groups
- 3,141 Transportation Analysis Zones (TAZs)

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For PSAP...

DVRPC = Primary Participating Organization (PPO)

- Kim Korejko | Primary Contact
- Ben Gruswitz | Technical Contact
- Mark Gatti | Technical Contact

The liaison to our 9 counties

PSAP 2010 Experience

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2010 Considerations

- Tracts: stay consistent for time series analyses
- Block groups: nest within tracts
- Has the geography exceeded a maximum?
  - Split it!
- Has the geography fallen below a minimum?
  - Merge it!
- Attempt to align with political geographies
- Review Census Designated Places

Resources for 2010

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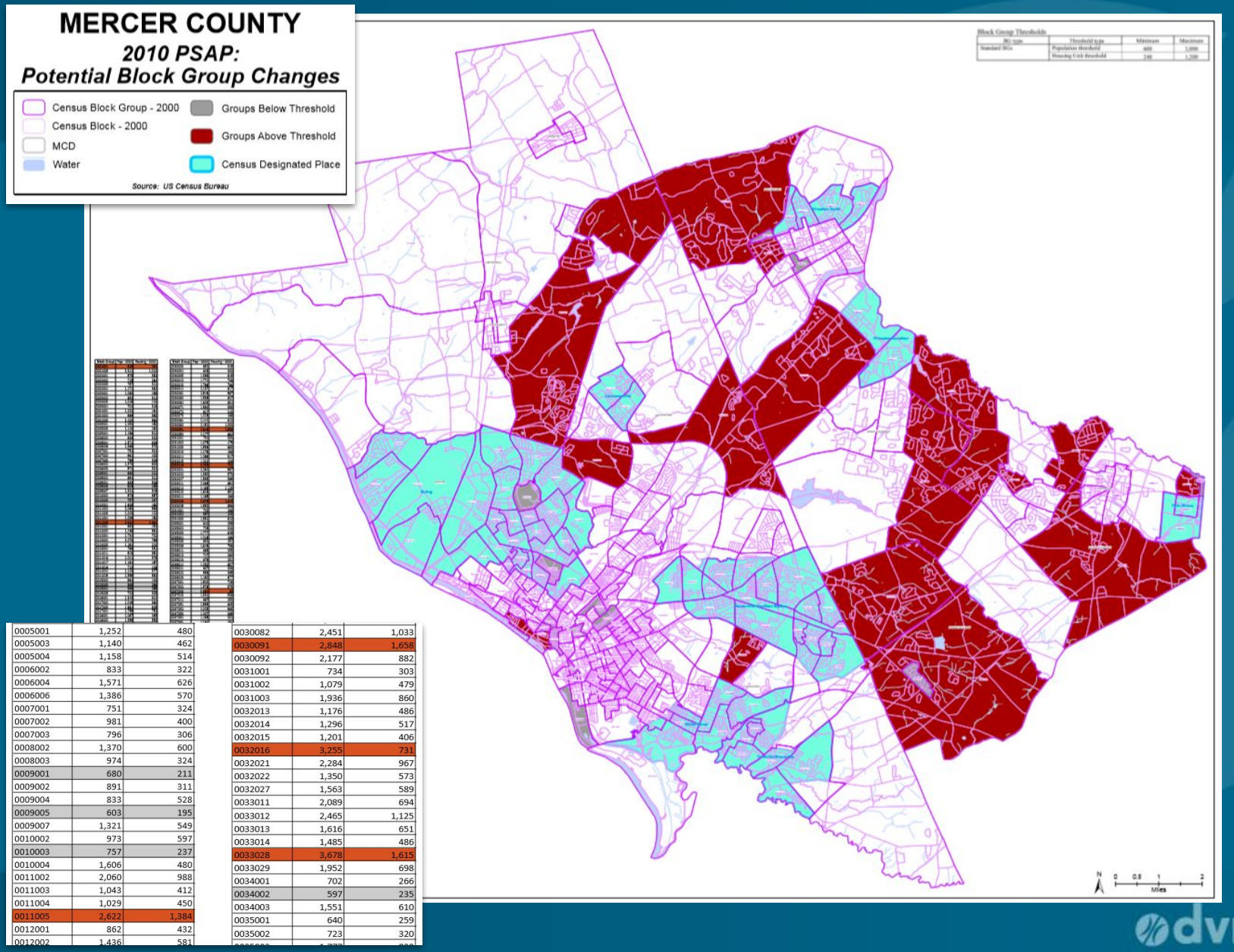
Hard copy, wall-sized maps!



0005001	1,252	480
0005003	1,140	462
0005004	1,158	514
0006002	833	322
0006004	1,571	626
0006006	1,386	570
0007001	751	324
0007002	981	400
0007003	796	306
0008002	1,370	600
0008003	974	324
0009001	680	211
0009002	891	311
0009004	833	528
0009005	603	195
0009007	1,321	549
0010002	973	597
0010003	757	237
0010004	1,606	480
0011002	2,060	988
0011003	1,043	412
0011004	1,029	450
0011005	2,622	1,384
0012001	862	432
0012002	1,436	581

0030082	2,451	1,033
0030091	2,848	1,658
0030092	2,177	882
0031001	734	303
0031002	1,079	479
0031003	1,936	860
0032013	1,176	486
0032014	1,296	517
0032015	1,201	406
0032016	3,255	731
0032021	2,284	967
0032022	1,350	573
0032027	1,563	589
0033011	2,089	694
0033012	2,465	1,125
0033013	1,616	651
0033014	1,485	486
0033028	3,678	1,615
0033029	1,952	698
0034001	702	266
0034002	597	235
0034003	1,551	610
0035001	640	259
0035002	723	320

