The Reality of Demographic Effects on Municipal Credit Quality

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Merritt
Research Services

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The Demographic Recipe for Better Credit Quality

- Introduction
  - Demographic analysis is the fundamental underpinning for determining credit quality beyond the horizon.
  - Essential ingredients to good credit health over time include:
    - **Population Growth**
    - **Expanding Wealth & Resources**
    - **Balanced Age Base**
    - **Educational Attainment**
- This presentation will focus on identifying quantitative demographic measures that should help analysts and investors identify credits more likely to catch the wind of positive change or the crosswinds that challenge stability.

The Demographic Recipe for Better Credit Quality

Main Areas of Focus Useful for Predicting Municipal Credit Quality

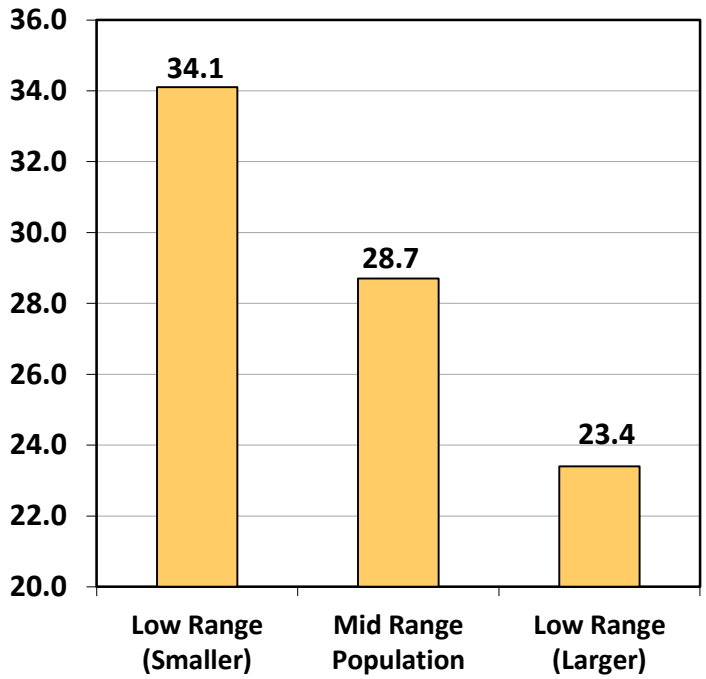
- Population Growth – Symbolic of the health of the economic base relating to both tax supported and revenue bonds.
- Age – Represents issues related to dynamics of the population, including: demand for schools, public services, health care and consumption.
- Educational Attainment – Leading determinant for the demand for educational services; source of entrepreneurial and community leadership, depth and quality of labor pool and professional support.
- Income – Another reflection of the health of the economic base, which provides the "ability" and capacity to support debts and provide for fiscal flexibility.

Cities by Population Size–

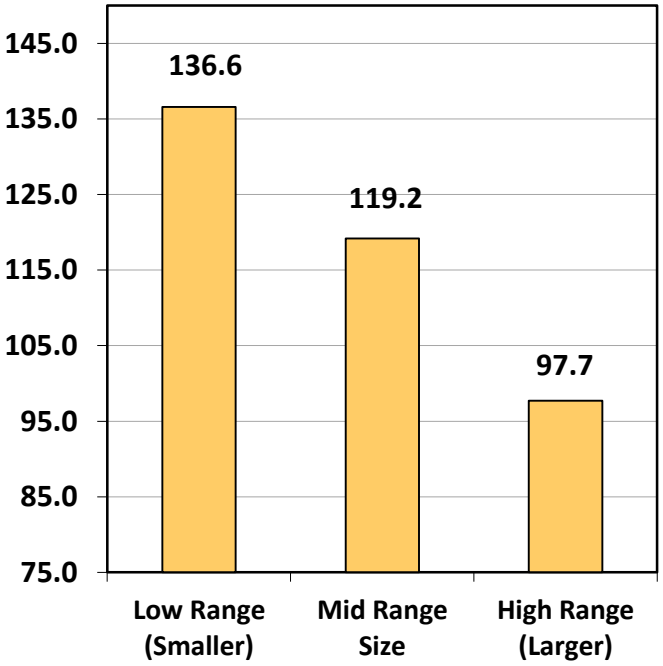
Characteristics Reflect Healthier Shorter Horizon Financial Profile

Smaller Cities show the best short term financial condition metrics in FY 2017.

Gen Fund Assigned & Unassigned Fund Balance as % of Revenues –2017



Gen Fund Days Cash on Hand - 2017



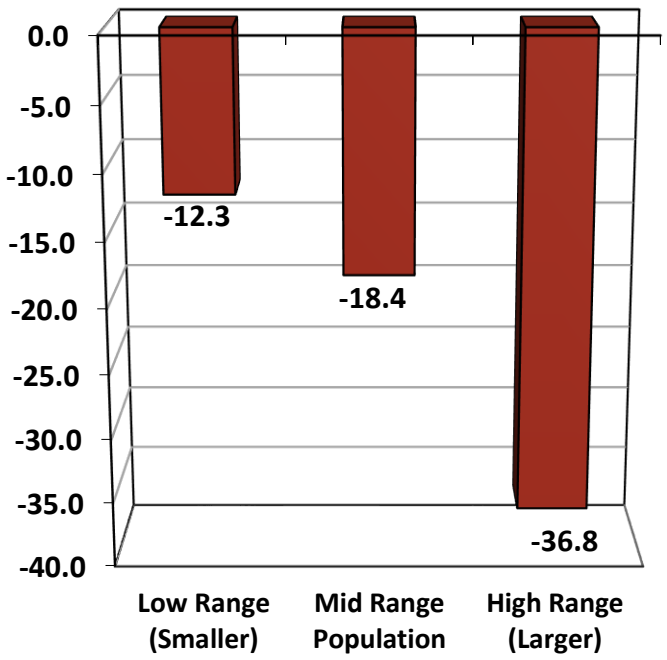
Source: Merritt Research Services, LLC Data based on medians of 1145 cities as of August 20, 2018. Low Range includes cities with a population of less than 43,200 persons. High Range includes populations of over 80,955.

Cities by Population Size–

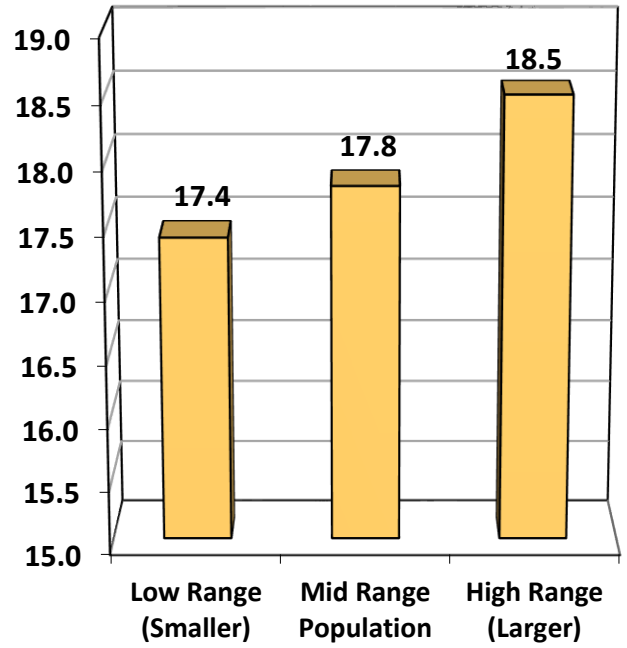
Characteristics Reflect Healthier Longer Horizon Financial Profile

Smaller Cities in FY 2017 reflect a stronger balance sheets favoring a better longer term financial condition and somewhat more manageable fixed costs.

Unrestricted Net Assets as % of Total Governmental Activities Expenses



Fixed Costs (DS+Pension and OPEB Contributions) to Govt Act. Expenses %



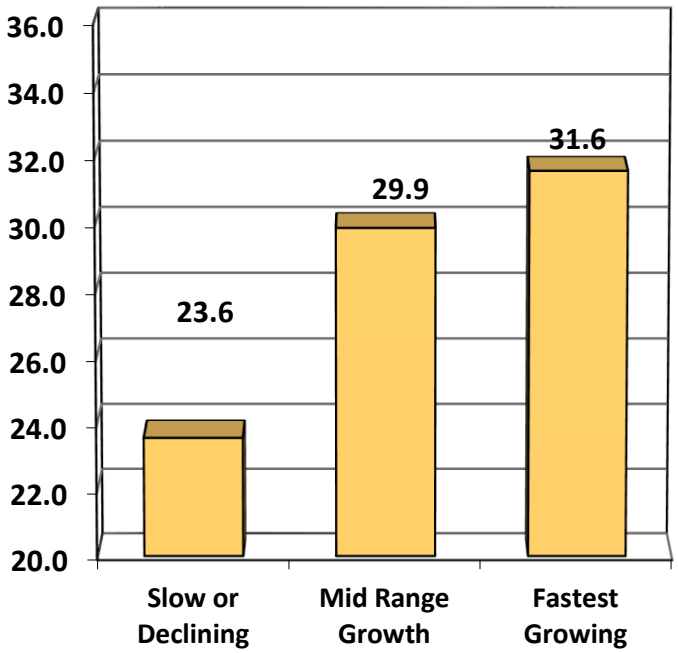
Source: Merritt Research Services, LLC, *Data based on medians of 1145 cities as of August 20, 2018. Low Range includes cities with a population of less than 43,200 persons. High Range includes populations of over 80,955.*

Cities by Population Growth –

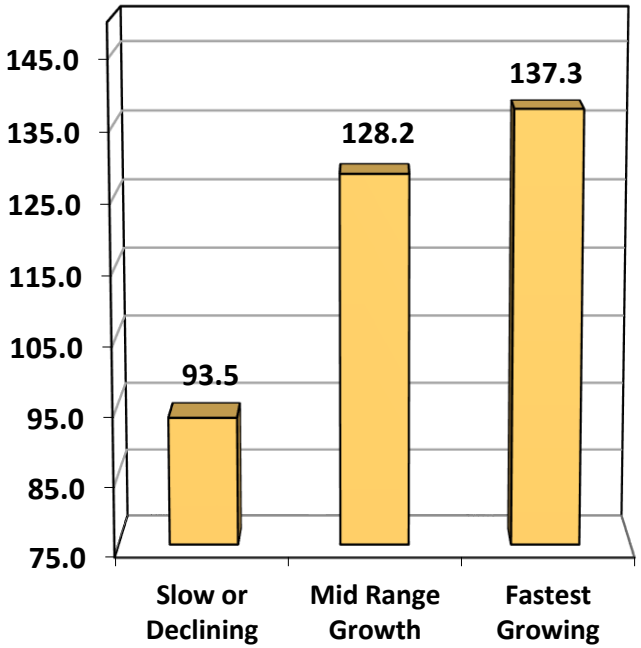
Faster Growing Cities *Characteristics Reflect Healthier Shorter Horizon Financial Profile*

Cities experiencing rapid growth (over 12.3%) during the past ten years have the best financial condition in FY 2017. Those with less than 4.5% growth show positive but less robust results.

