

Reston Task Force Fairfax County's Population Estimates and Forecasts Methodology

Presented by:

Fatima Khaja
June 22, 2020

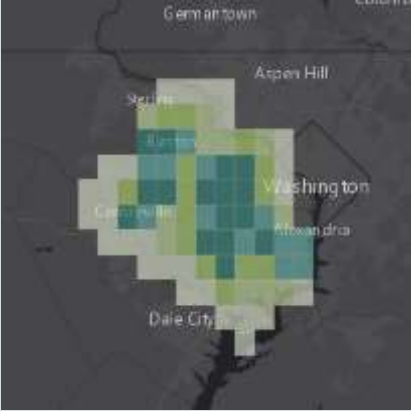


Fairfax County
Department of Management and Budget
Economic, Demographic and Statistical Research (EDSR)



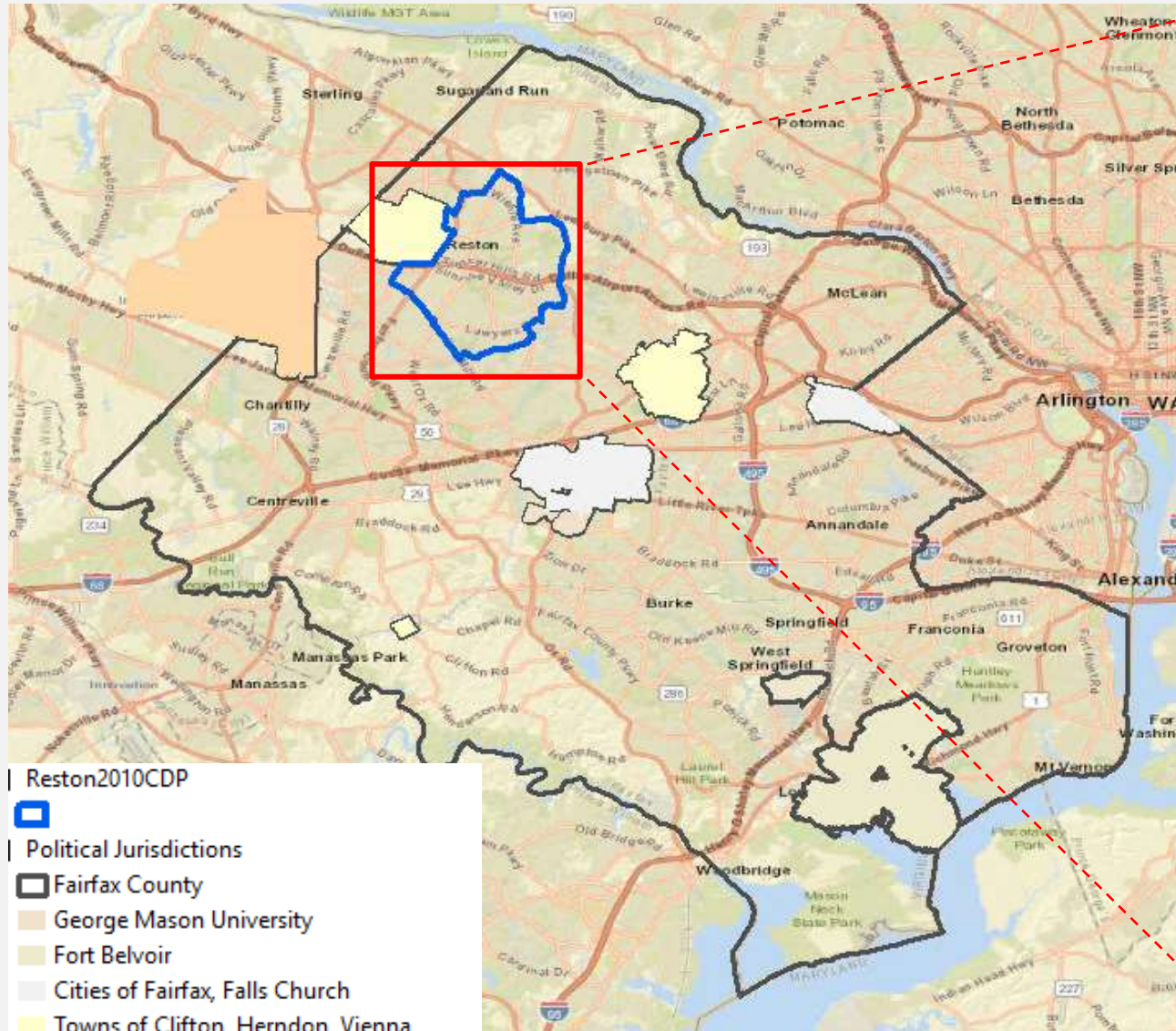
THREE MAJOR SOURCES

- **Integrated Parcel Lifecycle System (IPLS):** Official Fairfax County Population, Households and Housing Units Data.
- **Census**
 - ✓ 2020 Decennial Census Data (Differential Privacy – balancing privacy v/s accuracy).
 - ✓ Redistricting data released to the states no later than July 31, 2021 (pending congressional approval).
 - ✓ American Community Survey Data: 1-year and 5-year American Community Survey Data.
- **ESRI:** Population and Business Data

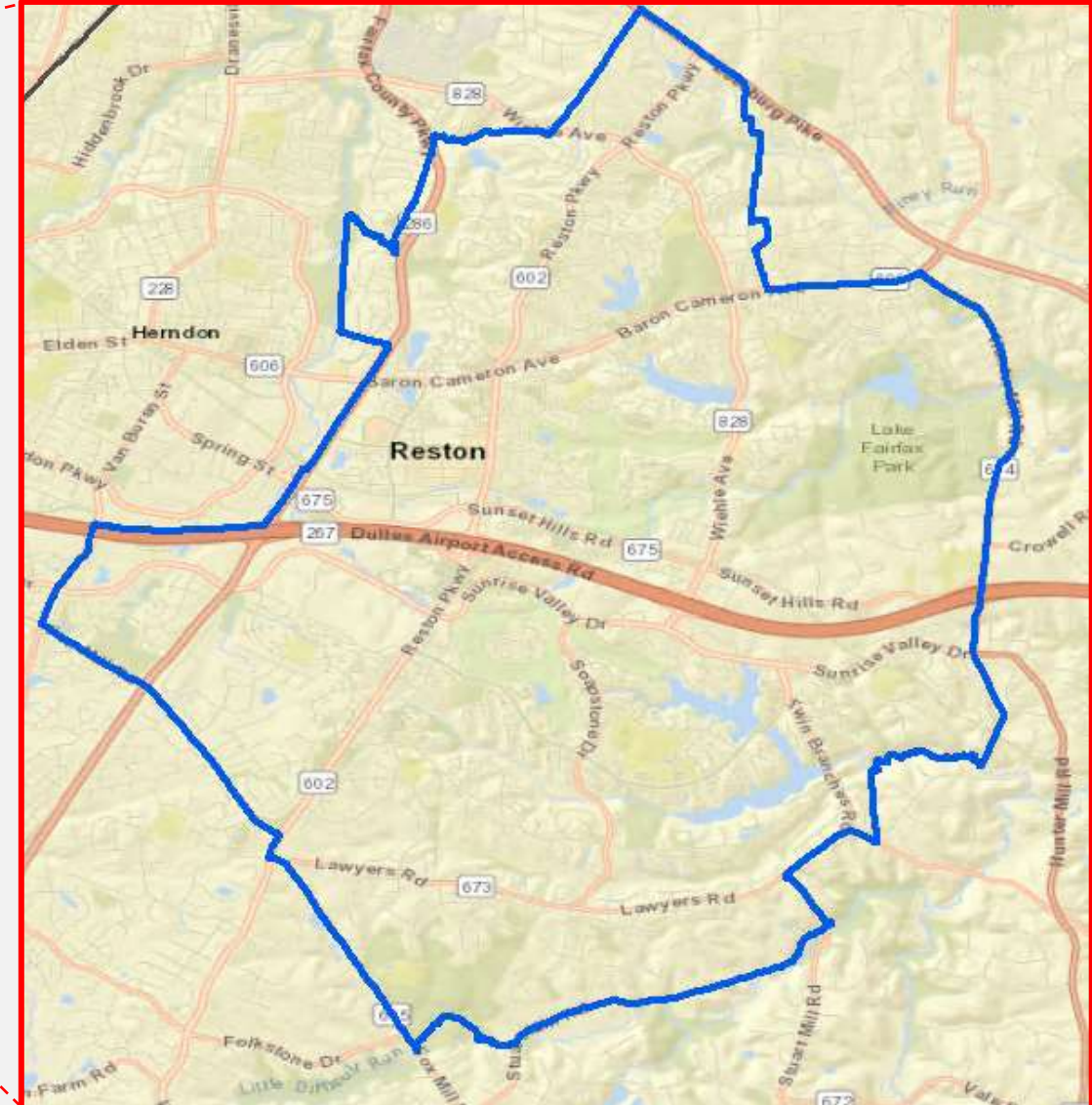
GEOGRAPHIC COVERAGE AND SPATIAL RESOLUTION (PRECISION)

	Geographic coverage	Spatial resolution
EDSR (IPLS) 	Fairfax County, VA	Census block group, tract, place, county; Supervisor Districts and towns; Planning Districts; Human Services Regions; Zip Codes; Sewersheds; Any geography can be aggregated from Parcels , such as Transportation Analysis Zones, Watersheds, Voting precinct, school district, etc.
ACS 	United States	Census block group, tract, place, county, state; Sub-county division (supervisor districts); Congressional district; School district; ZIP codes;
Esri 	Global, 137 countries	Census block group, tract, place, county; Sub-county division (supervisor districts); Congressional district; ZIP Codes

FAIRFAX COUNTY AND RESTON CENSUS DESIGNATED PLACE



- Reston2010CDP
- Political Jurisdictions
- Fairfax County
 - George Mason University
 - Fort Belvoir
 - Cities of Fairfax, Falls Church
 - Towns of Clifton, Herndon, Vienna
 - Washington Dulles International Airport



METHODOLOGY HIGHLIGHTS

- **Integrated Parcel Lifecycle System (IPLS)**

- **Integrated source** of input data including administrative data from the following sources:

- Tax, Administration
- Geographic Information System
- Land Development Systems
- Planning and Development
- Fairfax County Public School (enrollment)
- Fairfax Water
- American Community Survey
- USPS

- **Parcel** level data created and can be summarized to any geography.
- Stored in GIS Oracle database, and accessible to all county staff.