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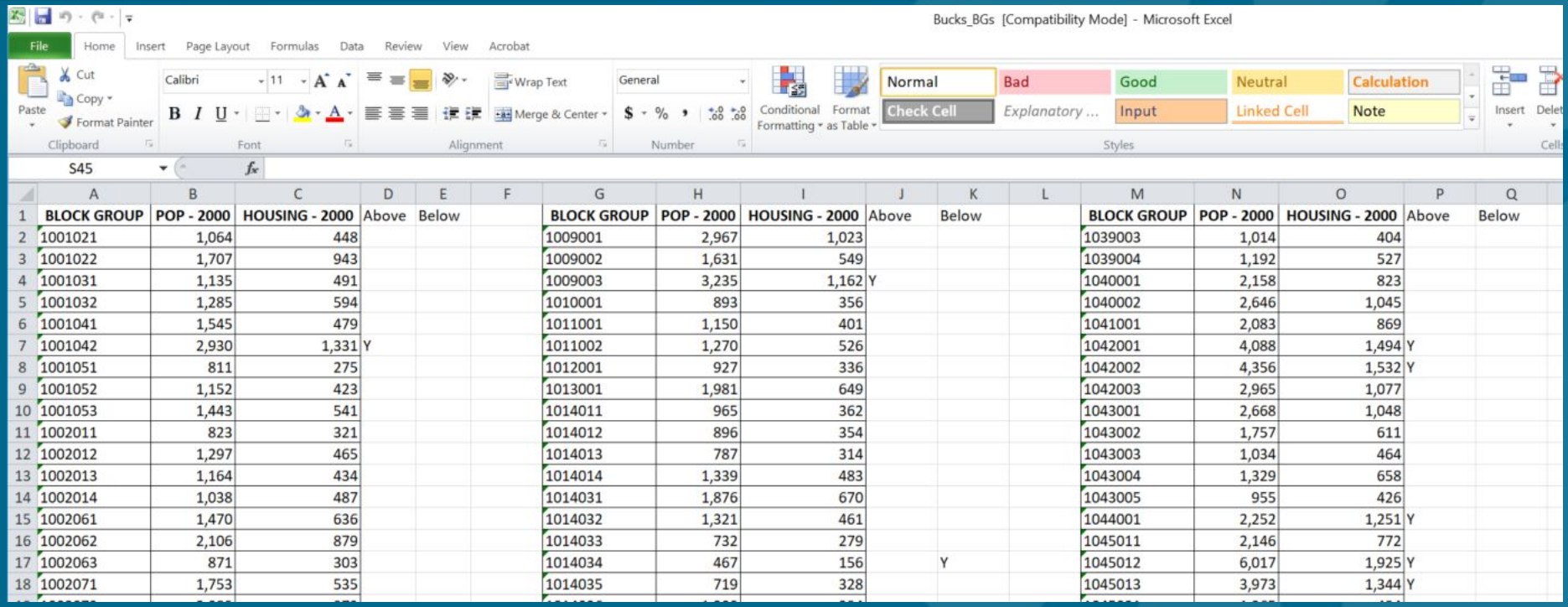
Spreadsheets!



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	BLOCK GROUP	POP - 2000	HOUSING - 2000	Above	Below		BLOCK GROUP	POP - 2000	HOUSING - 2000	Above	Below		BLOCK GROUP	POP - 2000	HOUSING - 2000	Above	Below
2	1001021	1,064	448				1009001	2,967	1,023				1039003	1,014	404		
3	1001022	1,707	943				1009002	1,631	549				1039004	1,192	527		
4	1001031	1,135	491				1009003	3,235	1,162	Y			1040001	2,158	823		
5	1001032	1,285	594				1010001	893	356				1040002	2,646	1,045		
6	1001041	1,545	479				1011001	1,150	401				1041001	2,083	869		
7	1001042	2,930	1,331	Y			1011002	1,270	526				1042001	4,088	1,494	Y	
8	1001051	811	275				1012001	927	336				1042002	4,356	1,532	Y	
9	1001052	1,152	423				1013001	1,981	649				1042003	2,965	1,077		
10	1001053	1,443	541				1014011	965	362				1043001	2,668	1,048		
11	1002011	823	321				1014012	896	354				1043002	1,757	611		
12	1002012	1,297	465				1014013	787	314				1043003	1,034	464		
13	1002013	1,164	434				1014014	1,339	483				1043004	1,329	658		
14	1002014	1,038	487				1014031	1,876	670				1043005	955	426		
15	1002061	1,470	636				1014032	1,321	461				1044001	2,252	1,251	Y	
16	1002062	2,106	879				1014033	732	279				1045011	2,146	772		
17	1002063	871	303				1014034	467	156		Y		1045012	6,017	1,925	Y	
18	1002071	1,753	535				1014035	719	328				1045013	3,973	1,344	Y	

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County Meetings

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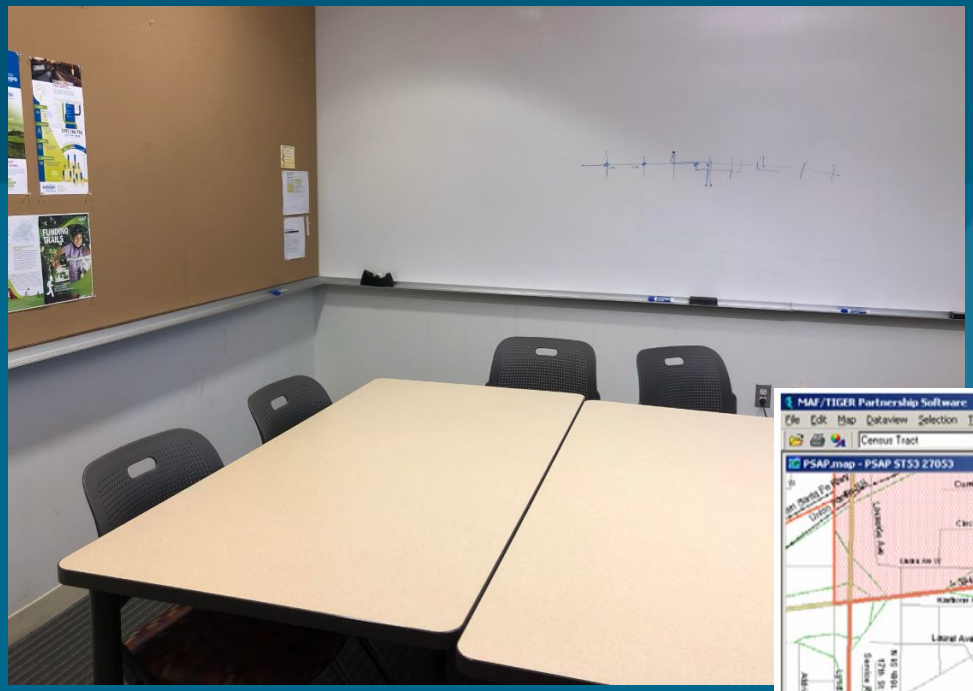