Gen Fund Assigned & Unassigned Fund Balance as % of Revenues –2017



Gen Fund Days Cash on Hand - 2017



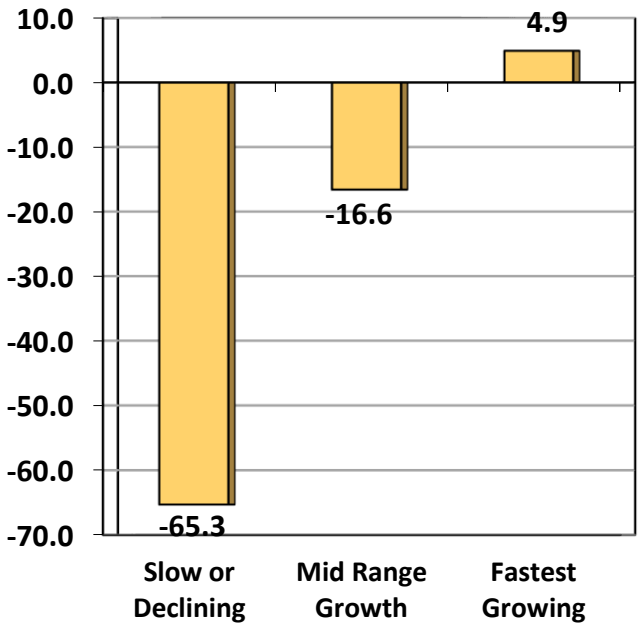
Source: Merritt Research Services, LLC, *Data based on medians of 1145 cities as of August 20, 2018. Slow or Declining Range includes cities with less than 4.5% growth rate for past ten years and Fastest Growing includes cities with over 12.3% rate of increase.*

Cities by Population Growth –

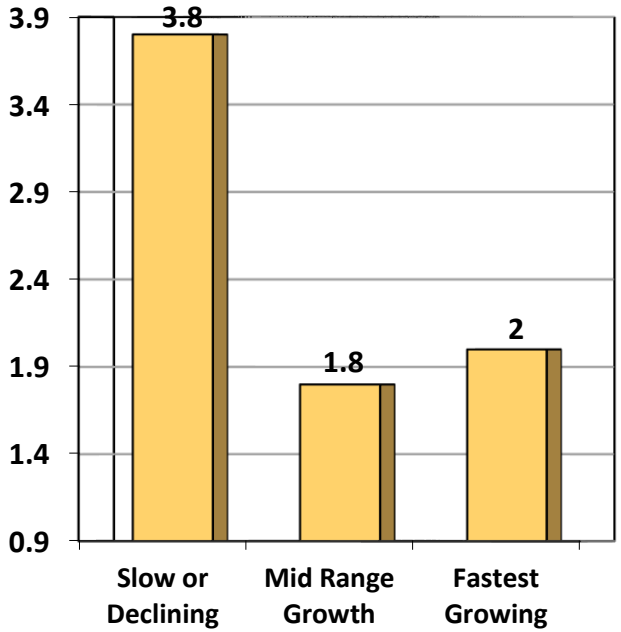
Characteristics Reflect Healthier Longer Horizon Financial Profile

Cities experiencing slow or declining growth over the past ten years have higher legacy liabilities.

Unrestricted Net Assets as % of Total Governmental Activities Expenses 2017



Total Direct Debt +Local Unfunded Pension Liability as % of Full Value 2017



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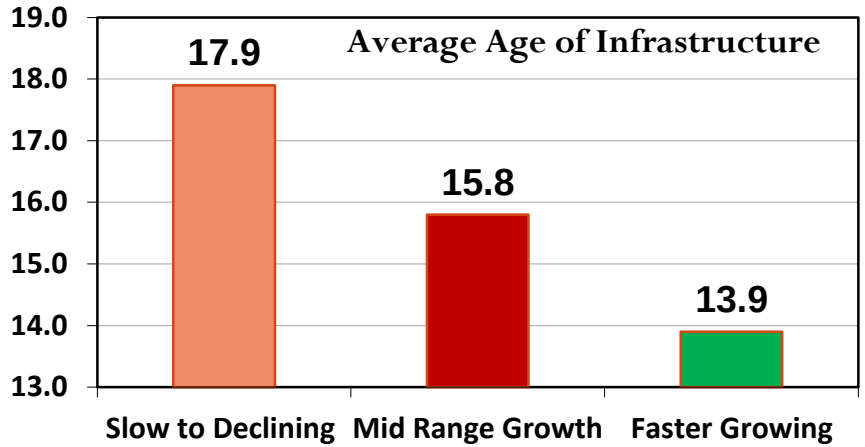
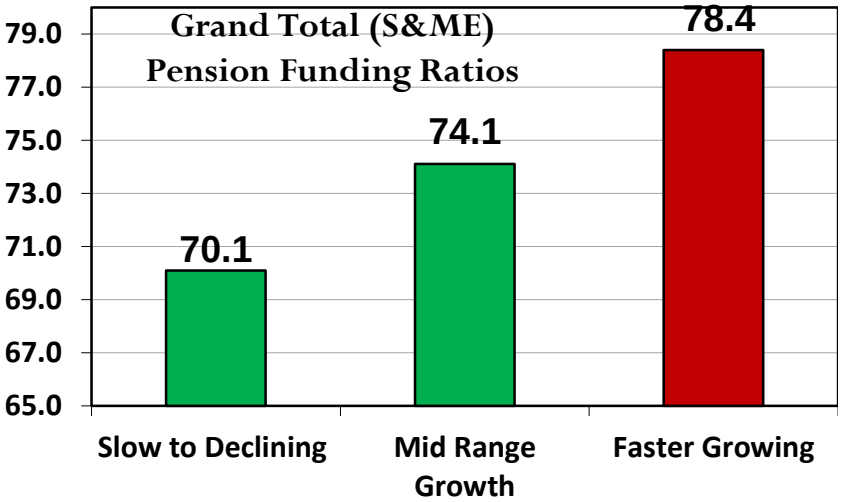
Population Growth Trend –2017 Medians

Declining to Slower Growth Cities Carry Burden of Older Infrastructure

- **Deferred Infrastructure Maintenance is a more formidable challenge for most stagnant or declining cities.**
- **Long Term Liabilities present a significantly greater challenge for slow growth to declining cities.**
- **Pension Funding Ratios are lowest for slow to declining cities (70.1%) compared to mid-range and fastest growing cities (74.1% and 78.4%).**
- **Legacy costs leave behind a heavier burden for the population.**
- **Median Household Income for slow growth cities is 24% lower than fast growing cities.**





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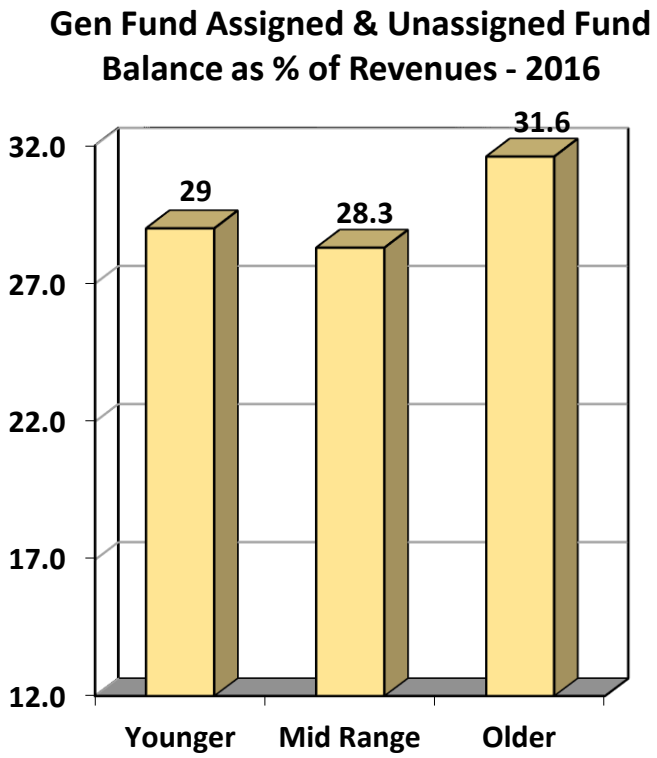
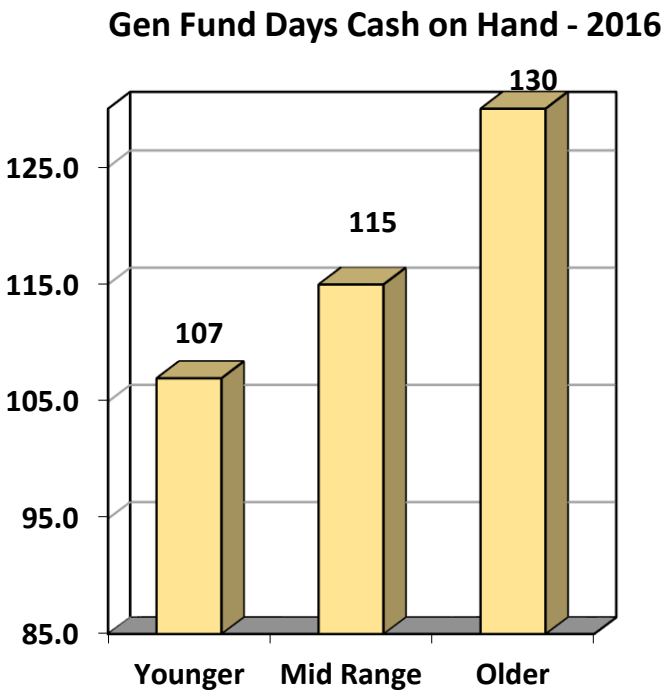
Median Age of Population

Older Populated Cities Tend to Have More Conservative Financial Operating Cushions

Cities with Older Populations Tend to be Generally Smaller in Population size (many suburbs) and Somewhat More Conservative Financial Conditions.



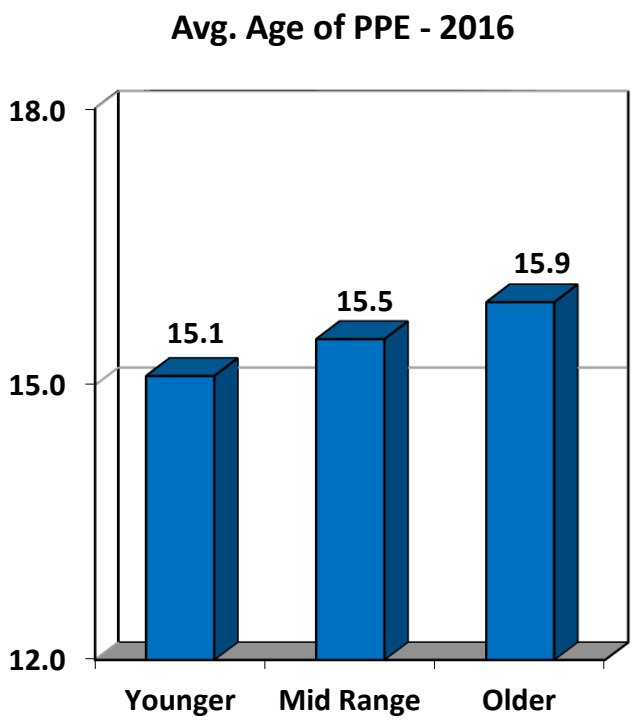


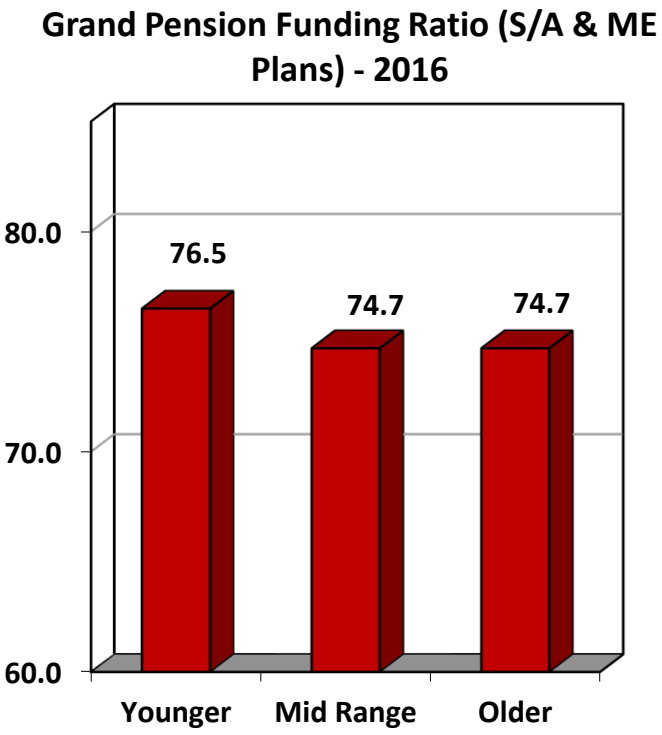
Source: Merritt Research Services, LLC. Data based on medians for approximately 1,670 cities. Younger median age group applies to cities with less than or equal to 35 years. Older populations include cities with over 39.3 years.

Median Age –

Older Age Populations Leave Behind Legacy Costs Despite Higher Wealth Levels

Cities with Older Populations Tend to Have Higher Long Term Liabilities, Including Infrastructure (PPE) and Lower Pension Funding (SE & ME).