Detailed methodology is available in Demographic Reports: Appendix A.
<https://www.fairfaxcounty.gov/demographics/sites/demographics/files/assets/demographicreports/fullrpt.pdf>

- **American Community Survey (ACS)**

- **Questionnaire survey** through mail, phone interviews, personal visits, and internet response.
- Survey is sent to **address**, not people.
- Annual sample size: 2.9 million addresses in 2005, increased to more than 3.5 million addresses in 2015 (Approximately 122 million households in US).
- Over a 5-year period, samples about 1-in-9 households nationwide, but the sampling rate is higher in areas with small populations and low predicted response rates.

https://www.census.gov/content/dam/Census/library/publications/2018/acs/acs_general_handbook_2018_ch01.pdf

- **Esri**

- Input data
 - ✓ ACS - demographic profiles
 - ✓ IRS - migration
 - ✓ USPS - residential postal delivery counts
 - ✓ Experian
 - ✓ Metrostudy - new resid. construction
 - ✓ Axiometrics - multifamily rental market
 - ✓ BLS Consumer Expenditure Surveys consumer spending
 - ✓ GfK MRI - market potential
 - ✓ Infogroup - business data and locations
 - ✓ Kalibrate - traffic counts
 - ✓ AGS - crimes index
 - ✓ Directory of Major Malls - major shopping centers

https://www.esri.com/arcgis-blog/products/bus-analyst/analytics/whats-coming-in-the-2018-2023-u-s-demographic-updates/#_RES

http://downloads.esri.com/esri_content_doc/dbl/us/J10268_Methodology_Statement_018-2023_Esri_US_Demographic_Updates.pdf

WHAT IS IPLS?

Integrated Parcel Lifecycle System

- Collects and links administrative data from multiple databases across the Fairfax County.
- Utilizes most current administrative data for Fairfax County at the time of processing
- Creates new data which is the most accurate for Fairfax County.
- All data are as of January 1 (snapshot in time) of the reporting year and updated annually.



Housing Units



Population



**Development
Pipeline**



**Existing
Land Use**



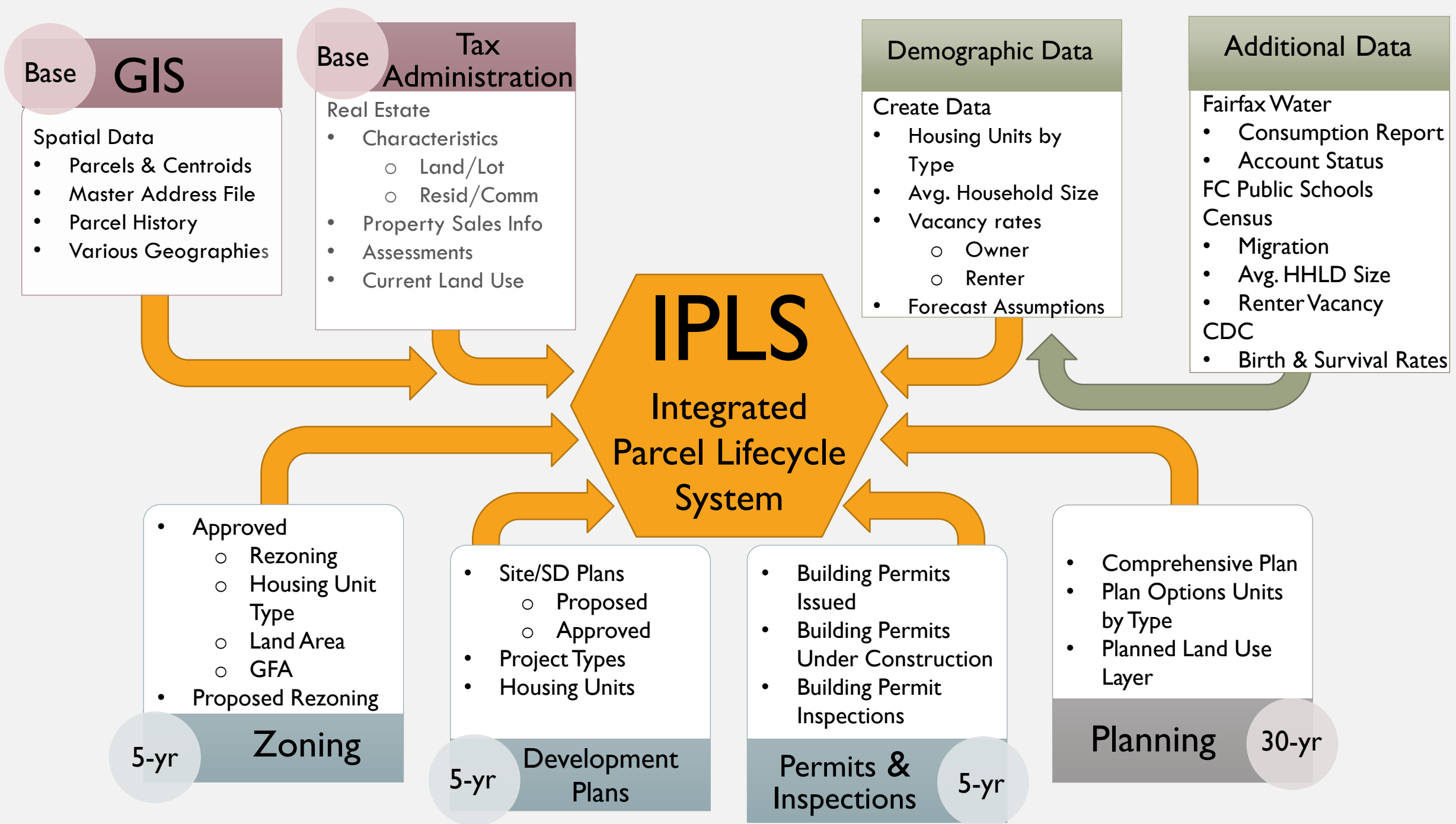
Households



Housing Value



Gross Floor Area



IPLS CURRENT ESTIMATES INPUT



Housing Units

- Real Estate Tax Assessment (January)
 - Conditions for Inclusion: type of unit, age and condition of the structure, percent complete, assessed value, sales value, existing land use, zoning, and access to utilities.



Households (Occupied Housing Units)

- Fairfax Water
 - Account Status and Consumption Rates
 - Owner Vacancy Estimates
- Fairfax County Surveys of Rental Housing Complexes
 - Renter Vacancy Estimates
- USPS
- U.S. Census Bureau
 - Vacancy Estimates



Population

- Fairfax Water Usage by Type of Unit
- Average Household Size Estimates
 - ACS 5-Year Data (Racial/Ethnic & Age)
 - Fairfax County Public School Enrollment by Area
- Group Quarters Population
 - Fort Belvoir
 - George Mason University
 - Detention Centers
 - Nursing Homes
 - Etc.

STUDY AREA



- Housing Unit Data is accurate to the parcel/point.
- Household and Population Estimates require caution when using small geographic areas.
- As geography size increases, accuracy increases.

VACANT AND UNDERUTILIZED LAND FOR RESIDENTIAL USE

Forecast Foundation

- Parcel Current Characteristics/Conditions
- Existing and Planned land uses
- Parcel Potential
- Assumptions are Applied to Each Parcel

IPLS FORECASTS INPUT

Short-term forecasts:

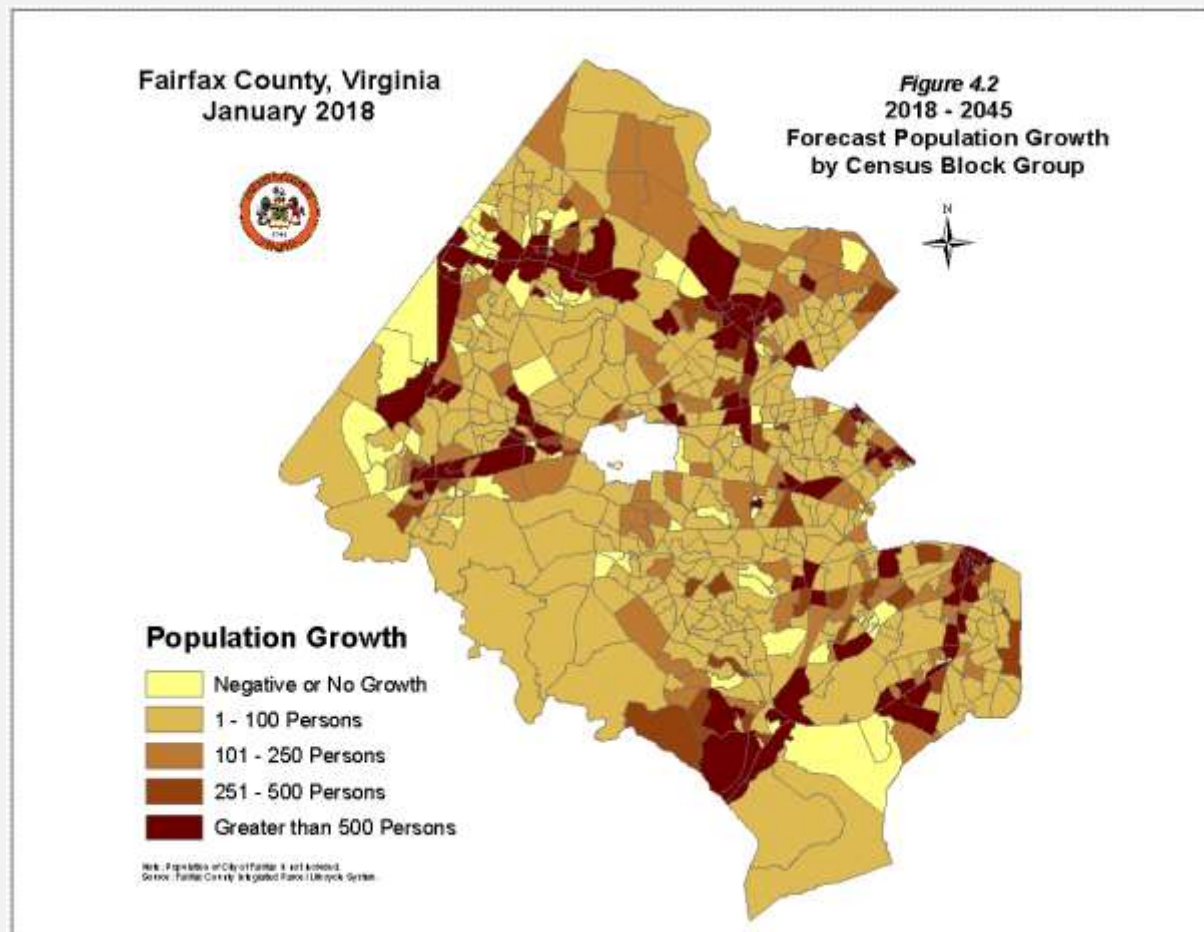
- 1-5 years
- Residential Development Activity
 - Under Construction
 - Building Permit Issued
 - Development Plan Approved
 - Development Plan Submitted
 - Rezoning Granted
 - Rezoning Pending
- 5-year Projection Accuracy
 - 1.01% average percent error for Housing Units over 5 years of forecast (based on latest 2019 data).