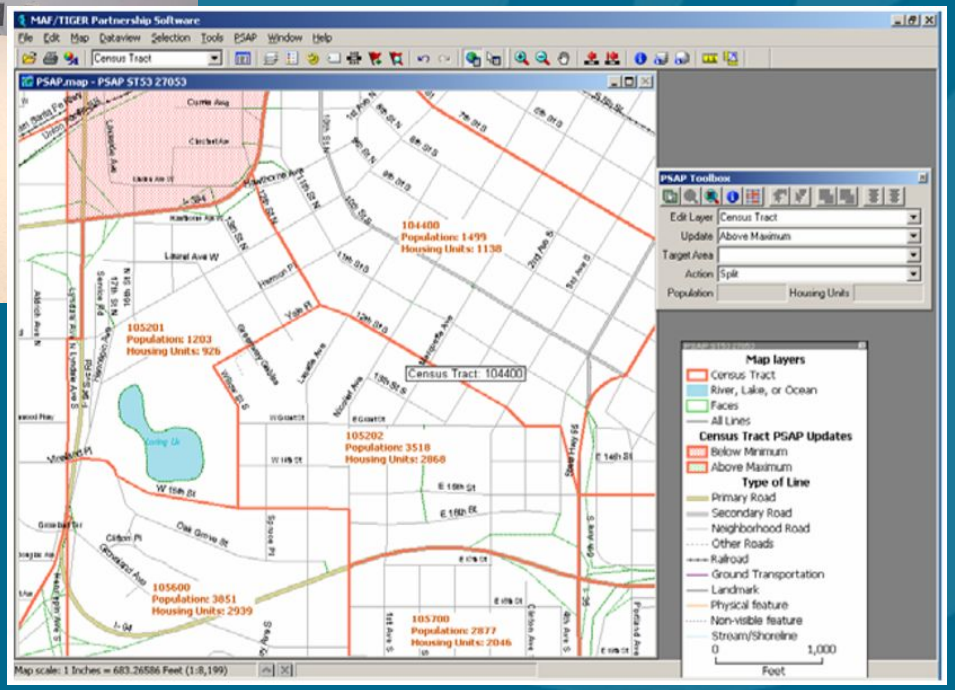
MAF/TIGER Partnership Software
File Edit Map Dataview Selection Tools PSAP Window Help
Census Tract
PSAP.map - PSAP ST53 27053
104400
Population: 1499
Housing Units: 1138
105201
Population: 1203
Housing Units: 926
105202
Population: 3518
Housing Units: 2868
105600
Population: 3851
Housing Units: 2939
105700
Population: 2877
Housing Units: 2046
Census Tract: 104400
PSAP Toolbox
Edit Layer Census Tract
Update Above Maximum
Target Area
Action Split
Population Housing Units
Map layers
Census Tract
River, Lake, or Ocean
Faces
All Lines
Census Tract PSAP Updates
Below Minimum
Above Maximum
Type of Line
Primary Road
Secondary Road
Neighborhood Road
Other Roads
Railroad
Ground Transportation
Landmark
Physical feature
Non-visible feature
Stream/Shoreline
0 1,000
Feet
Map scale: 1 Inches = 683.26586 Feet (1:8,199)

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Lessons Learned from 2010 PSAP

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Lessons Learned

- Get the right people in the room
- Work with counties more ahead of delineation effort
- Take detailed notes on changes that were made and why
- Budget more resources toward effort
- Boundary choices were later affected by BAS

DVRPC's Approach for 2020 PSAP

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2020 Outreach

- Establish contacts at counties and cities as early as possible
- Share memo with contacts (and their bosses) about CTPP change that would affect block group delineation
- Survey our contacts
- Hold kickoff meeting

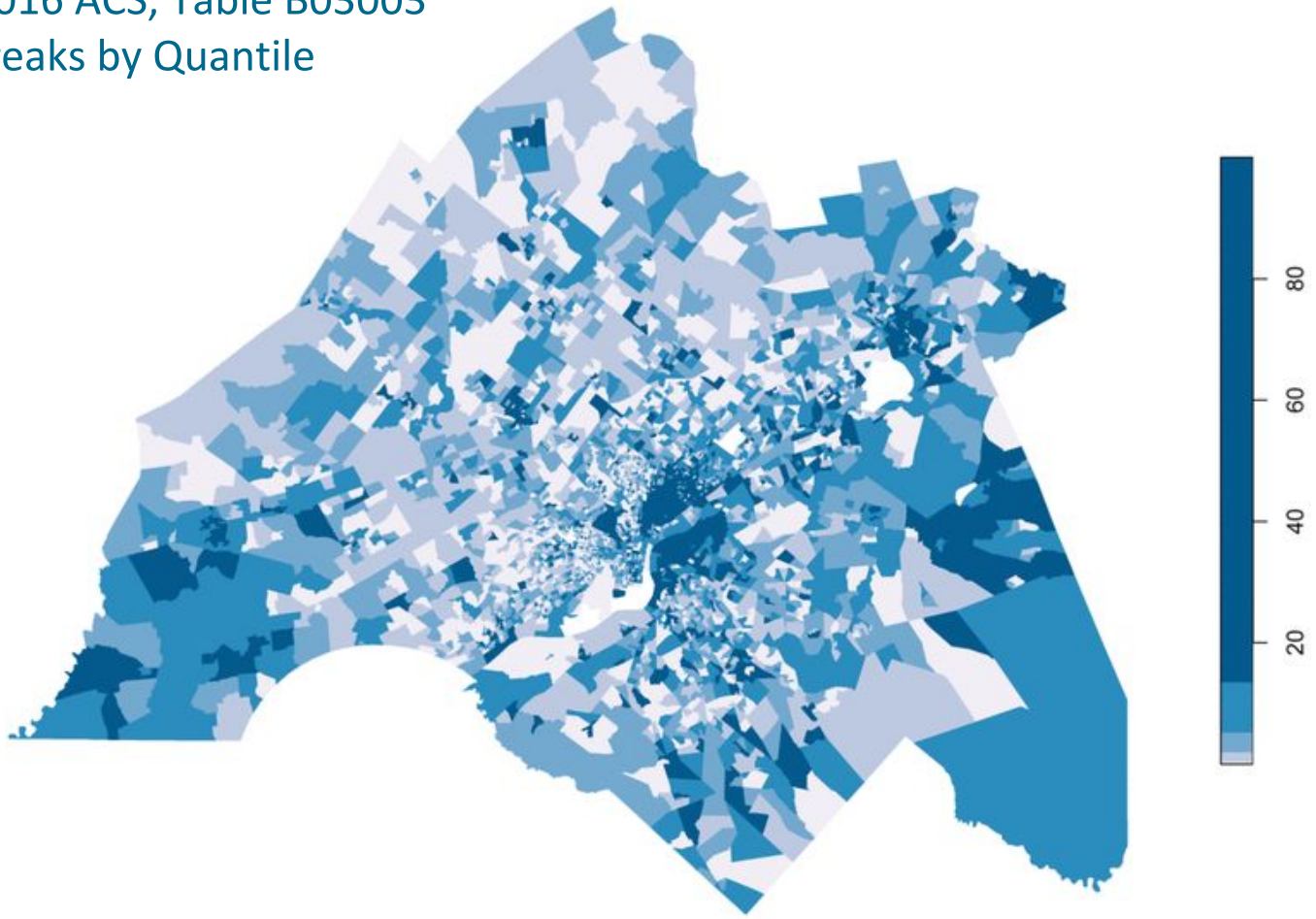
DVRPC's Goals for 2020 PSAP

- Play by Census Bureau rules
- Seek consensus with Counties/Cities
- Align MCDs & Philadelphia Districts with block groups
- Use forecast data to help guide decisions
- Nest block group & TAZ geographies
- Consider data quality

