Community Equity Index Analysis

Introductory Briefing

Agenda

Introduction of the Community Equity Index Analysis

Process for developing the Community Equity Index

Examples of other community indicator projects

Preview of data analysis methods

Next steps

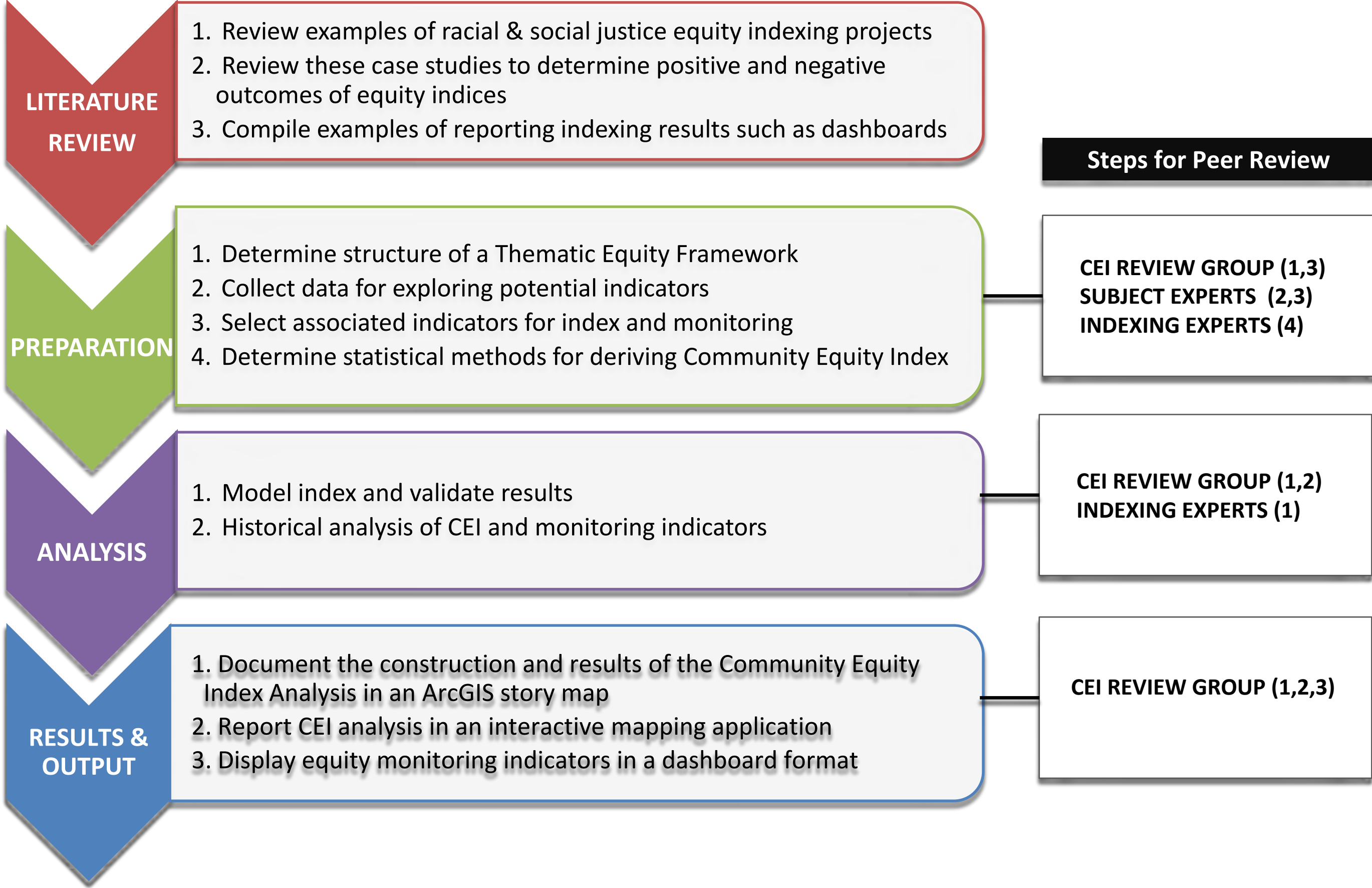Questions and discussion

Community Equity Index

- The Community Equity Index (CEI) is an analytical model of critically selected demographic and socio-economic factors relevant to equity analysis.

- Building on the Equity Focus Area (EFA) analysis, the CEI is a gradient index, describing all tracts and providing a relative comparison of neighborhood conditions.

- As a diagnostic tool, it will help us better understand existing conditions and to explore contributing determinants leading to inequities at the neighborhood and county levels.

- CEI will reflect current conditions and historical trajectories of neighborhoods.

- The index will serve as a benchmark against which to gauge future progress.

Potential Uses for the Community Equity Index

Examples:

- Monitoring neighborhood and county equitable conditions through the analysis of demographic and socio-economic indicators over time

- Provide groundwork for equity analysis to support ongoing and future planning efforts

- Support decision-making, improve policy and aid in prioritizing resources

- Communicating outcome measures to citizens, stimulating public debate and building confidence in progress towards societal goals
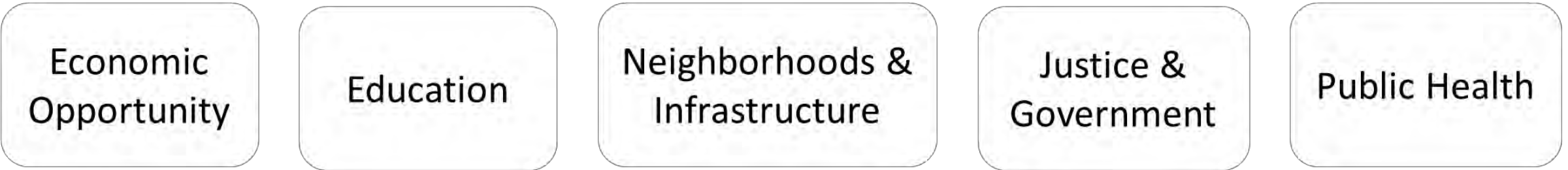
Process

LITERATURE REVIEW	1. Review examples of racial & social justice equity indexing projects 2. Review these case studies to determine positive and negative outcomes of equity indices 3. Compile examples of reporting indexing results such as dashboards

Steps for Peer Review

PREPARATION	1. Determine structure of a Thematic Equity Framework 2. Collect data for exploring potential indicators 3. Select associated indicators for index and monitoring 4. Determine statistical methods for deriving Community Equity Index

CEI REVIEW GROUP (1,3)
SUBJECT EXPERTS (2,3)
INDEXING EXPERTS (4)

ANALYSIS	1. Model index and validate results 2. Historical analysis of CEI and monitoring indicators

CEI REVIEW GROUP (1,2)
INDEXING EXPERTS (1)

RESULTS & OUTPUT	1. Document the construction and results of the Community Equity Index Analysis in an ArcGIS story map 2. Report CEI analysis in an interactive mapping application 3. Display equity monitoring indicators in a dashboard format

CEI REVIEW GROUP (1,2,3)

Community Equity Index Analysis

Examples of Other Community Indicator Projects

Dallas: *Equity Indicators*

5 Broad Themes:

Economic Opportunity	Education	Neighborhoods & Infrastructure	Justice & Government	Public Health

Example of how themes, topics, and indicators are structured:

THEME	TOPICS	INDICATORS
ECONOMIC OPPORTUNITY	Business Development	Business Establishments
		Business Ownership
		Long-Term Business Vacancies
	Employment	Labor Force Non-Participation
		Unemployment
		High-Growth, High-Paying Employment
	Income	Median Full-Time Income
		Median Hourly Wage
		Median Household Income
	Poverty	Child Poverty
		Senior Poverty
		Working Poverty

Examples of Other Community Indicator Projects

Seattle: *Equitable Development Community Indicators*

HOME

- Homeownership
- Housing cost burdens
- Affordability and availability of rental housing
- Family-size rental housing
- Rent- and income-restricted housing

TRANSPORTATION

- Sidewalk coverage
- Access to frequent transit with night and weekend service
- Jobs accessible by transit
- Average commute time

COMMUNITY

- Proximity to community centers
- Access to public libraries
- Proximity to grocery stores
- Access to parks and open space (in next report)
- Air pollution exposure risk

EDUCATION AND ECONOMIC OPPORTUNITY

- Performance of neighborhood elementary schools
- Unemployment
- Disconnected youth
- Educational attainment
- Poverty and near-poverty
- Full-time workers in or near poverty
- Business ownership

Community Indicators Report (2020)

Seattle: *Racial & Social Equity Index (RSE)*

Combines data on race, ethnicity, and related demographics with data on socioeconomic and health disadvantages to identify neighborhoods with marginalized populations.

The Composite Index includes sub-indices of:

Race, English Language Learners, and Origins Index
ranks census tracts by an index of three measures weighted as follows:

- Persons of color (weight: 1.0)
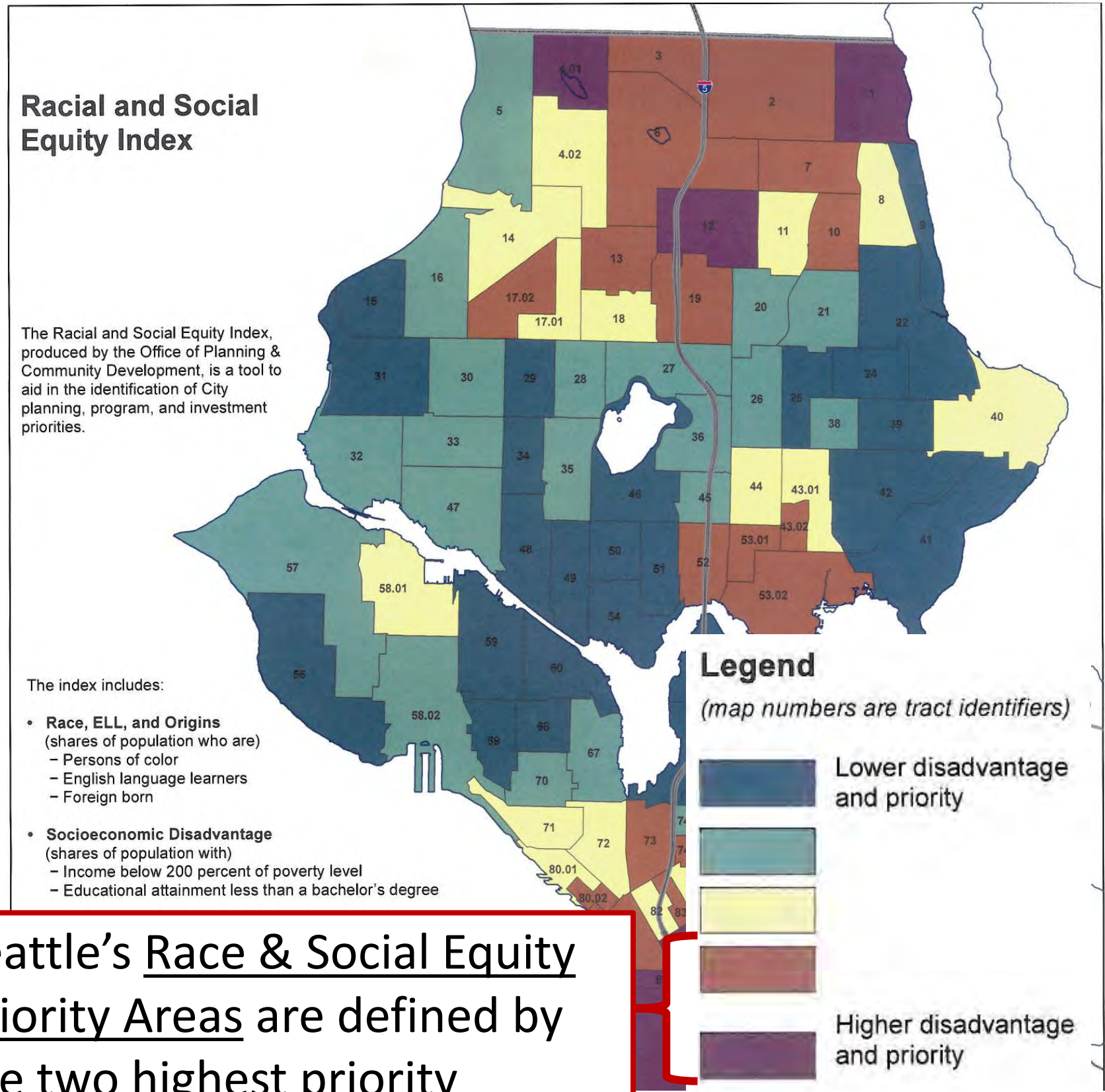- English language learner (weight: 0.5)
- Foreign born (weight: 0.5)