Long-term forecasts:

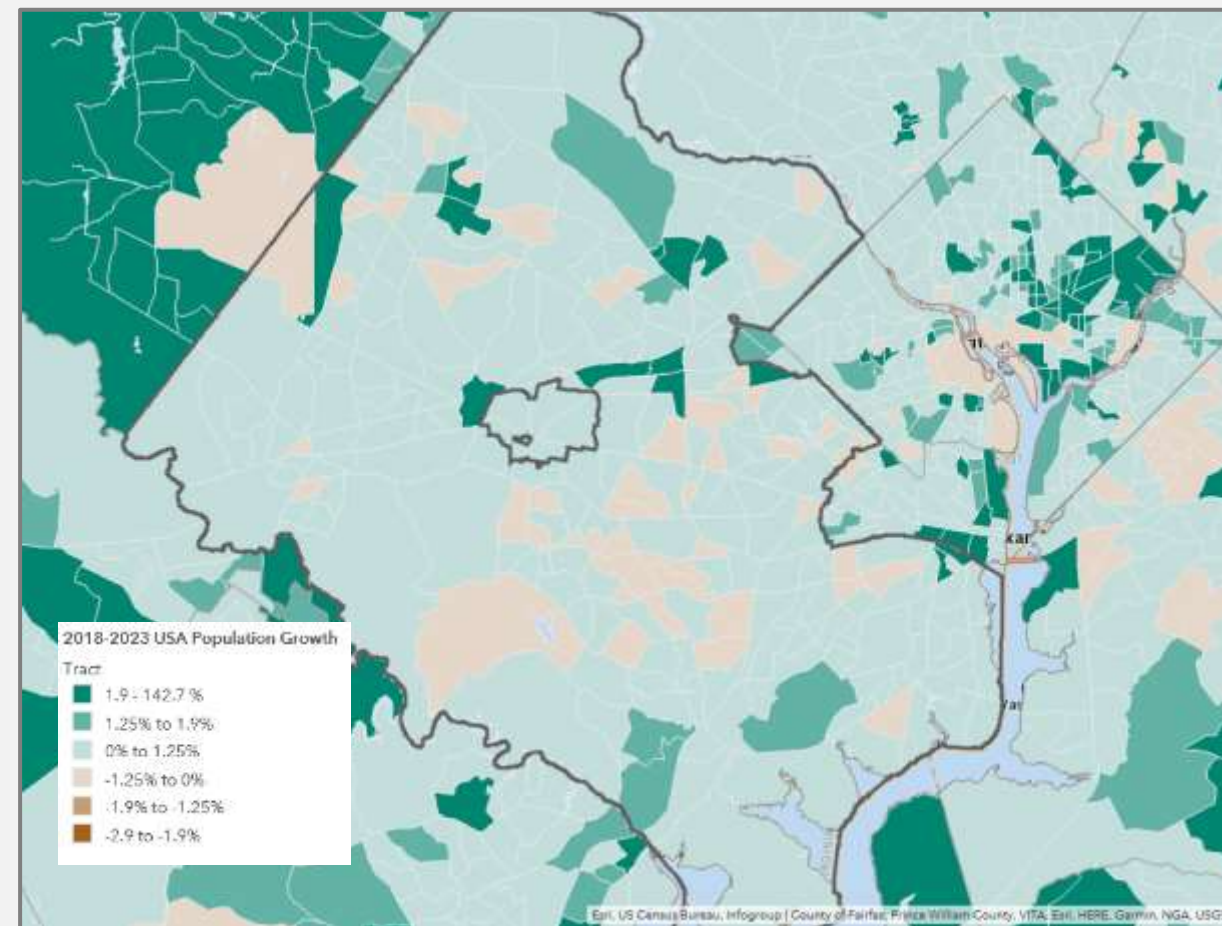
- 6-30 years
- Comprehensive Plan (Base Plan)
- Plan Options (Max HU Potential)
- Existing Parcel Characteristics
 - Age of Structure
 - Location
 - Steepness
 - Flood Plains
 - Structure on Parcel < 15 Years Old
 - Vacant Parcel Sold Within Last Two Years, etc.
- 10-year Projection Accuracy over 3 10-year forecast period
 - 2.86% average percent error