Block Group Level Concentration of Hispanic or Latino Origin

Source: 2016 ACS, Table B03003

5-Class Breaks by Quantile



High margins of error in small geographies increase uncertainty

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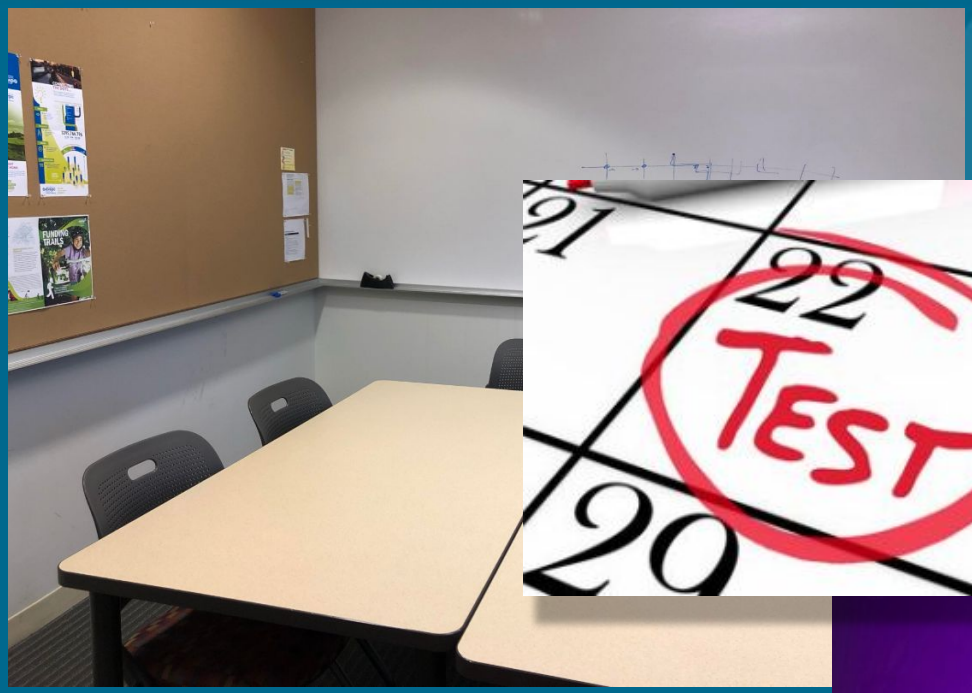
Stakeholder's Goals for 2020 PSAP

- Think about agriculture, zoning, open space
- Look at new and proposed developments
- Maintain tract boundaries for looking at data over time
- Nest block group & TAZ geographies
- Consider how changes may affect funding opportunities (like HUD's Community Development Block Grant program)

Resources for 2020

- Leverage ArcGIS online to share maps and data in an interactive way
- Create layer* that looks at existing spatial relationships between TAZs and block groups (*from Python script)
- More paper maps!
- More spreadsheets!

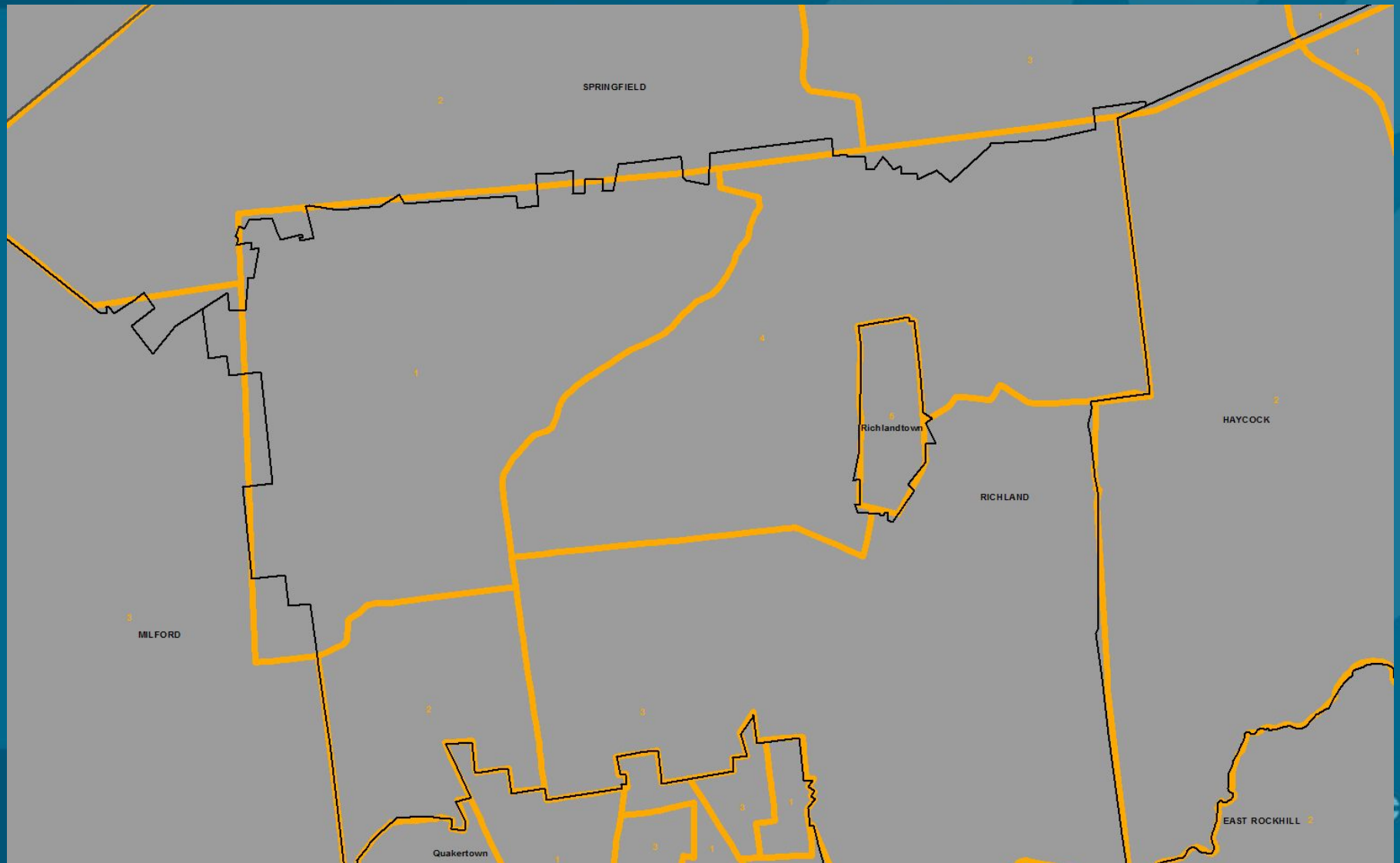
2020 County Meetings



GUPS

GEOGRAPHIC UPDATE
PARTNERSHIP SOFTWARE

Seek out BAS participation



New Criteria

Liberalized Special Geos

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Block Group Criteria

Standard block groups = Residential

- Population: 600 - 3,000
- Housing Units: 240 - 1,200

Special block groups = Non-residential

- Employment centers, airports, public park, public forest, large water body
- Little to no population
- Comparable in size to surrounding standard block groups

