



A Look to the Future:

Demographic Projection for Fairfax County, Virginia

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ACS Data Users Conference, Washington, DC: May 14-15, 2019



Outline

- Background
 - Current state of Fairfax County demographics
 - Questions for the future
- Methods
 - Historical trends analysis
 - Population Forecasts:
 - Cohort component method for population projection
 - Land use & economic projection approach
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 - Economic factors: labor force, industry, occupations
 - Population characteristics: Diversity and Migration
 - Housing and land use characteristics: Where and How many?
- Conclusions and Data Suggestions
- Resources and Questions

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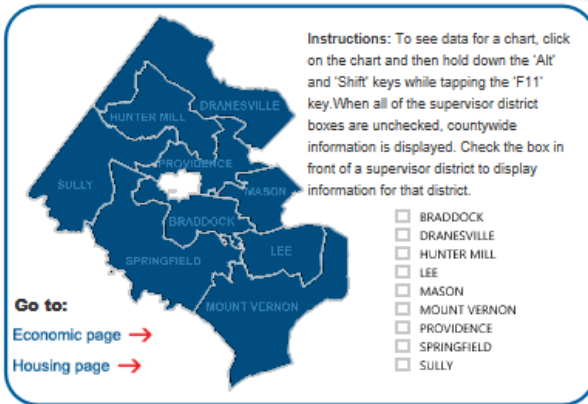
Fairfax County General Overview

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Fairfax County, VA

Overview:

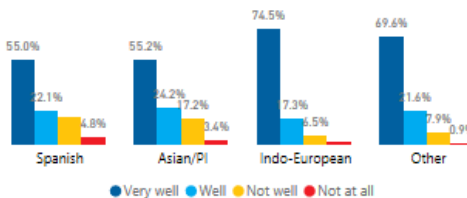
Demographic Characteristics



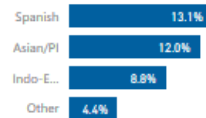
Estimate/Forecast	2018	2020	2025	2030	2035	2040	2045
Households	409,563	414,539	433,495	457,158	481,406	503,860	520,984
Housing Units	418,250	423,311	443,041	467,530	492,557	515,726	533,398
Population	1,152,873	1,164,315	1,206,007	1,258,778	1,313,042	1,363,429	1,401,797

English Proficiency by Language Spoken at Home

Percent of Persons 5 Years and Older



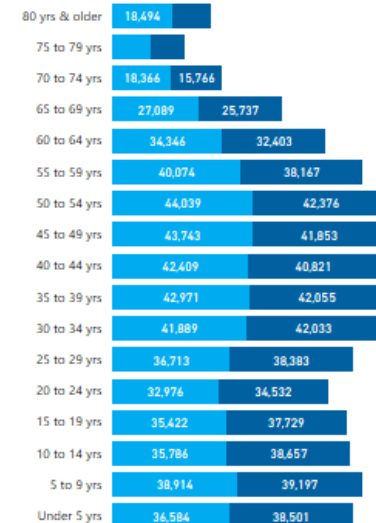
Language Spoken at Home



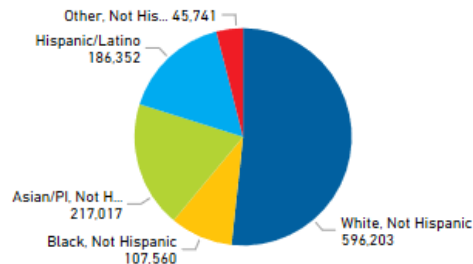
38.3%
of residents, age 5 and older, speak a language other than English at home.

Persons by Age and Sex

● Females ● Males



Persons by Race/Ethnicity



26.1%
of residents are children and youth under age 20 years.



49.5%
of residents are male.



12.2%
of residents are seniors age 65 years and older.



50.5%
of residents are female.

Source: Fairfax County Economic, Demographic and Statistical Research, 2018 data and U.S. Census Bureau, 2017 five-year American Community Survey data.
Prepared by: Anne Pickford Cahill, Economic, Demographic and Statistical Research.
Note: Estimates may not sum to totals due to rounding.

✓ Diversity

✓ Working Age Population

<https://www.fairfaxcounty.gov/demographics/fairfax-county-general-overview>



Fairfax County General Overview

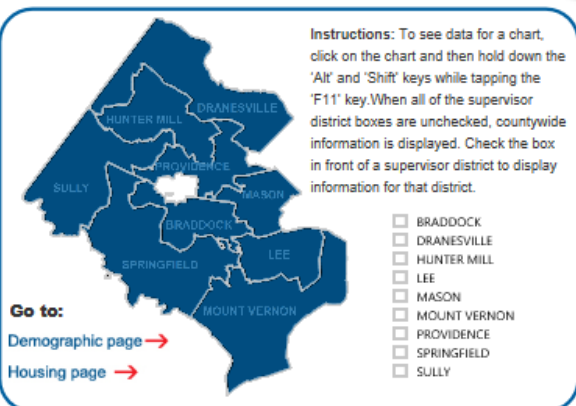
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Fairfax County, VA

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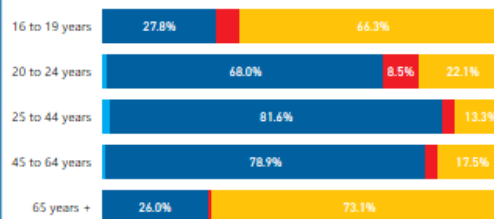
Economic Characteristics



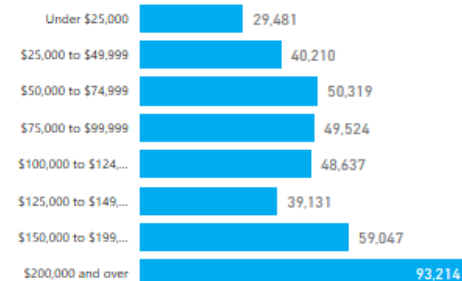
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Employment Status, Age 16 Years and Older

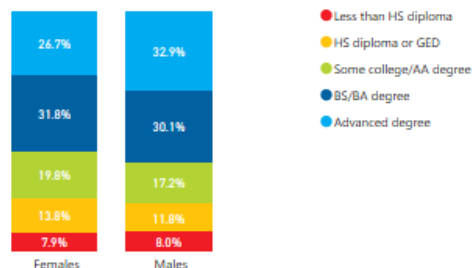
● Armed Forces
 ● Civilian-Employed
 ● Unemployed
 ● Not in Labor Force



Households by Income Range



Educational Attainment, Age 25 Years and Older



73.9%
of women age 20 to 64 years are employed.



3.5%
of women age 20 to 64 years are unemployed.

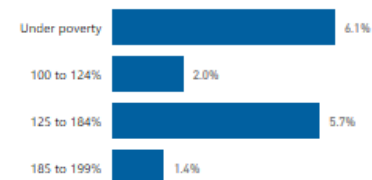


87.3%
of men age 20 to 64 years are employed.



3.4%
of men age 20 to 64 years are unemployed.

Percent of Persons by Poverty Ratio



Source: Fairfax County Economic, Demographic and Statistical Research, 2018 data and U.S. Census Bureau, 2017 five-year American Community Survey data.
 Prepared by: Anne Pickford Cahill, Economic, Demographic and Statistical Research.
 Note: Estimates may not sum to totals due to rounding.

✓ Vibrant Economy

✓ Strong Labor Force

<https://www.fairfaxcounty.gov/demographics/fairfax-county-general-overview>



Fairfax County General Overview

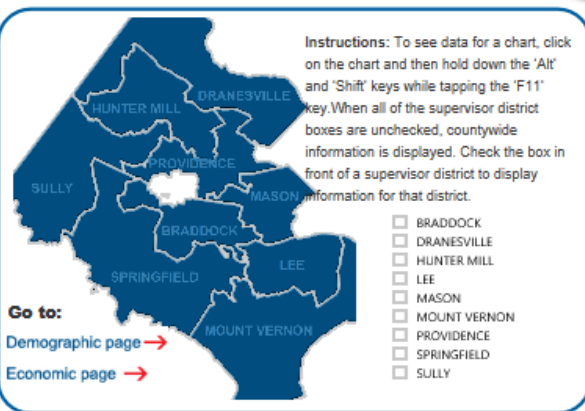
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Fairfax County, VA

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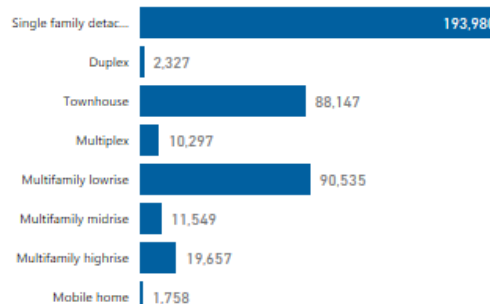
Housing Characteristics



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Housing Units by Type

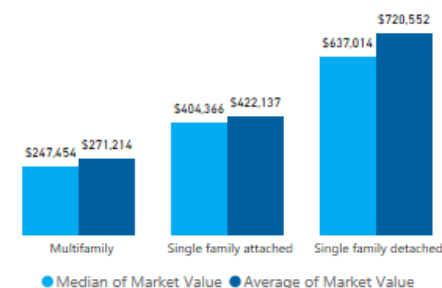
(Click on the bars in this graph to filter age and square feet by housing type.)



\$519,560

is the overall median market value of owned housing.

Median and Average Market Value of Owned Housing



\$63,969

is the annual income needed to rent the average market rate one bedroom apartment unit.

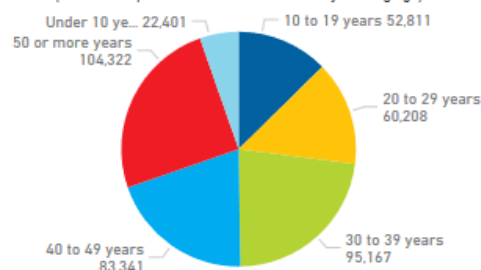
Rental Complex Housing

Unit Type	Year	Units	Market Rate Units	Average Rent	Vacancy Rate
One bedroom	2017	28,966	25,134	\$1,599	5.8%
Two bedroom	2017	32,805	27,291	\$1,901	5.1%
Other unit types	2017	17,867	14,797	\$1,907	5.0%
Total		79,638	67,222	\$1,789	5.3%

Rental complex units that are not market rate units include affordable dwelling units, workforce dwelling units and units in subsidized rental complexes.

Housing Units by Age

(Click on the pie slices to filter other charts by housing age)



1,600

square feet is the median size of owned housing.

Source: Fairfax County Economic, Demographic and Statistical Research, 2018 data unless otherwise noted.

Prepared by: Anne Pickford Cahill, Economic, Demographic and Statistical Research.

✓ Expensive

✓ Stable Housing Market

<https://www.fairfaxcounty.gov/demographics/fairfax-county-general-overview>



- How will the demographic diversity change?
- Will our economic growth last?
- Will we have adequate labor force and job opportunities?
- Are we going to have appropriate housing to accommodate residents?
- What should we plan for seniors and children?
- Will social and racial equity be ensured?

Where Do We Come From? What Are We? Where Are We Going?



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Population &
Age Distribution

Diversity
& Migration

Economics:
Industry &
Employment

Housing & Land
Development

Historical Trend Analysis

- Decennial Census Data
- ACS data including PUMS



U.S. Census and American
Community Survey microdata from
1850 to the present.



Tabular U.S. Census data and GIS
boundary files from 1790 to the present.