DEMOGRAPHIC PROJECTIONS

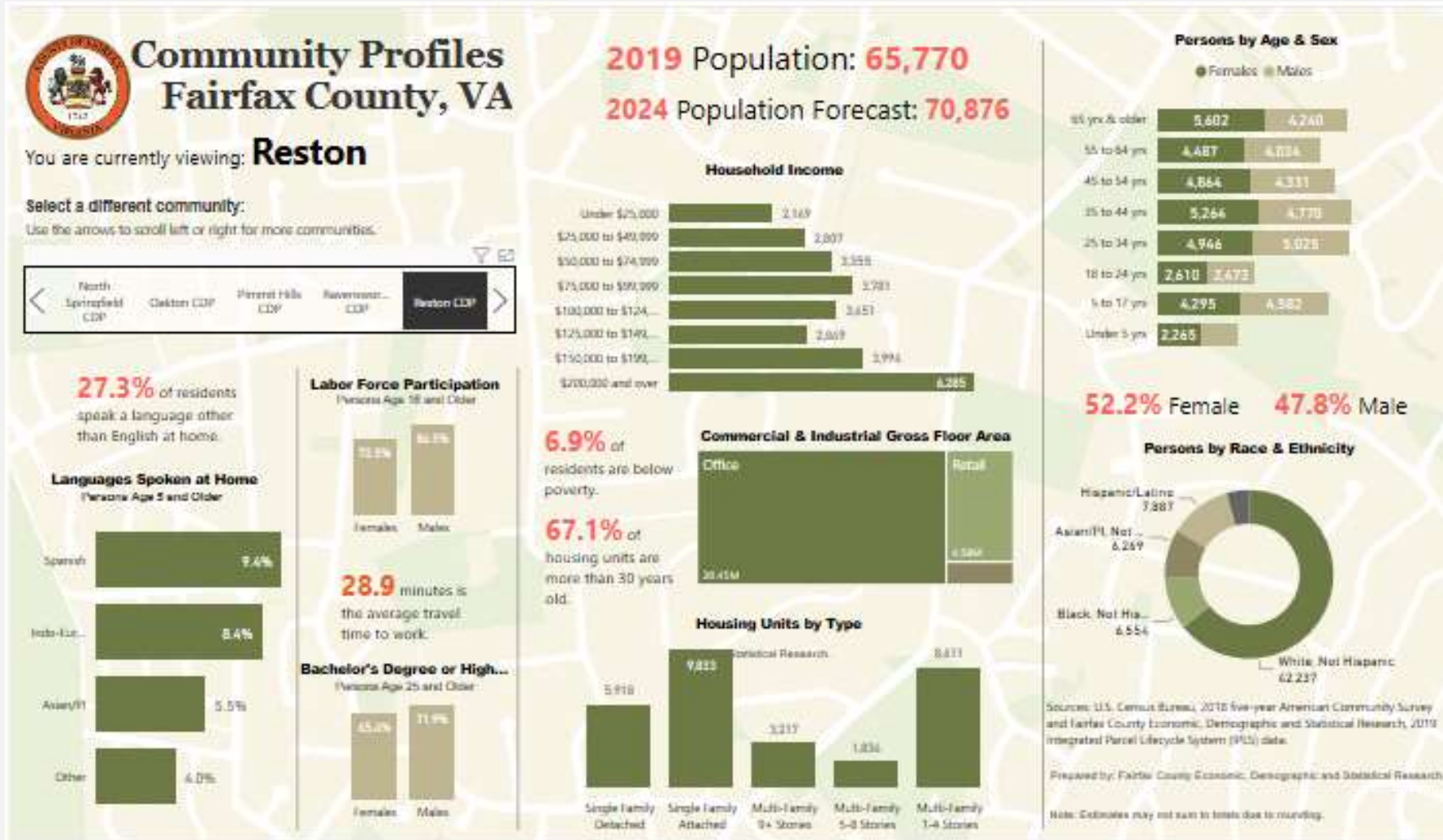
IPLS Population Forecast 2018-2045



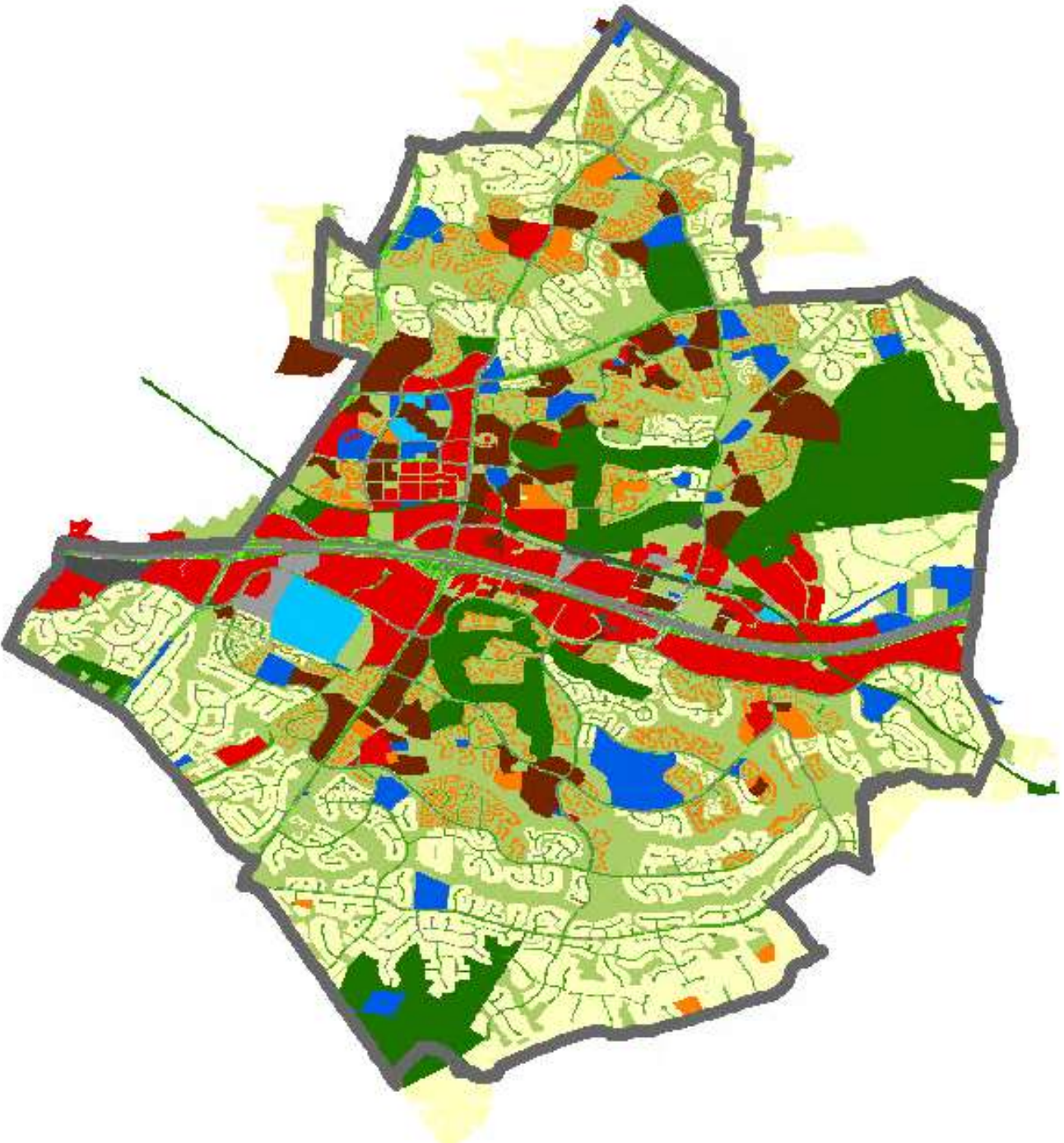
Esri Population Forecast 2018-2023



RESTON CENSUS DESIGNATED PLACE



Fairfax County
Generalized Existing Land
Use
IPLS, 2020



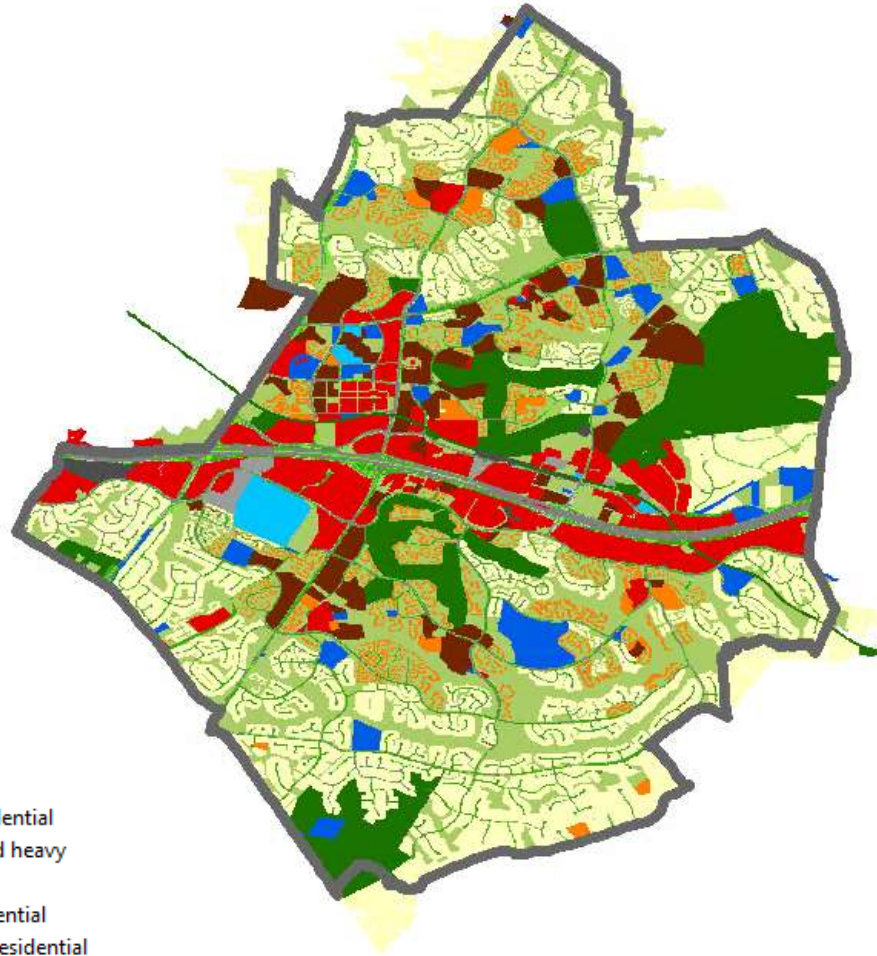
Fairfax County High
Resolution Land Cover
By University of Vermont

Based on Pictometry,
NAIP and LiDAR, 2015

- IPLSExistingLU2020
- Agricultural
 - Commercial
 - High-density Residential
 - Industrial, light and heavy
 - Institutional
 - Low-density Residential
 - Medium-density Residential
 - Open land, not forested or developed
 - Public
 - Recreation
 - Utilities

- FCLandCover2015Reston
Class_Name
- Bare Soil
 - Buildings
 - Grass/Shrubs
 - Other Paved Surfaces
 - Roads/Railroads
 - Tree Canopy
 - Water

2020 Fairfax County Generalized Existing Land Use
IPLS Data, 2020



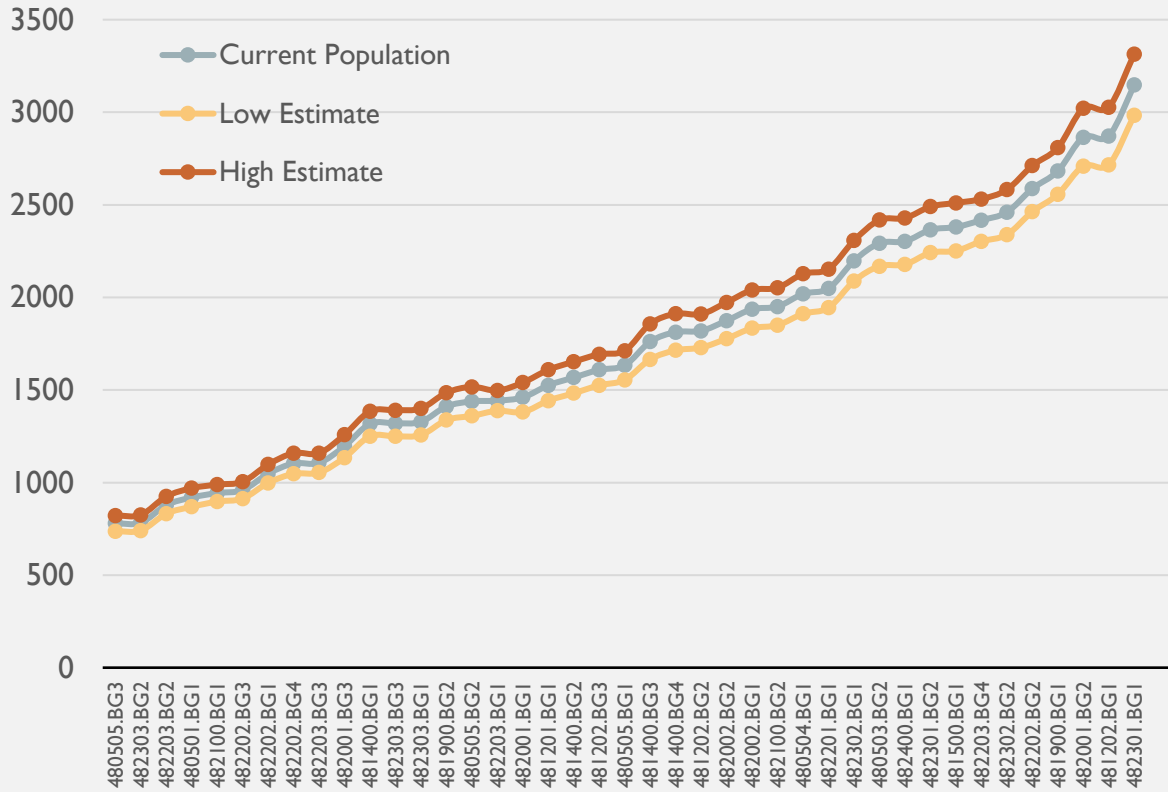
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Fairfax County High Resolution Land Cover
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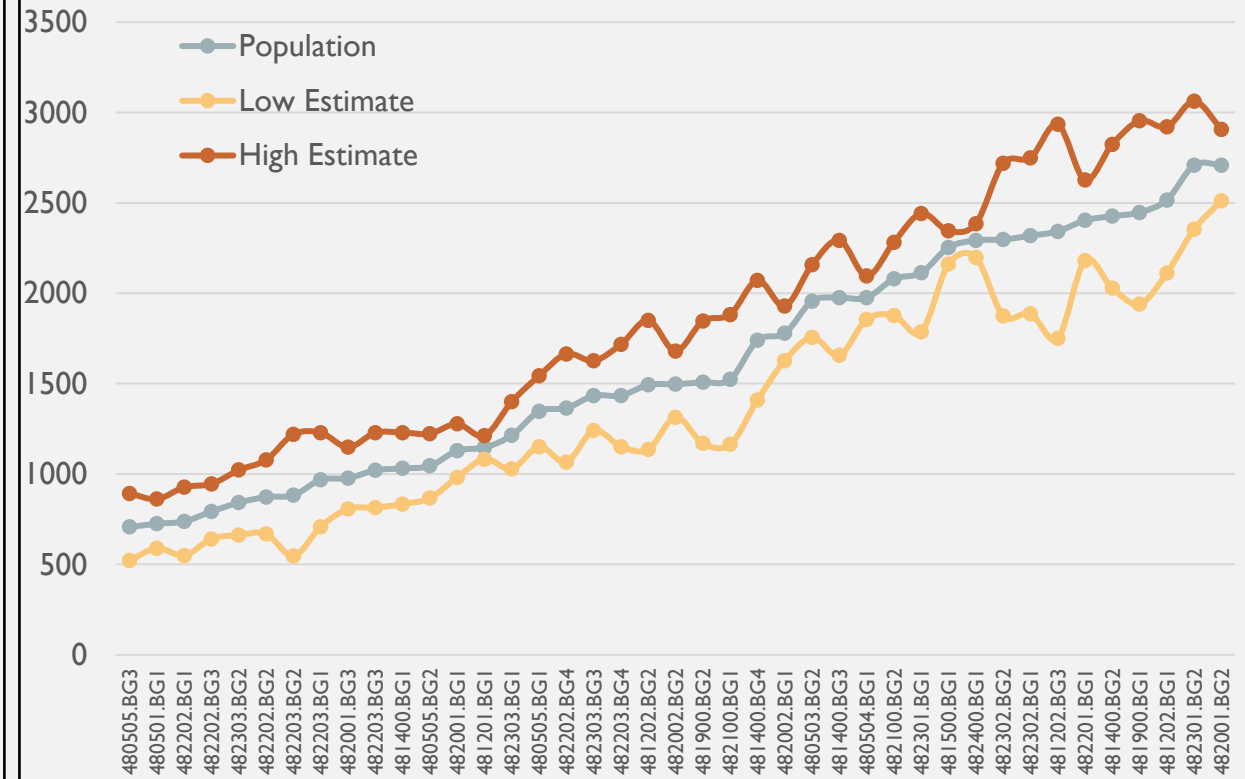
- FCLandCover2015Reston
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 - Roads/Railroads
 - Tree Canopy
 - Water

IPLS Population Estimate by Block Group, Reston,VA, 2019



Reston CDP total population: 71,548 (+/- 501)

ACS 1-Yr Population Estimate by Block Group, Reston,VA, 2018



Reston CDP total population: 60,335 (+/- 1274)