Note: Block groups nest within tracts

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Illustration: Before

● = 20 residents

● = 20 employees

□ = block group

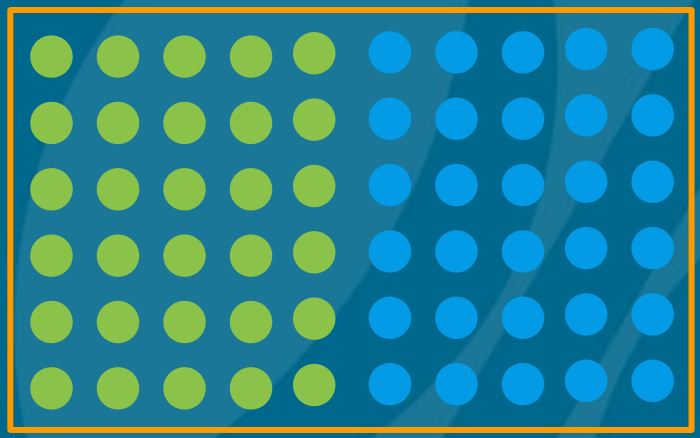


Illustration: Now

● = 20 residents

● = 20 employees

□ = block group

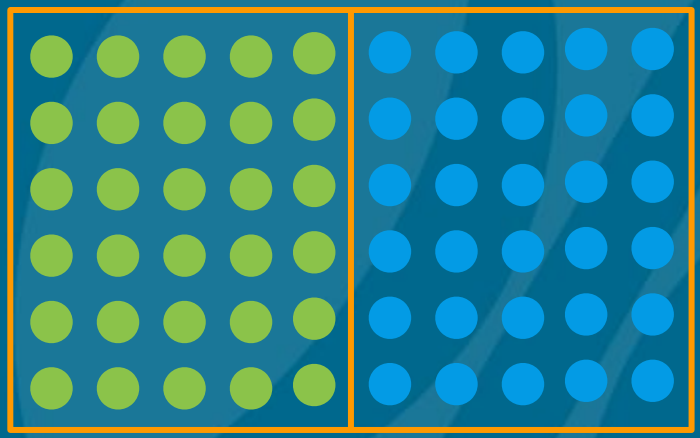
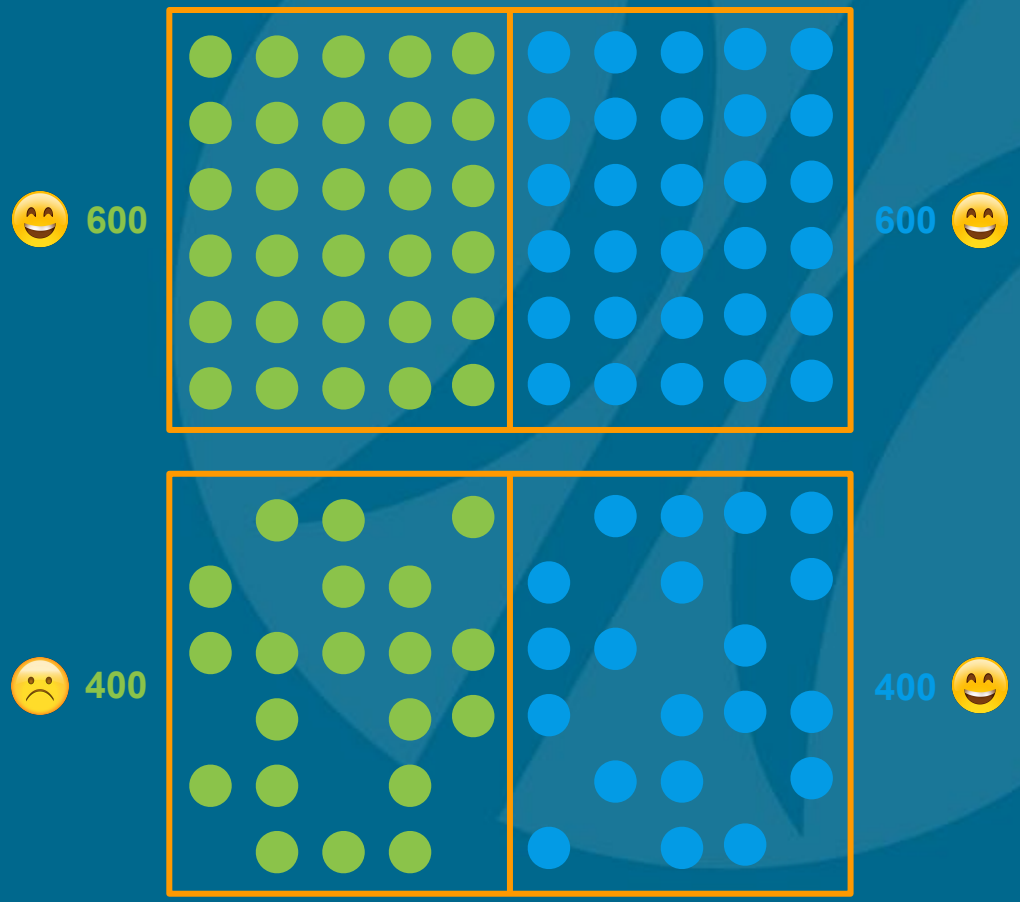


Illustration: Now

● = 20 residents

● = 20 employees

□ = block group



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Tract Criteria

Standard tracts = Residential

- Population: 1,200 - 8,000 (4,000 optimal)
- Housing Units: 480 - 3,200 (1,600 optimal)

Special tracts = Non-residential

- Employment centers, airports, public park, public forest, large water body
- Little to no population
- Comparable in size to surrounding standard tracts

Note: Block groups nest within tracts

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Pursuing Alignment

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1-to-1 or Nesting

TAZ = Block Group

TAZ =
2+ Block Groups

Block Group =
2+ TAZs

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Why Nest TAZs & Block Groups

Two delineation processes of yore

Participant Statistical Areas Program (PSAP)

- Residence-based geographies
  - Block groups
  - Tracts
  - Census designated places (CDPs)

Decennial Census

Transportation Analysis Zone (TAZ) Delineation Program

- Partnership of Census Bureau, State DOTs, & MPOs
- Aggregation of census blocks
- Attention to land uses for travel model
- Often separations of polygons by residence & workplace