Source: IPUMS (Minnesota Population Center)

Integrated Parcel Lifecycle System (IPLS) Estimate & Forecast

- Administrative data
 - GIS spatial data
 - Tax Administration
 - Zoning
 - Development Plans
 - Permits & Inspections
 - Comprehensive plan & Plan Options
- Census & ACS Data
- Additional Data
 - Water consumption
 - FC Public Schools
 - Group Quarters

Model developed by
Fairfax County



Cohort Component Method for Population Projection

- Natality Data for Birth Rate
- Death Data for Survival Rate
Source: CDC Wonder
- Migration Rate
Calculated with Forward Residual Method
 - Census or 5-year ACS data
 - Birth and death data for expected population from natural growth

IPLS
Forecast



Employment Forecasts

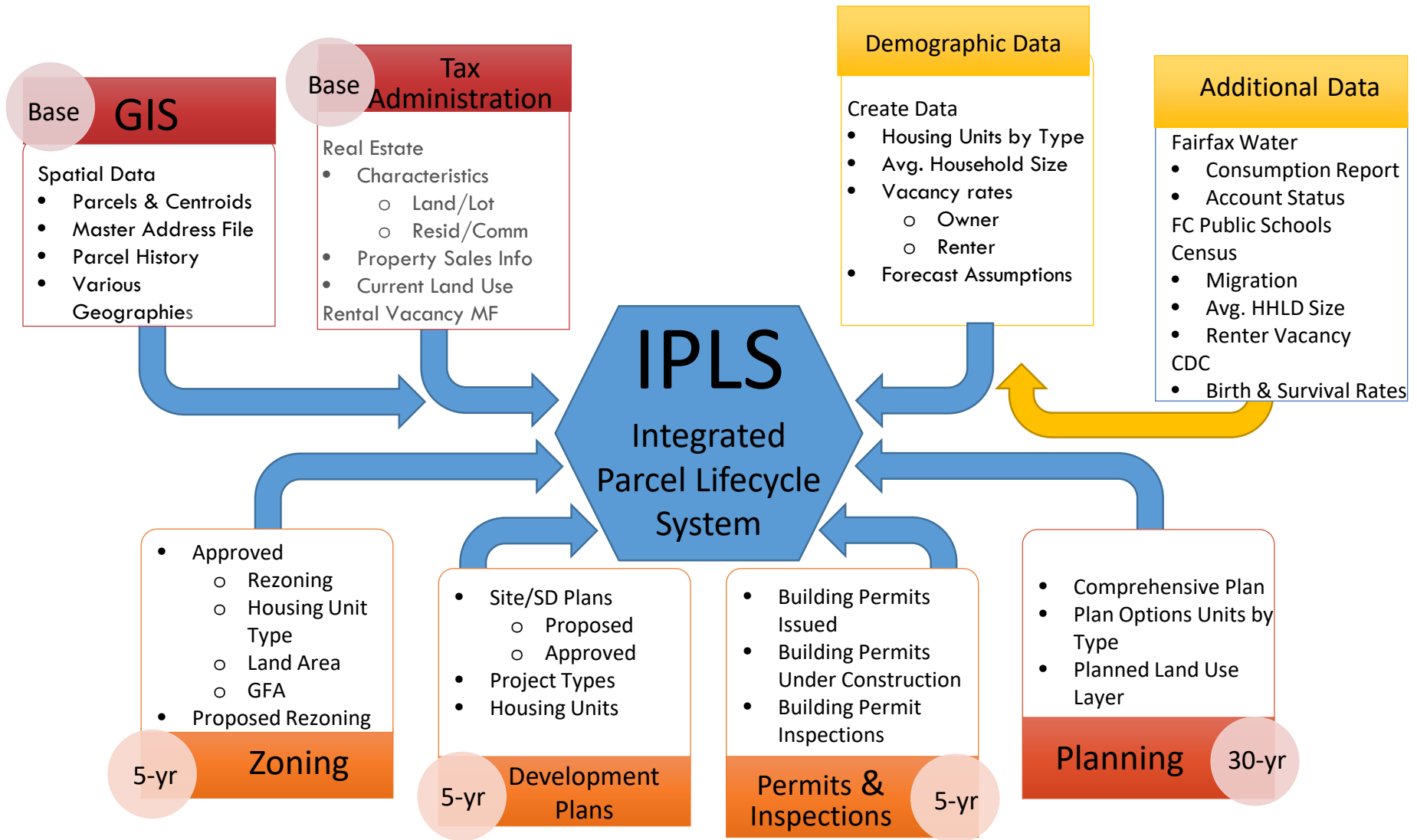
- Fairfax County Demographic Reports
- Regional forecast model output
- VEC historic data
- Direct Info from Institutional Employers
- Administration Land Development Data
- BLS Employment Survey Model
developed by Fairfax County



1850

2017

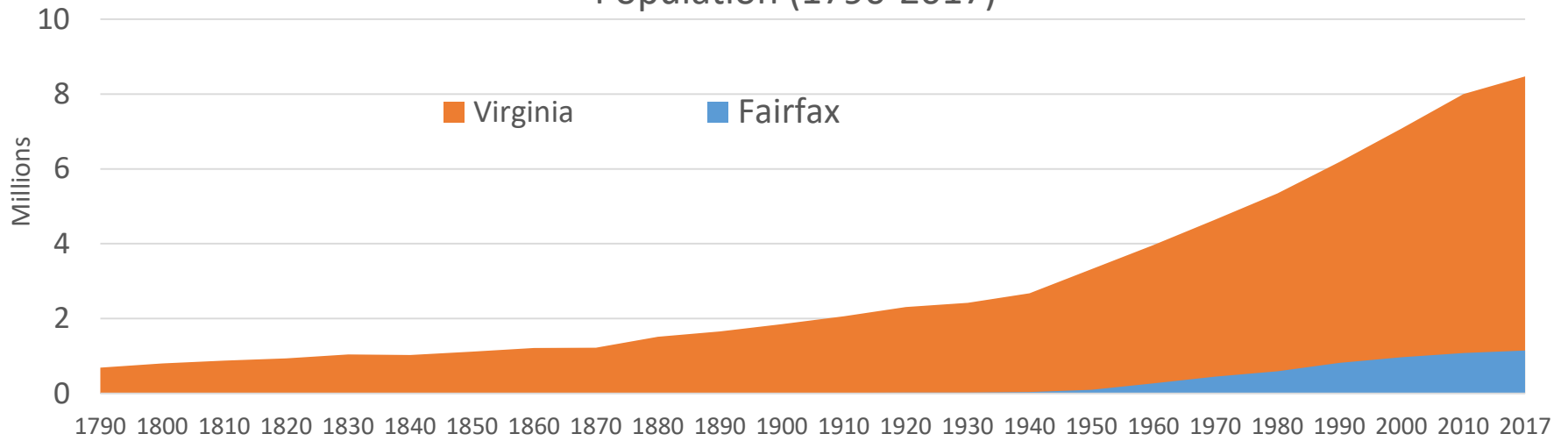
2045



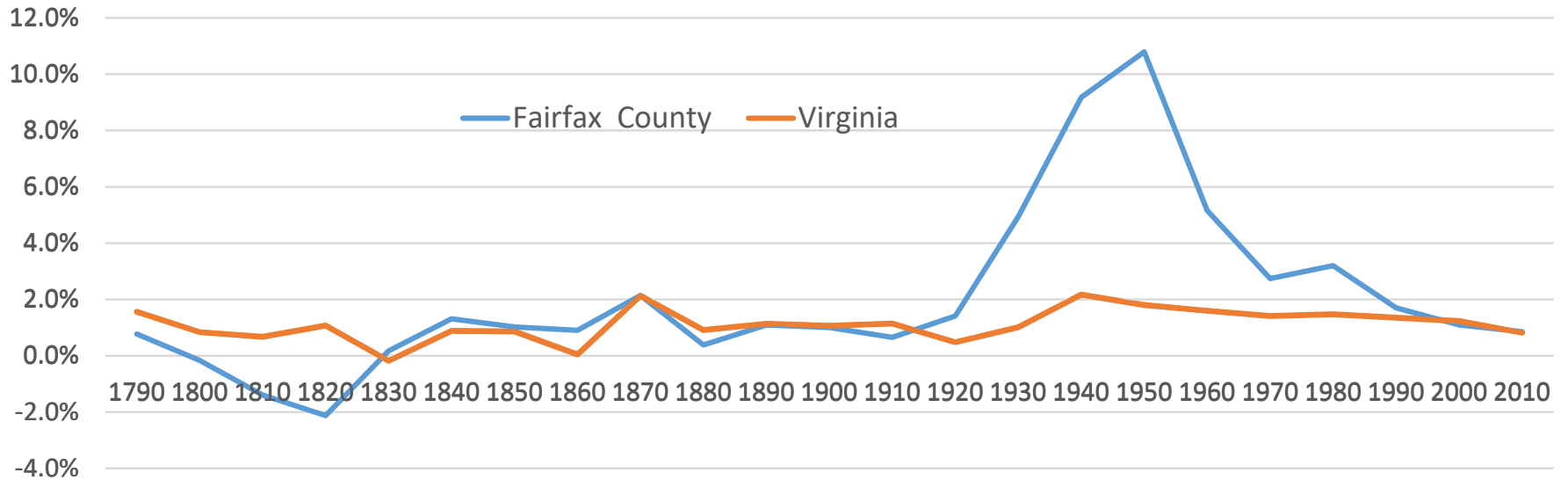
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Population (1790-2017)

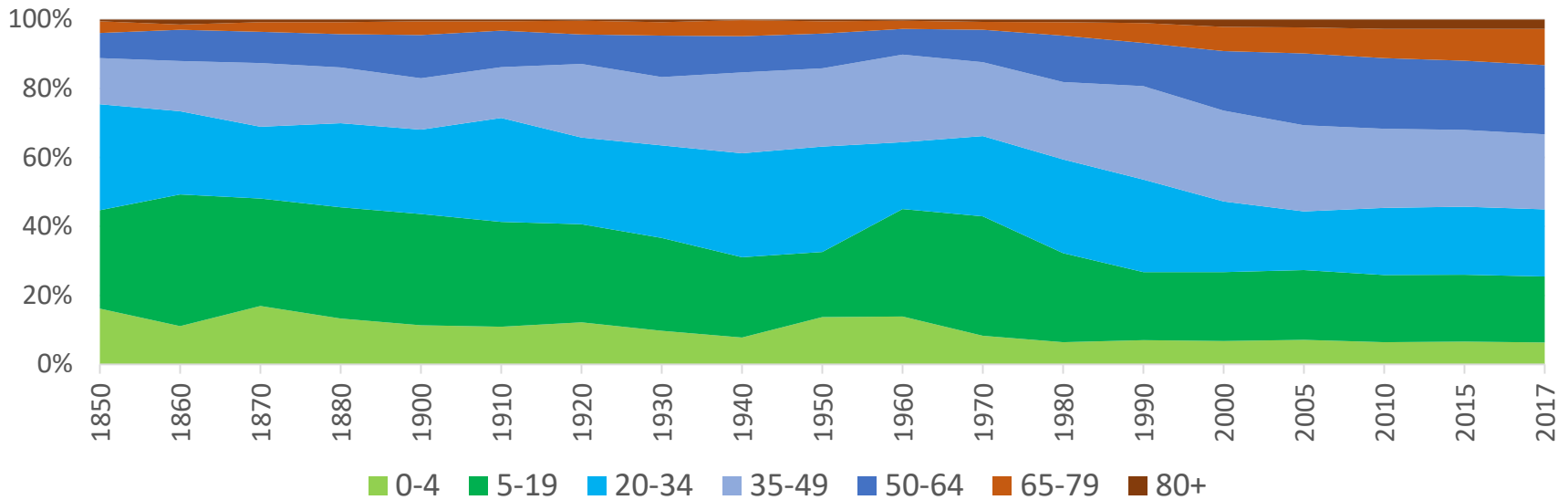


Average Annual Population Change Rate (1790-2017)