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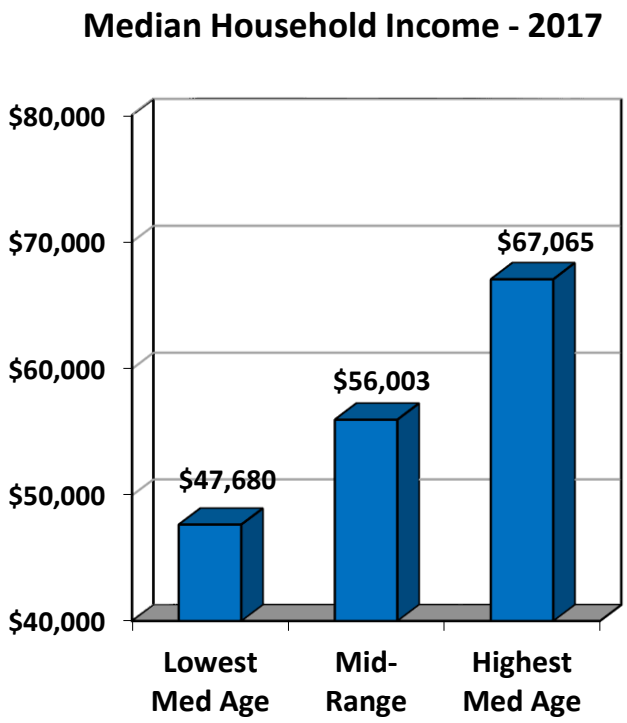
Median Age –

Older Age Populations are often Found in the Suburbs with Higher Wealth Levels

Cities with Older Populations Tend to be Wealthier by Income and Property Values.



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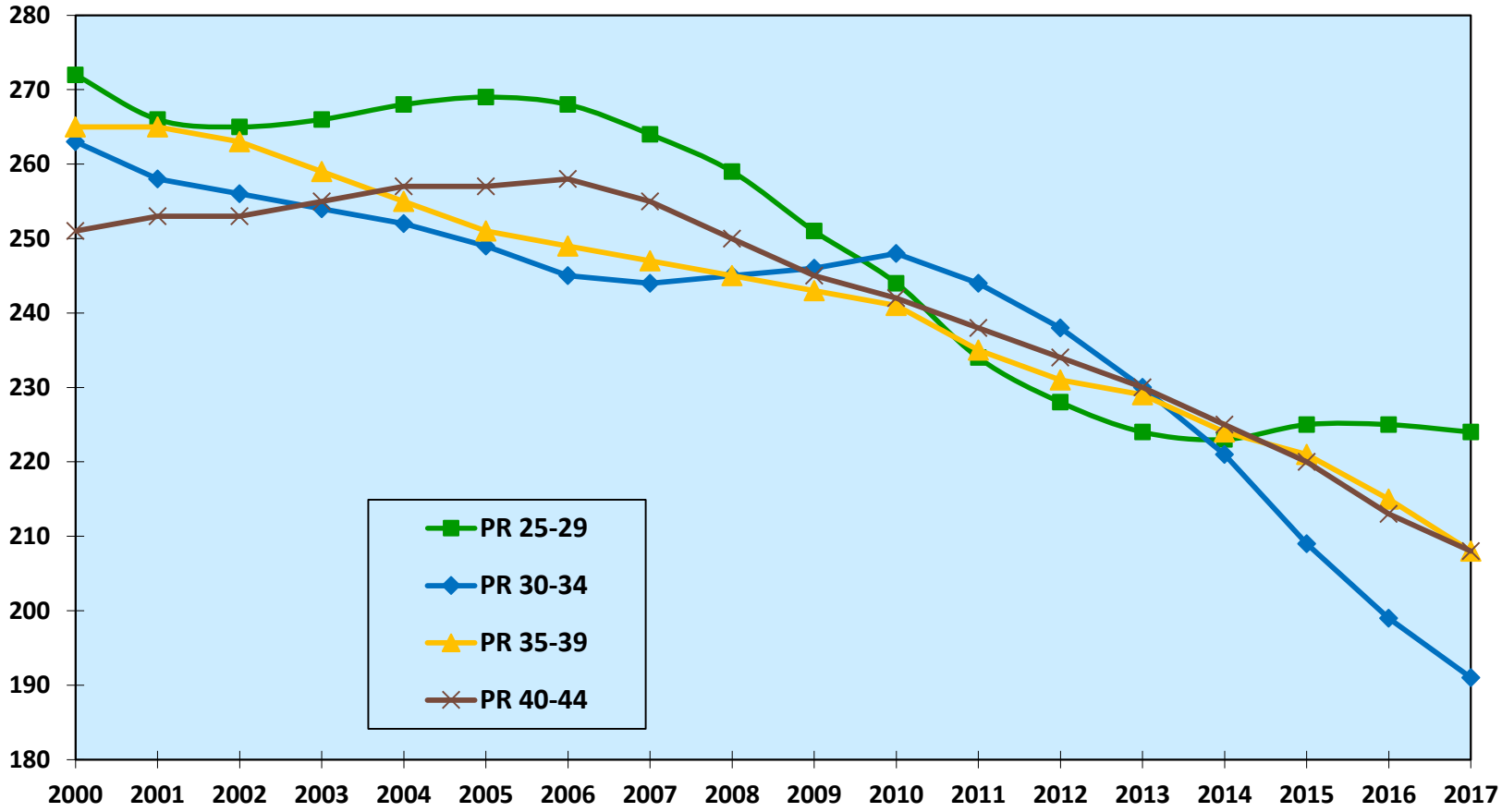
Tracking Age Waves –

Key Indicator Signaling Health of the Economy and Potential for Longer Term Economic Outlook

- Keeping younger career age population is a significant factor reflecting employment opportunities.
- Expanding consumer activity and growing entrepreneurial leaders requires retention and growth of mid-career population base.
- Bloated retirement ranks diminish opportunities for innovative start-ups; Support for bond levies to support schools and for tackling legacy liability costs.
- States and cities in which mid-career population bases show steadily declining figures are more likely to be dealing with mature economies and entrenched fiscal distress.

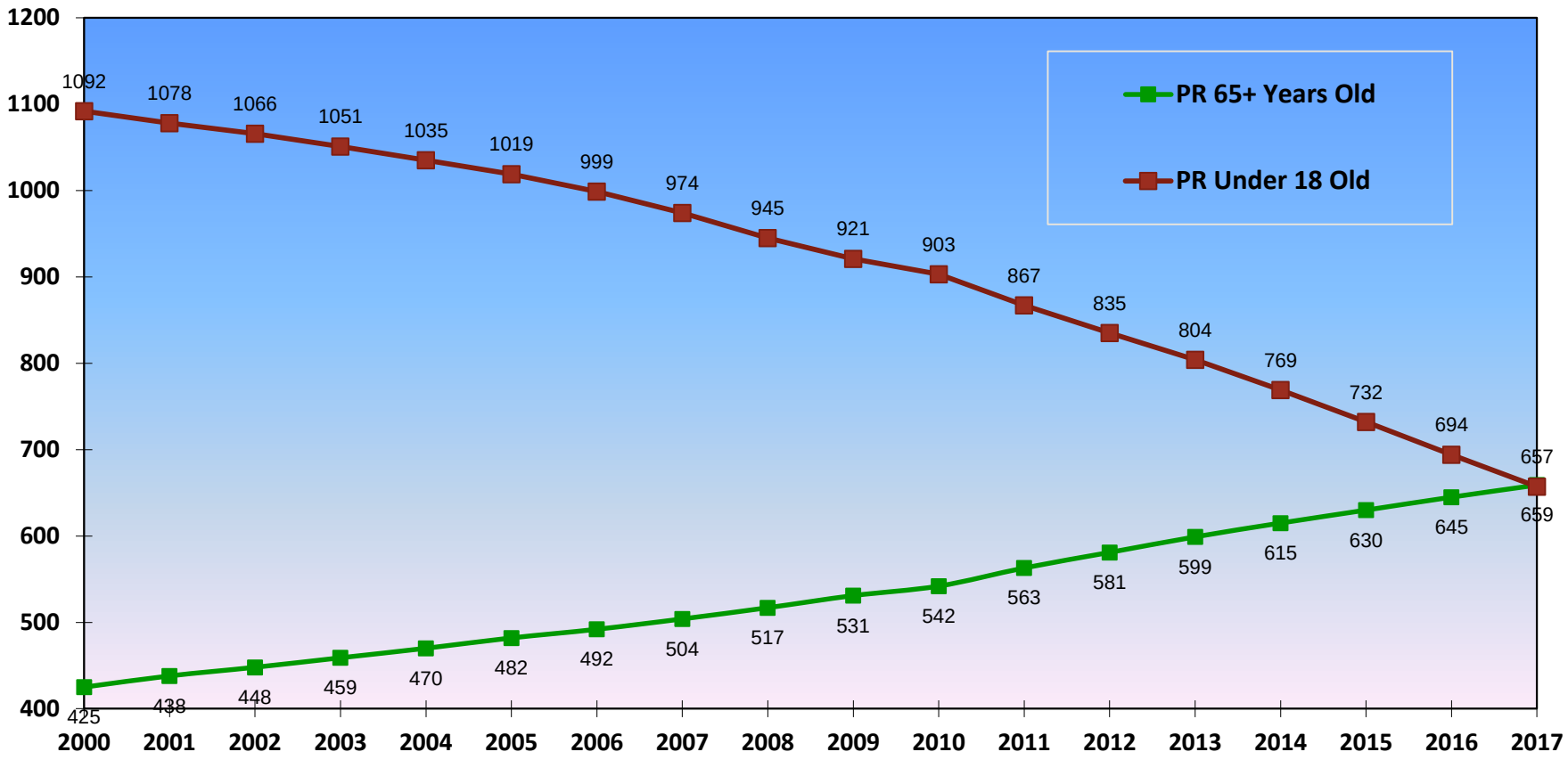
Puerto Rico: Early to Mid-Career Numbers Shrinking in Economically Distressed Areas

Population Groups (25-29 Years, 30-34 Years, 35-39 Years and 40-44 Years)



Source: Merritt Research Services, LLC.

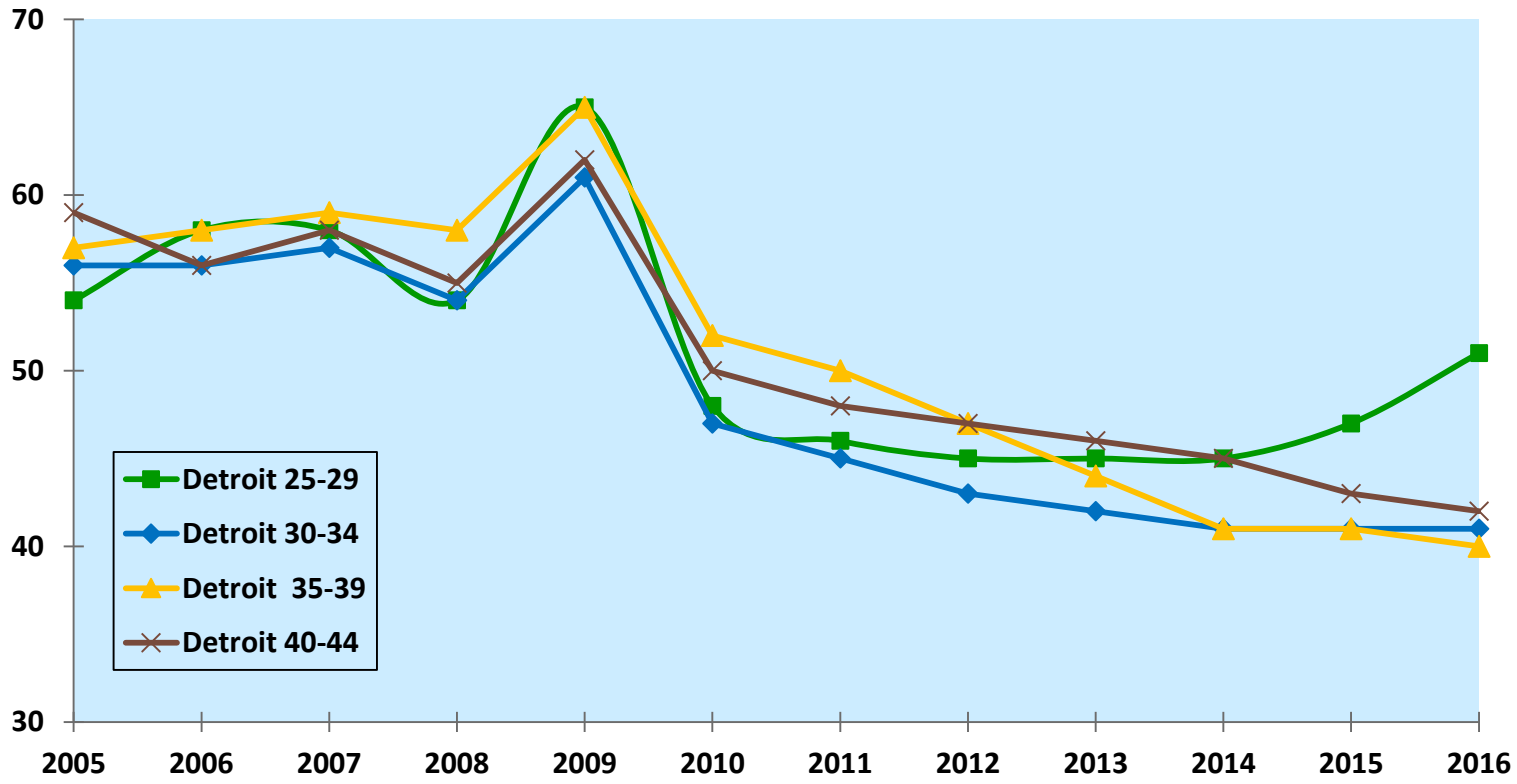
Puerto Rico: Younger Population Exiting Commonwealth while Persons over 65 Climb – Two Groups Intersect