Time

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Why Nest TAZs & Block Groups

Now one delineation processes

Participant Statistical Areas Program (PSAP)

- Still residence-based but more options for non-residential
  - Block groups
  - Tracts
  - Census designated places (CDPs)

Decennial Census

Time

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Why Nest TAZs & Block Groups

Census Transportation Planning Products (CTPP) special tabulation: Small area geographies by dataset vintage

Decennial-based	ACS-based		
2000 & Earlier	**2006-2010**	**2012-2016**	**The next one**
● Tracts ● TAZs	● Tracts ● TAZs	● Tracts ● TAZs	● Tracts ● Block groups
		data release: early 2019	

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Benefits of Nesting & New Criteria

- No need for clunky approximations
- Model inputs align with latest 5-year ACS
- Model outputs like origins & destinations align with standard geographies
- Nesting within MCDs & Planning Districts
- BGs can provide more info: like Vehicles by Workers, income by size, JTW flows
- Better default densities & land use distinction
- Blocks might look better

Identifying Nesting Relationships

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Python Script to Identify Nesting

https://github.com/dvrpc/BlockGroupTAZ

Input Table

	A	B	C	D	E	F
1	BLOCK10	BLKGRP10	TRACT10	TAZ_10	POP10	HOUSING10
2	340057047002605	340057047002	34005704700	20801	73	30
3	340057047002606	340057047002	34005704700	20801	0	0
4	340057047002607	340057047002	34005704700	20801	0	0
5	340057047002608	340057047002	34005704700	20801	0	0
6	340057047002609	340057047002	34005704700	20801	0	0
7	340057047002612	340057047002	34005704700	20801	136	45
8	340057047002613	340057047002	34005704700	20801	13	6
9	340057047002614	340057047002	34005704700	20801	31	12
10	340057047002615	340057047002	34005704700	20801	64	23
11	340057047002616	340057047002	34005704700	20801	49	17
12	340057047002617	340057047002	34005704700	20801	15	7
13	340057047002618	340057047002	34005704700	20801	0	0
14	340057047002619	340057047002	34005704700	20801	0	0
15	340057047002620	340057047002	34005704700	20801	0	0
16	340057047002621	340057047002	34005704700	20801	9	3
17	340057047002622	340057047002	34005704700	20801	0	0
18	340057047002623	340057047002	34005704700	20801	0	0

Output

How Block Population Is Shared

- 1 Block Group = 1 TAZ
- Many TAZs = 1 Block Group
- Many Block Groups = 1 TAZ
- ...the rest

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Python Script to Identify Nesting

Isolates what we should concentrate on with our counties

Percent of Block Groups		New Jersey Counties				Pennsylvania Counties				
Category	Region	Burlington	Camden	Gloucester	Mercer	Bucks	Chester	Delaware	Montgomery	Philadelphia
1 Block Group = 1 TAZ	10.3%	19.4%	10.5%	15.2%	13.6%	17.6%	13.6%	9.2%	10.5%	4.6%
Many Block Groups = 1 TAZ	4.4%	8.6%	2.6%	5.2%	5.0%	7.6%	13.6%	1.6%	4.1%	2.2%
Many TAZs = 1 Block Group	38.5%	28.7%	50.0%	34.6%	36.4%	28.3%	16.6%	41.6%	33.6%	46.6%
Minimal Pop	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
No Population	0.1%	0.4%	0.0%	0.0%	0.0%	0.3%	0.0%	0.2%	0.0%	0.2%
The Rest	46.5%	43.0%	36.9%	45.0%	45.0%	46.2%	56.2%	47.4%	51.8%	46.0%

Count of Block Groups		New Jersey Counties				Pennsylvania Counties				
Category	Region	Burlington	Camden	Gloucester	Mercer	Bucks	Chester	Delaware	Montgomery	Philadelphia
1 Block Group = 1 TAZ	419	54	40	29	33	67	36	40	59	61
Many Block Groups = 1 TAZ	180	24	10	10	12	29	36	7	23	29
Many TAZs = 1 Block Group	1,570	80	191	66	88	108	44	182	188	623
Minimal Pop	5									5
No Population	6	1				1		1		3
The Rest	1,893	120	141	86	109	176	149	207	290	615

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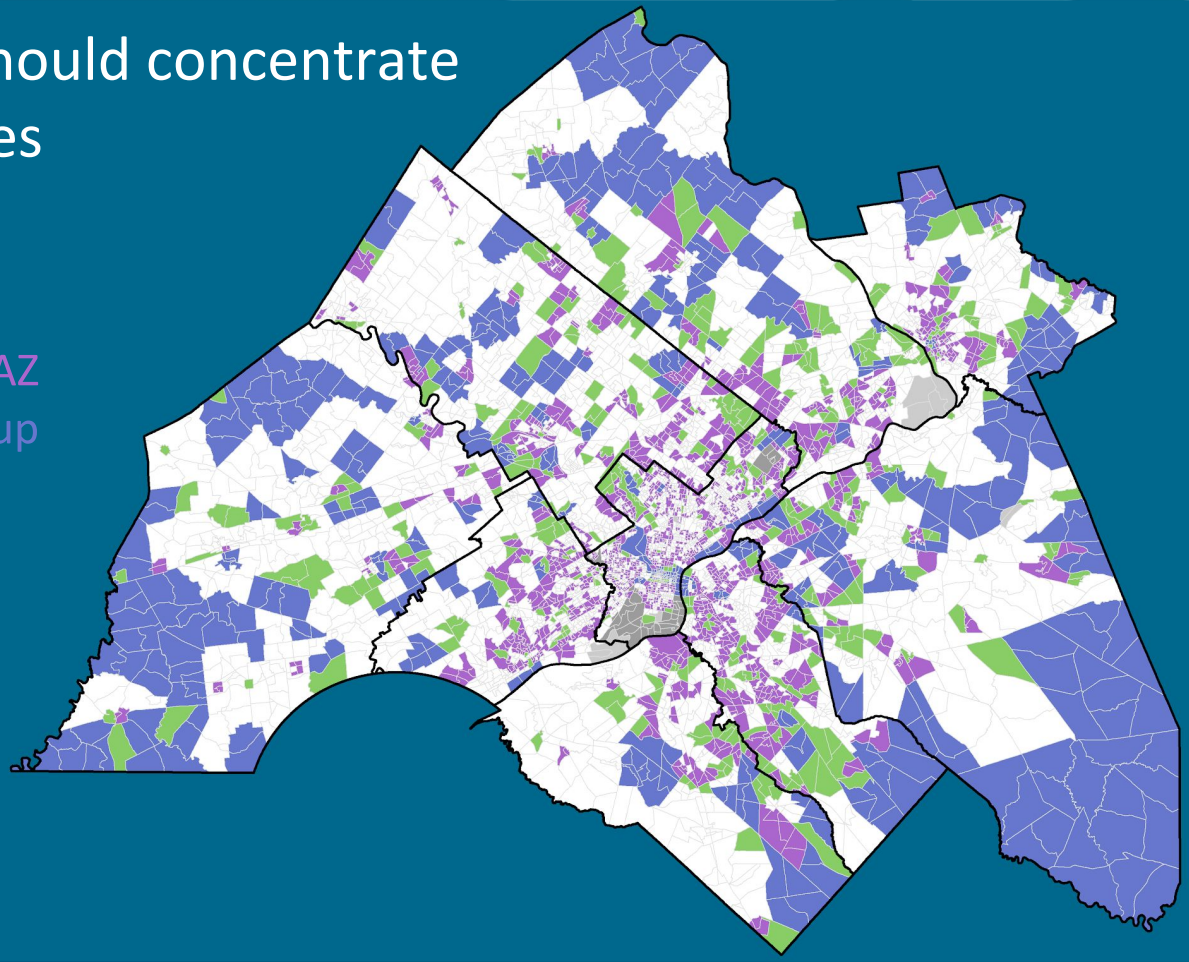
Python Script to Identify Nesting