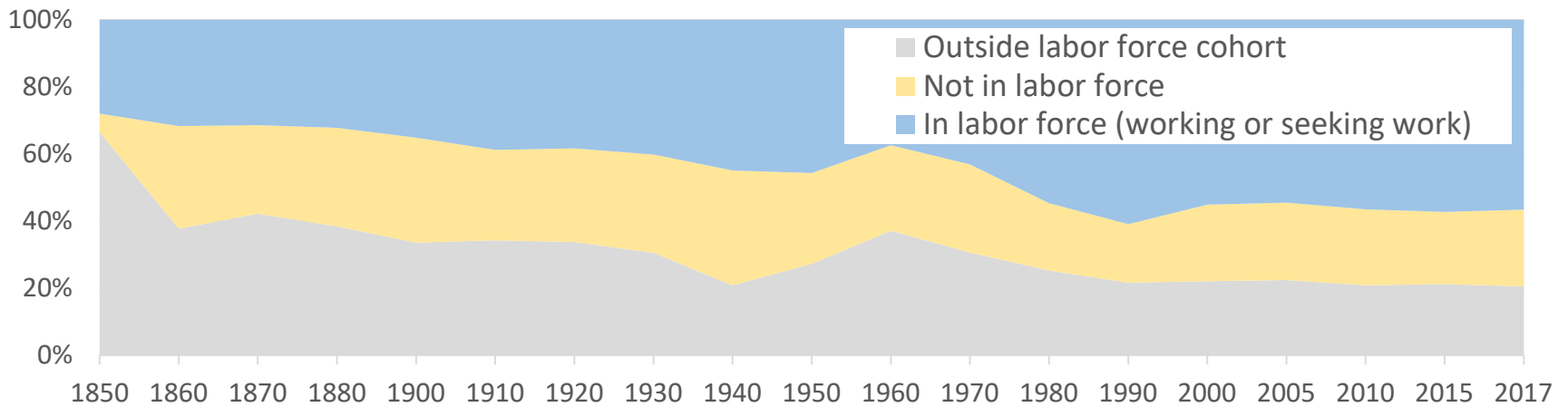


Source: IPUMS NHGIS.

Age Distribution in Fairfax County, VA (1850-2017)



Labor force distributions in Fairfax County, VA (1850-2017)

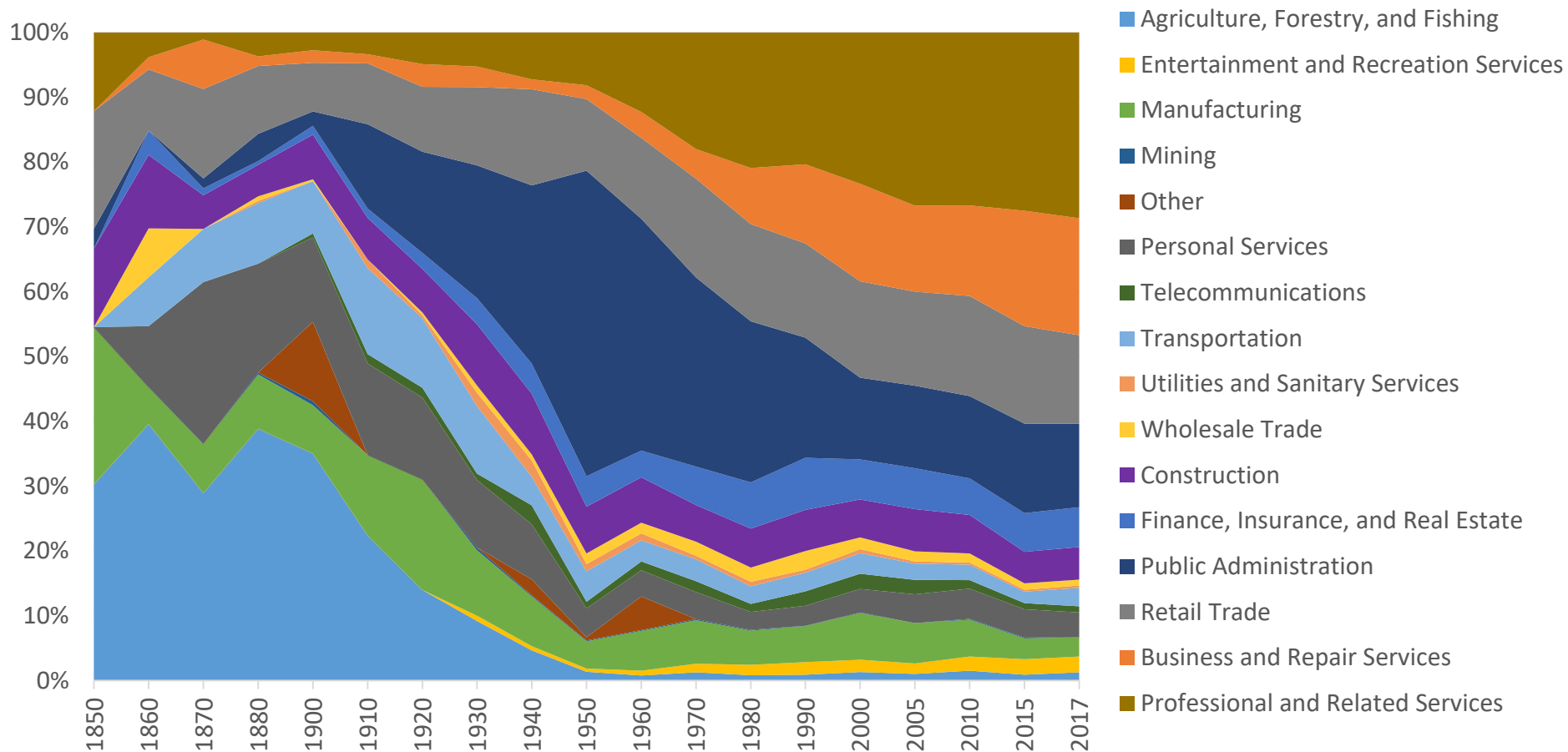


Labor force cohort:

1850: Males Age 16+; 1860 - 1930 & 1980 - 2017: Persons Age 16+; 1940 – 1970: Persons Age 14+

Source: IPUMS USA.

Employment by Industry in Fairfax, VA (1850-2017)



1850

- Agriculture, Forestry, and Fishing
- Retail Trade
- Manufacturing
- Construction
- Professional and Related Services

1950

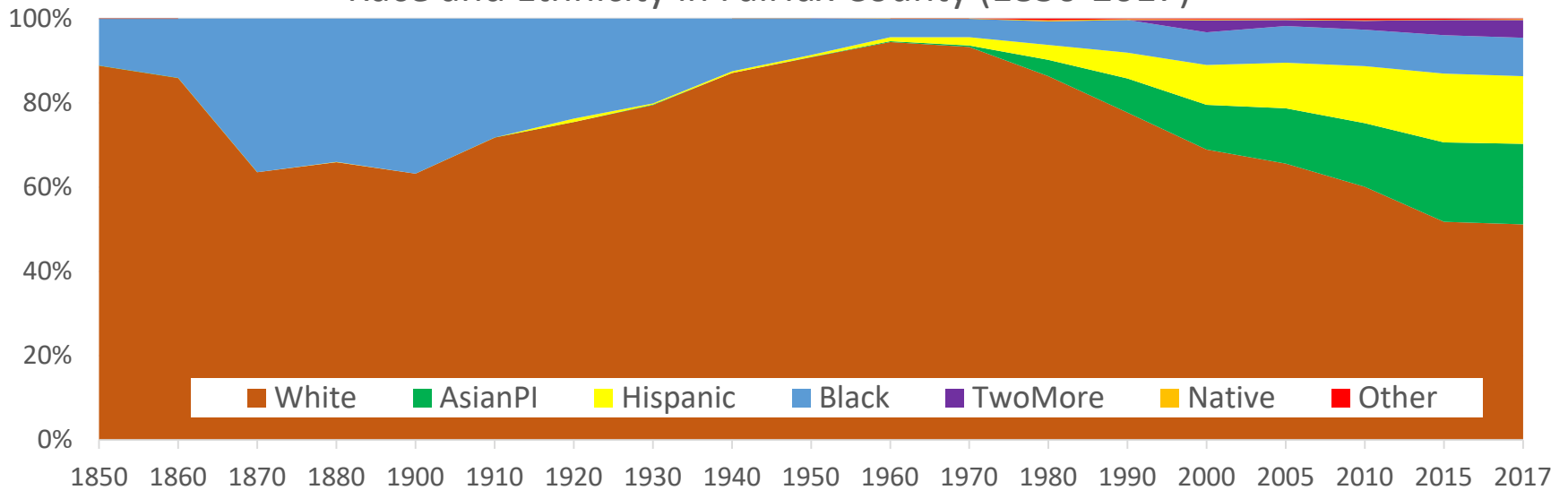
- Public Administration
- Retail Trade
- Professional and Related Services
- Construction
- Finance, Insurance, and Real Estate

2017

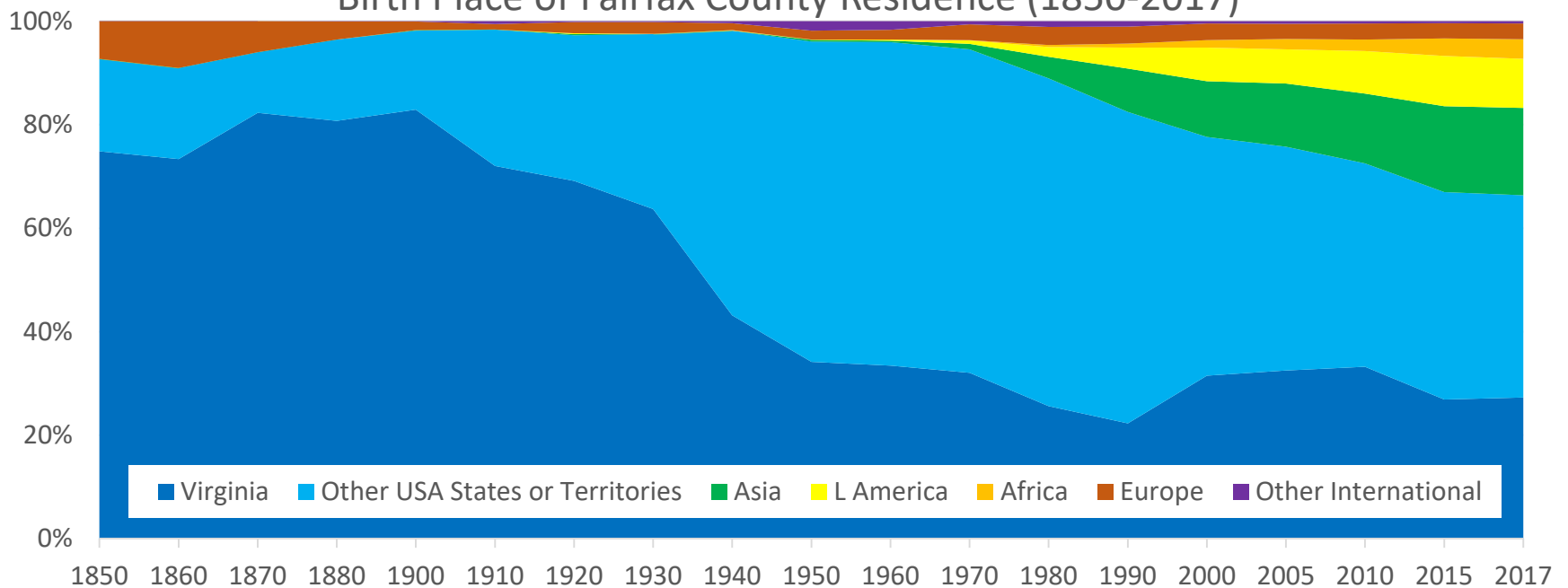
- Professional and Related Services
- Business and Repair Services
- Retail Trade
- Public Administration
- Finance, Insurance, and Real Estate

Source: IPUMS USA.