Source: Merritt Research Services, LLC. Based on US Census data

Detroit: Early to Mid-Career Numbers Shrinking in Economically Distressed Areas

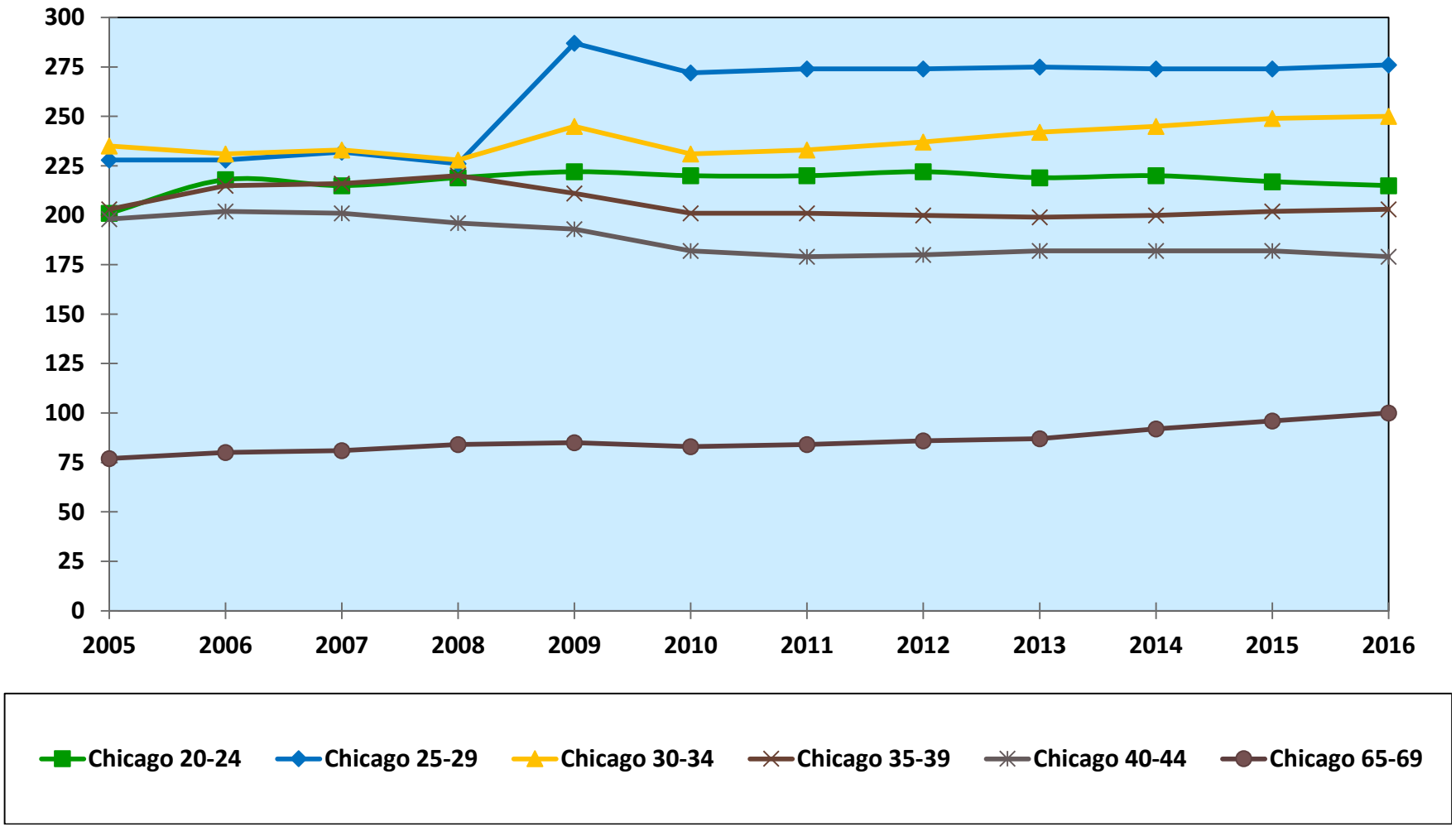
Recent Uptick in Millennials *(25-29 Years) while 30-34 , 35-39 and 40-44 Year-Olds Continue to Slip in Numbers*



Source: Merritt Research Services, LLC based on US Census figures.

Chicago: Early-Career Population Data Critical to Assessing Future Economic Health

Early to Mid Career Age Groups Mostly Holding Steady - 20-24 years take slight dip in numbers.

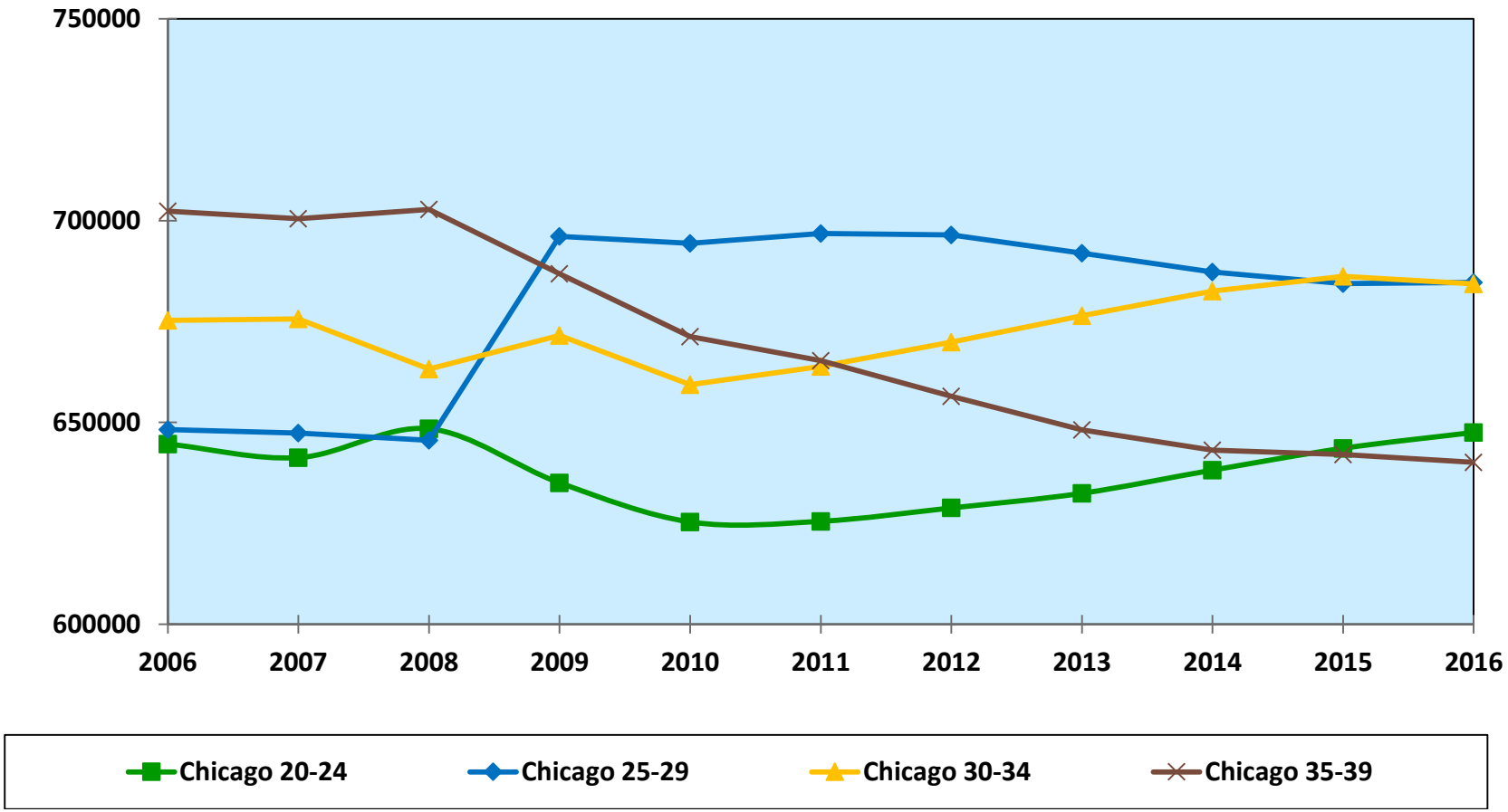


Source: Merritt Research Services, LLC. Based on US Census

Early-Career Population Data Critical to Assessing Future Economic Health

Chicago CBSA Population Groups (20-24 Years, 25-29 Years, 30-34 Years and 35-39 Years)

Chicago Metro Population trends are mixed. Those 20-24 and 30-34 Year olds show upward movement.



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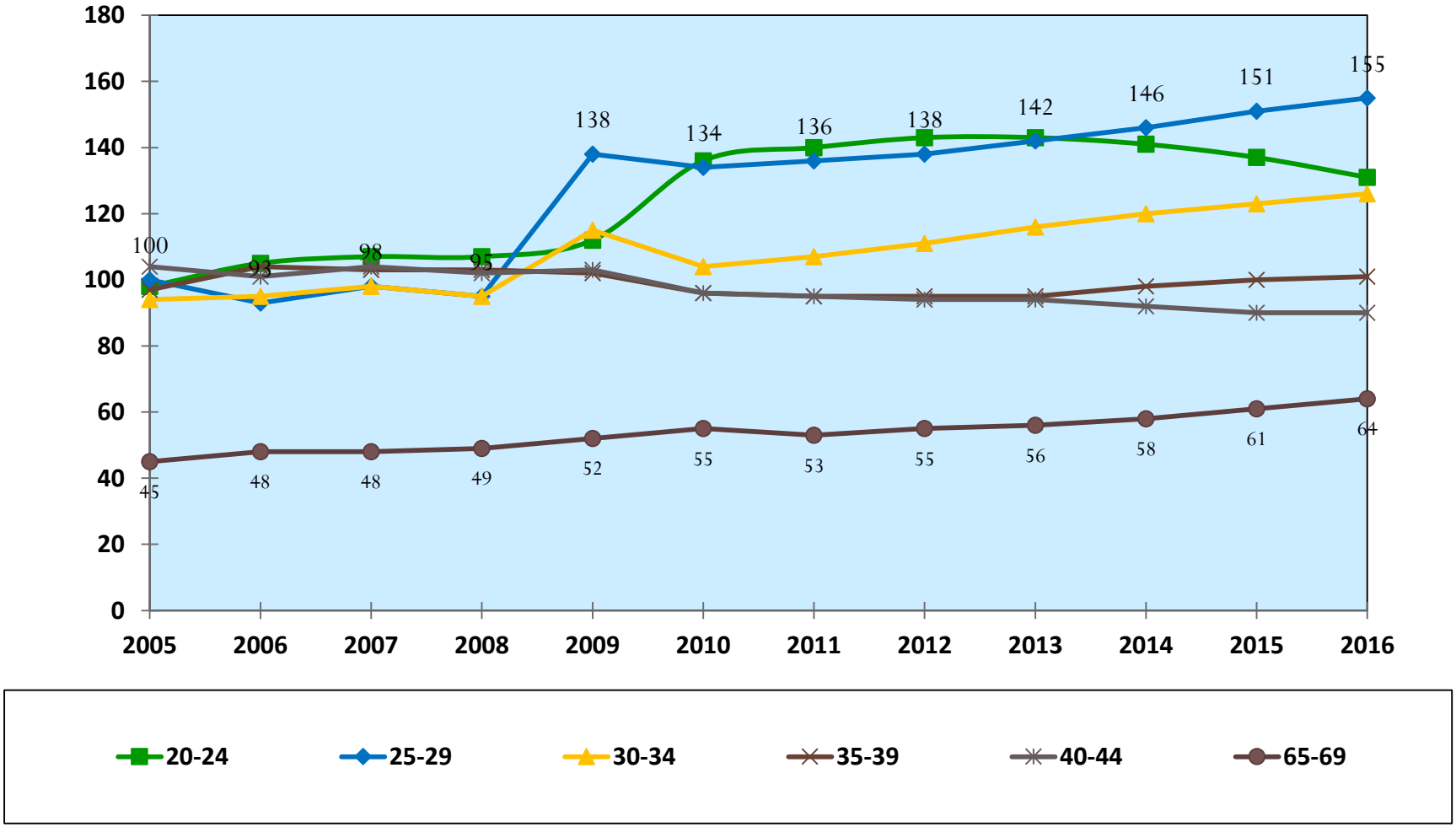
Philadelphia: Early-Career Population Data Critical to Assessing Future Economic Health

Early to Mid Career Age Groups showing slight upward trend- 25-34 year olds climb higher.