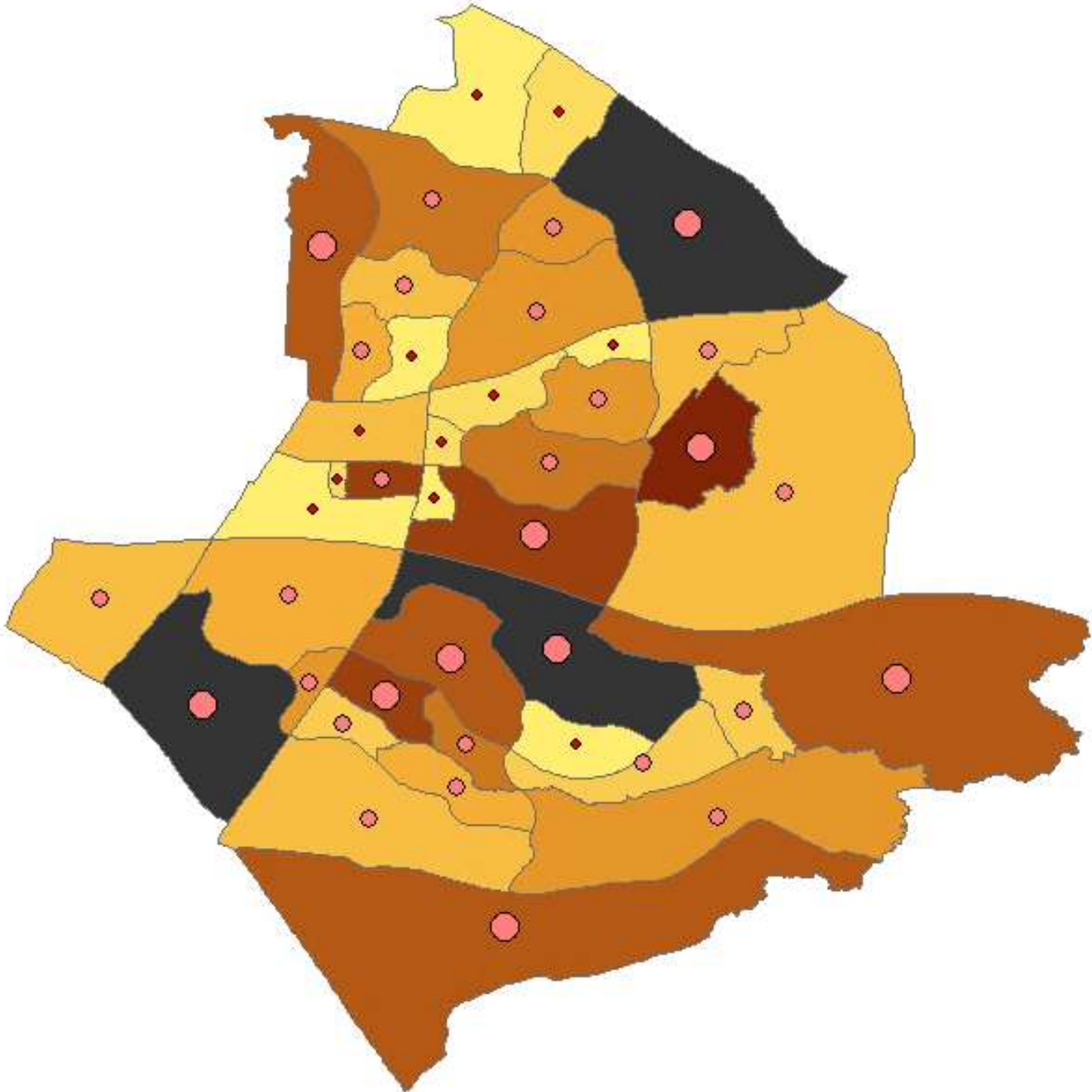
Fairfax County IPLS
Population Estimate
and Variance

Based on
Administrative Data
and IPLS Modeling

by Block Groups, 2019

Block Group Population

- 707 - 779
- 780 - 1000
- 1001 - 1200
- 1201 - 1400
- 1401 - 1600
- 1601 - 1800
- 1801 - 2000
- 2001 - 2200
- 2201 - 2400
- 2401 - 2600
- 2601 - 2709
- 2710 - 3148



ACS 1-yr Population
Estimate and Margin of
Error

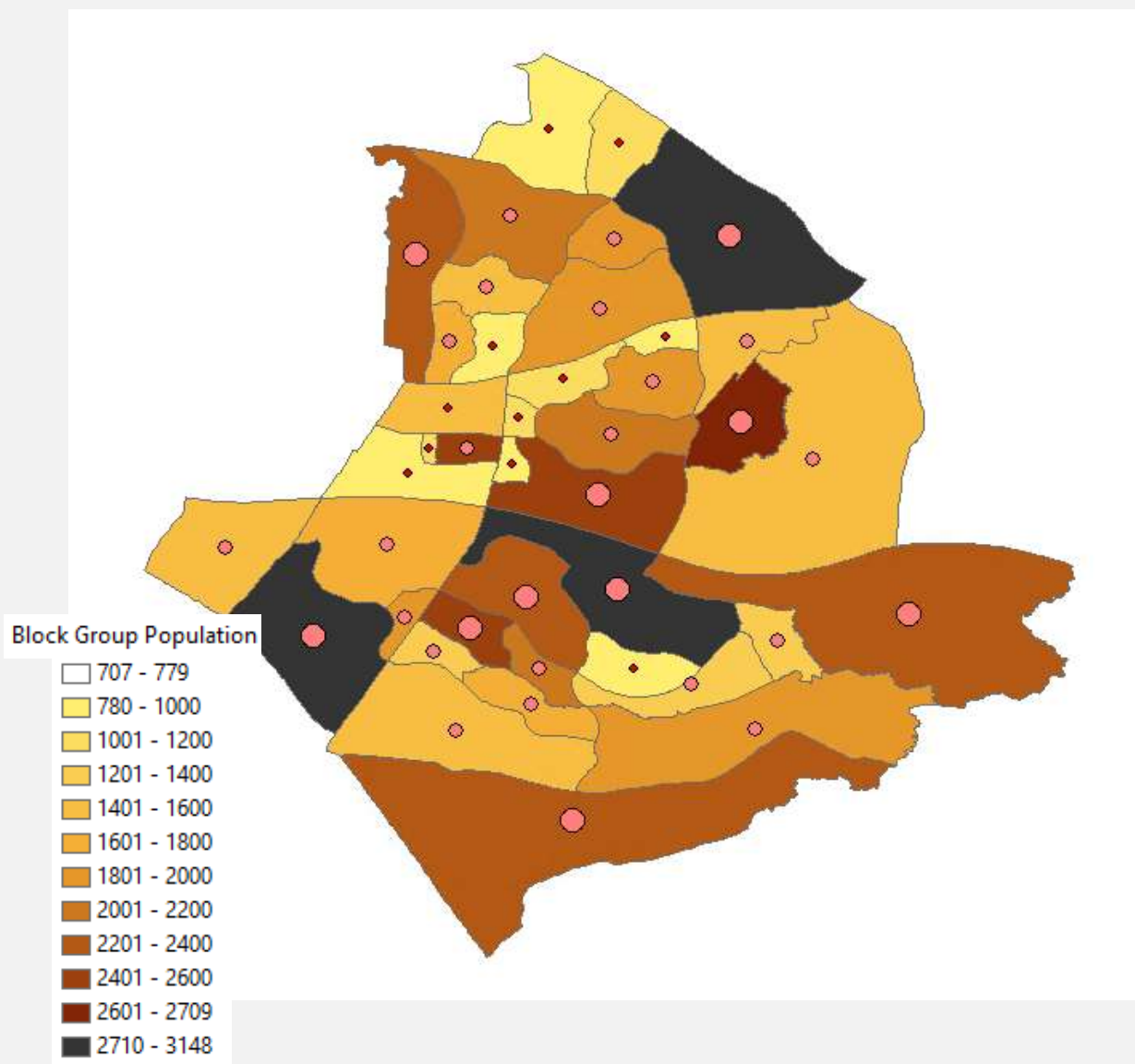
Based on Sampled
Survey Data

by Block Groups, 2018

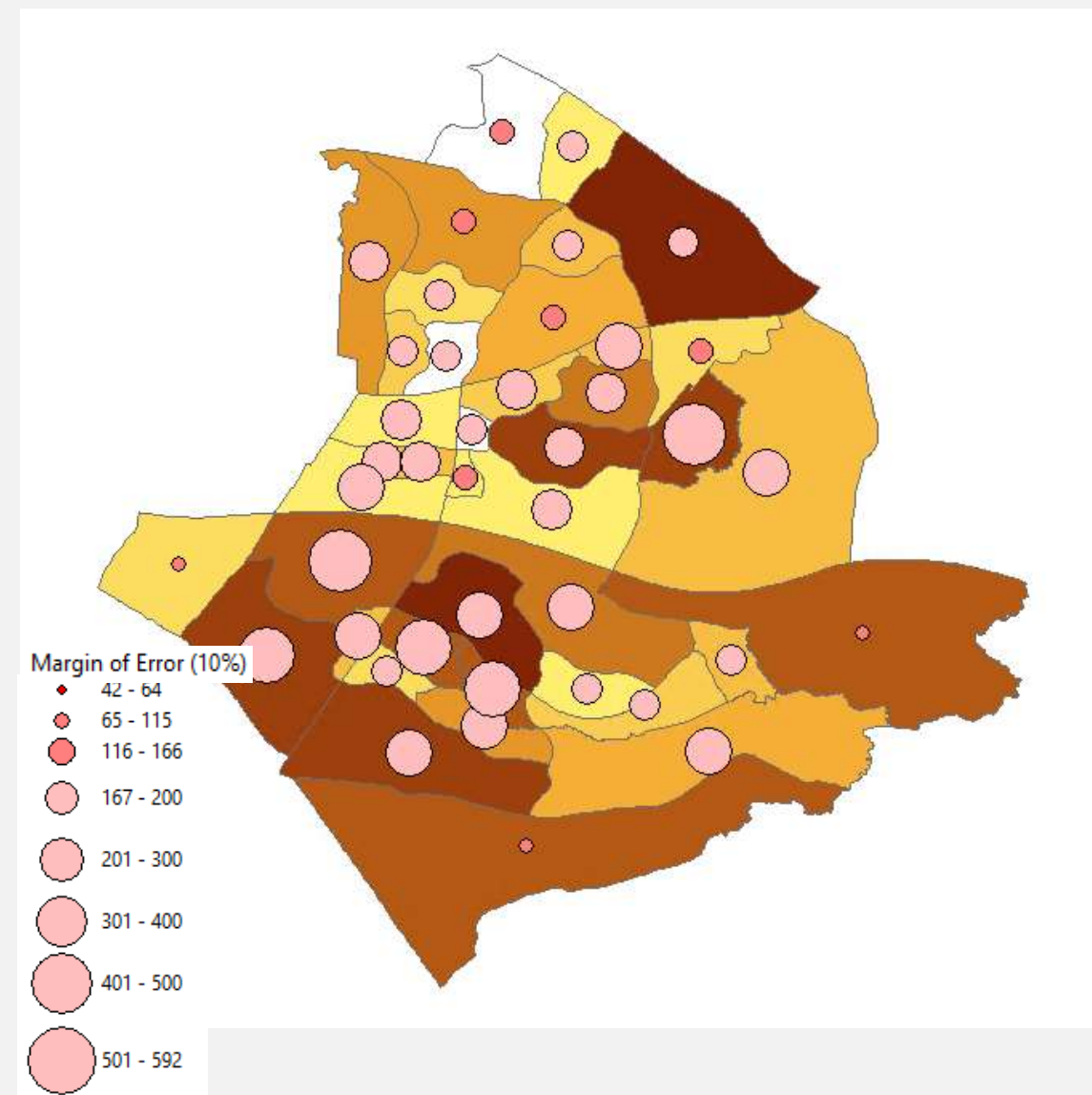
Margin of Error (10%)