Race and Ethnicity in Fairfax County (1850-2017)

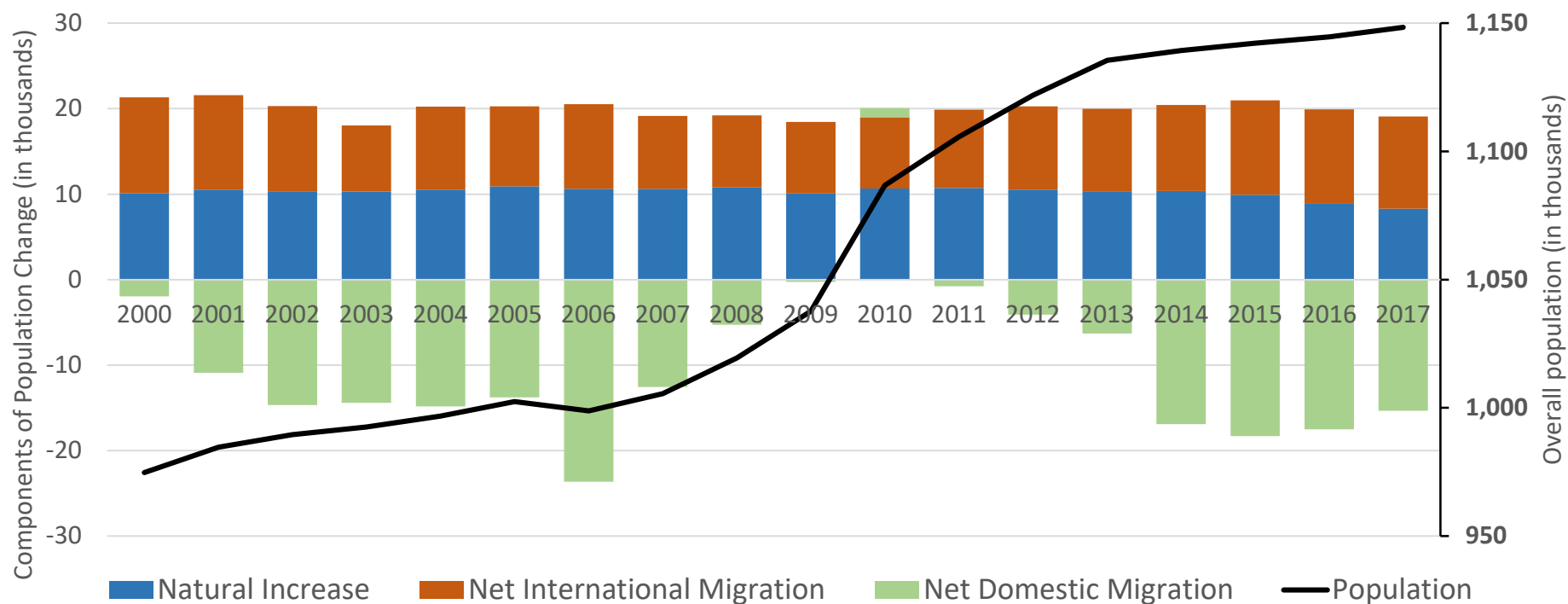


Birth Place of Fairfax County Residence (1850-2017)



Source: IPUMS USA.

Components of Population Change, Fairfax County, VA (2000-2017)



Source: US Census Bureau, Vintage 2000-2017.

Historical Trend Analysis



- From 1850 to present, Fairfax County's population has been increasing, however, the growth varies over time.



- Rapid population growth took off in 1930s. Annual growth rate peaked at nearly 10% from 1940's through 1950's. It gradually slowed in the next few decades and plateaued around 1% starting 2010.



- In Fairfax County, Baby boomers (1946 – 1964) contributed to the population growth.



- From 1850s to present, the types of job in Fairfax County have changed significantly due to technology advancement. The most jobs were in Agricultural industry until 1910's; followed by Public Administration from 1920's-1980's, and then Professional and Related Services since 1990's.

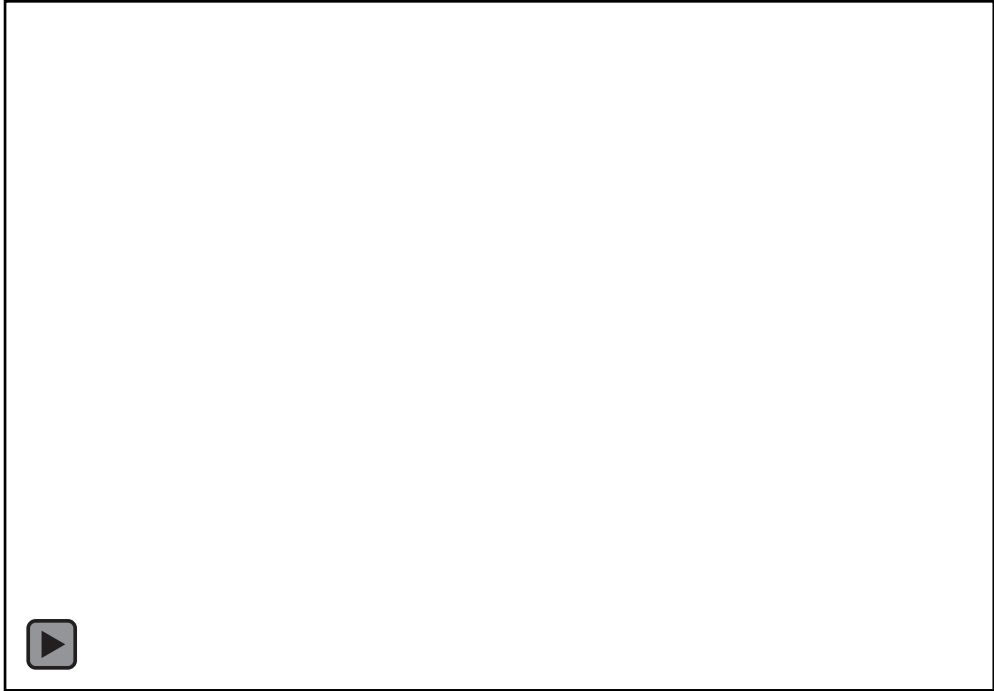


- Since 1950s, Fairfax County has a clear growth in diversity of race and ethnicity, from both inter-state and international migration; in the recent two decades, Asian and Pacific Islanders had the highest growth, followed closely by Hispanics, and mixed races. This led to a proportional decline in White (not Hispanic). Percentage of Black/African Americans remained stable.

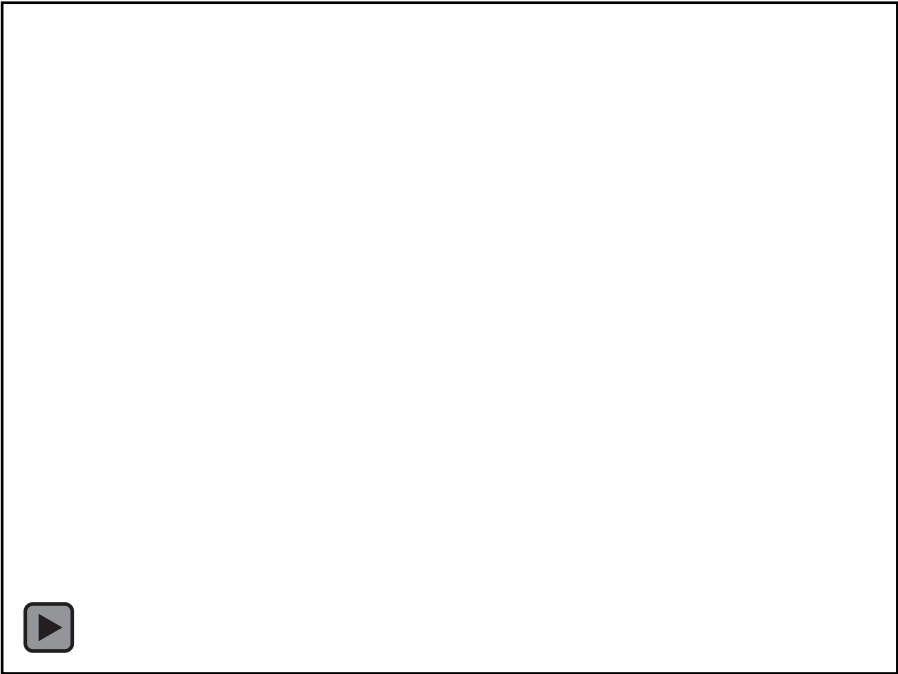
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Historical Trend



Future Forecast



Source: Department of Management and Budget, Economic, Demographic, and Statistical Research, Fairfax County, VA.