Source: Merritt Research Services, LLC. Based on US Census

Top/Bottom 20 Cities (Over 100,000) with the Fastest and Slowest Growth in Persons 25 to 29 Years Old (2007 to 2016)

Stressed Cities Prominent in Losses

Rank Order Based on % Growth in 25-29 Population		
1.	New Orleans, LA	103.6
2.	**Fayetteville, NC**	100.1
3.	Renton, WA	89.0
4.	San Francisco, CA	78.7
5.	**Pittsburgh, PA**	**73.2**
6.	Richmond, VA	72.7
7.	North Charleston, SC	72.1
8.	Midland, TX	71.4
9.	Kent, WA	71.3
10.	**Hialeah, FL**	**69.4**
11.	Bellevue, WA	66.7
12.	Clarksville, TN	59.7
13.	Jersey City, NJ	59.4
14.	**Philadelphia, PA**	**59.2**
15.	Denver, City & County, CO	57.6
16.	Minneapolis, MN	56.8
17.	Miami, FL	55.6
18.	Seattle, WA	54.6
19.	Irvine, CA	53.8
20.	Charlotte, NC	53.1

Median growth rate for the population segment (25 to 29 yrs.) is 14.3%

Rank Order Based on % Loss in 25-29 Population		
1.	Joliet, IL	-33.4
2.	Roseville, CA	-30.4
3.	Provo, UT	-22.8
4.	Aurora, IL	-22.7
5.	Riverside, CA	-21.0
6.	Corona, CA	-19.0
7.	Elgin, IL	-17.9
8.	Surprise, AZ	-17.9
9.	Eugene, OR-	-15.4
10.	Lakeland, FL	-14.0
11.	San Bernardino, CA	-13.1
12.	Frisco, TX	-12.8
13.	Springfield, IL	-12.5
14.	Detroit, MI	-11.9
15.	Rockford, IL	-11.3
16.	Greeley, CO	11.0
17.	Tucson, AZ	-10.8
18.	Plano, TX	-10.7
19.	Stockton, CA	-10.6
20.	Springfield, MA	-8.8

Cities in blue indicate early-career populations growing far faster than city population as a whole (having less than 10% rate).
cities in red denotes cities with total city populations growing at a rate below 10% over the pat ten years through 2017.

Source: Merritt Research Services, LLC.

Foreign Born Population – Big Cities Ranked by Total Population (2016)

City	Total Population (000)	Foreign Population in (000)	% of Foreign Born Persons to Total Population	% Foreign Born Pop. Change Since 2008
New York, NY	8,615	3,146	36.5	3.2%
Los Angeles, CA	3,981	1,483	37.3	-.4
Chicago, IL	2,720	566	20.8	-3.7
Houston, TX	2,304	650	28.2	14.6
Phoenix, AZ	1,602	307	19.2	-12.7
Philadelphia, PA	1,575	204	12.9	30.1
San Antonio, TX	1,488	204	13.7	22.5
San Diego, CA	1,406	364	25.9	13.8
Dallas, TX	1,322	310	23.5	-2.4
San Jose	1,031	392	38.0	11.1

Source: Merritt Research Services, LLC

Cities with Fastest % Growth in Foreign Born Population (2008 to 2016)

City (by rank of Tot Pop.)	Total Population 2016 (000)	Foreign Population in 2016 (000)	% of Foreign Born Persons to Total (2016)	% Foreign Born Pop. Change Since 2008
Dayton, OH	140	6.3	4.5	116.8
Frisco, TX	164	16.1	16.1	93.3
Pearland, TX	116	17.7	15.2	89.1
Fargo, ND	120	9.1	7.6	80.9
Buffalo, NY	258	23.1	9	72.7
High Point, NC	111	14.9	13.4	63.8
Renton, WA	101	27.8	27.5	62.9
Sioux Falls, SD	173	11.9	6.9	62.5
Lubbock, TX	251	14.2	5.7	62.2
Springfield, MO	166	6.5	3.9	60.5

Source: Merritt Research Services, LLC

Foreign Born Populations– High Percentage of Foreign Born Populations Is Not a Clear Cut Way to Get Better or Worse Credit Quality (All Cities)

Cities With Higher Foreign Born Populations Attract Newcomers from Same Origins.

Foreign Born as a % of Total Population

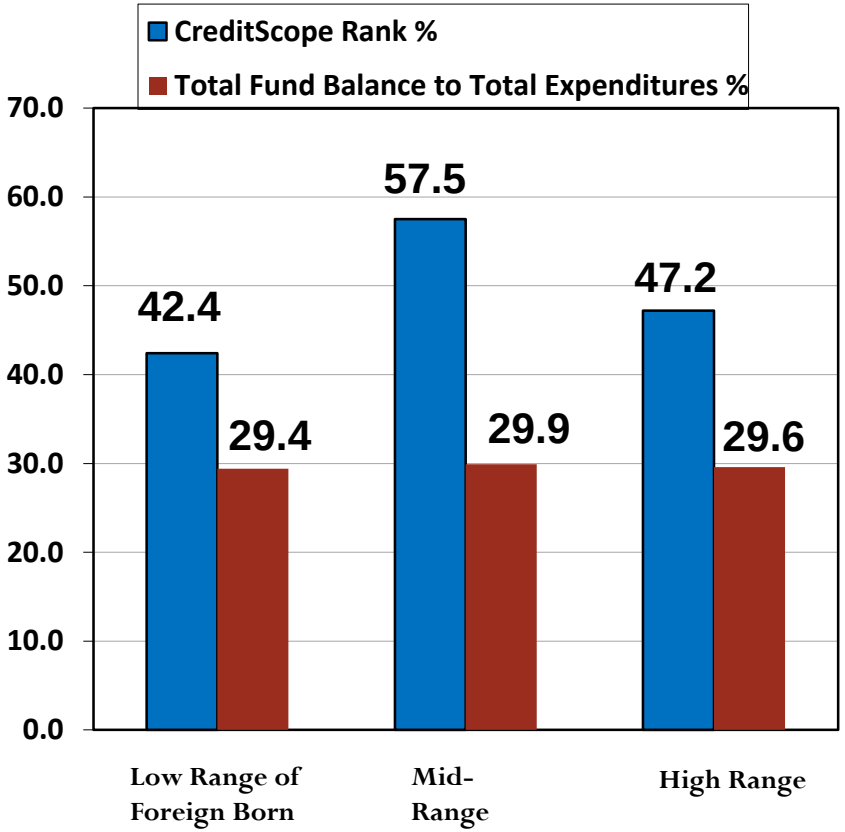
Cities with Highest Percentage:

Hialeah, FL	73.3
West New York, NJ	57.7
Union City, NJ	57.2
Rosemead, CA	55.5
Miami, FL	54.6
Glendale, CA	53.6
Miami Beach, FL	52.6
Daly City, CA	51.5
Fort Lee, NJ	51.3
Cupertino, CA *$	51.2

Other Notables:

Elizabeth, NJ	46.4
Fremont, CA *$	45.3
Sunnyvale, CA *$	45.1
Santa Clara, CA *$	40.6
Beverly Hills, CA *$	38.9
Central Falls, RI	38.0
Mountain View, CA *$	37.8
Passaic, NJ	38.5
Los Angeles, CA	37.3

***$Cities with Median Household Incomes of over $100,000Lo**

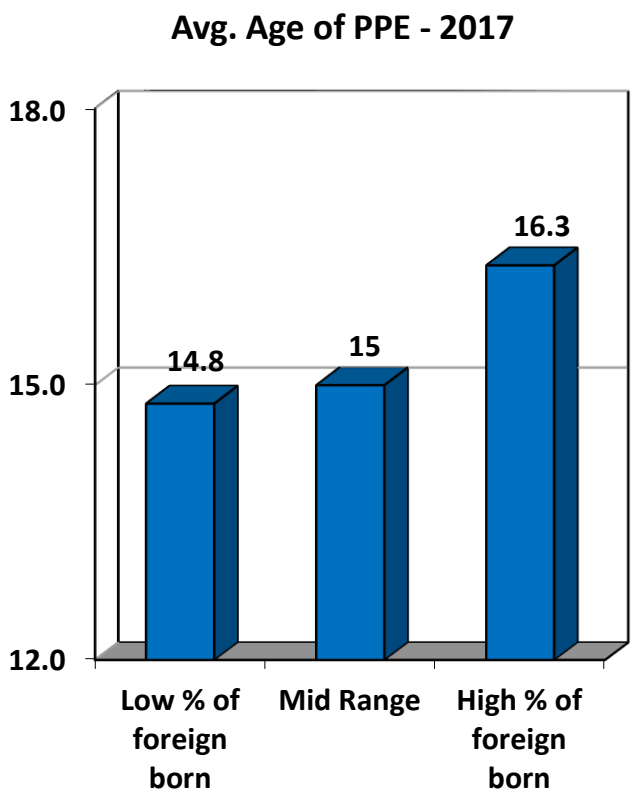


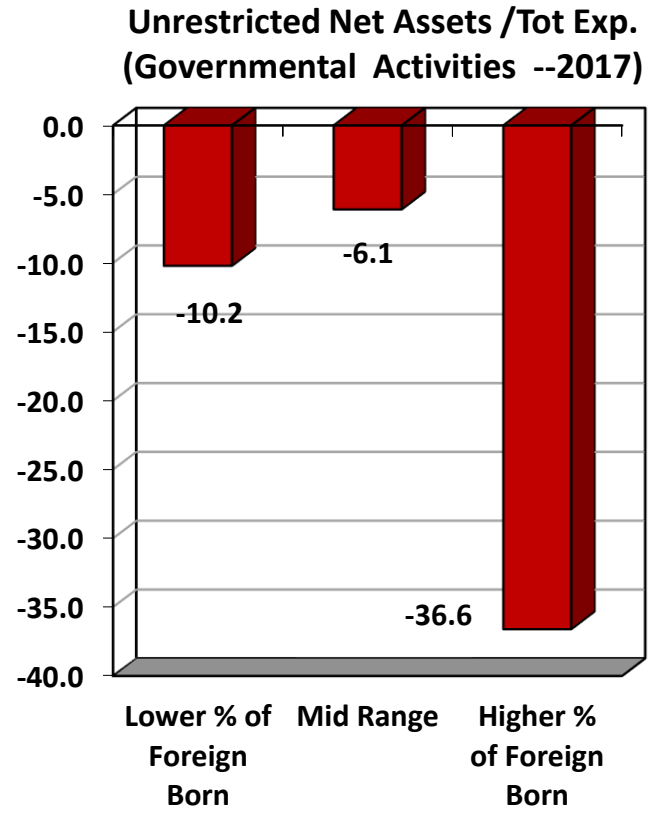
Source: Merritt Research Services, LLC. Data based on 2016 foreign born census information and FY 2016 financials for 1414 cities. Foreign Born Ranges are: Low Range is less than 7.15% foreign born to population, and High Range is over 15.8%.

Foreign Born – Influx into Mature Cities

Cities with a *High Percentage of Foreign Born Populations Often Inherit Legacy Costs*

Cities with Higher Foreign Born Often Tend to Live in Mature & Larger Cities with Older Infrastructure (PPE) and Weaker Net Unrestricted Governmental Activities Positions.