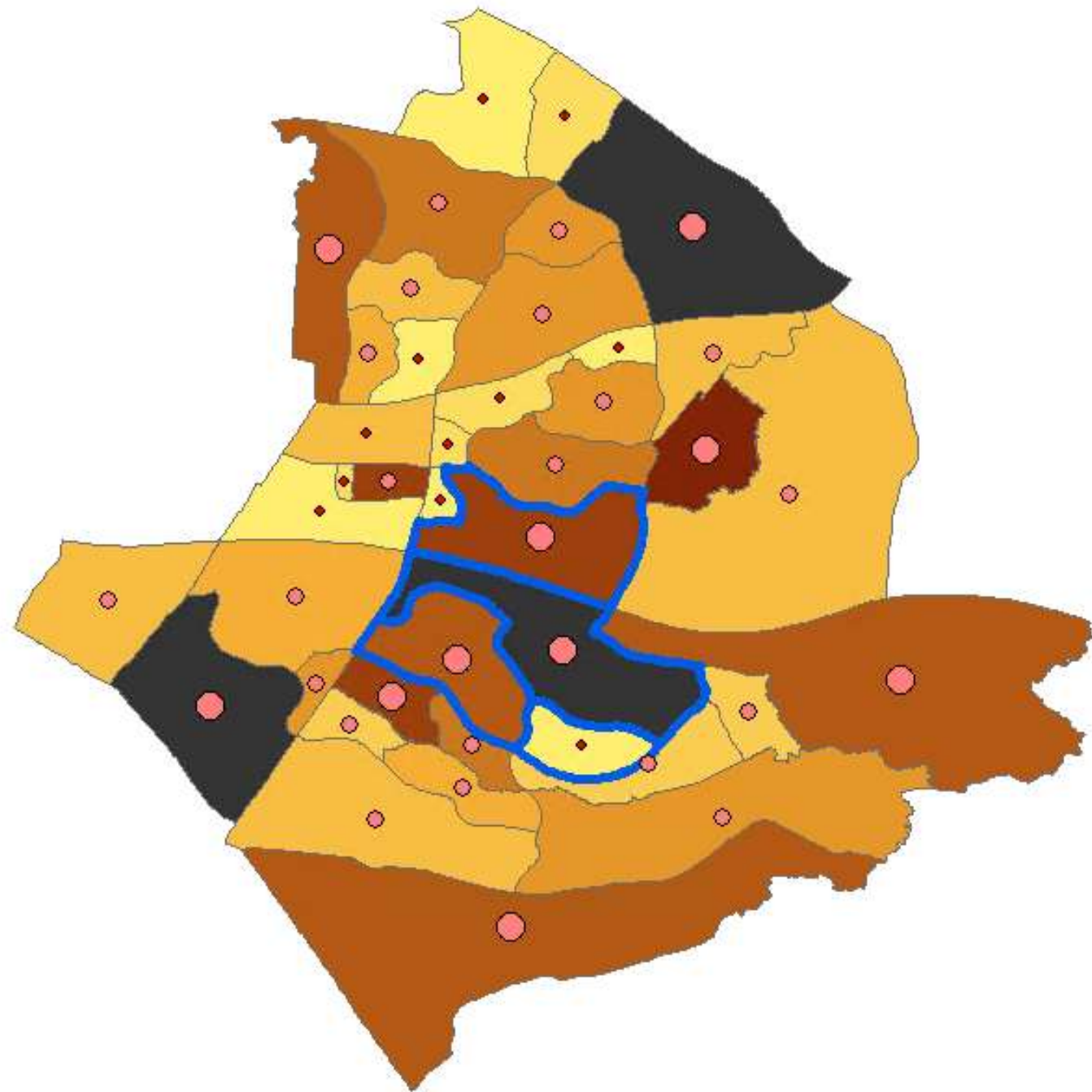
- 42 - 64
- 65 - 115
- 116 - 166
- 167 - 200
- 201 - 300
- 301 - 400
- 401 - 500
- 501 - 592

Fairfax County IPLS Population Estimate and Variance
by Block Groups, 2019



ACS 1-Year Population Estimate with Margin of Error
by Block Groups, 2018

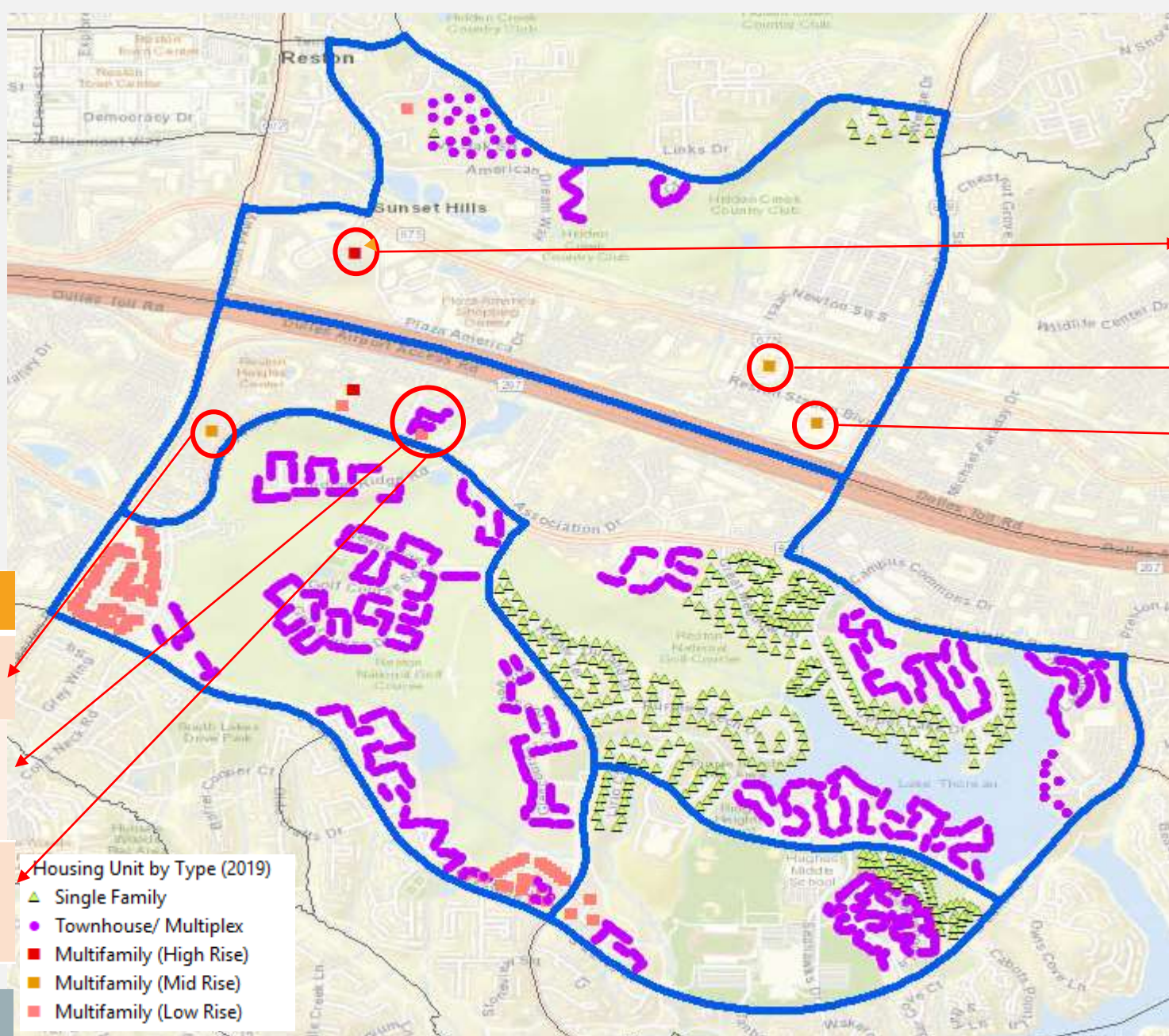




4823.01 BG I

Name	HU	YrBt
THE VY RESTON Apts	385 MR	2018
SUNRISE SQUARE Condo	10 LR	2018
SUNRISE SQUARE Townhomes	15 TH	2017 & 2018

IPLS Est.	ACS Est.
3147 (+/-105)	2113 (+/-328)



Housing Unit by Type (2019)

- ▲ Single Family
- Townhouse/ Multiplex
- Multifamily (High Rise)
- Multifamily (Mid Rise)
- Multifamily (Low Rise)

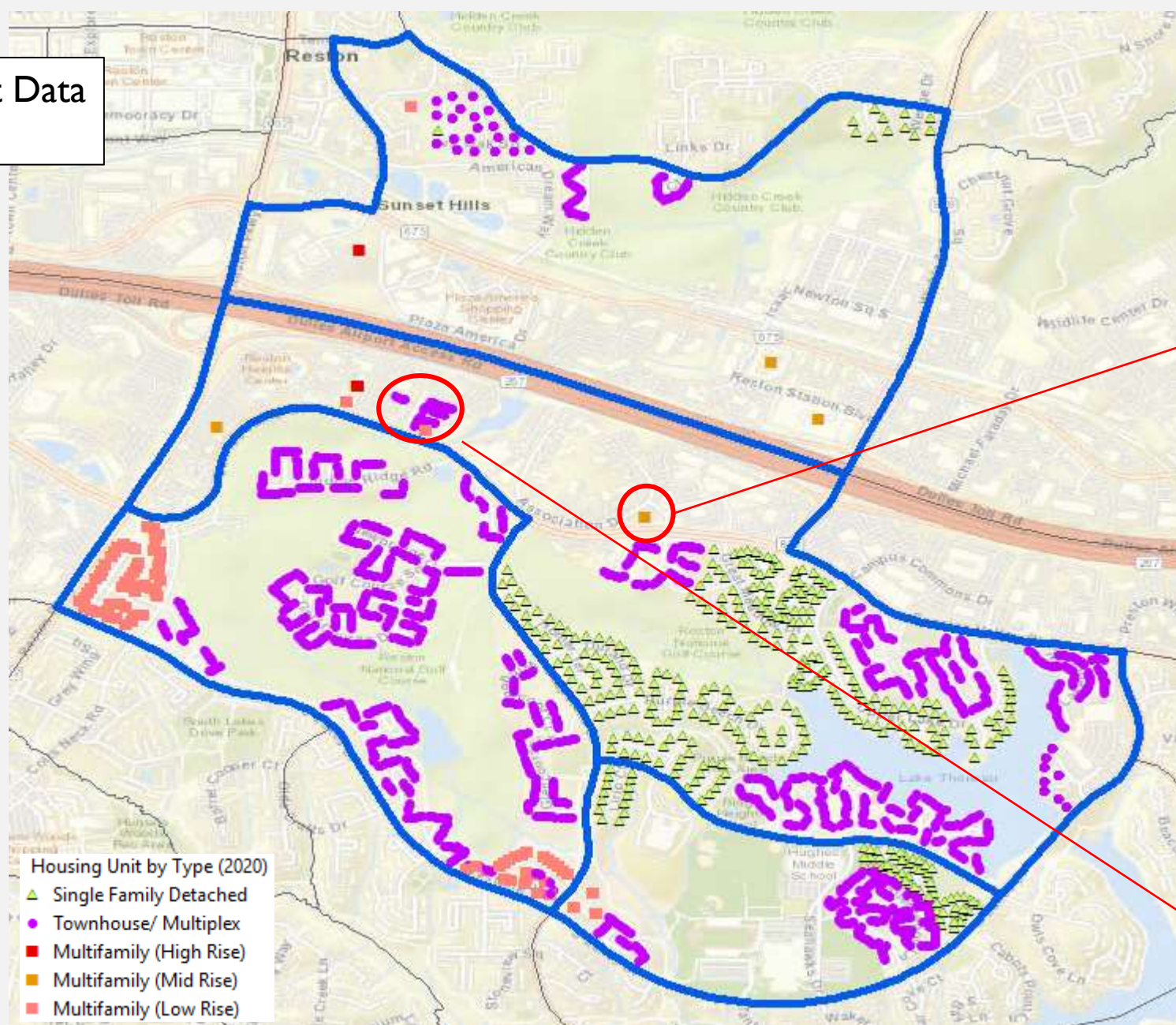
4822.02 BG 2

Name	HU	YrBt
EXO (EXCELSIOR PARC) Apts	457 HR	2018
APERTURE Apts	421 MR	2017
COMSTOCK BLVD RESTON Apts	448 MR	2015