Isolates what we should concentrate on with our counties

1 Block Group = 1 TAZ
Many Block Groups = 1 TAZ
Many TAZs = 1 Block Group
Minimal Pop
No Population
The Rest



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Examples of Opportunities

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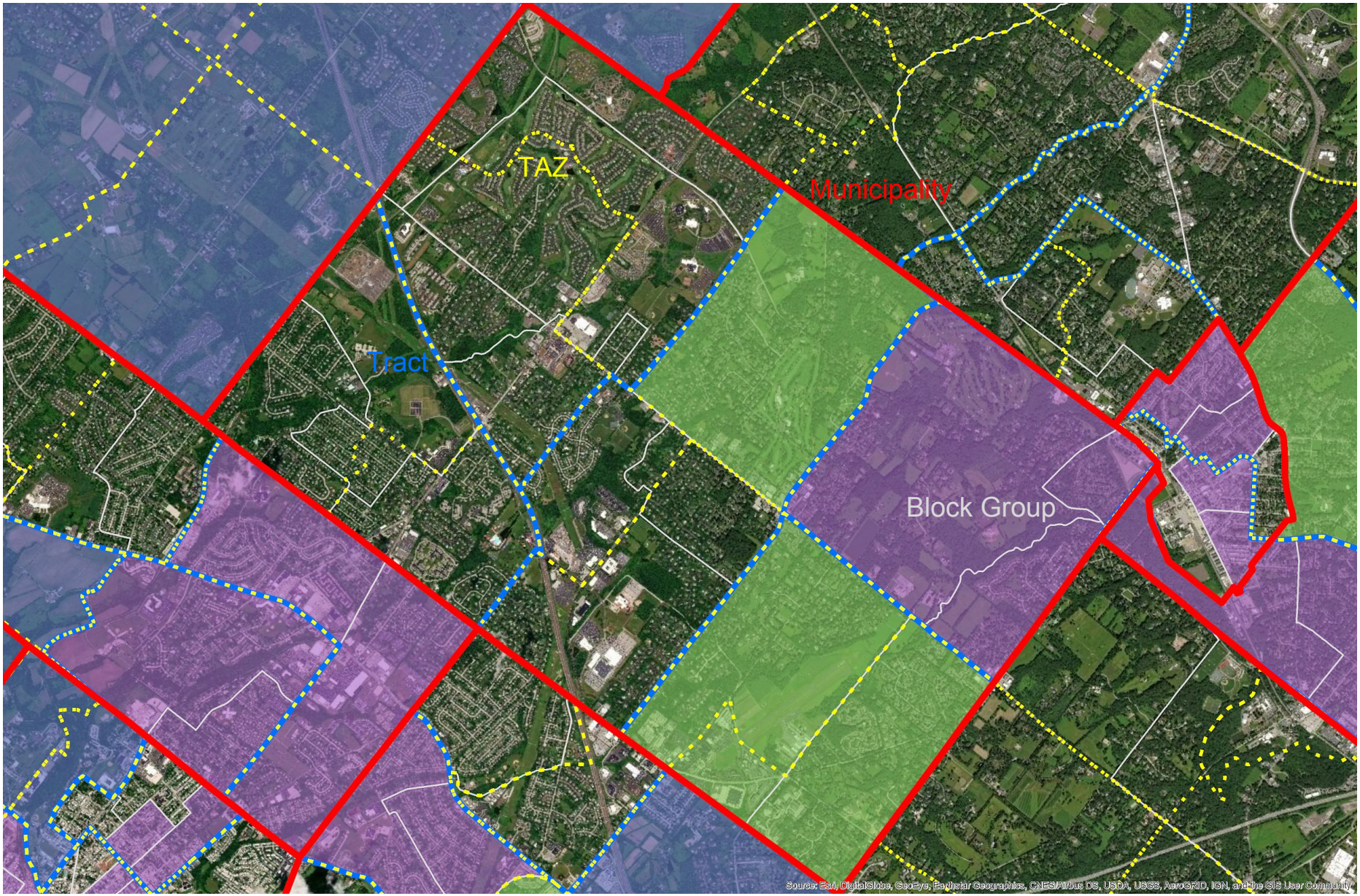
Navy Yard | Large Employment Area