Socioeconomic Disadvantage Index
ranks census tracts by an index of two equally weighted measures:

- Income below 200% of poverty level
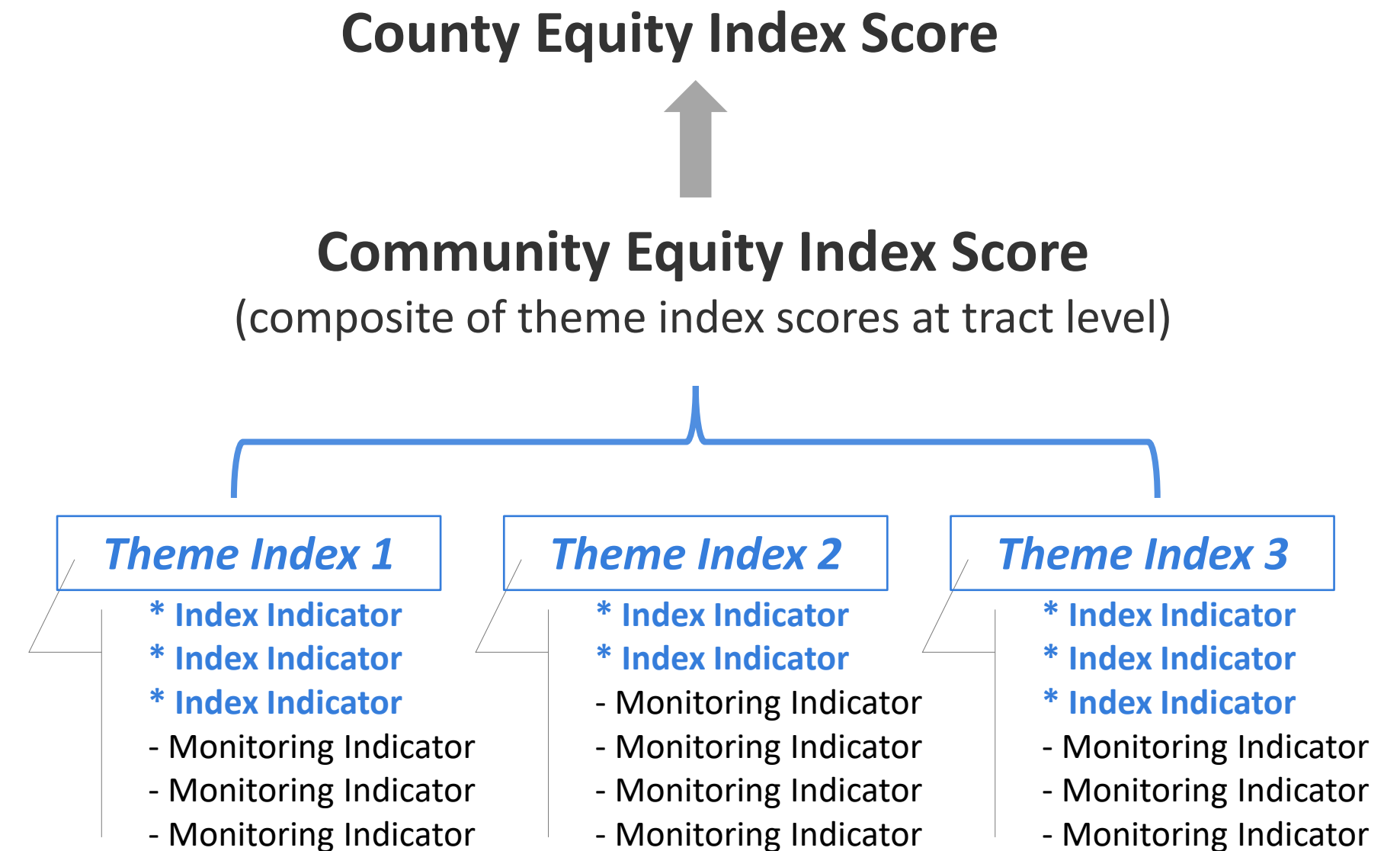- Educational attainment less than a bachelor's degree

Health Disadvantage Index
ranks census tracts by an index of seven equally weighted measures:

- No leisure-time physical activity
- Diagnosed diabetes
- Obesity
- Mental health not good
- Asthma
- Low life expectancy at birth
- Disability

Produced by City of Seattle Office of Planning & Community Development.

Racial and Social Equity Index

The Racial and Social Equity Index, produced by the Office of Planning & Community Development, is a tool to aid in the identification of City planning, program, and investment priorities.

The index includes:

- **Race, ELL, and Origins** (shares of population who are)
  - Persons of color
  - English language learners
  - Foreign born

- **Socioeconomic Disadvantage** (shares of population with)
  - Income below 200 percent of poverty level
  - Educational attainment less than a bachelor's degree

Legend
(map numbers are tract identifiers)

Lower disadvantage and priority

Higher disadvantage and priority

Seattle's Race & Social Equity Priority Areas are defined by the two highest priority quintiles of the RSE Index.

Methodology: Thematic Equity Indexing Framework

- Identify overarching dimensions of equity themes pertinent to Montgomery County

- Themes address broad areas such as housing, economy, demographics, and health

- Indicators are best proxies for measuring an equity theme; used to calculate Theme Index

- Composite Equity Index is a summary of Theme Indices derived from each set of index indicators

- Results reported as an "Community Equity Index & Monitoring Dashboard" comparing disparities of different areas and neighborhood changes over time

County Equity Index Score

Community Equity Index Score
(composite of theme index scores at tract level)

Theme Index 1	**Theme Index 2**	**Theme Index 3**
* Index Indicator	*** Index Indicator**	*** Index Indicator**
* Index Indicator	*** Index Indicator**	*** Index Indicator**
* Index Indicator	- Monitoring Indicator	*** Index Indicator**
- Monitoring Indicator	- Monitoring Indicator	- Monitoring Indicator
- Monitoring Indicator	- Monitoring Indicator	- Monitoring Indicator
- Monitoring Indicator	- Monitoring Indicator	- Monitoring Indicator

Criteria for Selecting Indicators

- Meaningful and important indicator that effectively measures equity

- Understandable and transparent to a broad audience

- Measurable with readily available data from a reliable source

- Data is statistically reliable at a U.S. Census tract level

- Data can be measured consistently over time to calculate change

- Analysis is statistically sound using high-quality data and a statistically robust methodology

Statistical Analysis for Selecting Indicators

- Distribution of the variable

- Margin of error to discern data reliability

- Descriptive statistics such as average and standard deviation

- Correlation analysis

	Hispanic.per	POC.per	NHWhite.per	NHBlack.per	NHAsianPI.per	NHOther.per	IncPovRatio.under100.per	IncPovRatio.under150.per	IncPovRatio.under200.per	Inc.lt50k.per	Own.per	Rent.per	Occupied30up.per	Own.30up.per	Rent.30up.per	HSgradUnder.per	ltBA.per	BAup.per	SomeColAssoc.per	SocSecInc.per	RetIncHH.per	SupSecInc.per	CashAssist.per	FoodSNAP.per	PublicAssis.v1	Uninsured.per
Hispanic.per	1.000	0.688	-0.688	0.174	-0.166	-0.139	0.543	0.633	0.716	0.505	-0.285	0.285	0.510	0.259	0.353	0.891	0.809	-0.809	0.383	-0.282	-0.431	0.104	0.289	0.560	0.494	0.816
POC.per	0.688	1.000	-1.000	0.705	0.231	0.067	0.627	0.685	0.756	0.633	-0.457	0.457	0.668	0.291	0.425	0.746	0.786	-0.786	0.601	-0.448	-0.595	0.293	0.419	0.689	0.667	0.701
NHWhite.per	-0.688	-1.000	1.000	-0.705	-0.231	-0.067	-0.627	-0.685	-0.756	-0.633	0.457	-0.457	-0.668	-0.291	-0.425	-0.746	-0.786	0.786	-0.601	0.448	0.595	-0.293	-0.419	-0.689	-0.667	-0.701
NHBlack.per	0.174	0.705	-0.705	1.000	-0.115	0.040	0.463	0.490	0.540	0.567	-0.461	0.461	0.541	0.126	0.301	0.375	0.505	-0.505	0.584	-0.306	-0.380	0.260	0.302	0.535	0.523	0.355
NHAsianPI.per	-0.166	0.231	-0.231	-0.115	1.000	0.061	-0.076	-0.114	-0.140	-0.155	0.077	-0.077	-0.040	0.085	0.012	-0.157	-0.139	0.139	-0.058	-0.137	-0.138	0.106	0.045	-0.073	-0.014	-0.137
NHOther.per	-0.139	0.067	-0.067	0.040	0.061	1.000	0.060	0.039	-0.007	0.046	-0.081	0.081	0.051	0.056	-0.030	-0.139	-0.094	0.094	0.024	-0.117	-0.136	0.152	0.180	0.106	0.156	-0.052
IncPovRatio.under100.per	0.543	0.627	-0.627	0.463	-0.076	0.060	1.000	0.936	0.836	0.758	-0.684	0.684	0.732	0.183	0.353	0.581	0.550	-0.550	0.308	-0.331	-0.488	0.253	0.372	0.663	0.628	0.697
IncPovRatio.under150.per	0.633	0.685	-0.685	0.490	-0.114	0.039	0.936	1.000	0.901	0.818	-0.707	0.707	0.787	0.193	0.388	0.676	0.638	-0.638	0.354	-0.357	-0.524	0.311	0.398	0.731	0.699	0.763
IncPovRatio.under200.per	0.716	0.756	-0.756	0.540	-0.140	-0.007	0.836	0.901	1.000	0.857	-0.666	0.666	0.820	0.266	0.410	0.757	0.738	-0.738	0.454	-0.344	-0.516	0.296	0.449	0.797	0.753	0.804
Inc.lt50k.per	0.505	0.633	-0.633	0.567	-0.155	0.046	0.758	0.818	0.857	1.000	-0.746	0.746	0.869	0.360	0.379	0.600	0.628	-0.628	0.471	-0.160	-0.372	0.378	0.391	0.725	0.712	0.626
Own.per	-0.285	-0.457	0.457	-0.461	0.077	-0.081	-0.684	-0.707	-0.666	-0.746	1.000	-1.000	-0.813	-0.175	-0.208	-0.280	-0.275	0.275	-0.174	0.438	0.570	-0.245	-0.220	-0.519	-0.491	-0.469
Rent.per	0.285	0.457	-0.457	0.461	-0.077	0.081	0.684	0.707	0.666	0.746	-1.000	1.000	0.813	0.175	0.208	0.280	0.275	-0.275	0.174	-0.438	-0.570	0.245	0.220	0.519	0.491	0.469
Occupied30up.per	0.510	0.668	-0.668	0.541	-0.040	0.051	0.732	0.787	0.820	0.869	-0.813	0.813	1.000	0.440	0.458	0.550	0.565	-0.565	0.404	-0.248	-0.453	0.320	0.333	0.645	0.626	0.594
Own.30up.per	0.259	0.291	-0.291	0.126	0.085	0.056	0.183	0.193	0.266	0.360	-0.175	0.175	0.440	1.000	0.052	0.271	0.295	-0.295	0.242	0.084	-0.075	0.116	0.155	0.108	0.142	0.170
Rent.30up.per	0.353	0.425	-0.425	0.301	0.012	-0.030	0.353	0.388	0.410	0.379	-0.208	0.208	0.458	0.052	1.000	0.401	0.393	-0.393	0.245	-0.002	-0.113	0.172	0.227	0.375	0.367	0.323
HSgradUnder.per	0.891	0.746	-0.746	0.375	-0.157	-0.139	0.581	0.676	0.757	0.600	-0.280	0.280	0.550	0.271	0.401	1.000	0.943	-0.943	0.520	-0.191	-0.340	0.236	0.373	0.656	0.618	0.809
ltBA.per	0.809	0.786	-0.786	0.505	-0.139	-0.094	0.550	0.638	0.738	0.628	-0.275	0.275	0.565	0.295	0.393	0.943	1.000	-1.000	0.774	-0.182	-0.326	0.277	0.417	0.649	0.633	0.745
BAup.per	-0.809	-0.786	0.786	-0.505	0.139	0.094	-0.550	-0.638	-0.738	-0.628	0.275	-0.275	-0.565	-0.295	-0.393	-0.943	-1.000	1.000	-0.774	0.182	0.326	-0.277	-0.417	-0.649	-0.633	-0.745
SomeColAssoc.per	0.383	0.601	-0.601	0.584	-0.058	0.024	0.308	0.354	0.454	0.471	-0.174	0.174	0.404	0.242	0.245	0.520	0.774	-0.774	1.000	-0.104	-0.190	0.263	0.361	0.420	0.451	0.374
SocSecInc.per	-0.282	-0.448	0.448	-0.306	-0.137	-0.117	-0.331	-0.357	-0.344	-0.160	0.438	-0.438	-0.248	0.084	-0.002	-0.191	-0.182	0.182	-0.104	1.000	0.890	0.004	-0.172	-0.287	-0.241	-0.356
RetIncHH.per	-0.431	-0.595	0.595	-0.380	-0.138	-0.136	-0.488	-0.524	-0.516	-0.372	0.570	-0.570	-0.453	-0.075	-0.113	-0.340	-0.326	0.326	-0.190	0.890	1.000	-0.110	-0.267	-0.447	-0.409	-0.488
SupSecInc.per	0.104	0.293	-0.293	0.260	0.106	0.152	0.253	0.311	0.296	0.378	-0.245	0.245	0.320	0.116	0.172	0.236	0.277	-0.277	0.263	0.004	-0.110	1.000	0.251	0.414	0.636	0.153
CashAssist.per	0.289	0.419	-0.419	0.302	0.045	0.180	0.372	0.398	0.449	0.391	-0.220	0.220	0.333	0.155	0.227	0.373	0.417	-0.417	0.361	-0.172	-0.267	0.251	1.000	0.526	0.649	0.325
FoodSNAP.per	0.560	0.689	-0.689	0.535	-0.073	0.106	0.663	0.731	0.797	0.725	-0.519	0.519	0.645	0.108	0.375	0.656	0.649	-0.649	0.420	-0.287	-0.447	0.414	0.526	1.000	0.949	0.629
PublicAssis.v1	0.494	0.667	-0.667	0.523	-0.014	0.156	0.628	0.699	0.753	0.712	-0.491	0.491	0.626	0.142	0.367	0.618	0.633	-0.633	0.451	-0.241	-0.409	0.636	0.649	0.949	1.000	0.565
Uninsured.per	0.816	0.701	-0.701	0.355	-0.137	-0.052	0.697	0.763	0.804	0.626	-0.469	0.469	0.594	0.170	0.323	0.809	0.745	-0.745	0.374	-0.356	-0.488	0.153	0.325	0.629	0.565	1.000