IPLS Est.	ACS Est.
2587 (+/-124)	873 (+/-205)

IPLS Housing Unit, 2019

Updated Housing Unit Data
January 2020



0174 12 0011BI

LINCOLN AT WIEHLE
STATION APTS

- Mid Rise
- 260 Housing Units
- Year Built 2019
- Vacancy rate 36.5%
by March 2020

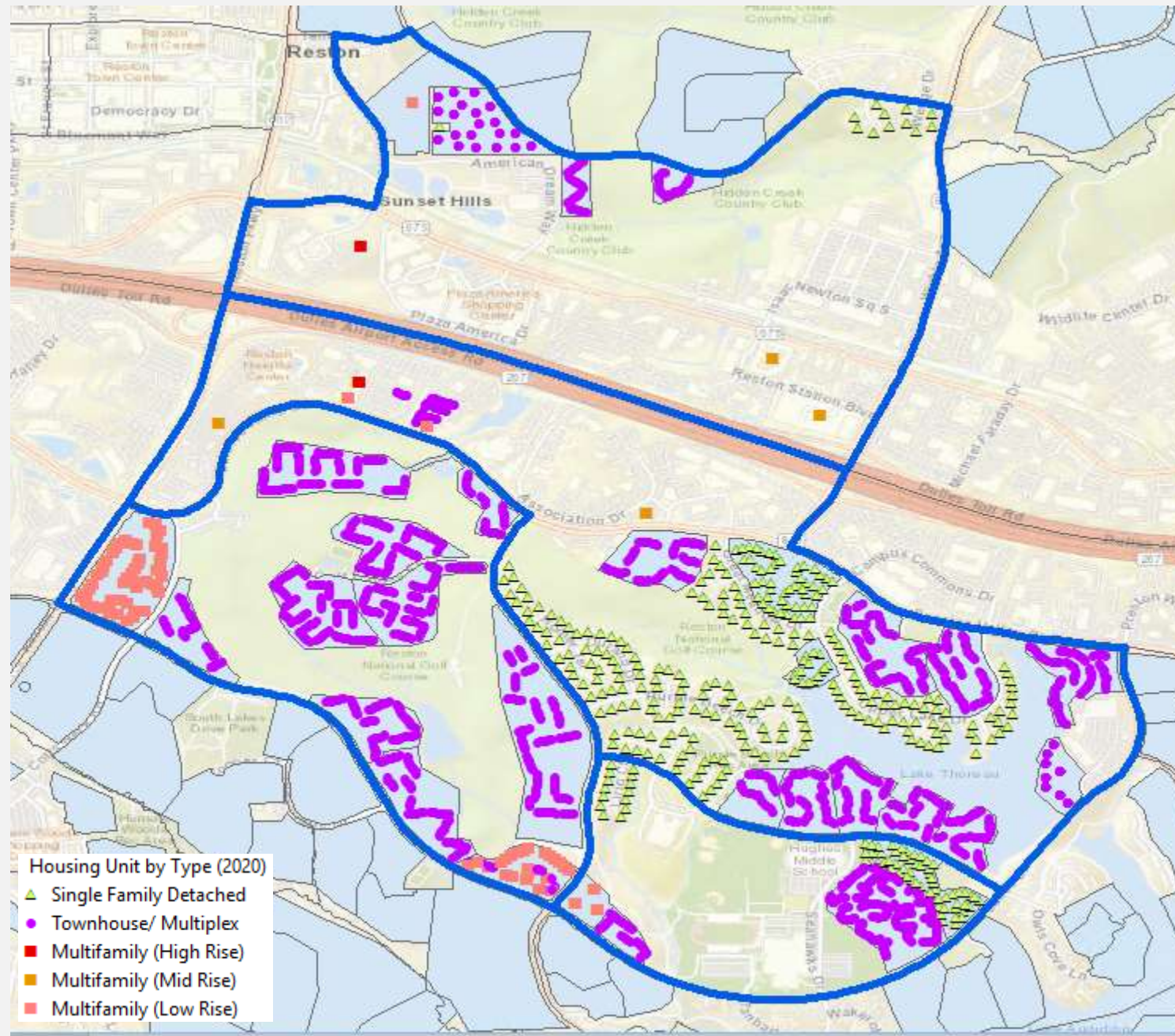
0174 35 and 0174 38

Sunrise Square &
Valley and Park
Townhouse

- Townhouse
- 21 Housing Units
- Year Built 2019

Overlay with
Civic Associations

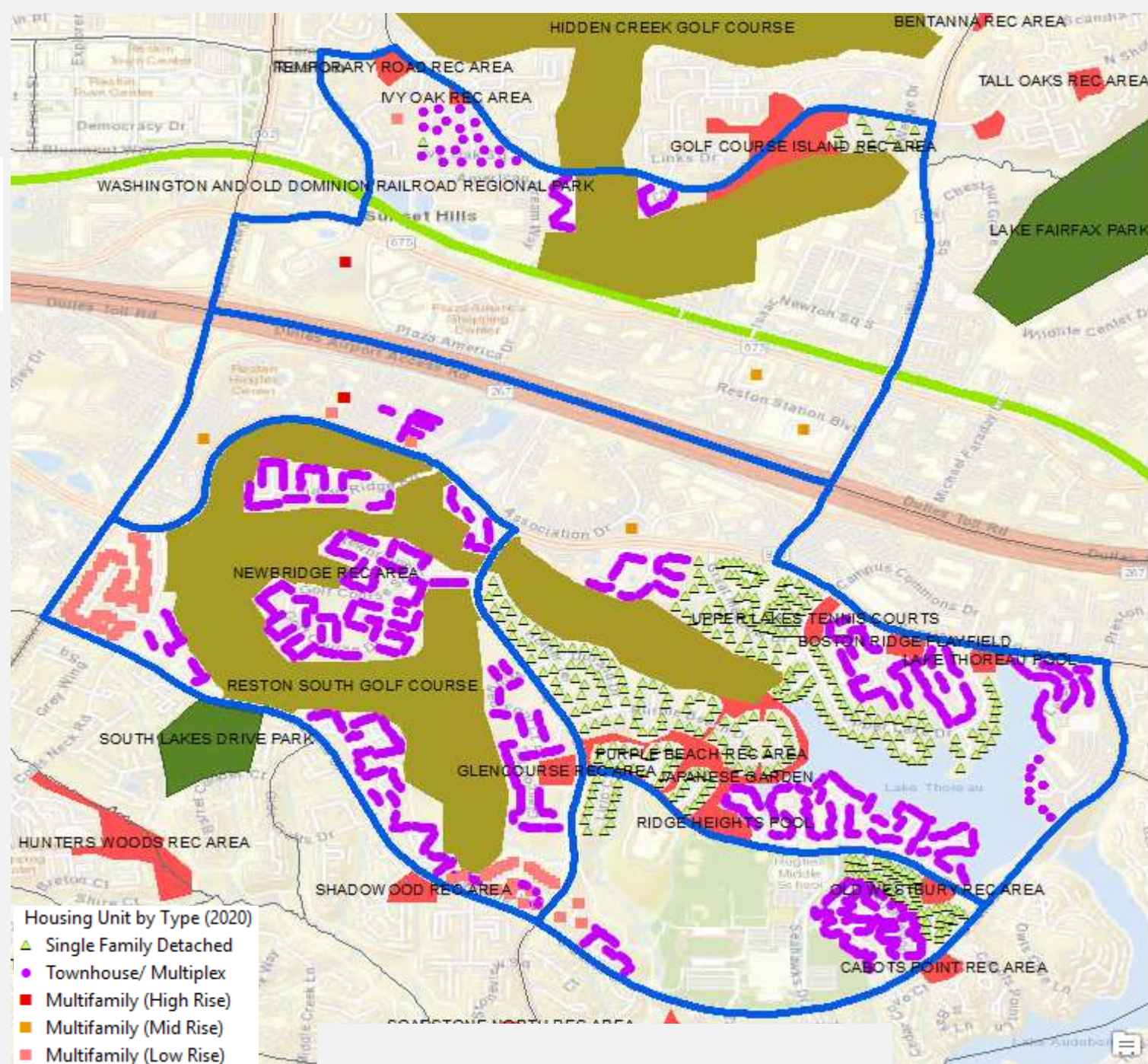
Civic Associations



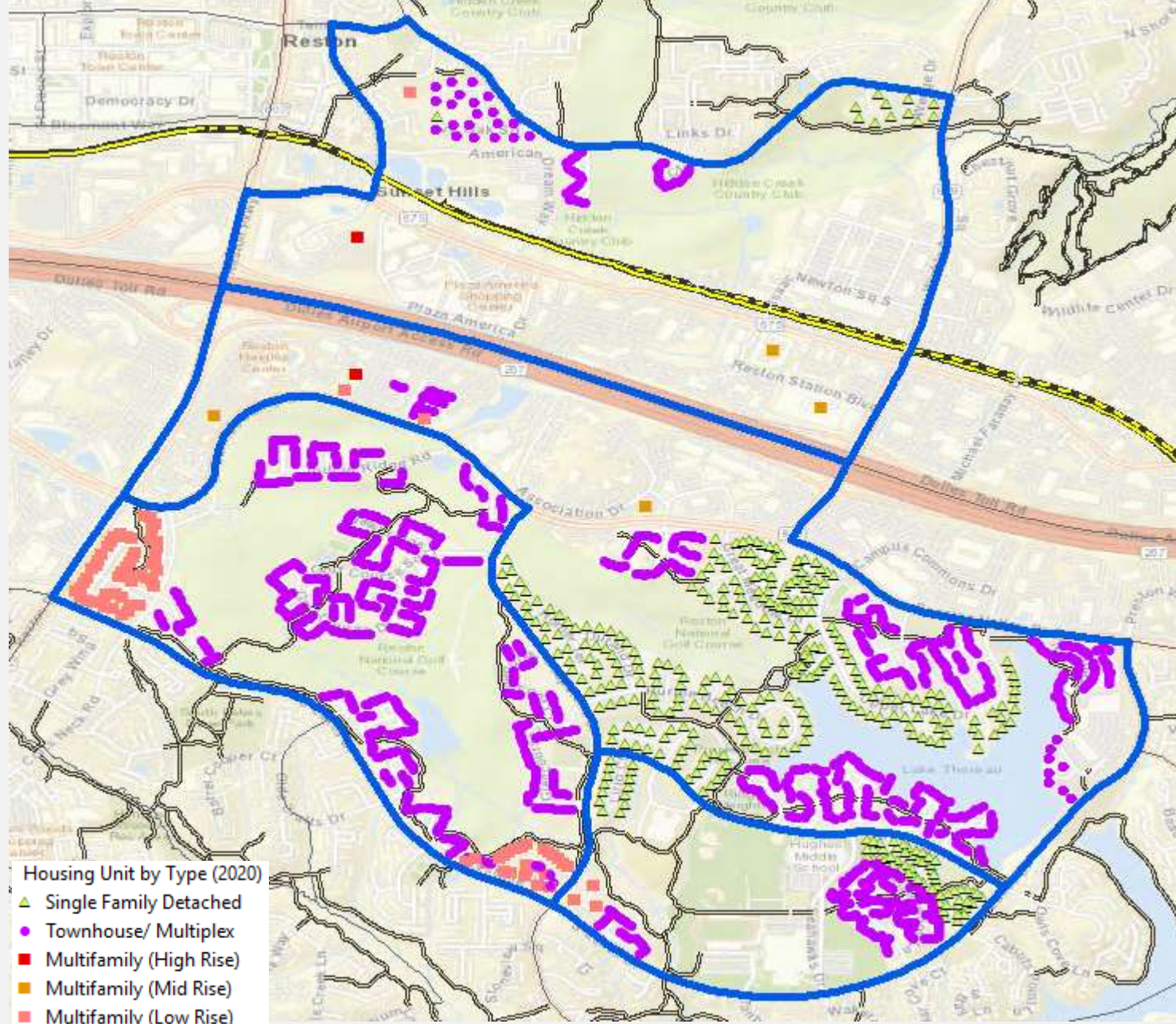
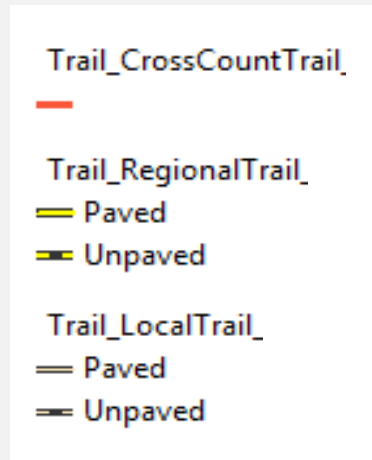
IPLS Housing Unit, 2020

Overlay with Parks

- Fairfax County Park Authority
- Northern VA Regional Park Authority (Regional)
- Private Golf Course (Regional)
- Reston Association (Local)

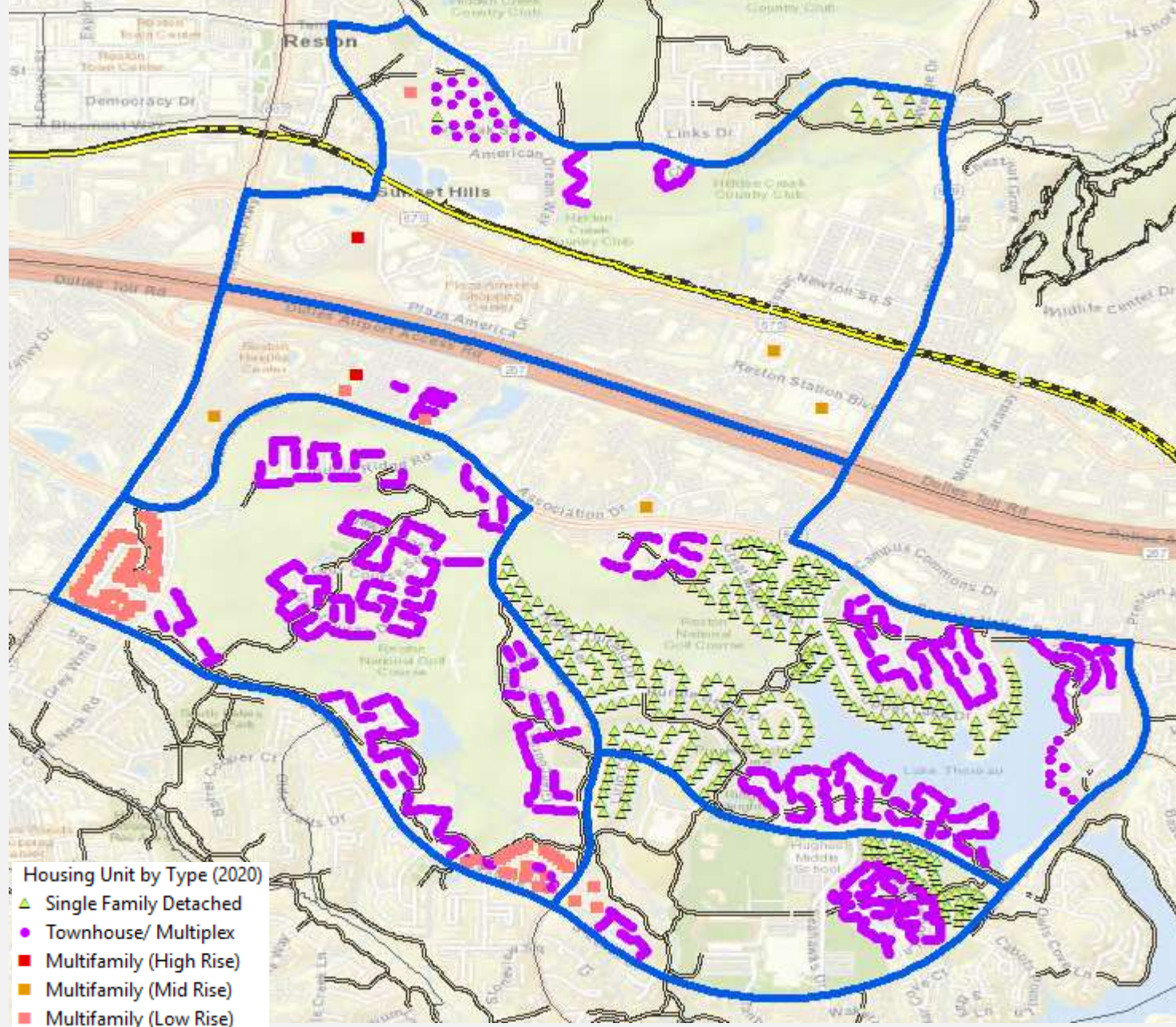
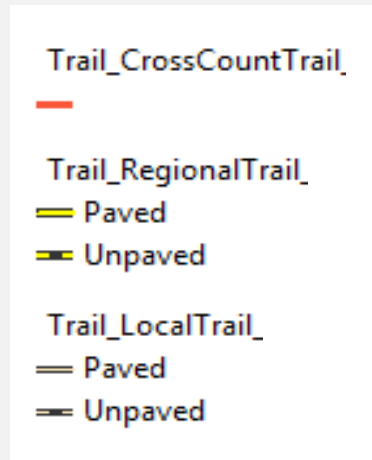


Overlay with Trails



IPLS Housing Unit, 2020

Overlay with Trails



IPLS Housing Unit, 2020

AVAILABLE DATA PRODUCTS

• IPLS

- Housing units
 - ✓ Current estimates: PIN, Number of Housing Unit, HU type, Land-use Code, Year Built, Report Year
 - ✓ Forecasts: PIN, Number of HU (most likely, low, and high), HU type, Report Year
- Household
 - ✓ Current estimates: PIN, Number of Household (current, low and high), Report year
 - ✓ Forecasts: PIN, Number of Household (most likely, low, and high), Report Year
- Population
 - ✓ Current estimates: PIN, Population (current, low and high), Report Year
 - ✓ Forecasts: PIN, Population (most likely, low, and high), Report Year
- Market Value of Owned Housing Unit
 - ✓ PIN, HU type, Market Sale Ratio, Market Value, Assessment Value, Sales Value, Report Year
- Residential Development Activity
 - ✓ PIN, Development Phase, HU type, Number of HU, Report Year
- Industrial & Commercial Gross Floor Area
 - ✓ Sequence number, PIN, Element, Year Built, Land-use Code, General Activity Type, Gross Floor Area, Report Year
- Generalized Existing Land Use
 - ✓ PIN, Primary LU, Secondary LU, LU category, Ta Exemption, Acres, Report Year

Detailed methodology is available in Appendix A in Demographic Reports

• ACS

- Demographics Characteristics
 - ✓ Age and Sex
 - ✓ Group Quarters Population
 - ✓ Hispanic or Latino Origin /Race
 - ✓ Relationship to Householder
 - ✓ Total Population
- Housing Characteristics
 - ✓ Occupancy/Vacancy status
 - ✓ Computer and Internet use