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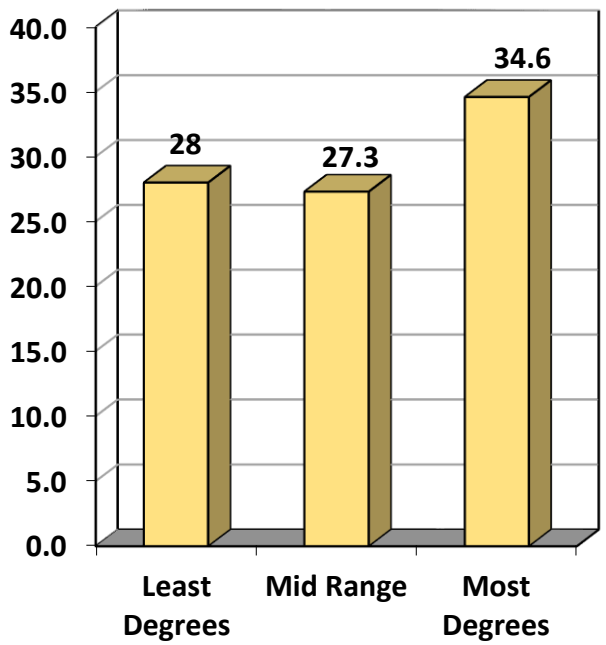
Educational Attainment –

Top City Finances Are Characteristically Associated with More Educated Population Bases

Cities with More Highly Educated Populations Tend to Have Better Financial Conditions.

Gen Fund Assigned & Unassigned Fund Balance as % of Revenues - 2016



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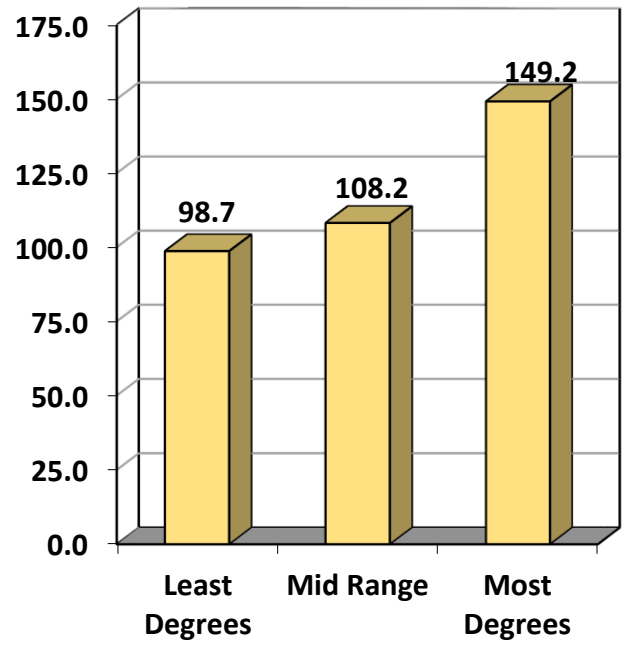
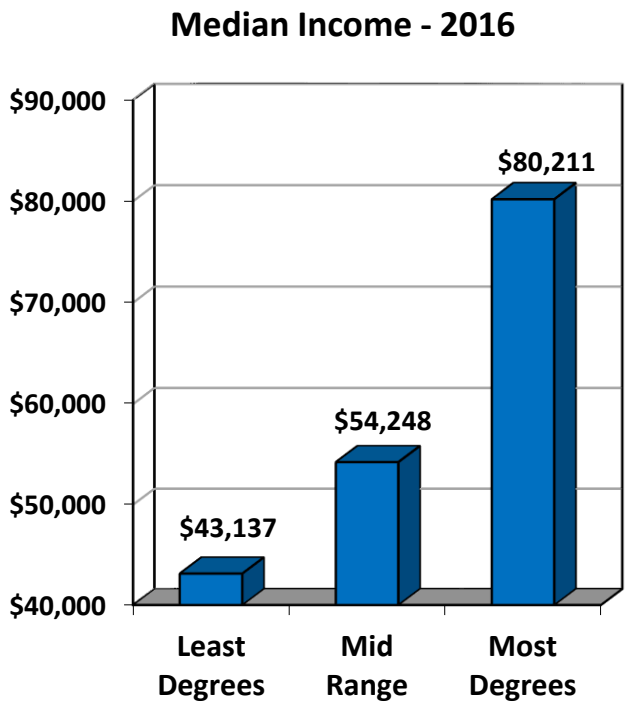
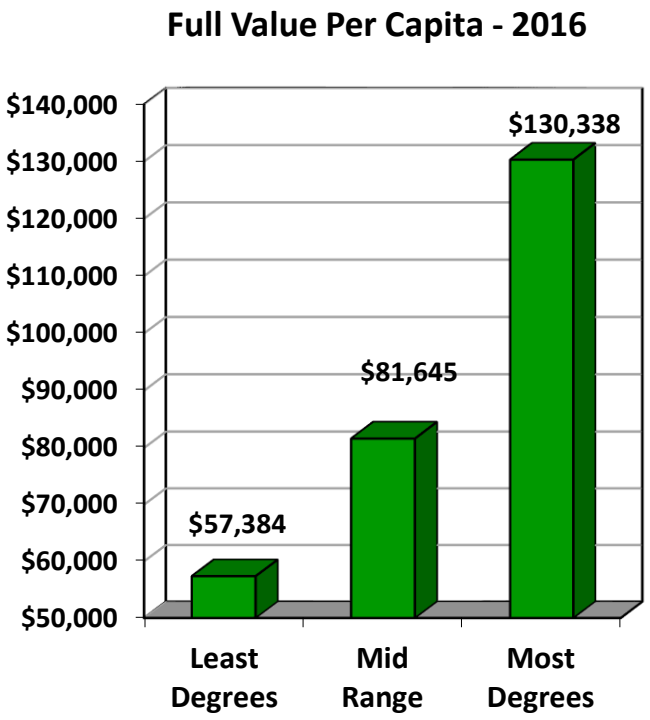


Source: Merritt Research Services, LLC. *Data based on 2016 fiscal year and census medians .*

Characteristics of Cities Based on Educational Attainment as a % of Census

Cities with More Educated (College Degree or Higher) Populations Tend to be Wealthier and Estimated Market Values of Property Higher

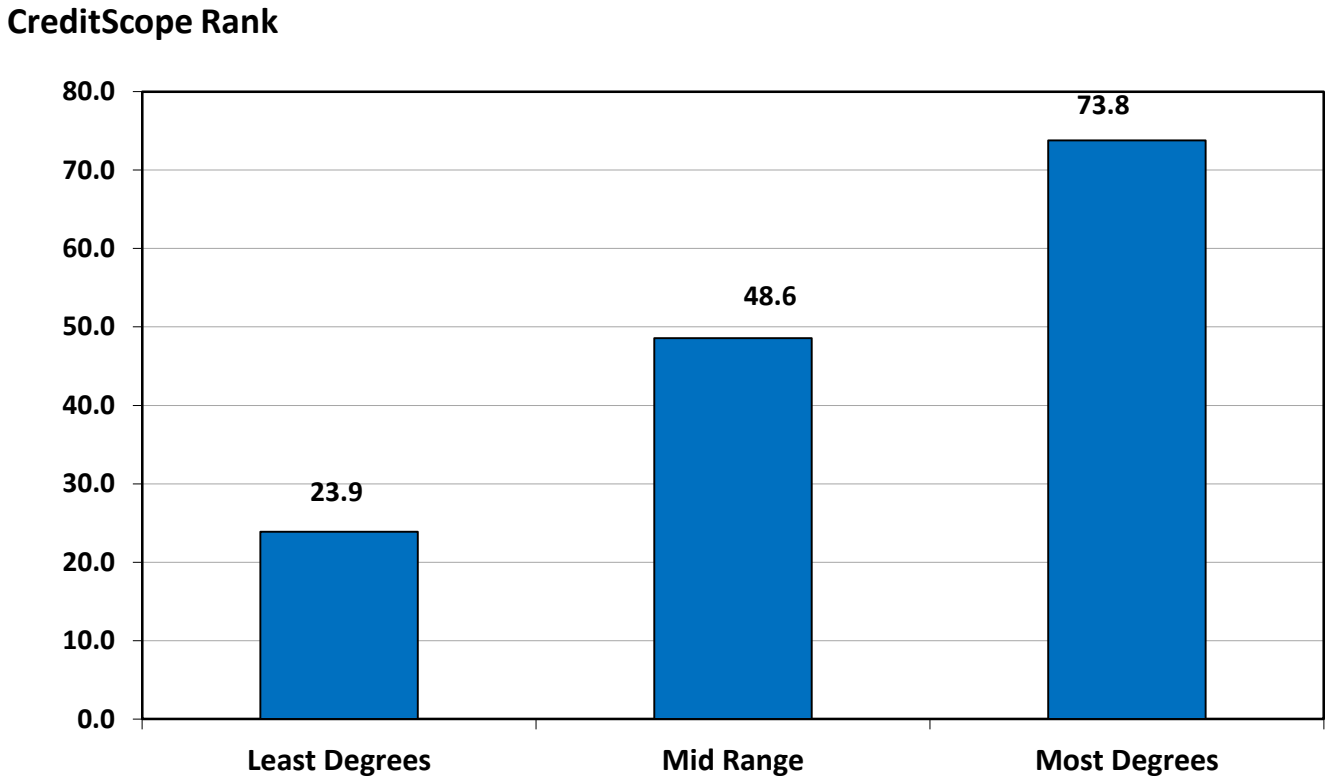




***Source: Merritt Research Services, LLC**. Data based on 2016 FY medians reported and collected as of August 17, 2018.*

Characteristics of Cities Based on Educational Attainment as a % of Census

Cities with More Educated (College Degree or Higher) Population Have the Highest CreditScope Rank Percentiles



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A Demographic Ingredient for Better Credit Quality

Educational Attainment – Cities that Have Highest and Lowest Percent of College or Advanced Degrees in 2016

Sample of Cities with Highest % of Population 25 and Older with Degrees:		***Highest Rating by Moody's or S&P***
Winnetka, IL	88.1%	AAA
Palo Alto, CA	80.0%	AAA
Newton, MA	76.7%	AAA
Cambridge, MA	74.9%	AAA
Ann Arbor, M	72.8%	AA+
Boulder, CA	72.2%	AAA
Berkeley, CA	71.8%	AA+
Menlo, CA	70.6%	AAA
Oak Park, IL	68.0%	AA
Naperville, IL	66.0%	AAA
Sample of Cities with Lowest % of Population 25 and Older with Degrees:		
Huntington Park, CA	6.1%	BBB
Bell, CA	6.9%	BBB+
Cicero, IL	7.3%	A+
Reading, PA	9.2%	Baa1
Patterson, NJ	10.4%	Ba1
Flint, MI	11.2%	NR
Allentown, PA	15.4%	A3

***Source: Merritt Research Services, LLC**. Data based on 2016 FY medians reported and collected as of August 17, 2018.*

Median Household Income –

Wealthier Populations Normally Generate More Tax Dollars Per Capita – (FY 2016)

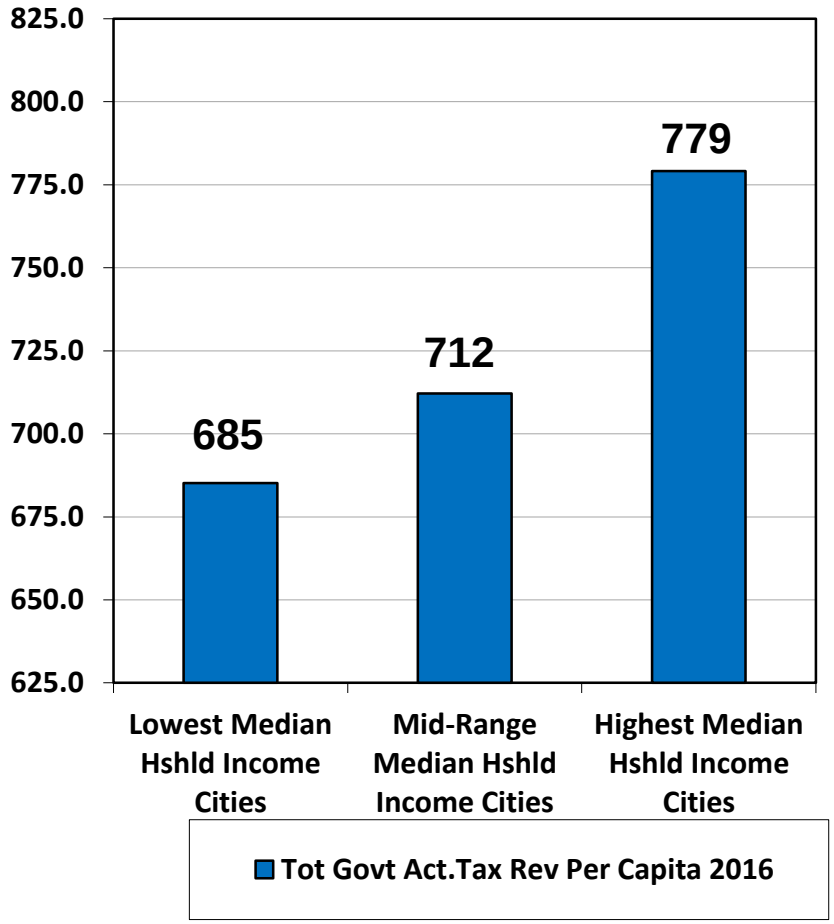
Wealthier cities raise relatively higher tax revenues based on ability and service levels. Lower income cities sometimes produce higher relative taxes out of fiscal necessity or business activity