Reporting the Results of Community Equity Index Analysis

Visualize the CEI to show geographic disparities across the county, helping us know where to target equity initiatives and resources.

Three Data Products:

1. ArcGIS story map

2. Community Equity Index Mapping Application

3. Community Equity Index Dashboard

Example of Reporting Results by Story Map
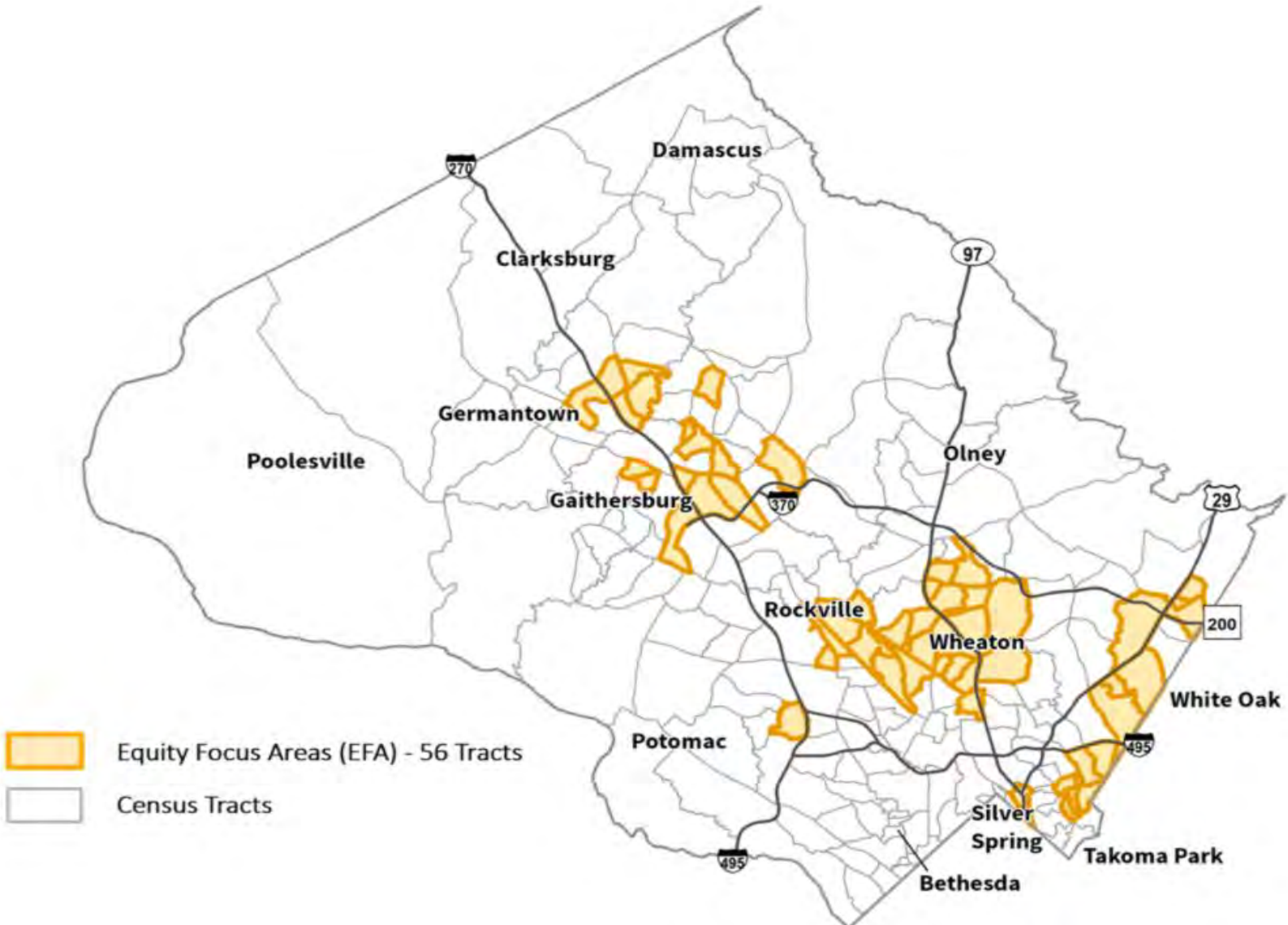
Montgomery: Equity Focus Area Analysis

Example of Reporting Results by Mapping Application

City of Seattle:
Racial and Social Equity Index

https://seattlecitygis.maps.arcgis.com/apps/Minimalist/index.html?appid=764b5d8988574644b61e644e9fbe30d1
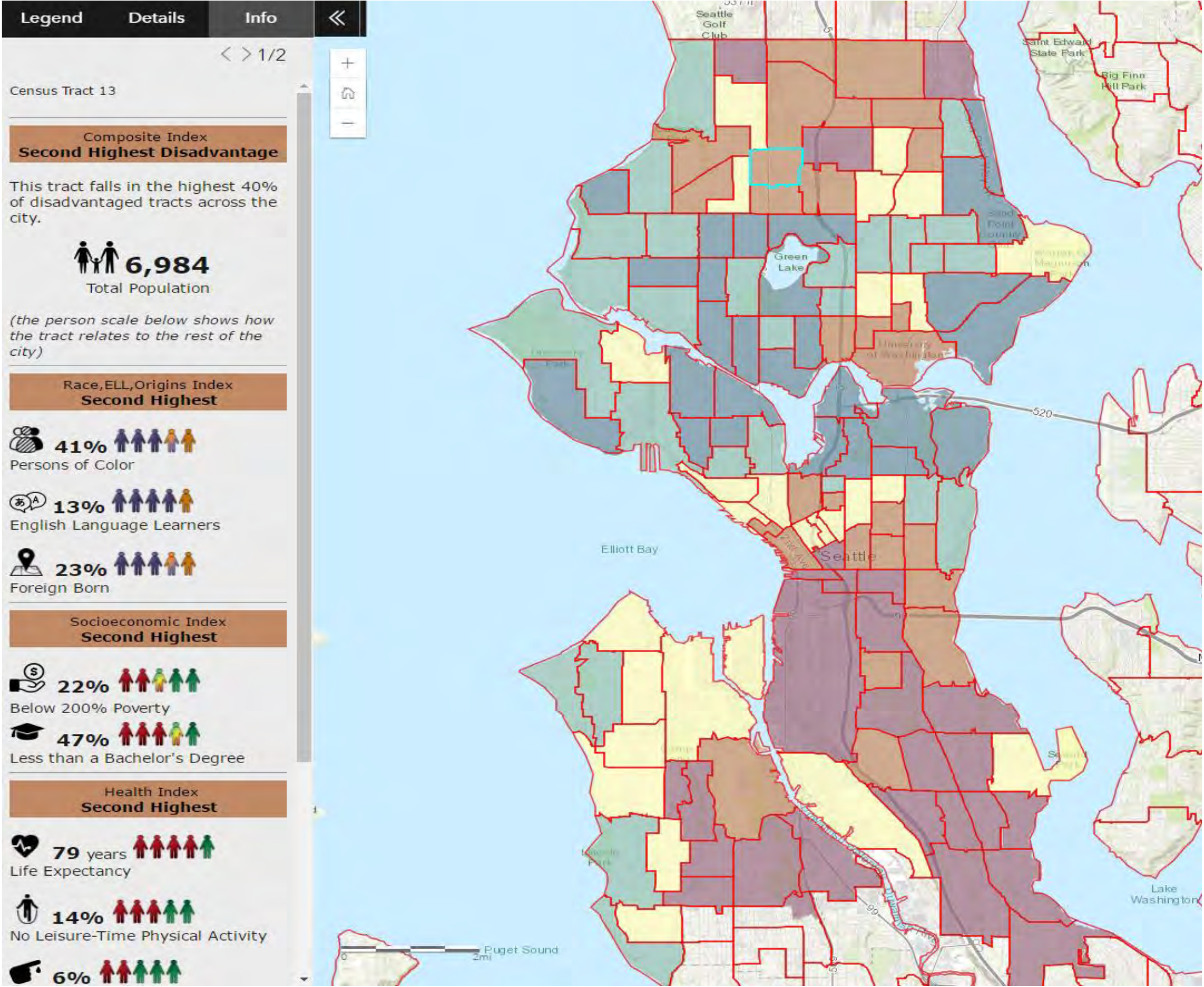
Example of Reporting Results by Dashboard