Whitpain Twp | Complexity/Opportunity



Whitpain Twp | Complexity/Opportunity

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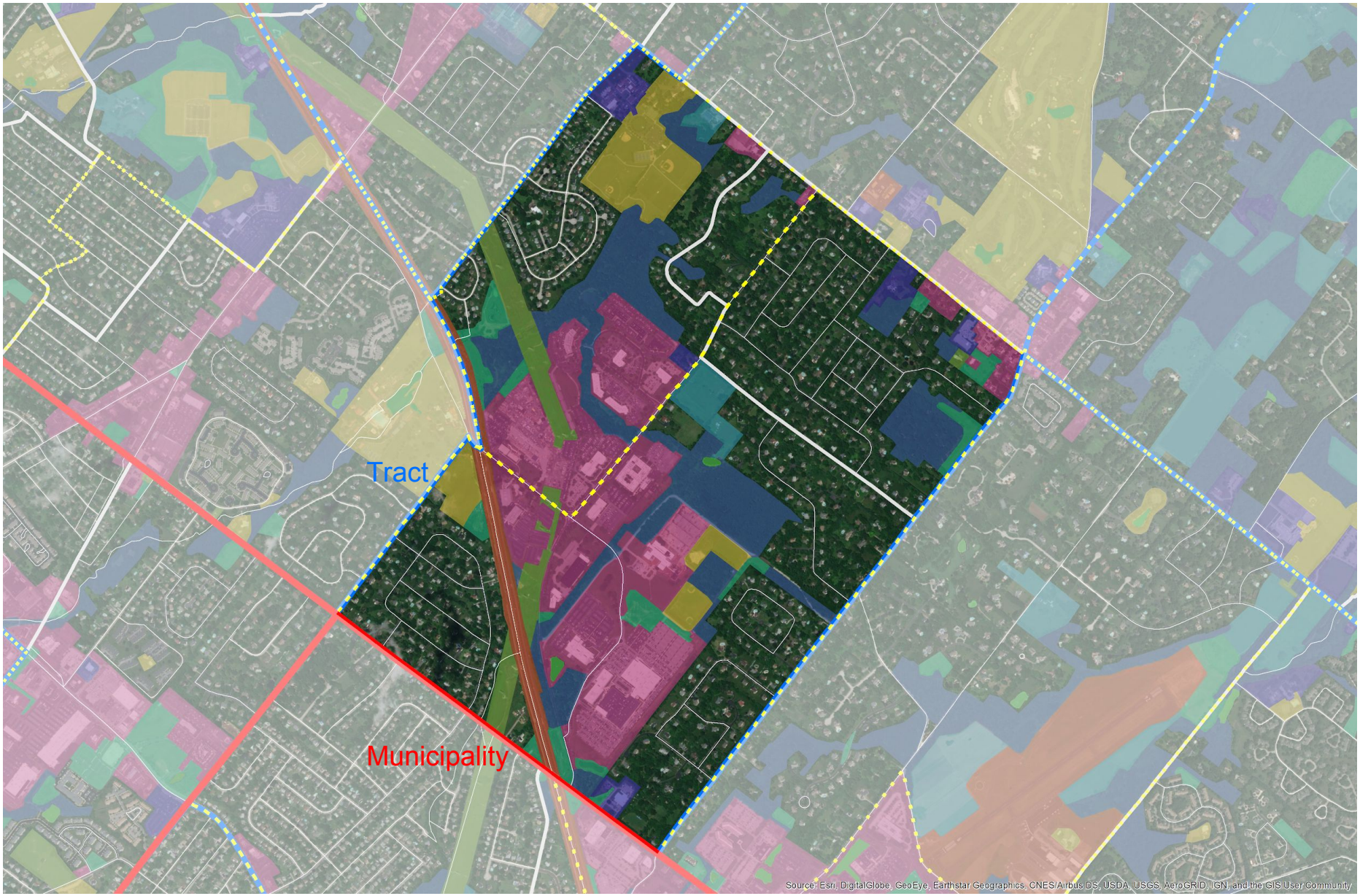
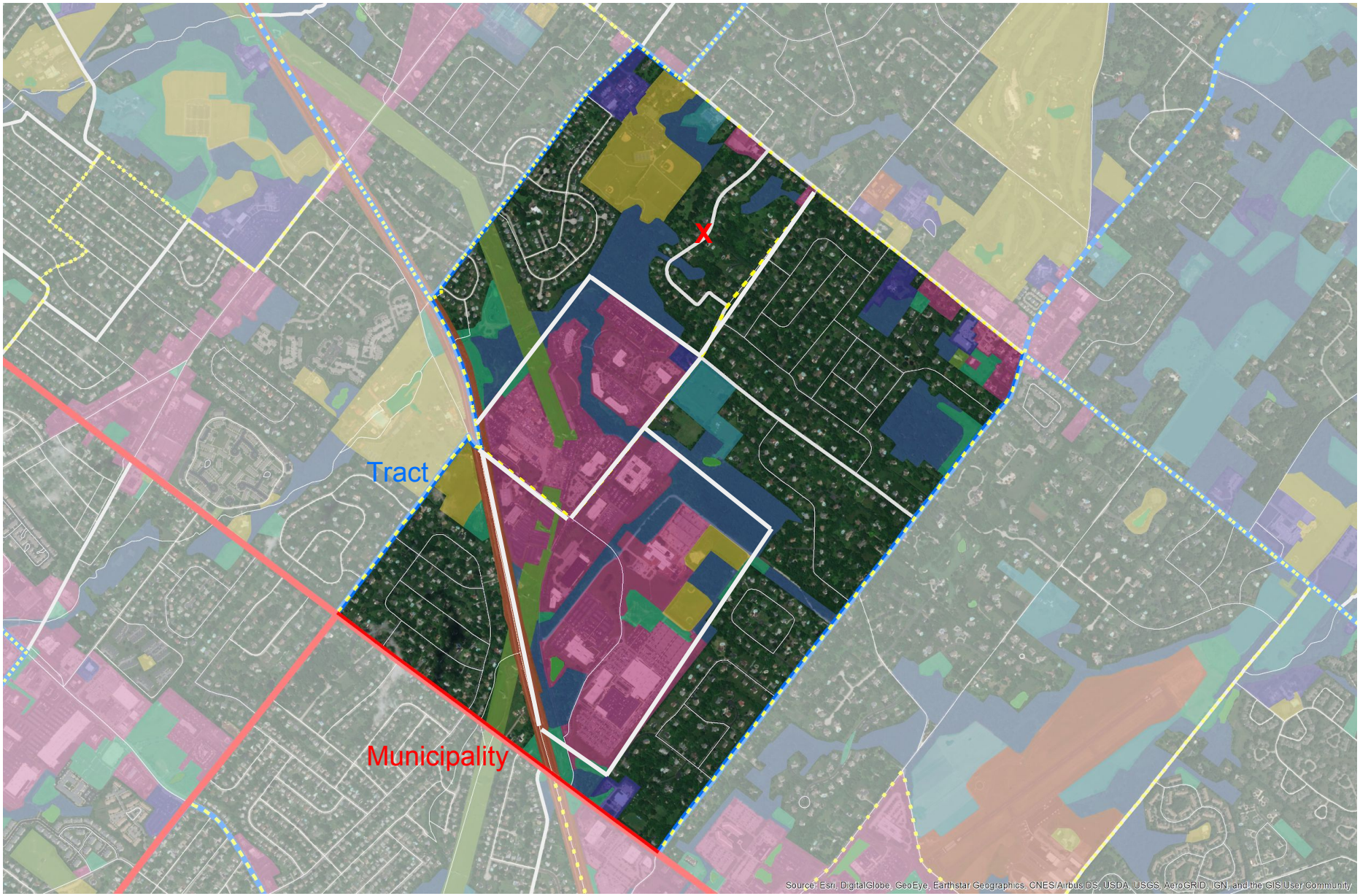


Whitpain Twp | Complexity/Opportunity



Summary

- Get started early
- Reach out to stakeholders and allot time
- Emphasize opportunity amidst complexity
- Living with these geos for next decade

Thank You!

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