Examples: Higher Income Cites with High Taxes Per Capita:

Greenwich, CT	$5,987
Beverly Hills, CA	5,570
San Francisco, CA	4,520
Alexandria, VA	3,897
Stamford, CT	3,866

Examples: Lower Tier Income Cities with High Total Taxes Per Capita:

Miami Beach, FL	$3,484
Baltimore, MD	2,317
Philadelphia, PA	2,386
Hartford, CT	**2,168**
Providence, RI	2,163
Bridgeport, CT	2,033
St. Louis, MO	1,887
Atlanta, GA	1,605
Detroit, MI	**1,429**
New Orleans, LA	1,358

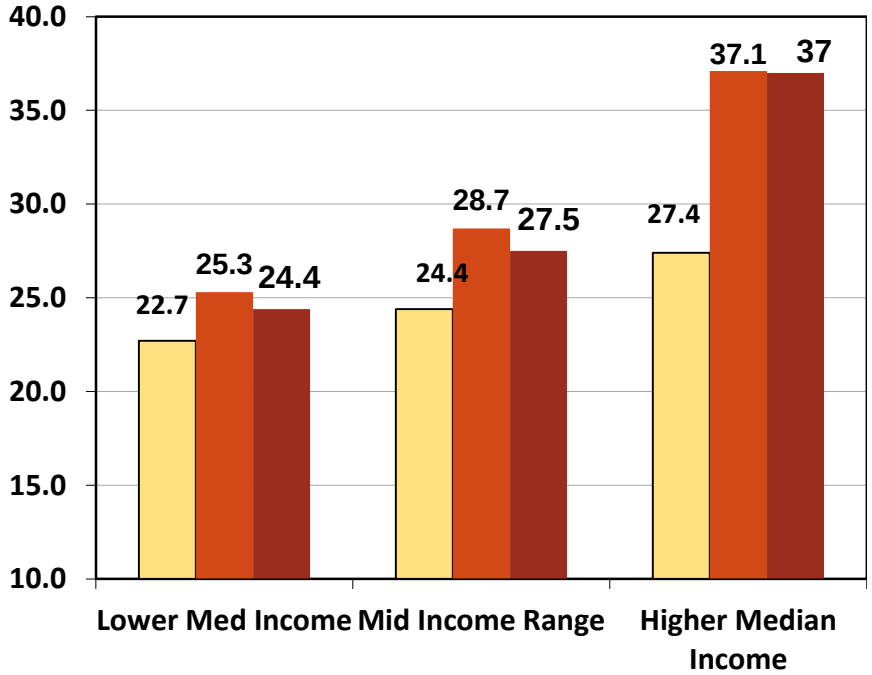


Source: Merritt Research Services, LLC. Data based on 2016 medians for 1700 cities as of August 22, 2018. Lower income applies to $47,225 and below. Higher income applies to cities over $68,157. City examples shown in left table apply to FY 2017.

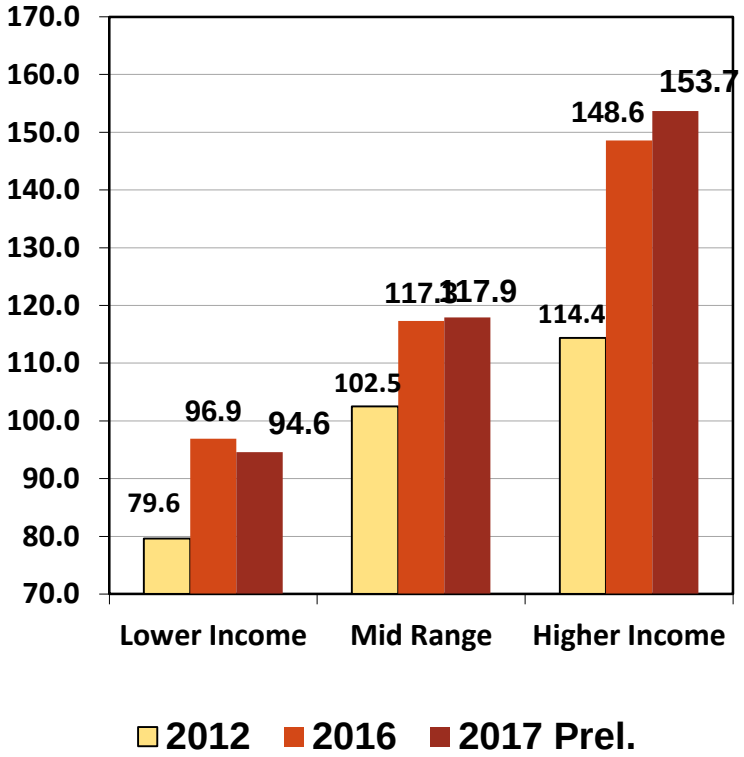
Impact of Median Household Income on City Credit Quality Comparing Results from 2012, 2016 and 2017

Wealthier Household Cities Consistently Show Strong Tendency to Have Better Financial Conditions

Gen. Fund Assigned & Unassigned Fund Balance as % of Revenues – 2012/2016/2017 Preliminary



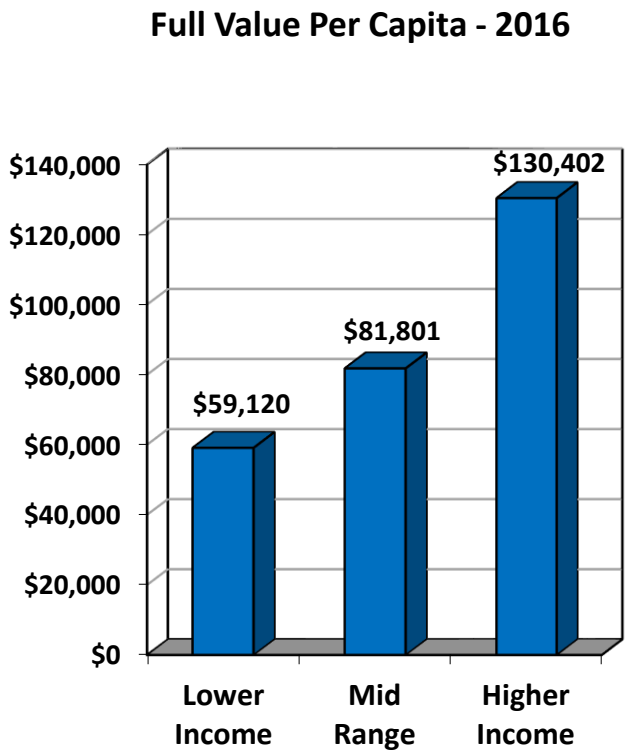
General Fund Days Cash on Hand – 2012/2016 /2017 Preliminary

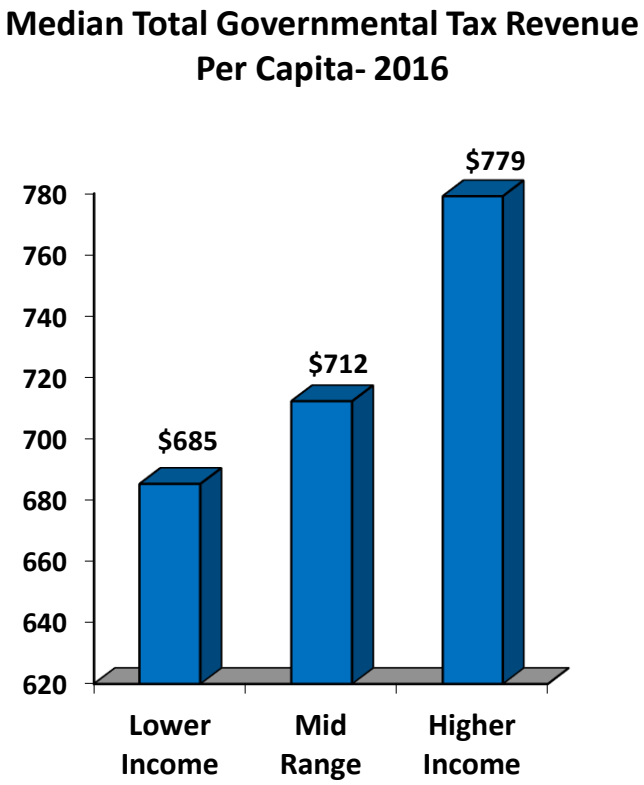


Source: Merritt Research Services, LLC. Data based on medians for 1600 cities for 2016 and 1145 results for 2017 as of August 20, 2018.

Characteristics of Cities Based on Median Household Income

Wealthier cities raise relatively higher tax revenues based on ability and service levels. Lower income cities sometimes produce higher relative taxes out of fiscal necessity or business activity , but not normally.

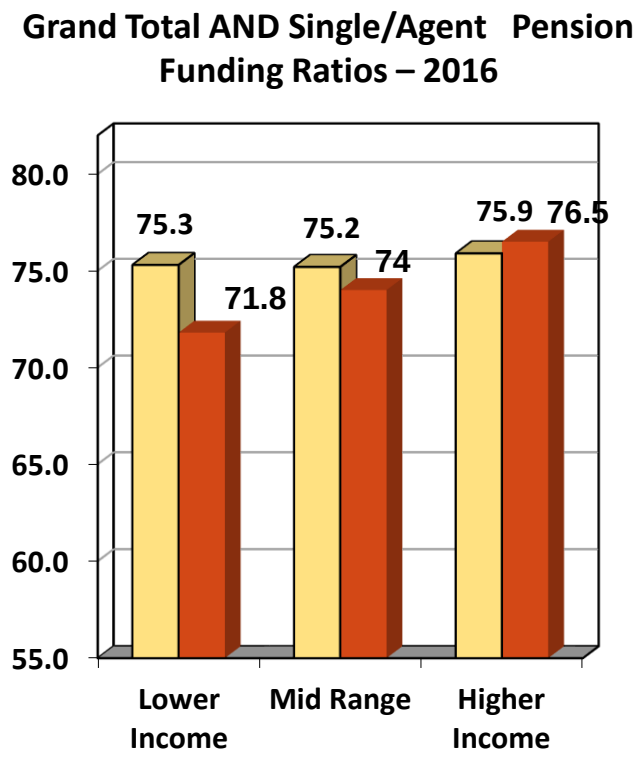




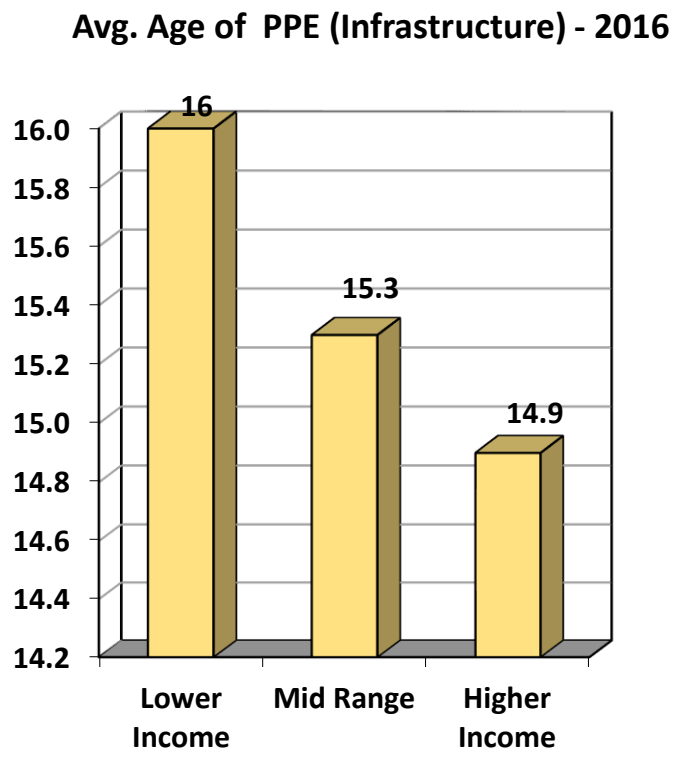
Source: Merritt Research Services, LLC. Data based on FY 2016 medians for 1146 cities. Lower income applies to $47,225 and below. Higher income applies to cities over $68,157.