Charlotte/Mecklenburg: *Quality of Life Explorer*

Themes

Indicators

Timeline
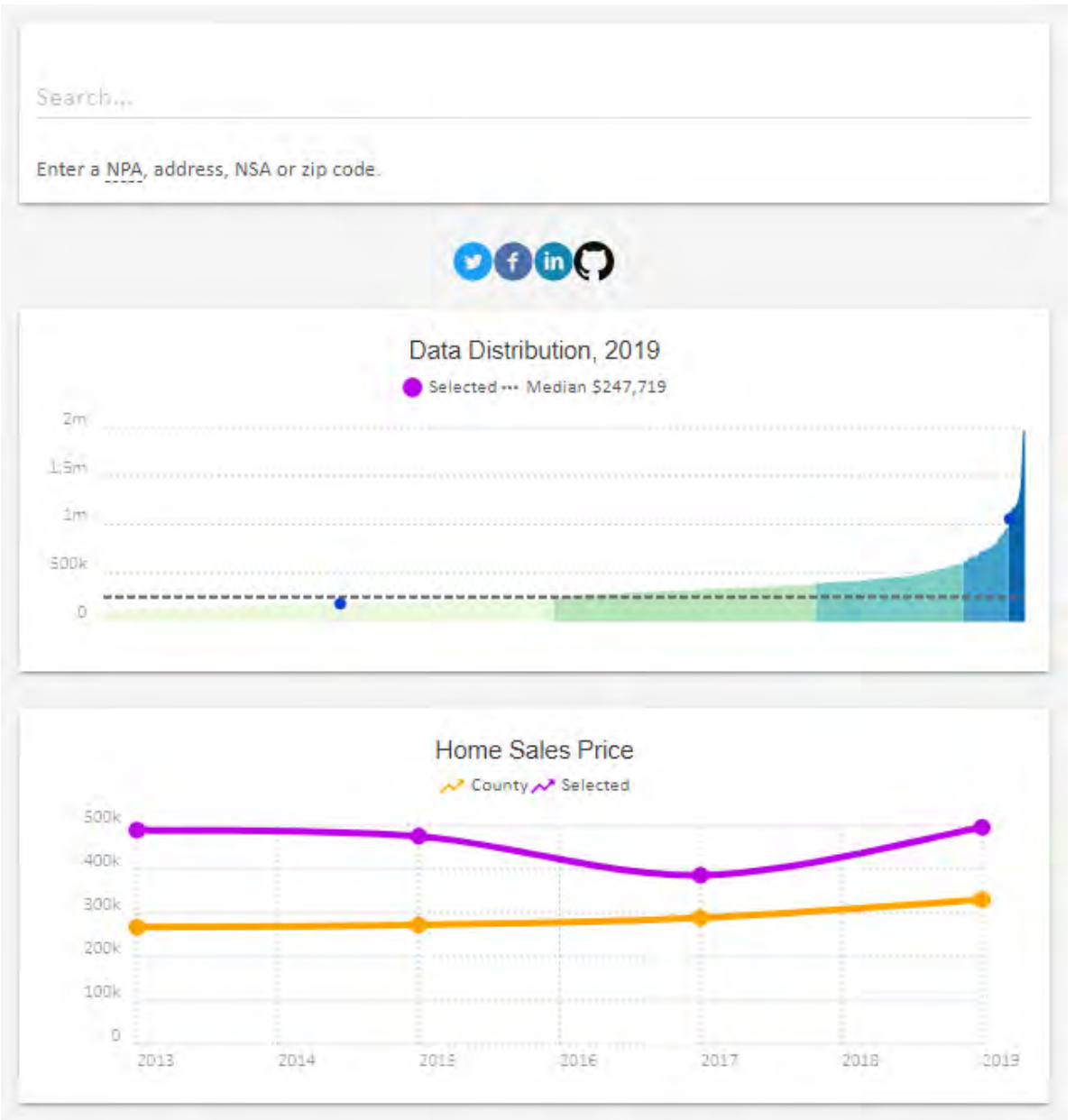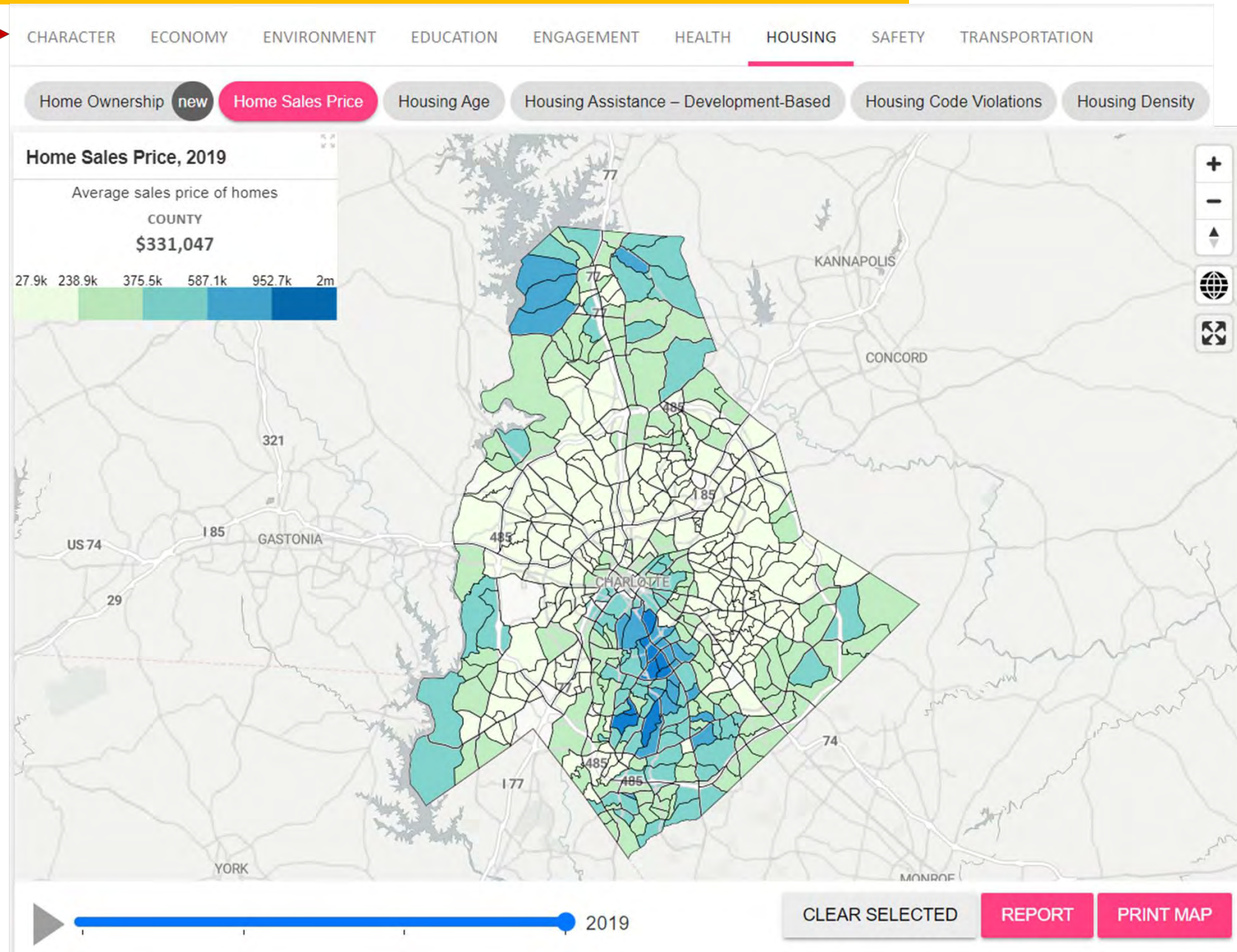
Next Steps

Fall

- Select draft themes & potential indicators

Winter

- Determine index modeling methodology

- Begin index modeling and validation of results

- Review draft Community Equity Index indicators & modeling methods by CEI Peer Review Group

- Develop communication plan

- Analyze Community Equity Index results

- Review index results by CEI Peer Review Group

Spring

- Develop data products reporting CEI results in such formats as a story map, mapping application, and dashboard

- Review draft data products by CEI Peer Review Group

- Present results of the Community Equity Index and Monitoring Dashboard to the Planning Board

Questions and Discussion

Reference slides

Examples of Other Community Indicator Projects

Seattle: *Racial & Social Equity Index*

Gold cross-hatching highlights the census tracts the RSE priority areas, which correspond with the two highest quintiles in the RSE Index:

Neighborhood-level analysis of community indicators focuses on how the RSE priority areas are faring.
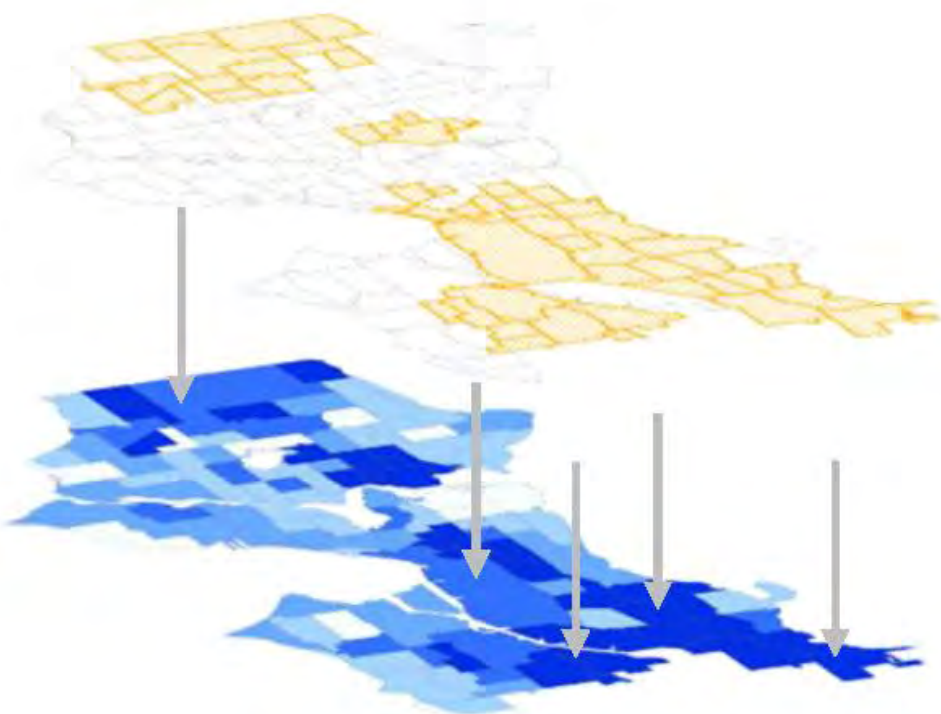
Race and Social Equity (RSE) Index
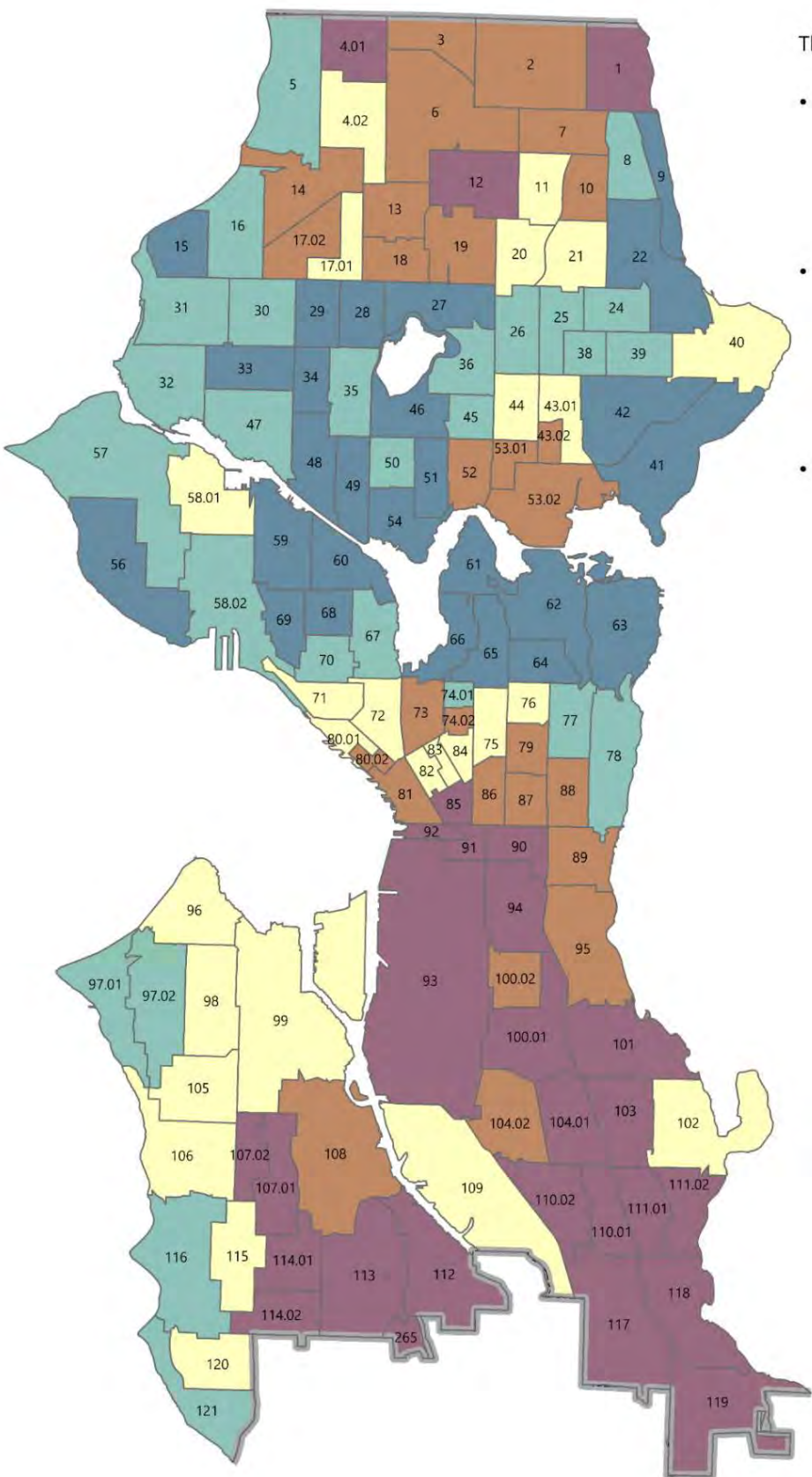
This composite index includes:

- **Race, ELL, and Origins**
  (shares of population who are)
  – Persons of color
  – English language learners (ELL)
  – Foreign born

- **Socioeconomic Disadvantage**
  (shares of population with)
  – Income below 200 percent of poverty level
  – Educational attainment less than a bachelor's degree

- **Health Disadvantage**
  – No leisure-time physical activity
  – Diagnosed diabetes
  – Obesity
  – Mental health not good
  – Asthma
  – Low life expectancy at birth
  – Disability

Legend
(map numbers are tract identifiers)

RSE Index: Level of Disadvantage/ Priority

- Lower disadvantage and priority
-
-
-
- Higher disadvantage and priority
- Seattle City Limit
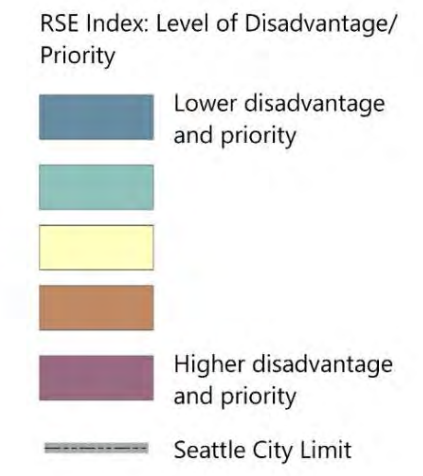
Example of a Thematic Equity Indexing Framework

Dallas Equity Indicator Framework

39.8
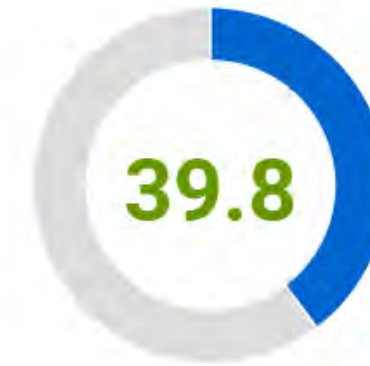
Overall Equity Score

The Overall Score is Comprised of 5 Themes of Equity Indicators

40.75	Economic Opportunity	>
38.5	Education	>
47.42	Neighborhoods & Infrastructure	>
32.25	Justice & Government	>
39.92	Public Health	>

Indicators:

ECONOMIC OPPORTUNITY
- 39.67
- 40.75

BUSINESS DEVELOPMENT
- 49.67
- 50.33

EMPLOYMENT
- 42.67
- 40.33

INCOME
- 40.67
- 39.67

POVERTY
- 25.67
- 32.67

2018
2019
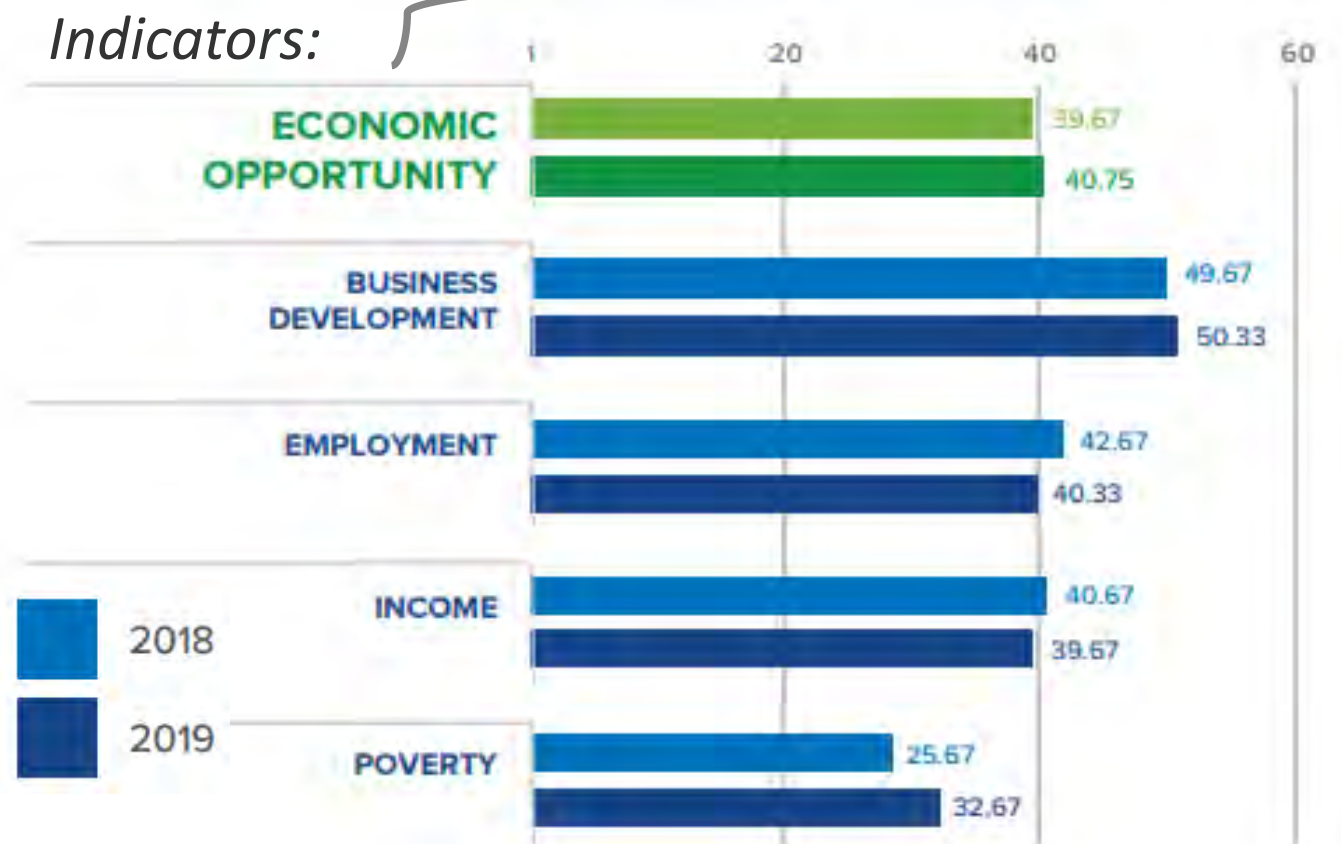
Selecting Indicators for the Community Equity Index

Indicator GIS "Sandbox" for exploring spatial relationships of potential equity variables

- *Mapping template for visualization*

- *Categorized by indicator topics*
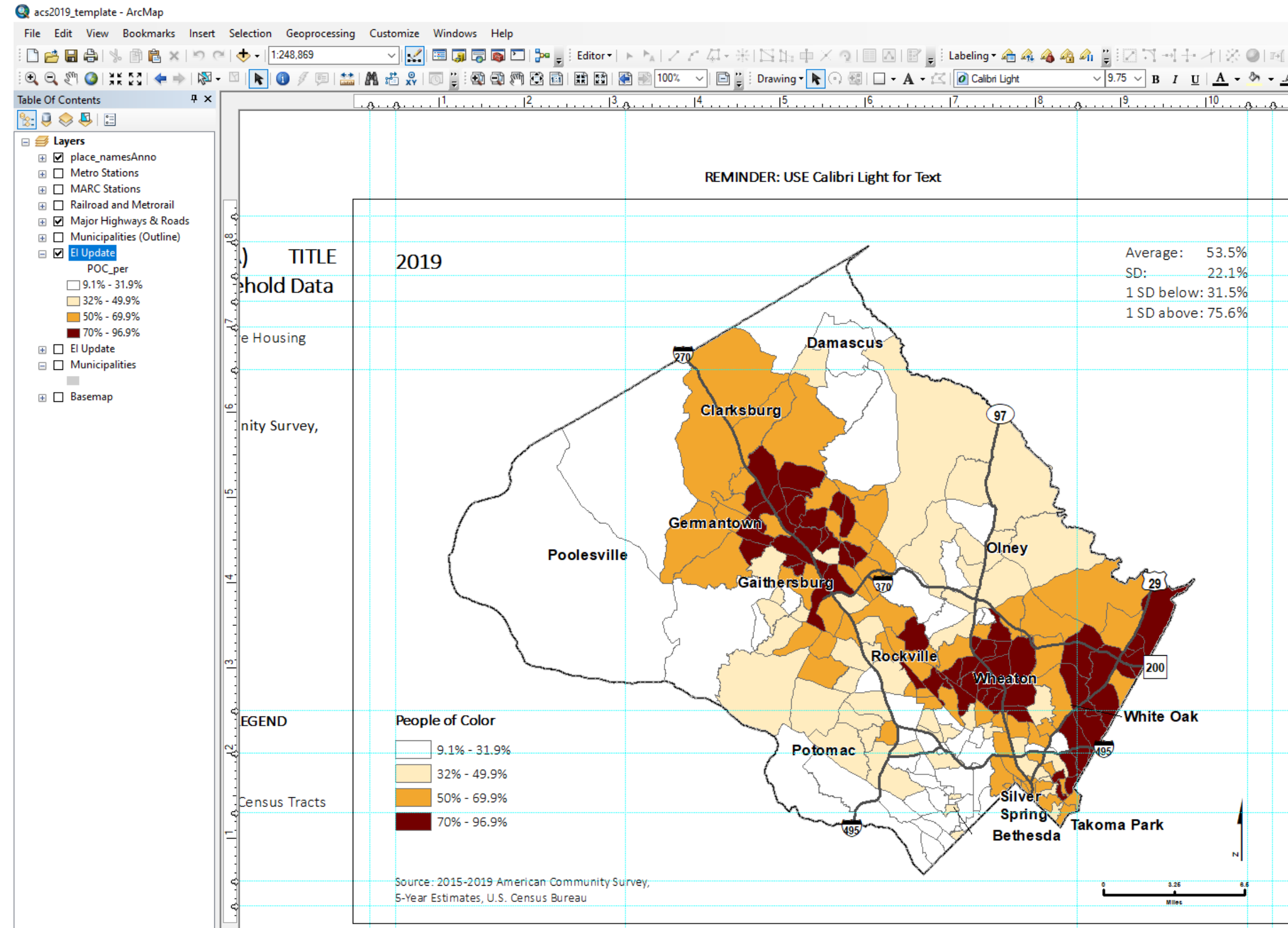
Selecting Indicators for the Community Equity Index