- Economic Characteristics
 - ✓ Income and earnings
 - ✓ Industry and occupation
 - ✓ Poverty status
- Social Characteristics
 - ✓ Ancestry
 - ✓ Disability
 - ✓ Language spoken at home

https://www.census.gov/content/dam/Census/library/publications/2018/acs/acs_general_handbook_2018_ch01.pdf

• Esri

- Demographic profiles
 - ✓ Population
 - ✓ Households
 - ✓ Income
 - ✓ Daytime Population
 - ✓ Housing
 - ✓ 5-year projection
- Tapestry Segmentation
- Consumer Spending
- Market potential
- Retail marketplace
- Business data
- Major shopping Centers
- Crime Indexes
- Traffic Counts

<http://doc.arcgis.com/en/esri-demographics/data/us-intro.htm>

Demographic Reports

Reports

DEPARTMENT RESOURCES



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[Archives](#)

RELATED



DEMOGRAPHIC REPORTS

Small area housing, population, development, and land use information. Estimates and projections of data presented by supervisor district, planning district, human services region, and census tract and block group. Please note that the geographies contained in the reports have changed over time.

[2018](#) | [2017](#) | [2016](#) | [2015](#) | [2014](#) | [2013](#) | [2012](#) | [2011](#) | [2010](#) | [2009](#) | [2008](#) | [2007](#) | [2005-2006](#) | [2004](#) | [2003](#) | [2002](#) | [2001](#)
| [2000](#) | [1999](#) | [1998](#) | [1997](#) | [1996](#) | [1995](#) | [1994](#) | [1993](#) | [1992](#) | [1991](#) | [1990](#) | [1989](#) | [1988](#) | [1987](#) | [1986](#) | [1985](#) | [1984](#) | [1983](#) |
[1982](#) | [1981](#) | [1980](#) | [1979](#) | [1978](#) | [1977](#) | [1976](#) | [1975](#) | [1974](#) | [1973](#)

<https://www.fairfaxcounty.gov/demographics/reports>

Data Access

General Public

Fairfax OpenData

- [Demography > IPLS](#)

Data Dictionary

- <https://www.fairfaxcounty.gov/demographics/sites/demographics/files/assets/datadictionary/ipls-data-dictionary-gis.pdf>

Fairfax County Demographic Page

- <https://www.fairfaxcounty.gov/demographics/>

Demographic Mapper

- [Selectable Summary Data](#)
 - CDP, Block Groups and ZIP codes

Demographic Reports

- [Summary Data](#)

Methodology

Methodology: Appendix A

- <https://www.fairfaxcounty.gov/demographics/sites/demographics/files/assets/demographicreports/fullreport.pdf>

Contact Information: Fatima Khaja
Emails: fatima.khaja@fairfaxcounty.gov