Future Forecast

No Migration

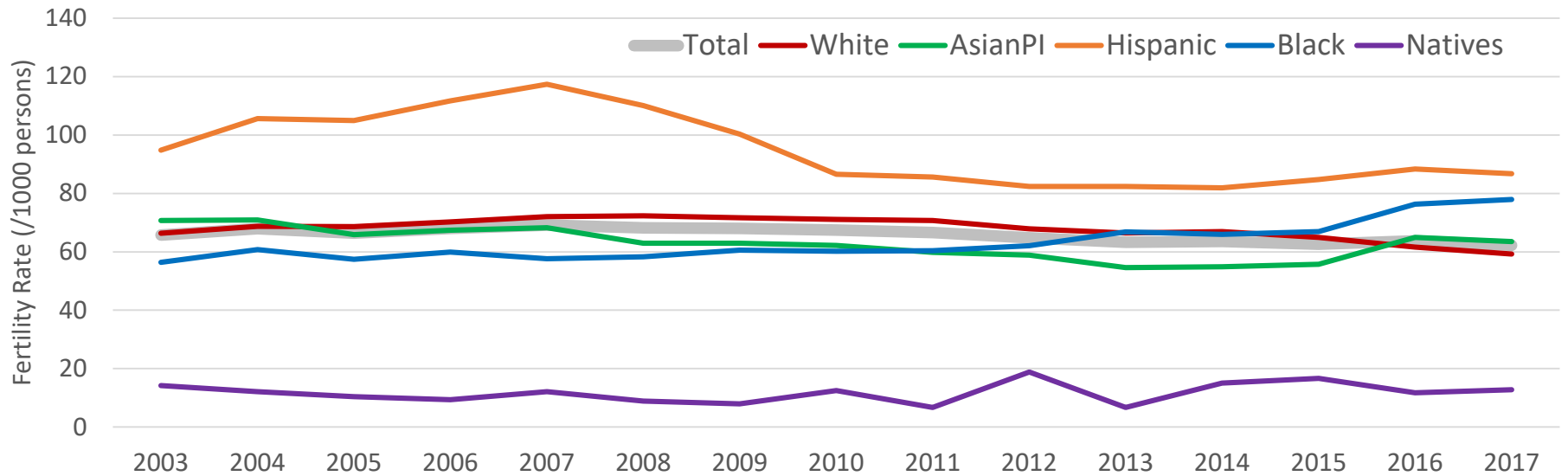
High Birth Rate

Low Birth Rate

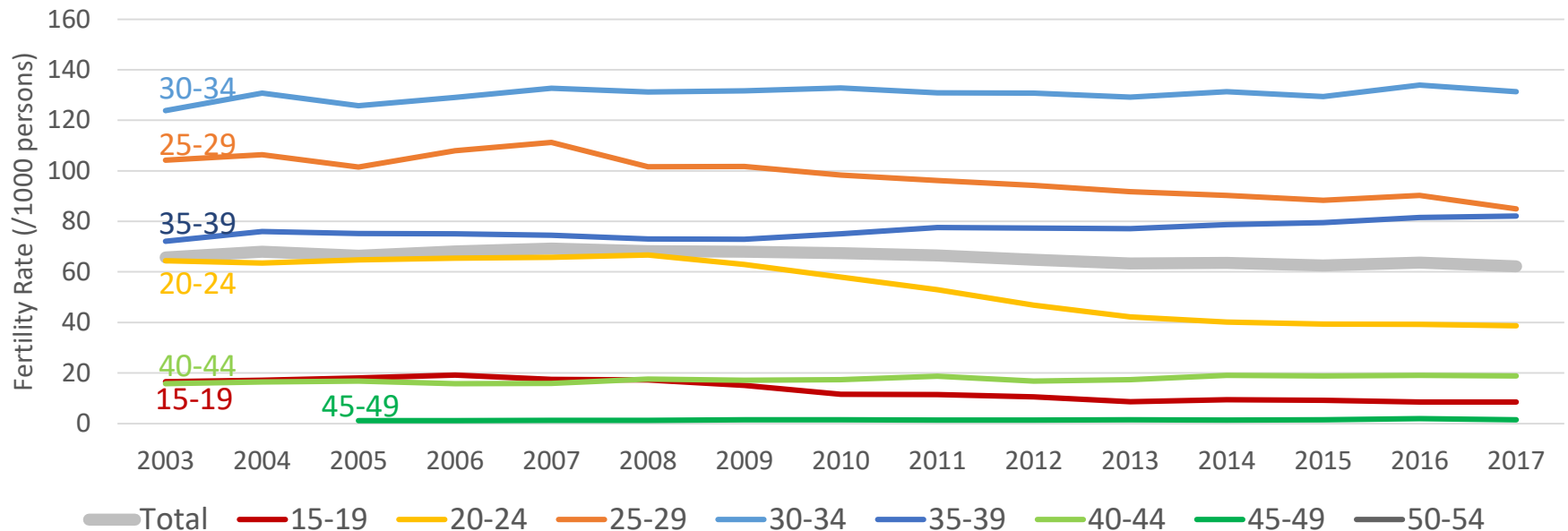


Source: Department of Management and Budget, Economic, Demographic, and Statistical Research, Fairfax County, VA.

Fertility Rate by Race and Ethnicity in Fairfax County, VA (2003-2017)



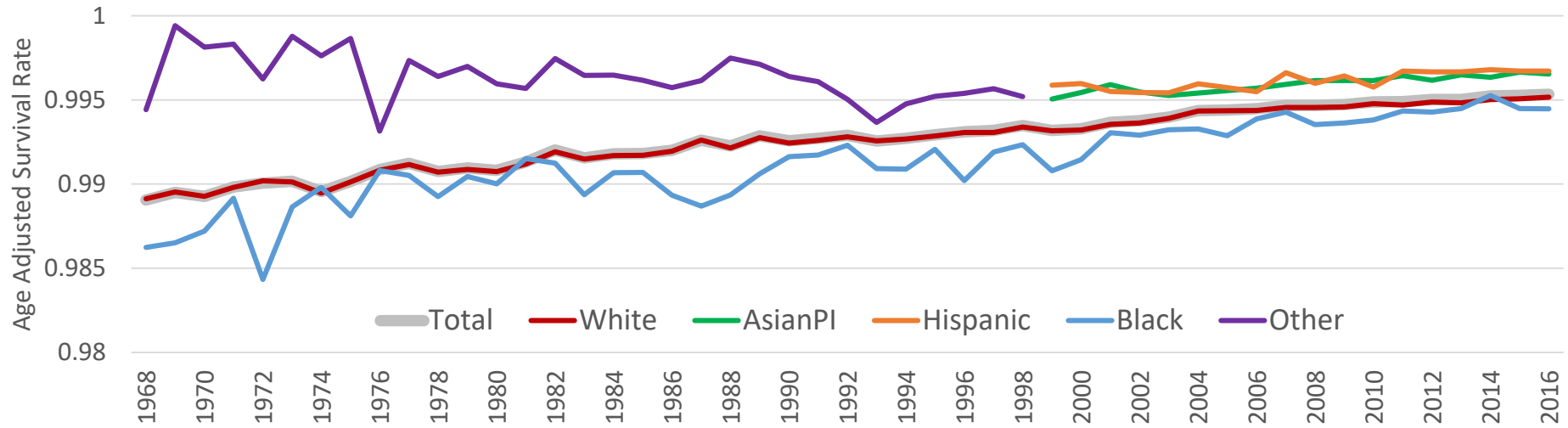
Fertility Rate by Age Group in Fairfax County, VA (2003-2017)



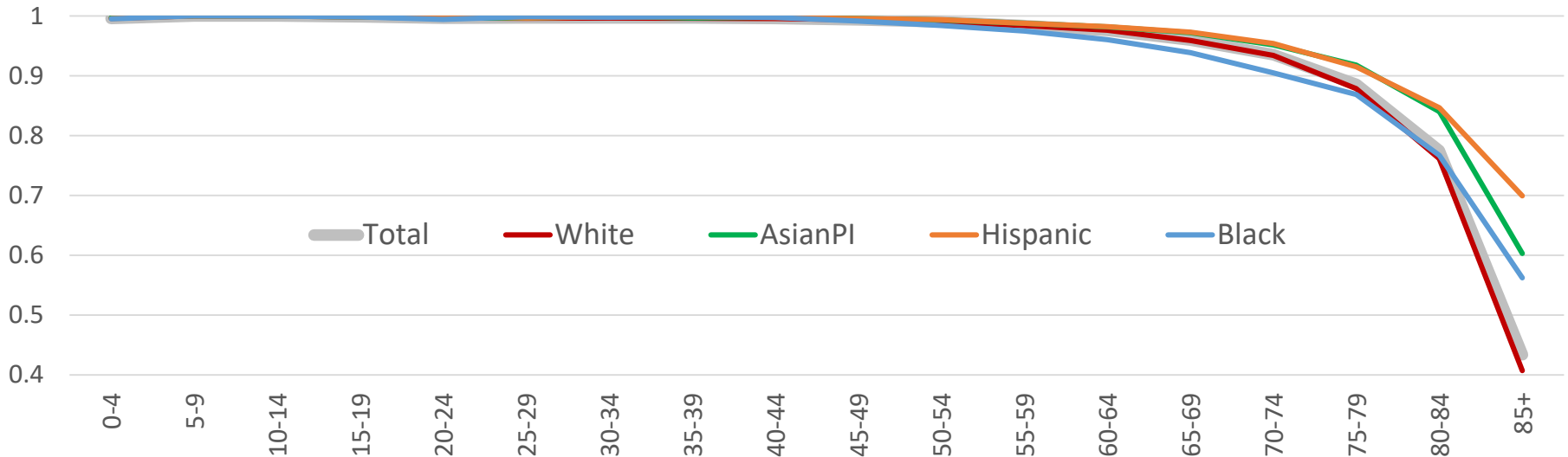
Note: Hispanic includes all races.

Source: CDC WONDER Online Database, 2018.

Survival Rate by Race and Ethnicity in Fairfax County, VA (1968-2016)

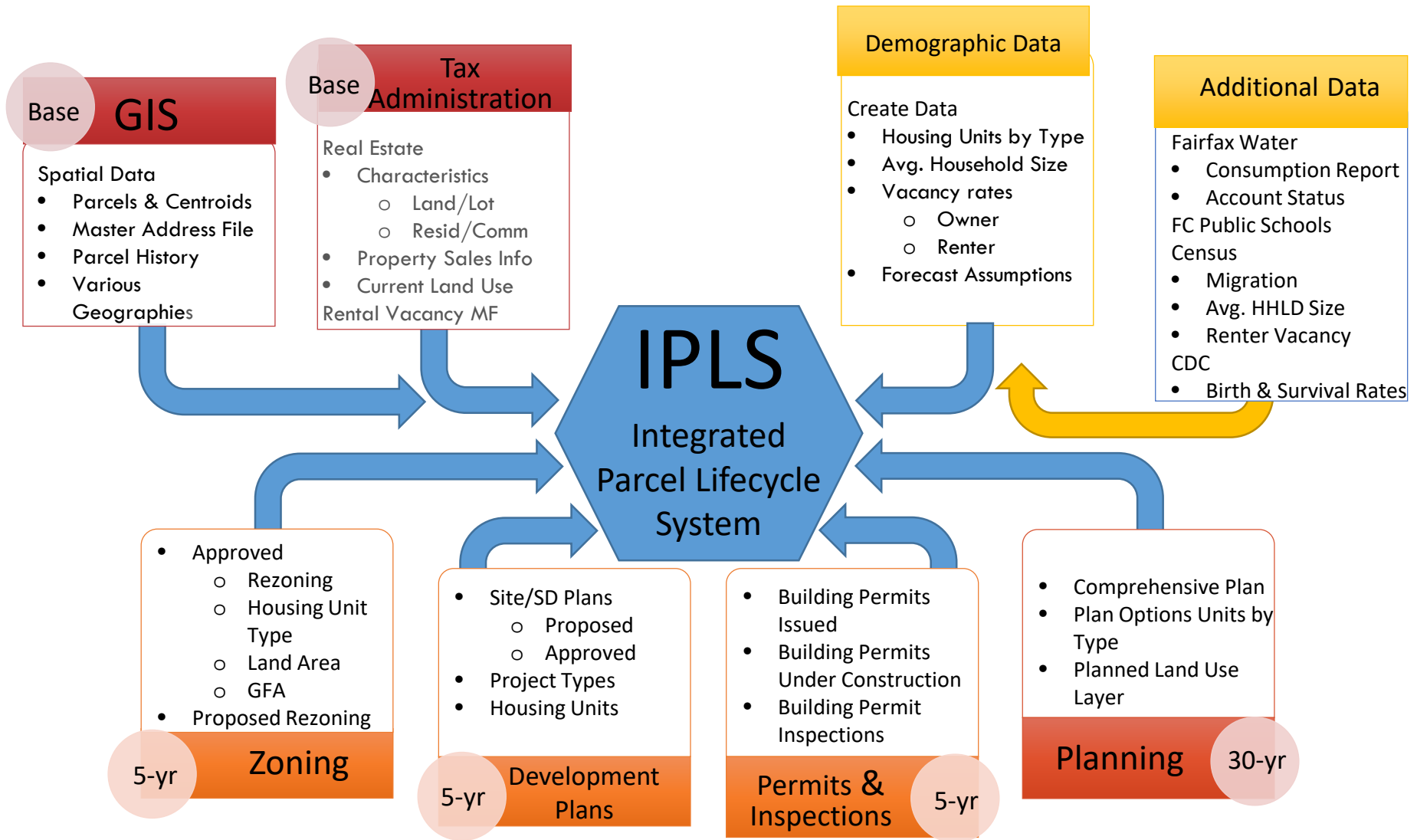


Five-year Survival Rate by Age Group and Race and Ethnicity in Fairfax County, VA in the recent 5 years (2012-2016)



Note: Hispanic includes all races.

Source: CDC WONDER Online Database, 2018.