Community Equity Indicator "Scrapbook" collects analysis for selecting indicators and tracks decisions as model is developed

- *Overview of mission & process summary*

- *Tracks modeling decisions*

- *Indicator analysis by equity theme includes statistical analysis & maps*

- *Case studies for reference*

- *Community Equity Index project background*

Indicator Analysis Scrapbook
Developing a Thematic Equity Framework

EQUITY INDEX – MONTGOMERY COUNTY PLANNING M-NCPPC
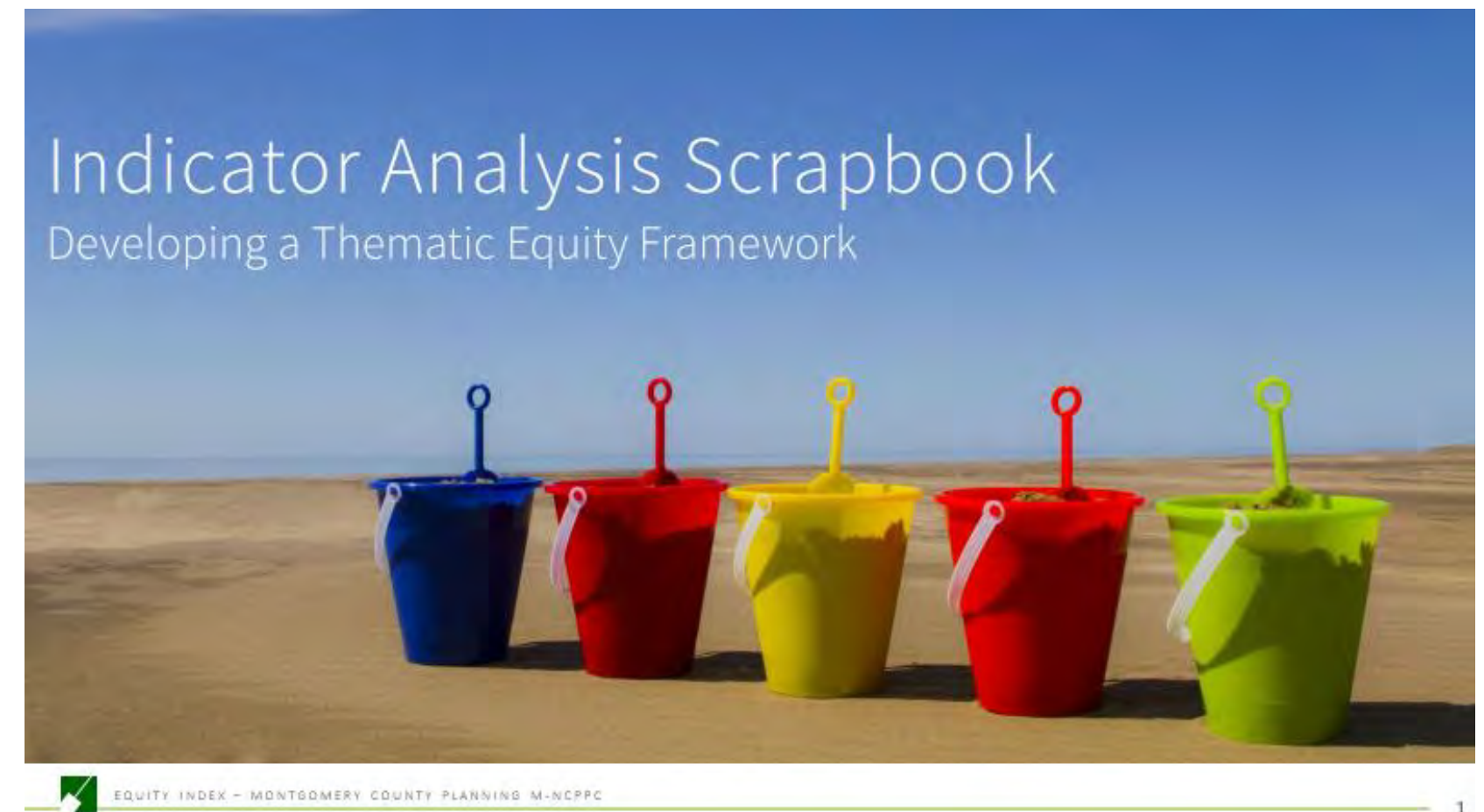
Comparison of the Equity Focus Areas & Community Equity Index

Equity Focus Areas (EFA)

A screening tool based on simple analysis of core equity variables to define the highest concentrations of vulnerable populations.

EFA analysis is a dichotomy:
U.S. Census tracts are either designated an EFA or not.

Community Equity Index (CEI)

A diagnostic tool of critically selected demographic, economic, and physical factors providing additional detail and identifying areas that are advantaged or challenged.

CEI examines conditions across the county depicting gradations of neighborhoods' level of socio-economic advantage and disadvantage.

Development in progress

Equity Focus Areas Results

56 EFA tracts out of 215 (26%)

276,000 people (26%) & 94,000 households (25%)

- Hispanics:
  65% of EFA v. 19%

- High School diploma or less:
  18% of EFA v. 9%

- Average age:
  35 in EFA v. 41 years

- Low-income households:
  45% of EFA v. 28% of County

- Average household income:
  $90,152 v. $150,317

- Median housing value:
  $337,651 v. $525,624

- Renter occupied: 54% v. 35%
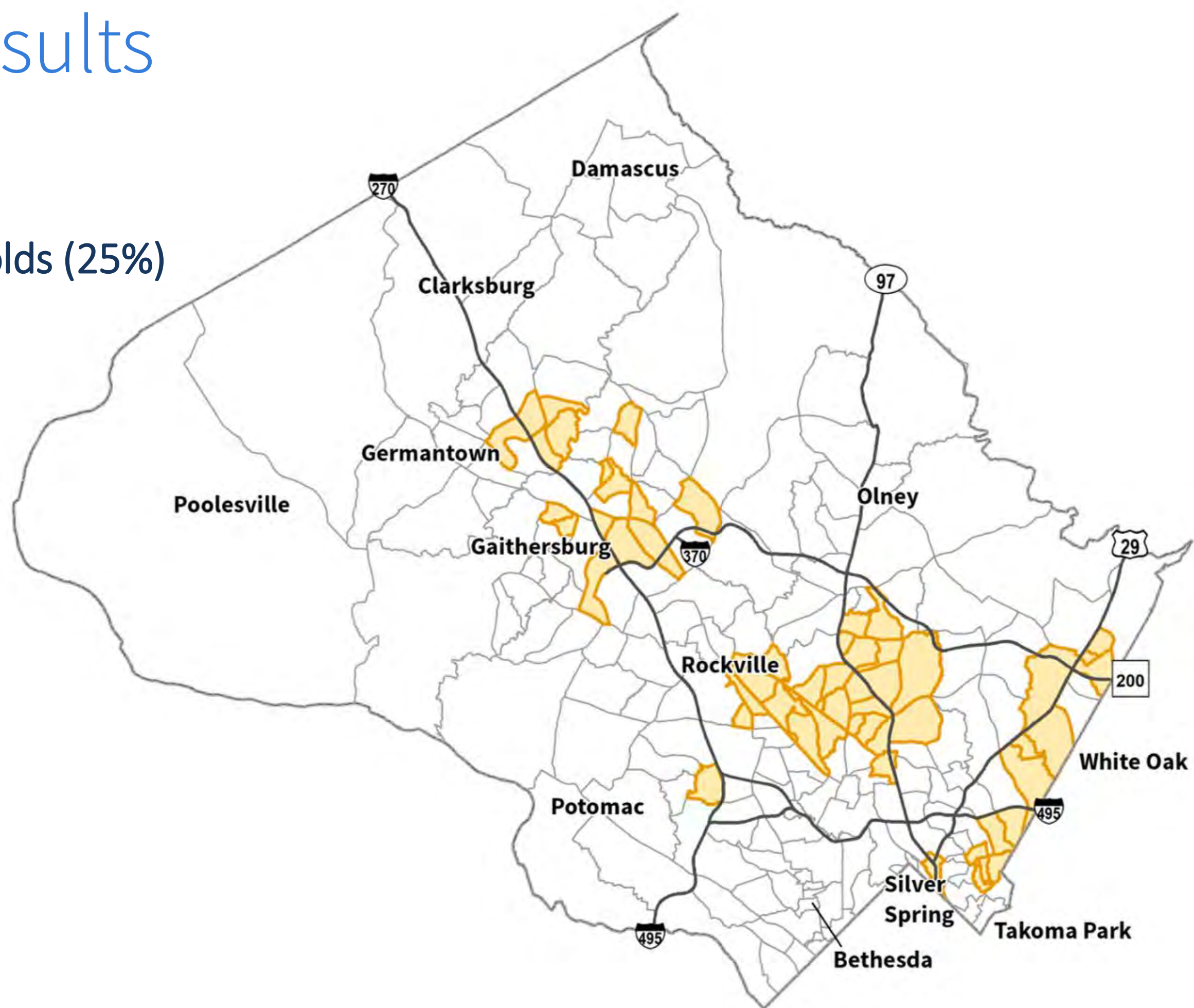
Equity Emphasis Areas (MCOG)

EEAs meet one of following criteria where US Census tracts have a concentration of:

- Low-income households or
- 2 or more minority groups or
- 1 or more minority groups and low-income concentration between regional average and the low-income threshold
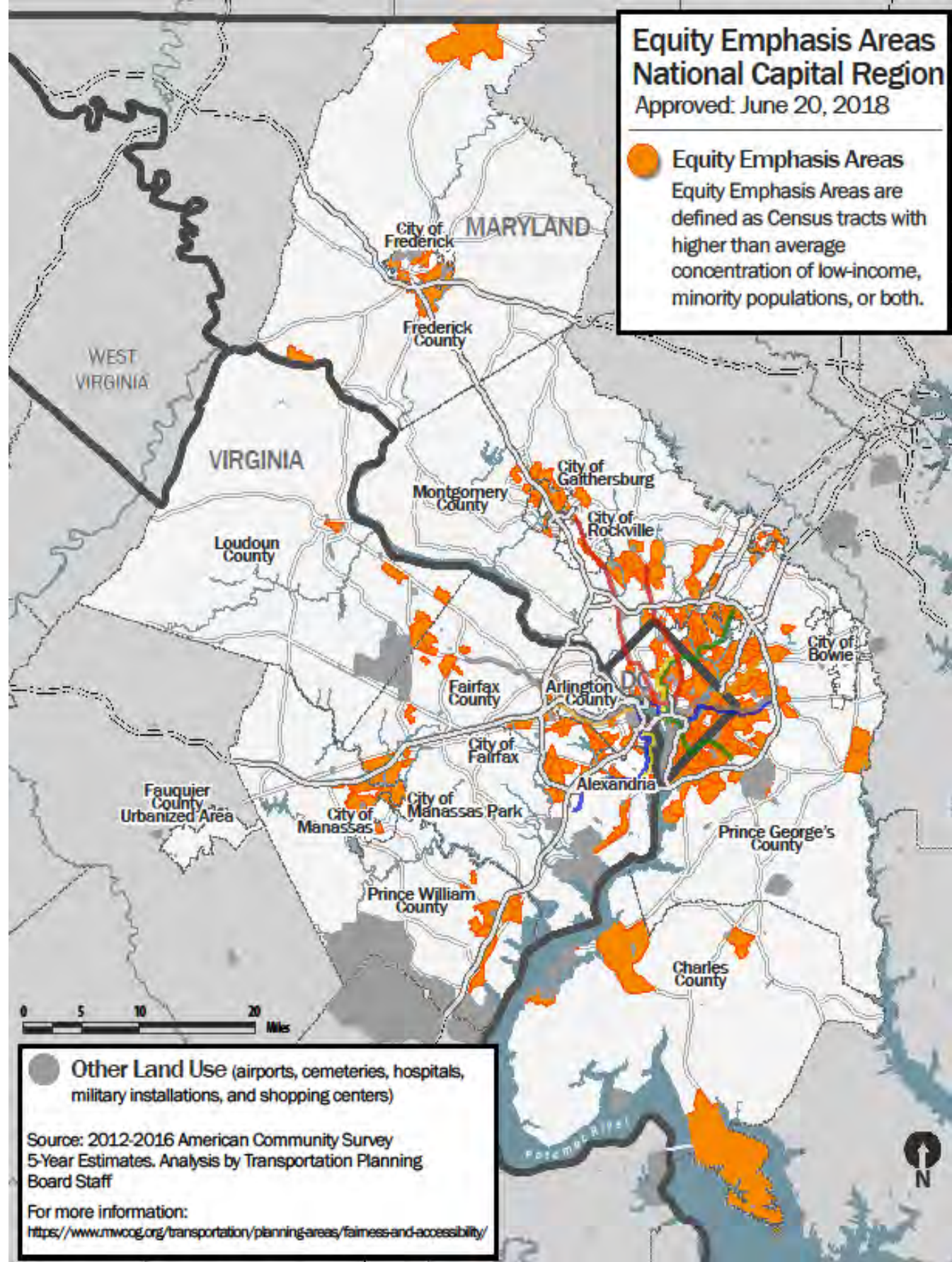
Table 1. Equity Index Score

Ratio of Concentration	Individual Index Score			
	Low-Income	African American	Asian	Hispanic
< 1.0	0	0	0	0
1.0 – 1.49	1.0-1.5	0	0	0
1.50 – 3.0	4.5-9.0	1.5-3.0	1.5-3.0	1.5-3.0
> 3.0	9.0	3.0	3.0	3.0

Figure 1. Scoring Example – Census Tract 9019.08 (Prince George's County, MD)

Fehr & Peers
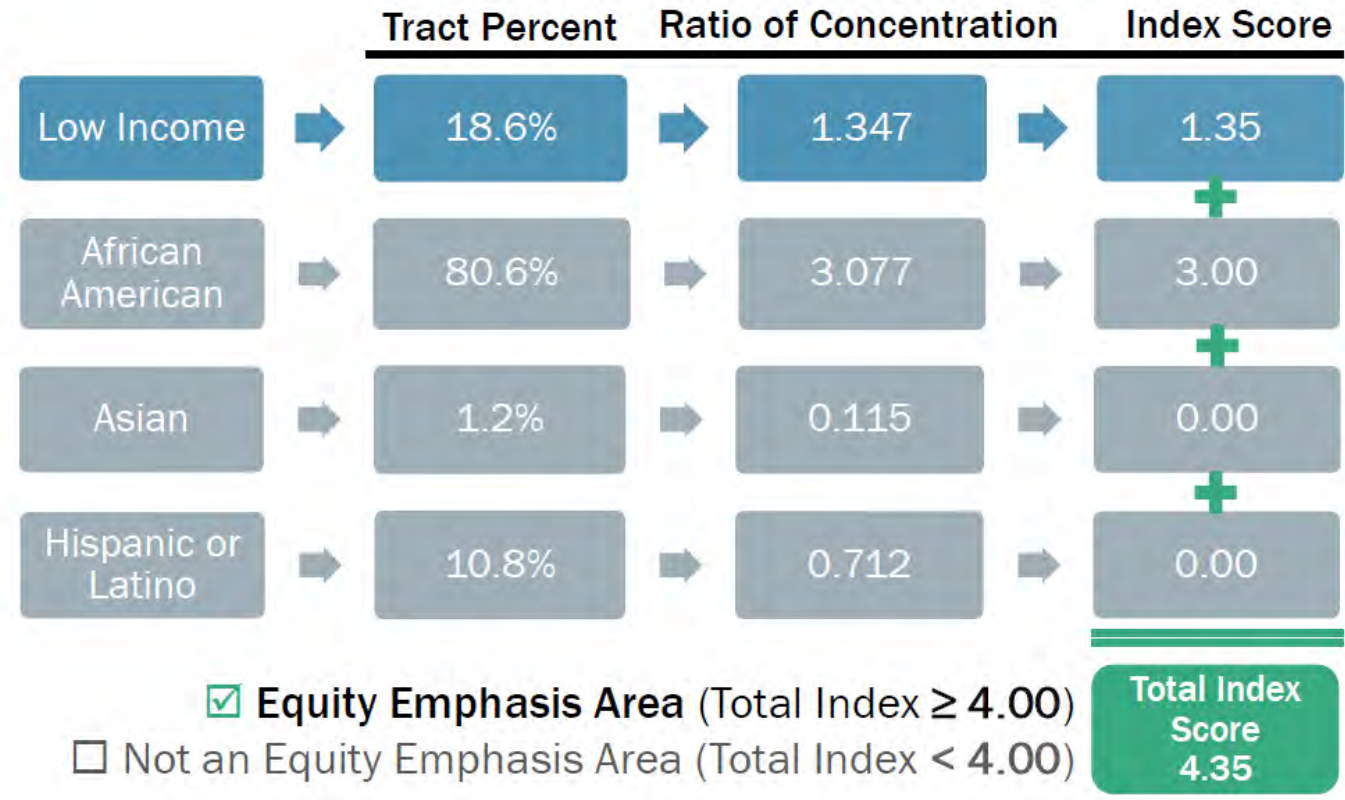
EFA Comparison:
Equity Emphasis Areas (MCOG)

40 Tracts in <u>both</u> EFA and EEA

16 Tracts in EFA but <u>not in EEA</u>

9 Tracts in EEA but <u>not in EFA</u>

EFA (56 Tracts)

MWCOG Equity Emphasis Areas (49 tracts)

Census Tracts

	EFA	EEA	DEP	COUNTY
# of tracts	56	49	91	215
% of all tracts	26%	23%	42%	100%
pop	275,873	257,842	499,137	1,040,133
households	94,019	88,340	169,885	370,277
POC	215,117	198,180	356,825	577,715
POC% of tot pop	78%	77%	71%	56%
pop age 5+	254,609	237,235	463,404	973,433
People speak Eng <VW	61,036	56,510	86,396	136,654
Eng<VW% of pop 5+	24%	19%	19%	14%
Avg Income	$90,151	$90,996	$105,826	$150,300
Inc < $50K	31,189	29,343	46,222	80,274
Inc < $50K%	33%	33%	27%	22%

EFA Comparison:
Demographic Index (DEP)

Equity Assessment by Demographic Index*
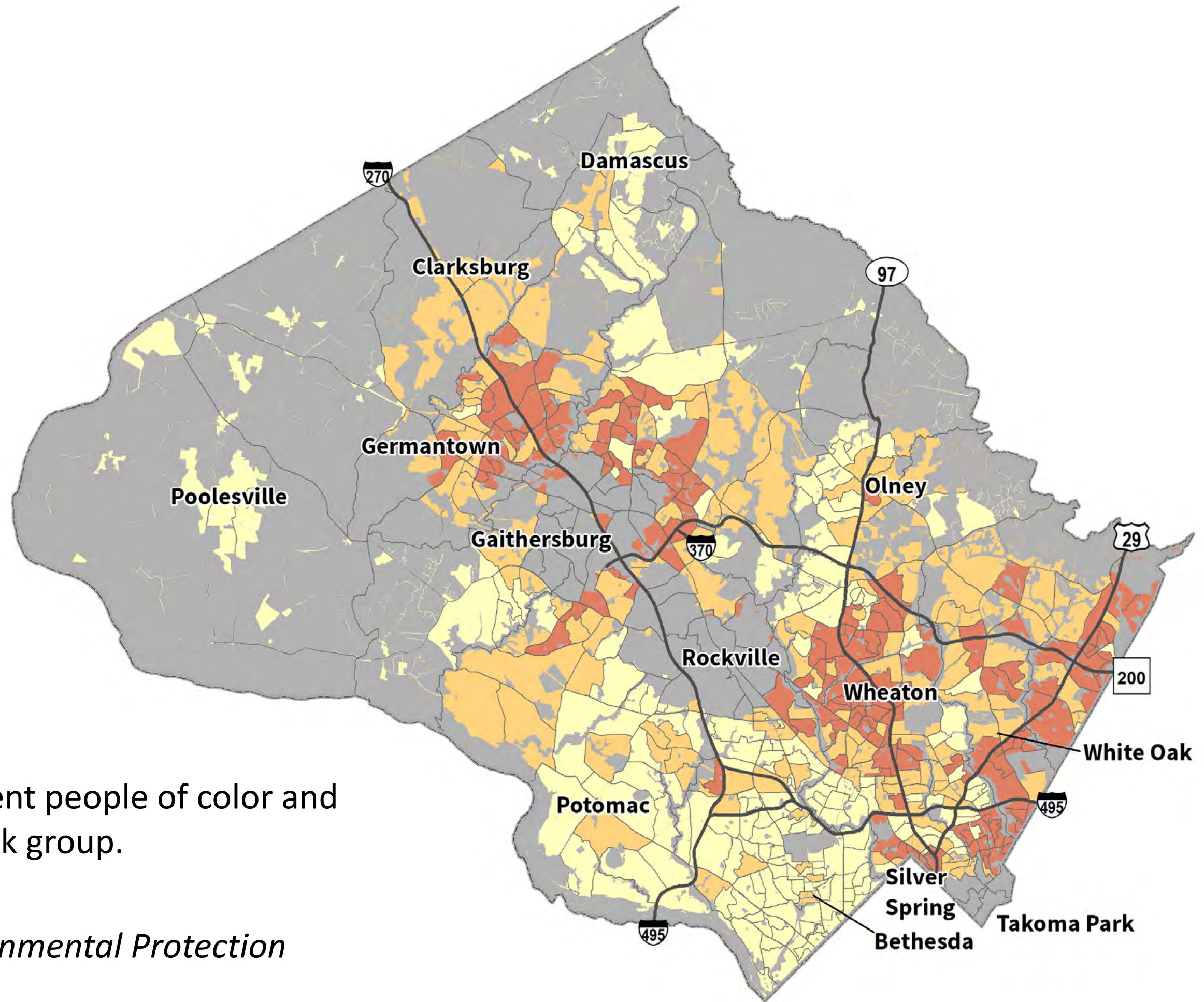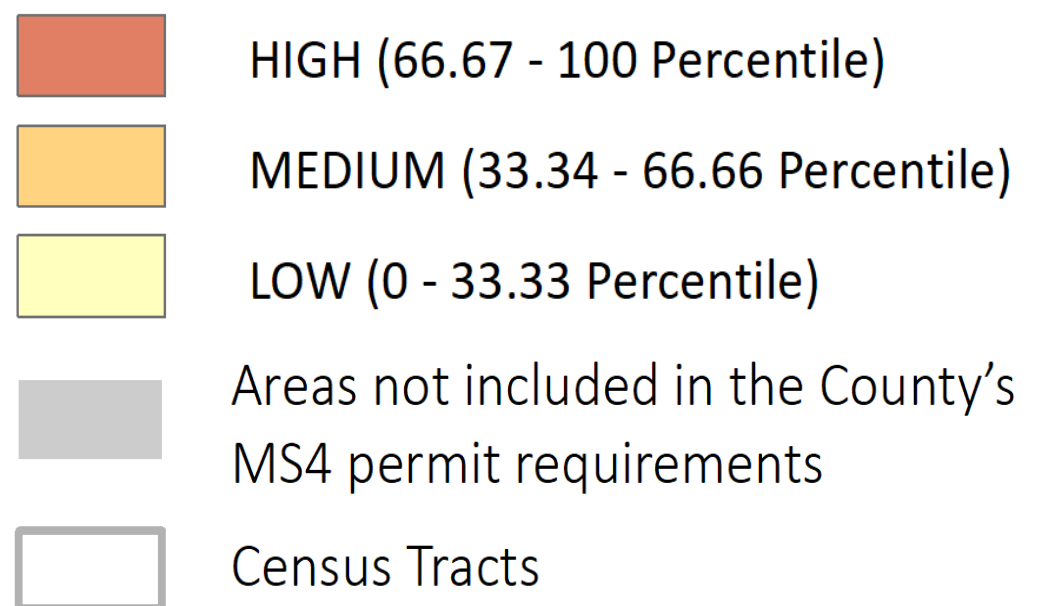
- HIGH (66.67 - 100 Percentile)
- MEDIUM (33.34 - 66.66 Percentile)
- LOW (0 - 33.33 Percentile)
- Areas not included in the County's MS4 permit requirements
- Census Tracts