Characteristics of Cities Based on Median Household Income

Total pension funding ratios appear to be indifferent to income. Single plan ratios are hardest on lower income cities. Average age of infrastructure is less problematic to wealthier cities.



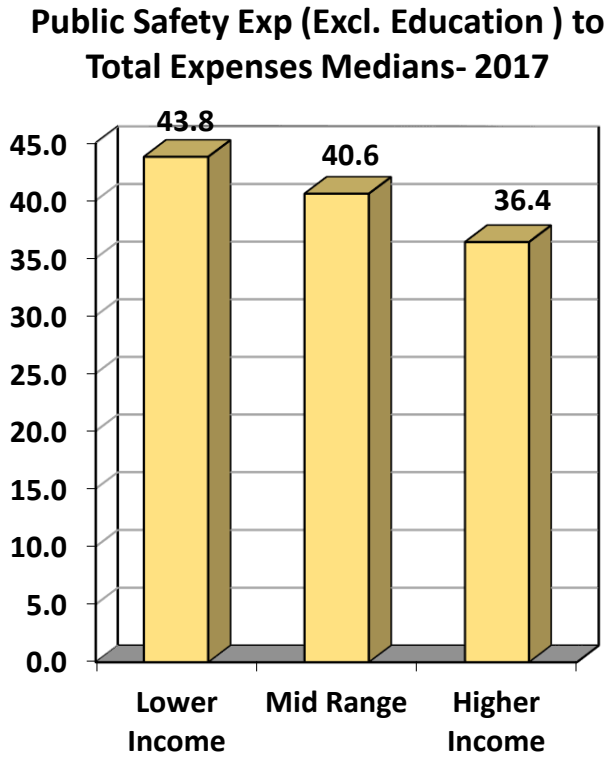
Yellow is Grand Total . Orange is Single/Agent

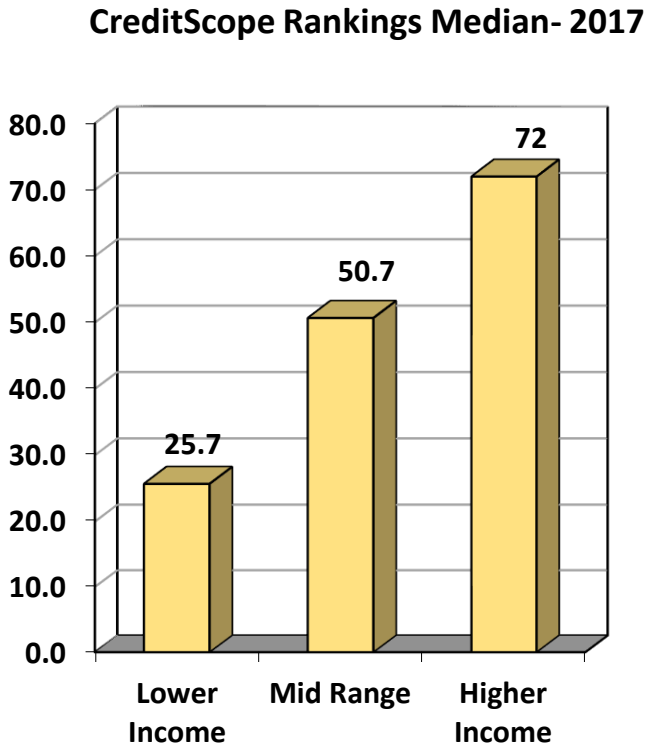


Source: Merritt Research Services, LLC. Data based on 2016 medians. . ***Lower income applies to $47,225 and below. Higher income applies to cities over $68,157.***

Characteristics of Cities Based on Median Household Income

Poorest Median Household Cities Have Higher Spending on Public Safety and Overall Better CreditScope Rankings

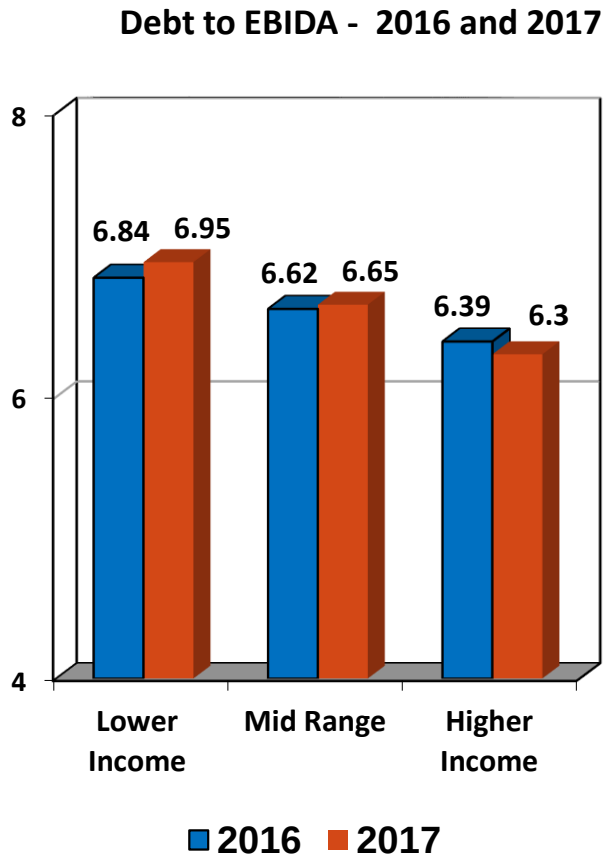


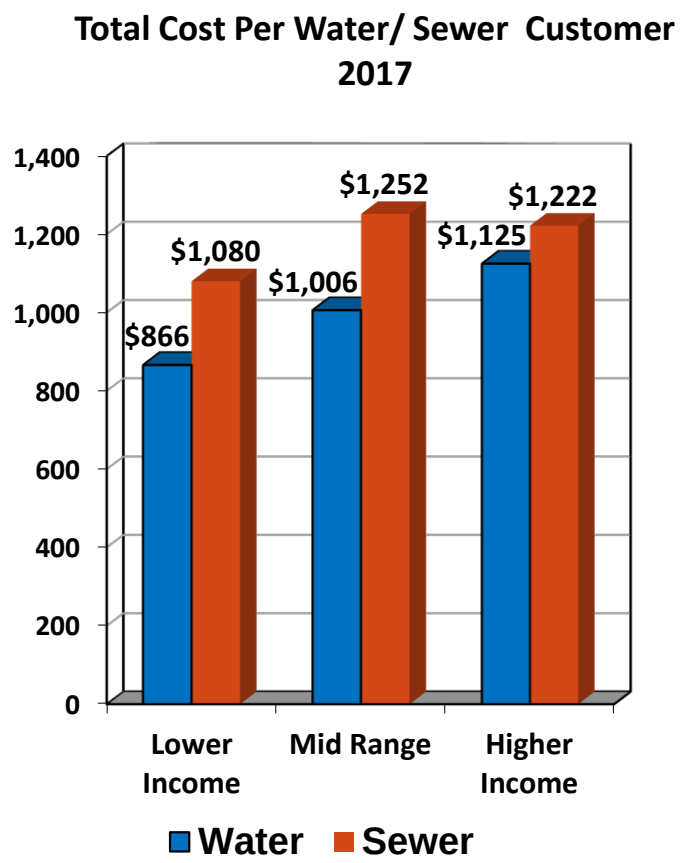


Source: Merritt Research Services, LLC. Data based on 2016 medians. . ***Lower income applies to $47,225 and below. Higher income applies to cities over $68,157.***

Characteristics of Water/Sewer Enterprises Based on Median Household Income – Leverage and Cost

Wealthier Household Water/Sewer Enterprises Display Lower Leverage and Higher Cost Per Water and Sewer Customers

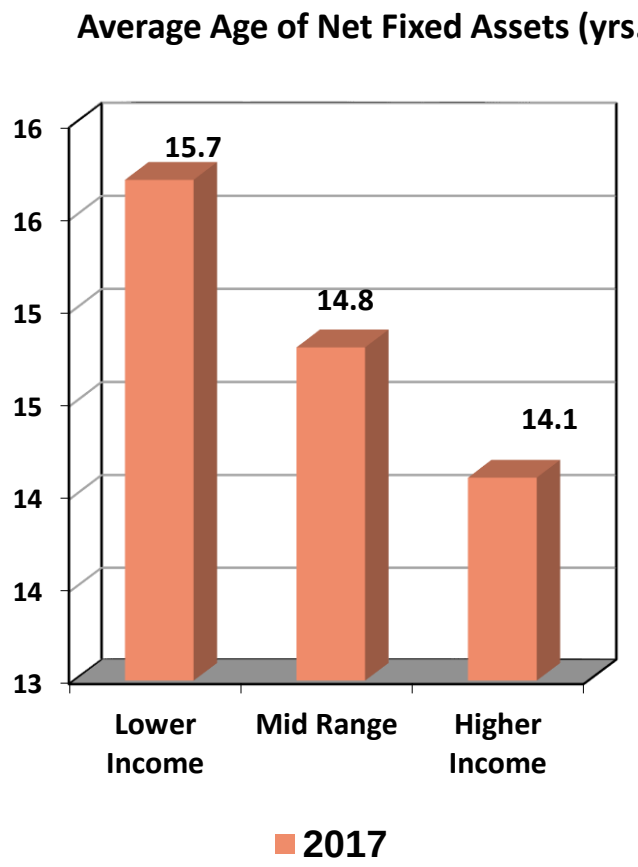


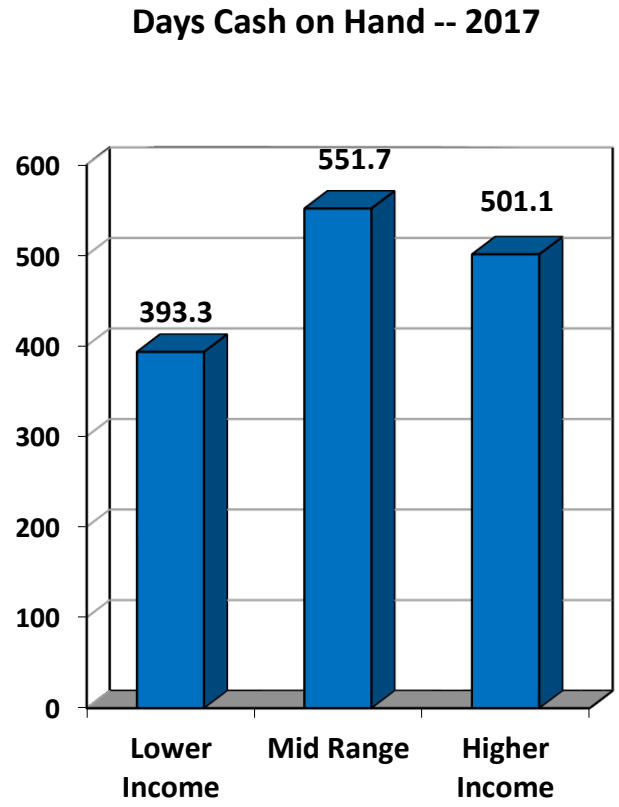


Source: Merritt Research Services, LLC. Data as of 8/20/18 based on FY 2017 and 2016 water & sewer medians covering approximately 1,150 water/sewer enterprises.. Lower Household Income >$46,902 and Higher Household. Income <$61,093. Fewer enterprises provide information on Cost per Water/Sewer Customers.

Characteristics of Water/Sewer Enterprises Based on Median Household Income

Less Wealthy Household Water/Sewer Enterprises Have Older Infrastructure and Less Days Cash on Hand





Source: Merritt Research Services, LLC. *Data as of 8/20/18 based on FY 2017 water & sewer medians covering approximately 1,150 water/sewer enterprises.. Lower Household Income >$46,902 and Higher Household. Income <$61,093.*

Notes and Disclosures

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