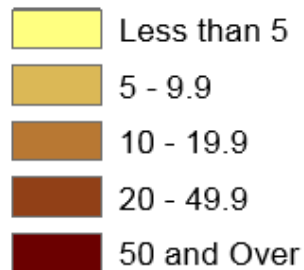
Fairfax County, Virginia
January 2018



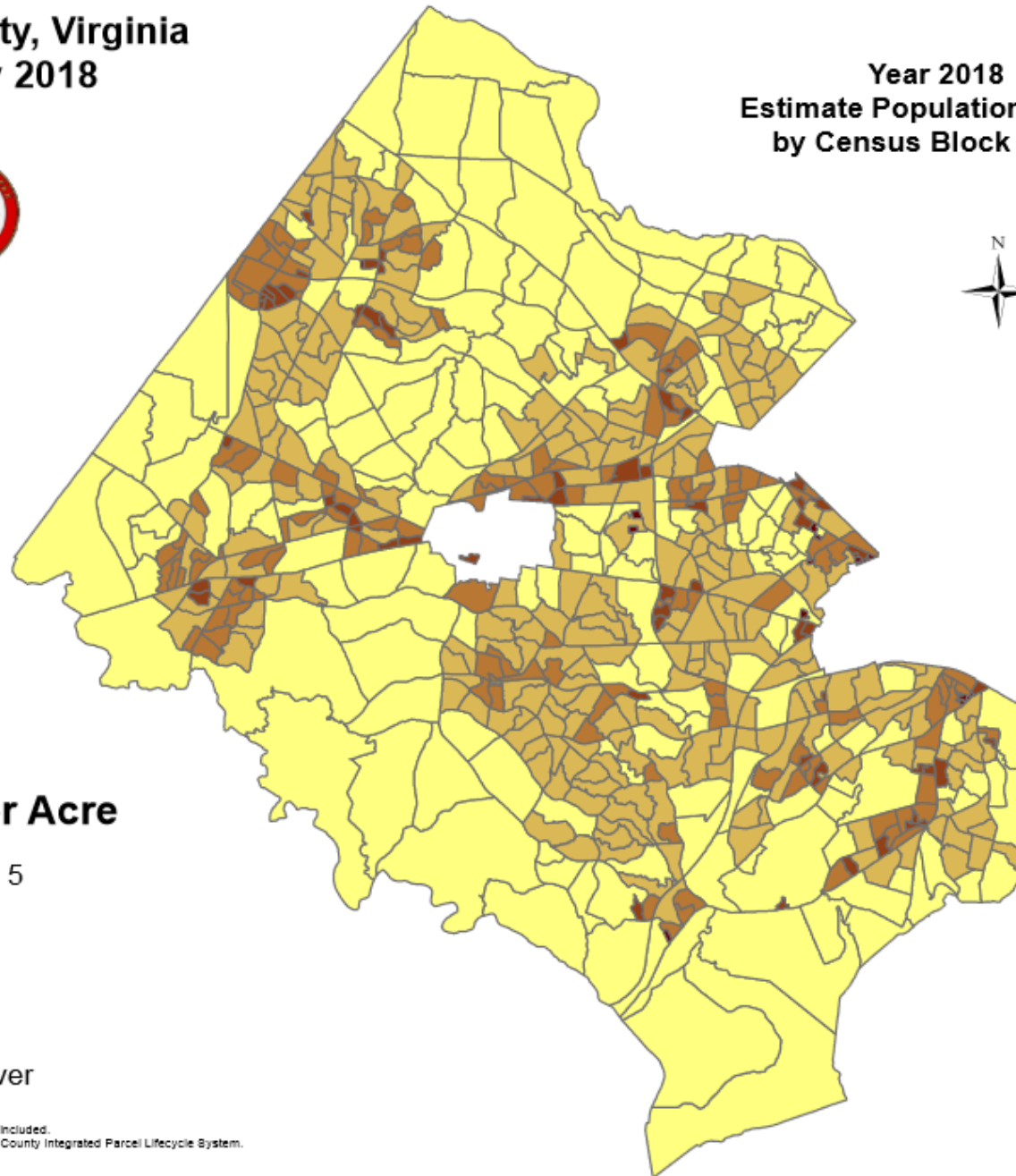
Year 2018
Estimate Population Density
by Census Block Group



Persons Per Acre



Note: Population of City of Fairfax is not included.
Source: Population Density from Fairfax County Integrated Parcel Lifecycle System.



Source: Demographic Reports, 2018. County of Fairfax, Virginia.

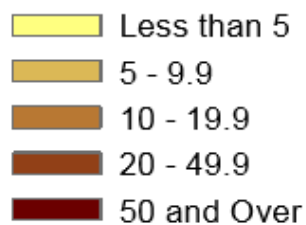
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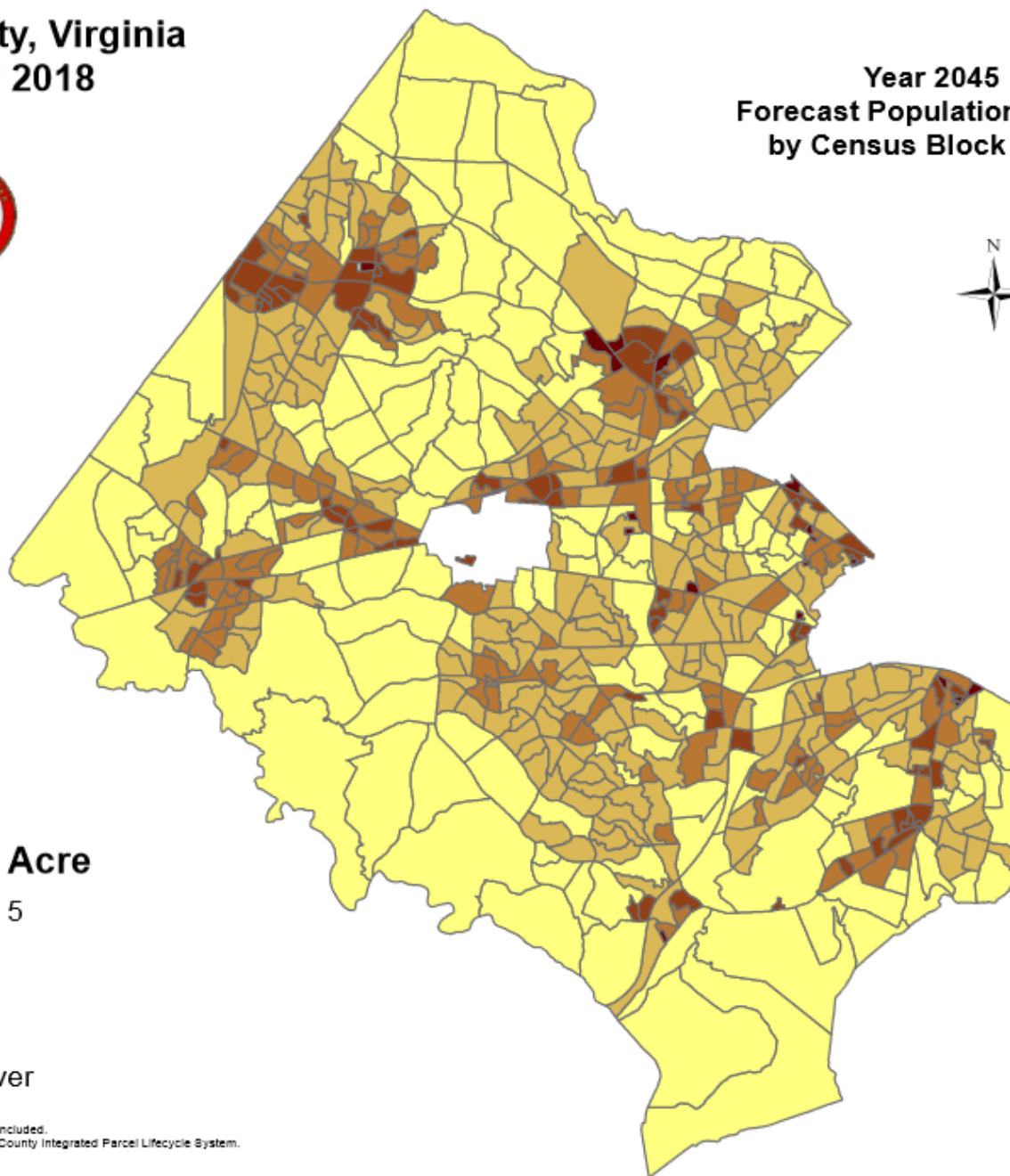
Year 2045
Forecast Population Density
by Census Block Group



Persons Per Acre



Note: Population of City of Fairfax is not included.
Source: Population Density from Fairfax County Integrated Parcel Lifecycle System.



Source: Demographic Reports, 2018. County of Fairfax, Virginia.






Fairfax County, Virginia
January 2018



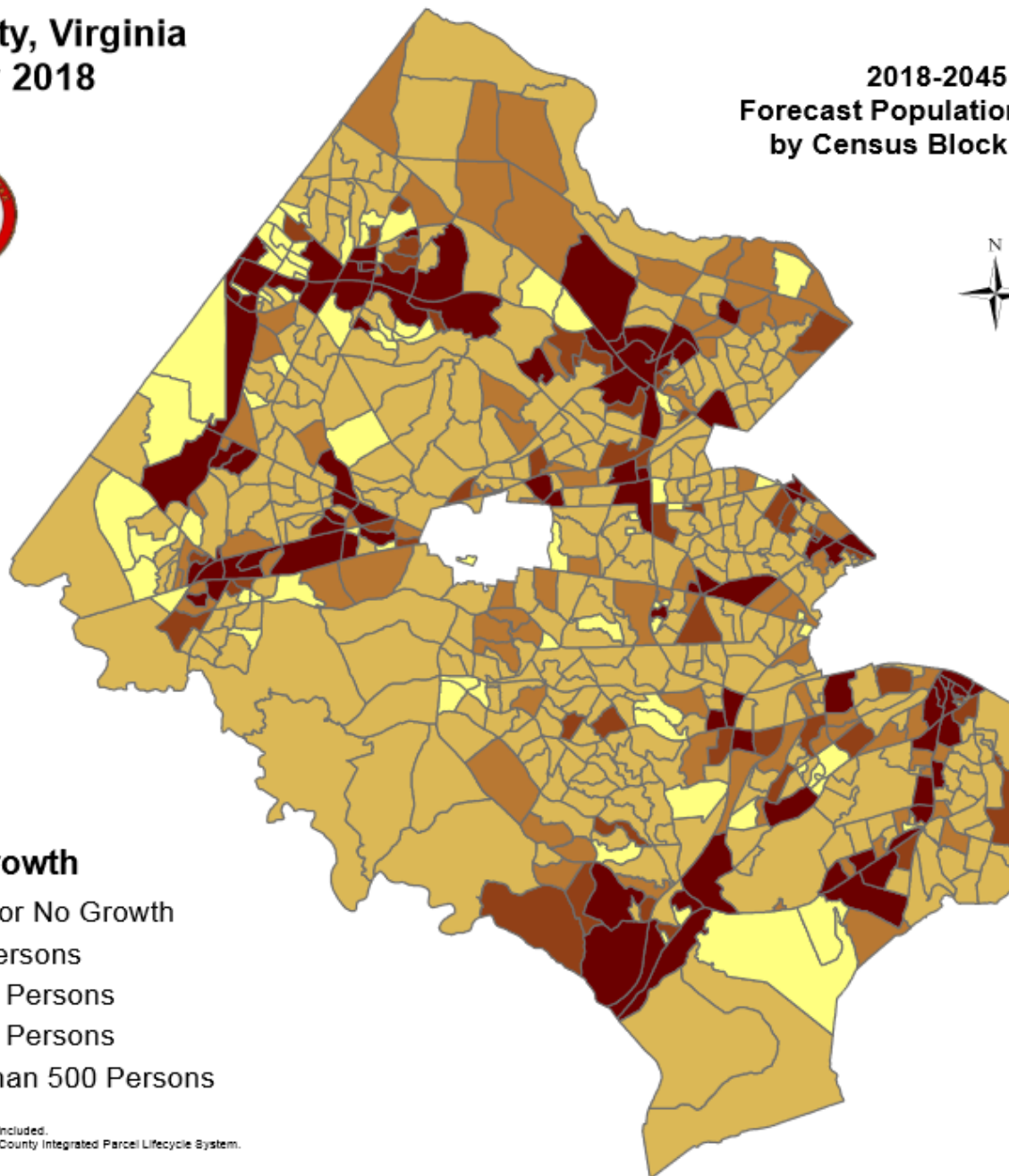
2018-2045
Forecast Population Growth
by Census Block Group