* Percentile ranking of the average of percent people of color and percent low income in each US Census block group.

Source: Montgomery Department of Environmental Protection

EFA Comparison:
# Demographic Index (DEP)

DEP Demographic Index
HIGH (66.67 - 100 Percentile)*

EFA

Areas not included in the County's
MS4 permit requirements
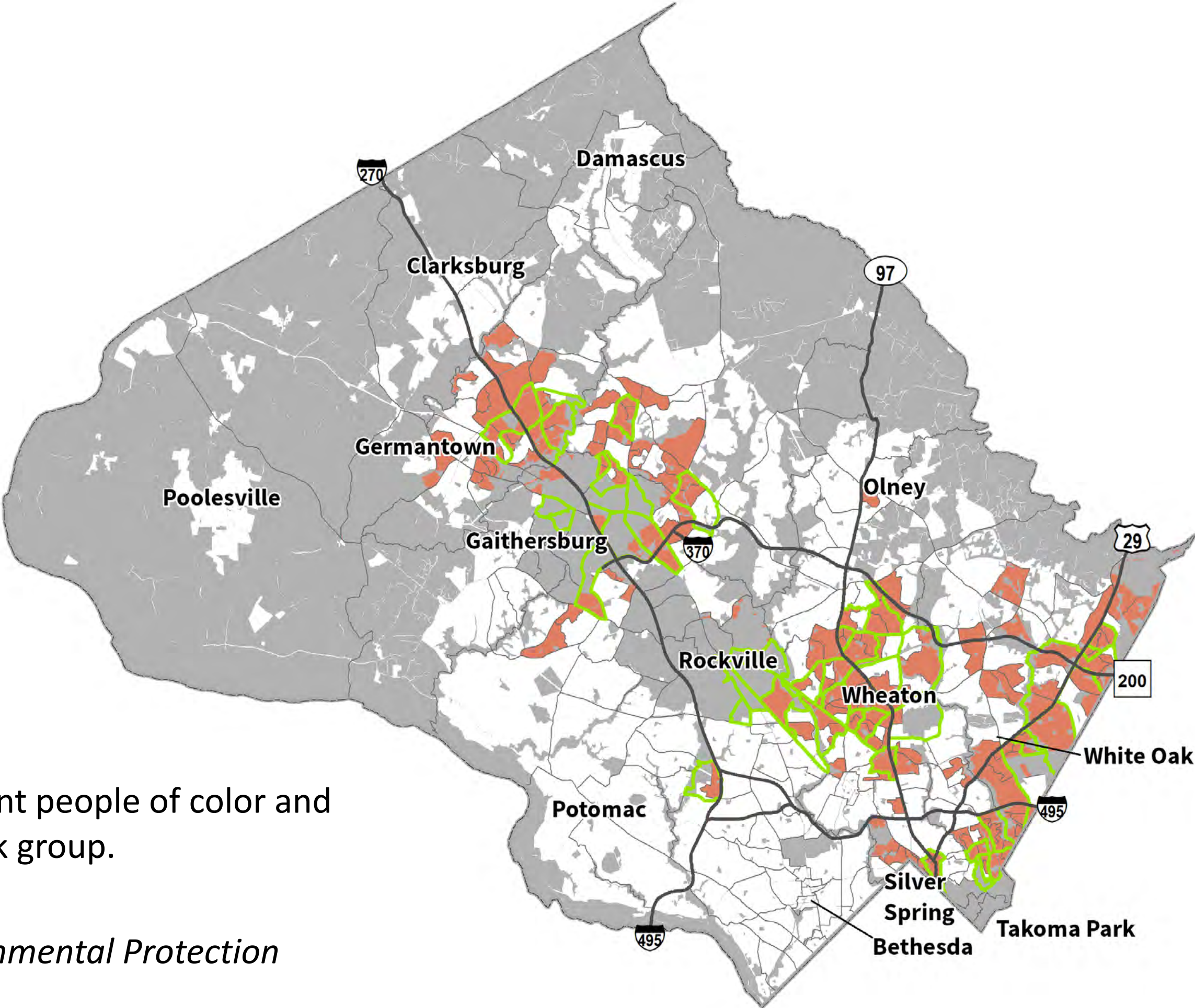
Census Tracts

* Percentile ranking of the average of percent people of color and
percent low income in each US Census block group.

Source: Montgomery Department of Environmental Protection

	EFA	EEA	DEP	COUNTY
# of tracts	56	49	91	215
% of all tracts	26%	23%	42%	100%
pop	275,873	257,842	499,137	1,040,133
households	94,019	88,340	169,885	370,277
POC	215,117	198,180	356,825	577,715
POC% of tot pop	78%	77%	71%	56%
pop age 5+	254,609	237,235	463,404	973,433
People speak Eng <VW	61,036	56,510	86,396	136,654
Eng<VW% of pop 5+	24%	19%	19%	14%
Avg Income	$90,151	$90,996	$105,826	$150,300
Inc < $50K	31,189	29,343	46,222	80,274
Inc < $50K%	33%	33%	27%	22%

EFA Comparison:
All equity areas identified by combining 3 methods

Combined EFA, EEA and DEP (103 tracts)

- 🟧 All Three Equity Areas Overlap
- 🟧 Two Equity Areas Overlap
- 🟨 Equity Area without Overlap
- ▭ EFA (56 Tracts)
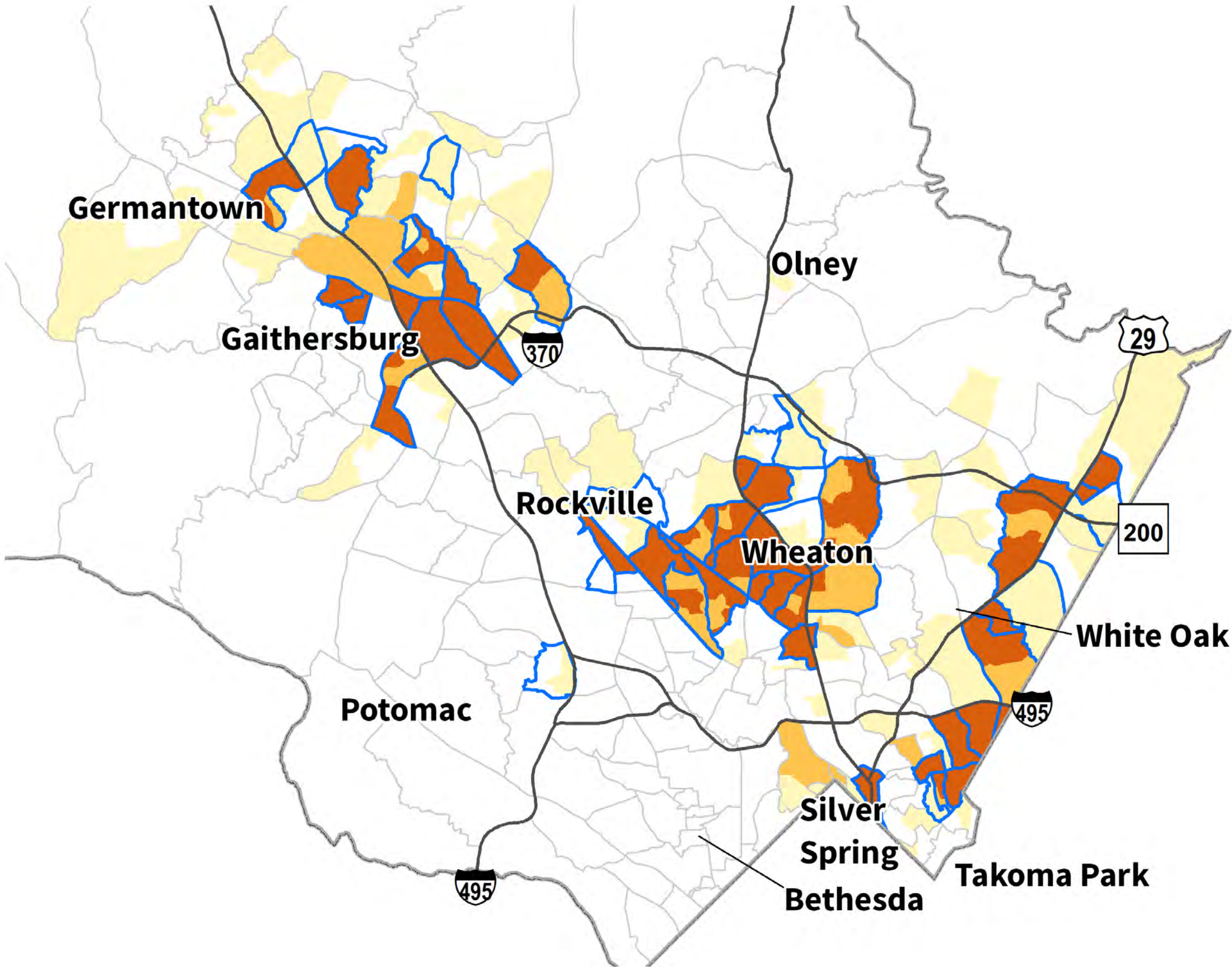
EFA Comparison:
Core equity areas identified in all 3 methods

Intersection of EFA, EEA & DEP (41 tracts)

- EFA (56 Tracts)
- Overlap of EEA, EFA and DEP potential susceptibility areas (41 Tracts)
- Census Tracts

Map labels: Germantown, Gaithersburg, Olney, Rockville, Wheaton, White Oak, Potomac, Silver Spring, Bethesda, Takoma Park