Population Growth

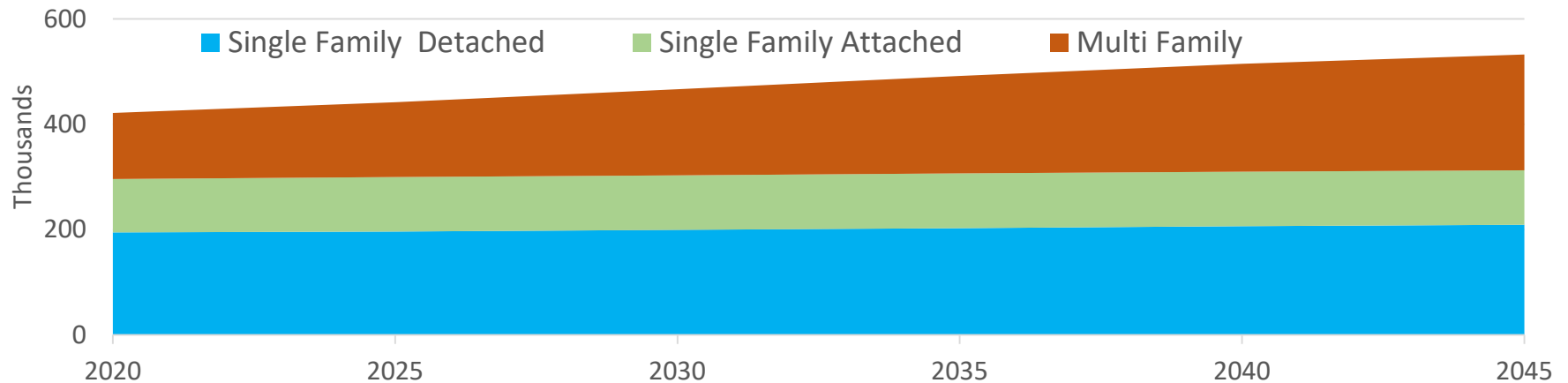
-  Negative or No Growth
-  1 - 100 Persons
-  101 - 250 Persons
-  251 - 500 Persons
-  Greater than 500 Persons

Note: Population of City of Fairfax is not included.
Source: Population Density from Fairfax County Integrated Parcel Lifecycle System.



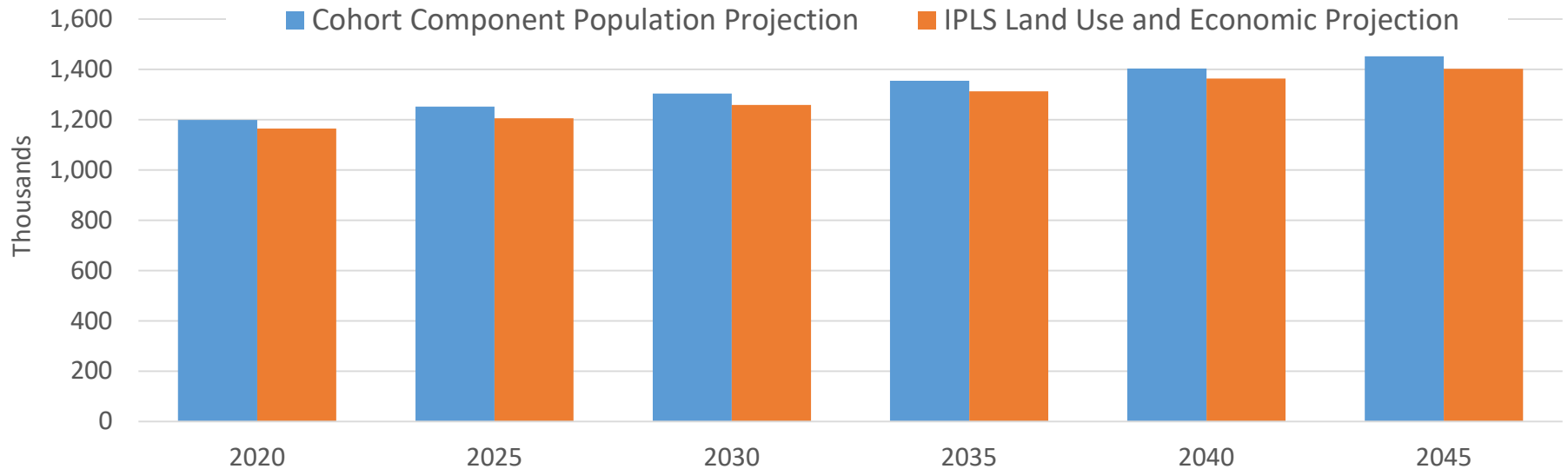
Source: Demographic Reports, 2018. County of Fairfax, Virginia.

Housing Unit Forecast in Fairfax County, VA (2020-2045)



Source: Demographic Reports, 2018. County of Fairfax, Virginia.

Forecast Population by Method in Fairfax County, VA (2020-2045)



Source: Department of Management and Budget, Economic, Demographic, and Statistical Research, Fairfax County, VA.

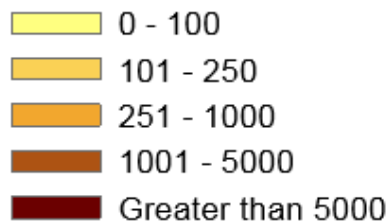
Fairfax County, Virginia
January 2018



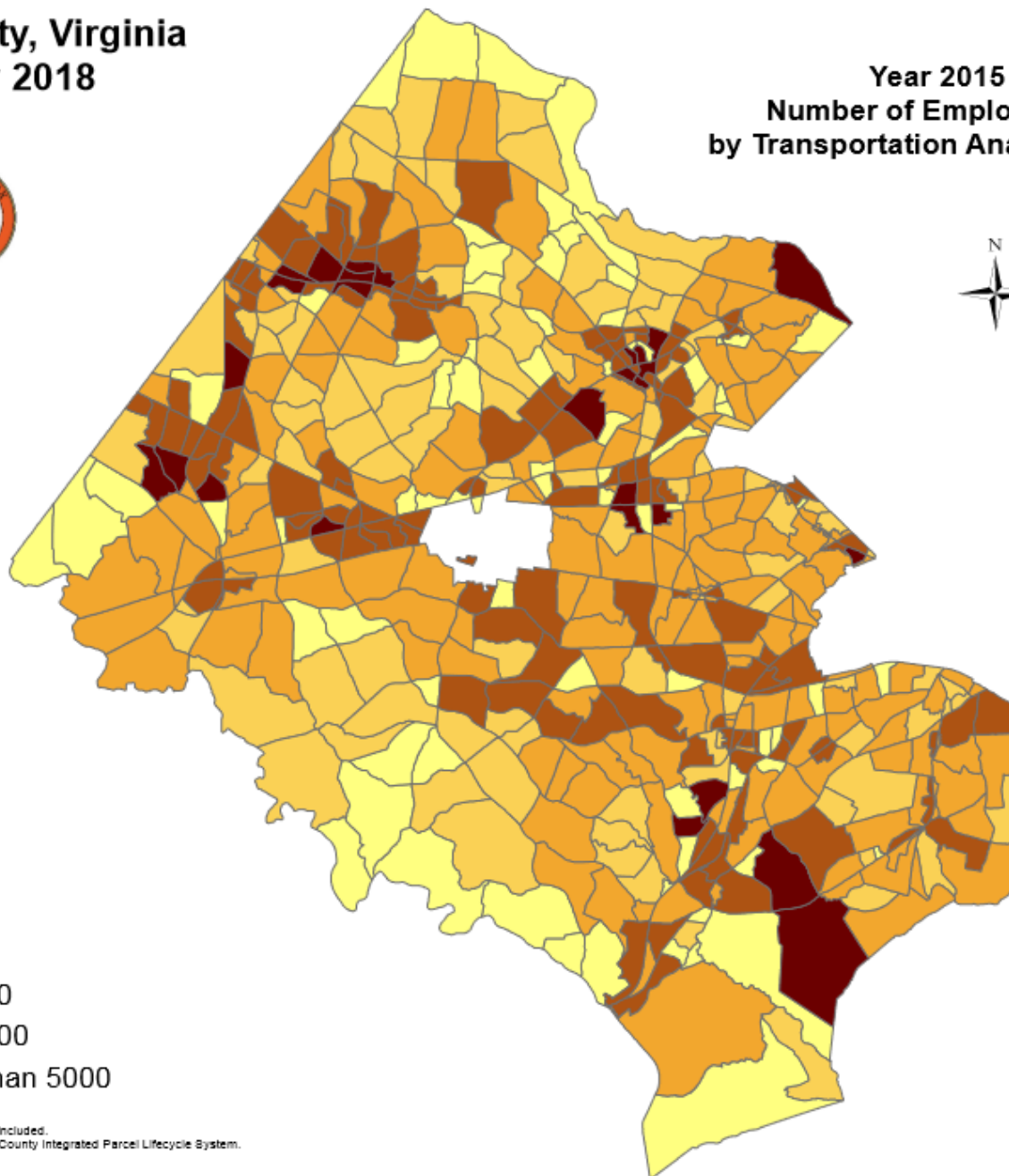
Year 2015
Number of Employment
by Transportation Analysis Zone



Employment



Note: Population of City of Fairfax is not included.
Source: Population Density from Fairfax County Integrated Parcel Lifecycle System.



Source: Department of Planning and Zoning, Fairfax County, Virginia. Employment Forecast for MWCOC, Round 9.1.

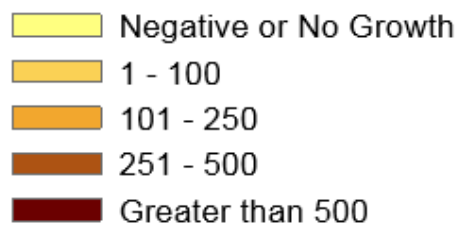
Fairfax County, Virginia
January 2018



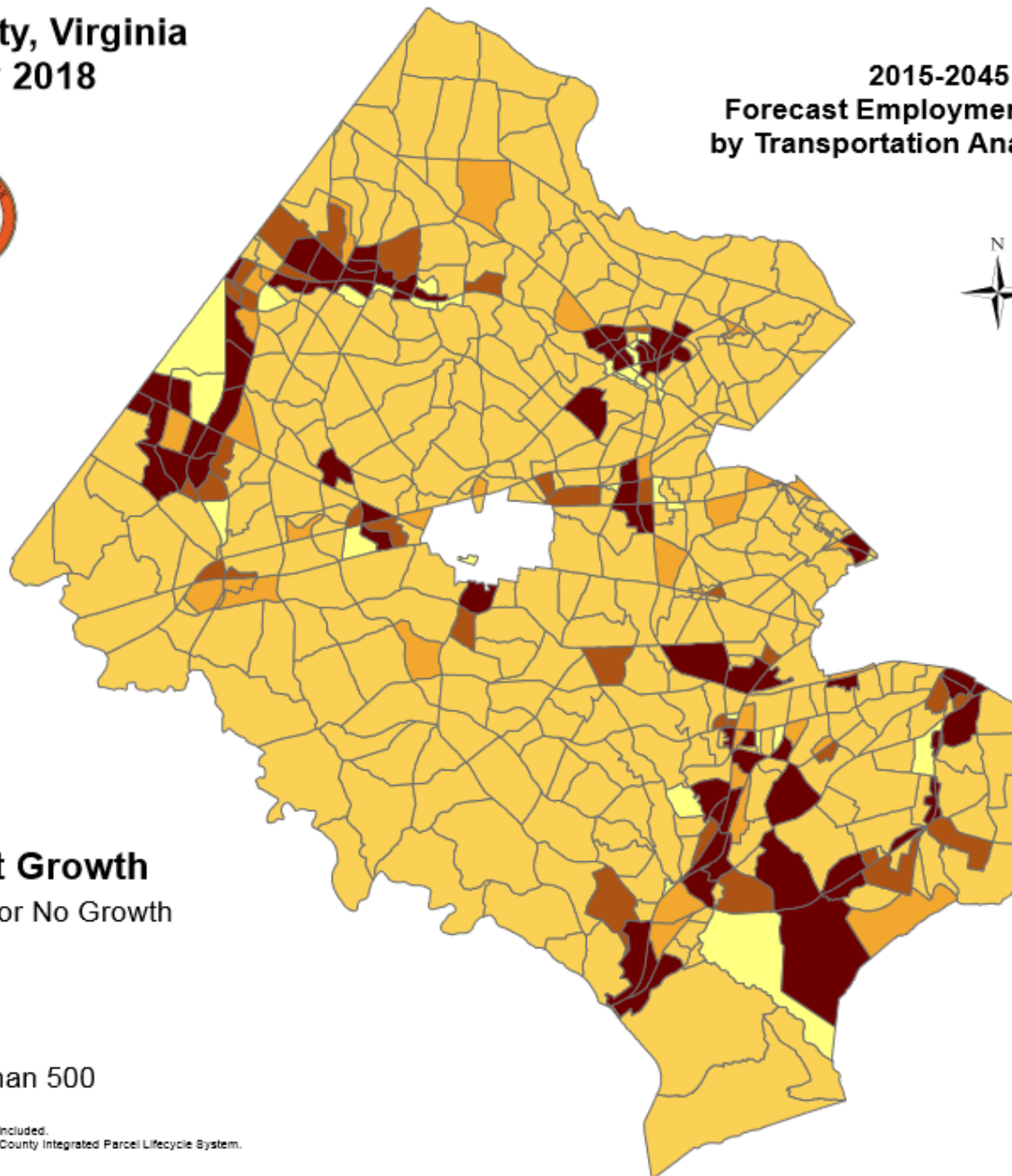
2015-2045
Forecast Employment Growth
by Transportation Analysis Zone



Employment Growth

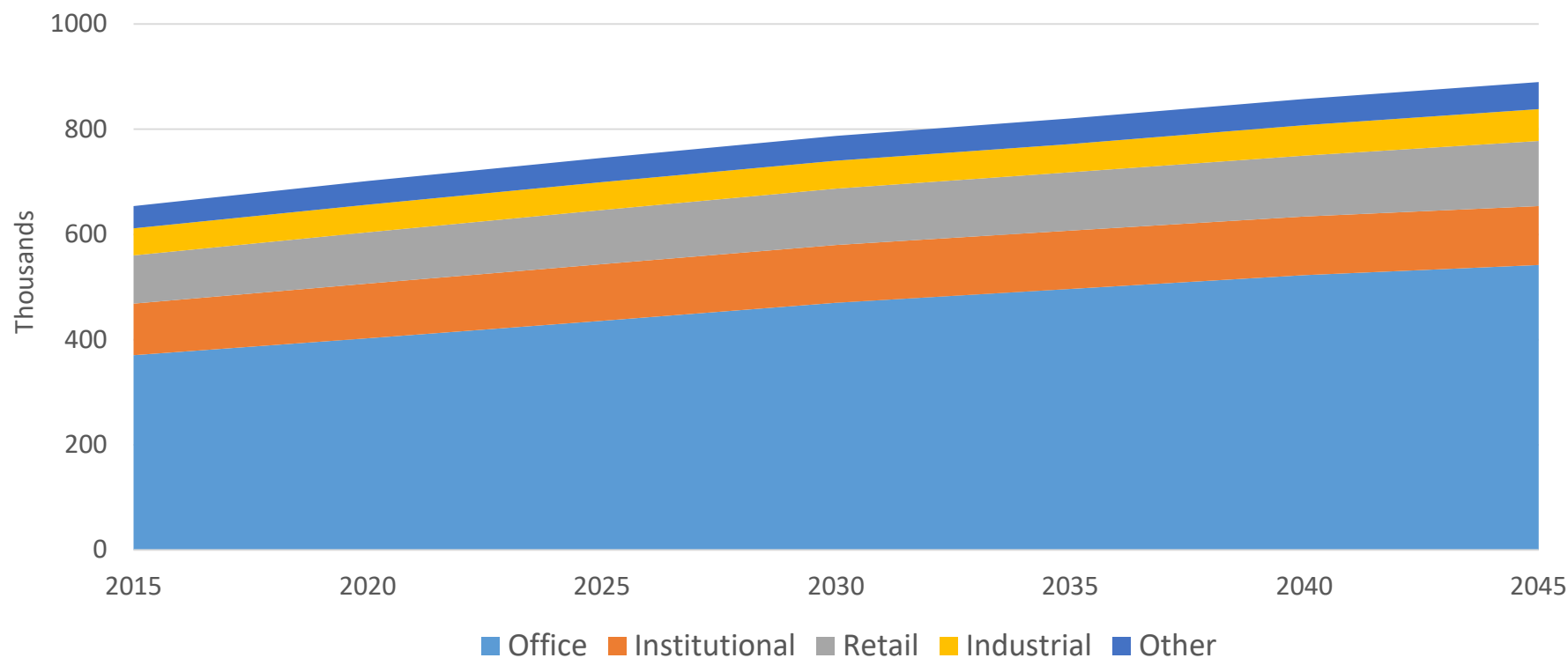


Note: Population of City of Fairfax is not included.
Source: Population Density from Fairfax County Integrated Parcel Lifecycle System.



Source: Department of Planning and Zoning, Fairfax County, Virginia. Employment Forecast for MWCOC, Round 9.1.

Employment Estimate and Forecast for Fairfax County, VA (2015-2045)



Source: Department of Planning and Zoning, Fairfax County, Virginia. Employment Forecast for MWCOG, Round 9.1.

Forecast: a Look at Future



- Assuming the current rates of birth, death and migration, Fairfax County will maintain a stable and gradual population growth. For the next 30 years, the age composition will remain similar to the current state with a slight increase in seniors (65+). The working age population will remain healthy, however, the younger age group (0-19) will have a slight decline.



- Migration is the major contributor in maintaining population growth and balanced age composition.



- Overall birth or fertility rates has kept Fairfax County stable since 2000's. The age of mother for new births has a slight increase; and there are variation in birth rate among different population groups.



- Survival rate increased in general population since 1960's when CDC WONDER data started available. Hispanics and Asian have the highest survival rate in later ages.



- The housing growth will keep up with the population growth. The multifamily will account for most of the housing growth, in a higher concentration in transit-oriented corridors.



- Employment is projected to grow steadily, with mostly professional and service-oriented jobs.

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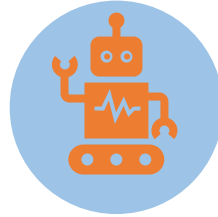
Conclusions



The outlook is healthy for population and job growth.



Migration is a major contributor in our population growth and in stabilizing age composition.



Types of job have changed due to technological advancement and higher educational attainment



Pattern of birth and death are changing – in the recent decades, the age of mother giving birth has gone up, while the mortality rate has gone down. There are variations among different population groups.

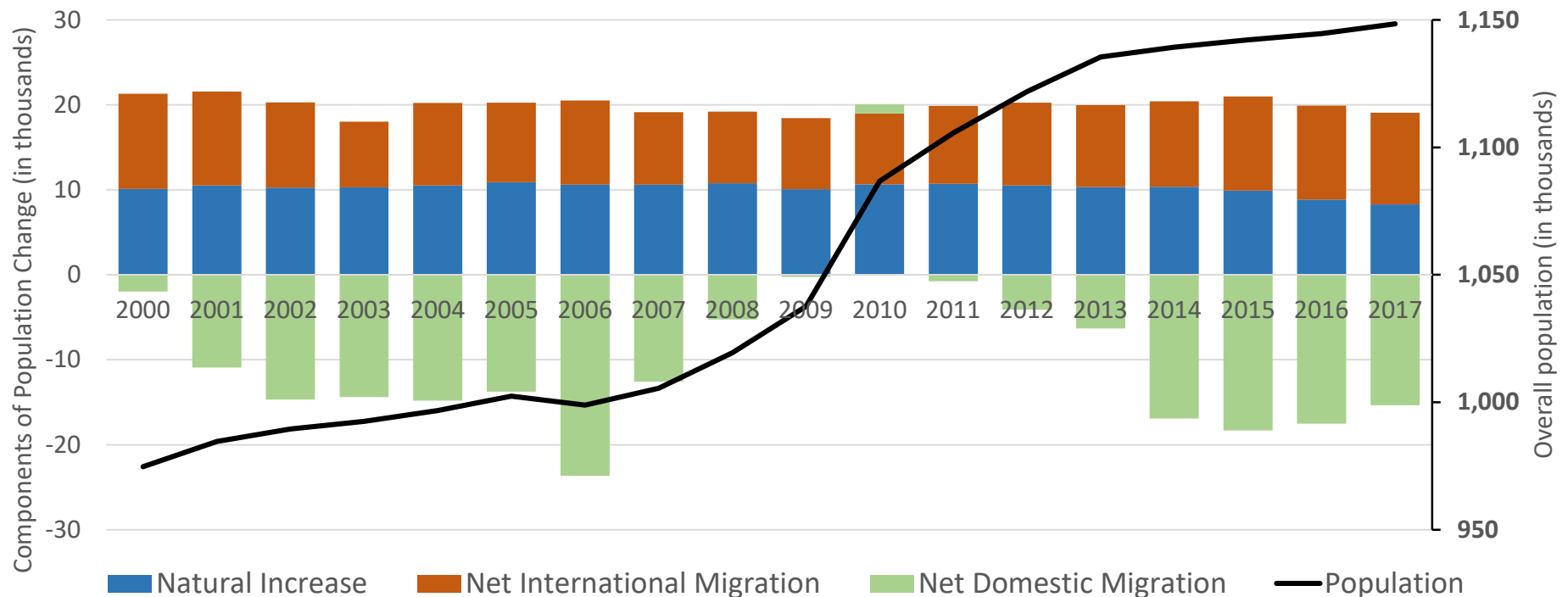


Housing development is planned in line with population and job growth.

Data Suggestions

- Reliable and easy-access survey data on international population migration.

Components of Population Change, Fairfax County, VA (2000-2017)



Source: US Census Bureau, Vintage 2000-2017.

Resources

- Fairfax County Demographics

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

- Story Map (coming soon)

- US Census Bureau

<https://www.census.gov/data.html>

- IPUMS, University of Minnesota

<https://www.ipums.org/>

- CDC WONDER Online Database

<https://wonder.cdc.gov/>



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quality of life for people,
neighborhoods, and diverse
communities."

Thank you! Gracias! 고맙습니다!
!شكرا جزيل! cảm ơn bạn! 谢谢!

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

ACS Data Users Conference, Washington, DC: May 14-15, 2019



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Source: US Census Bureau, ACS 5-year estimates (2013-2017)