

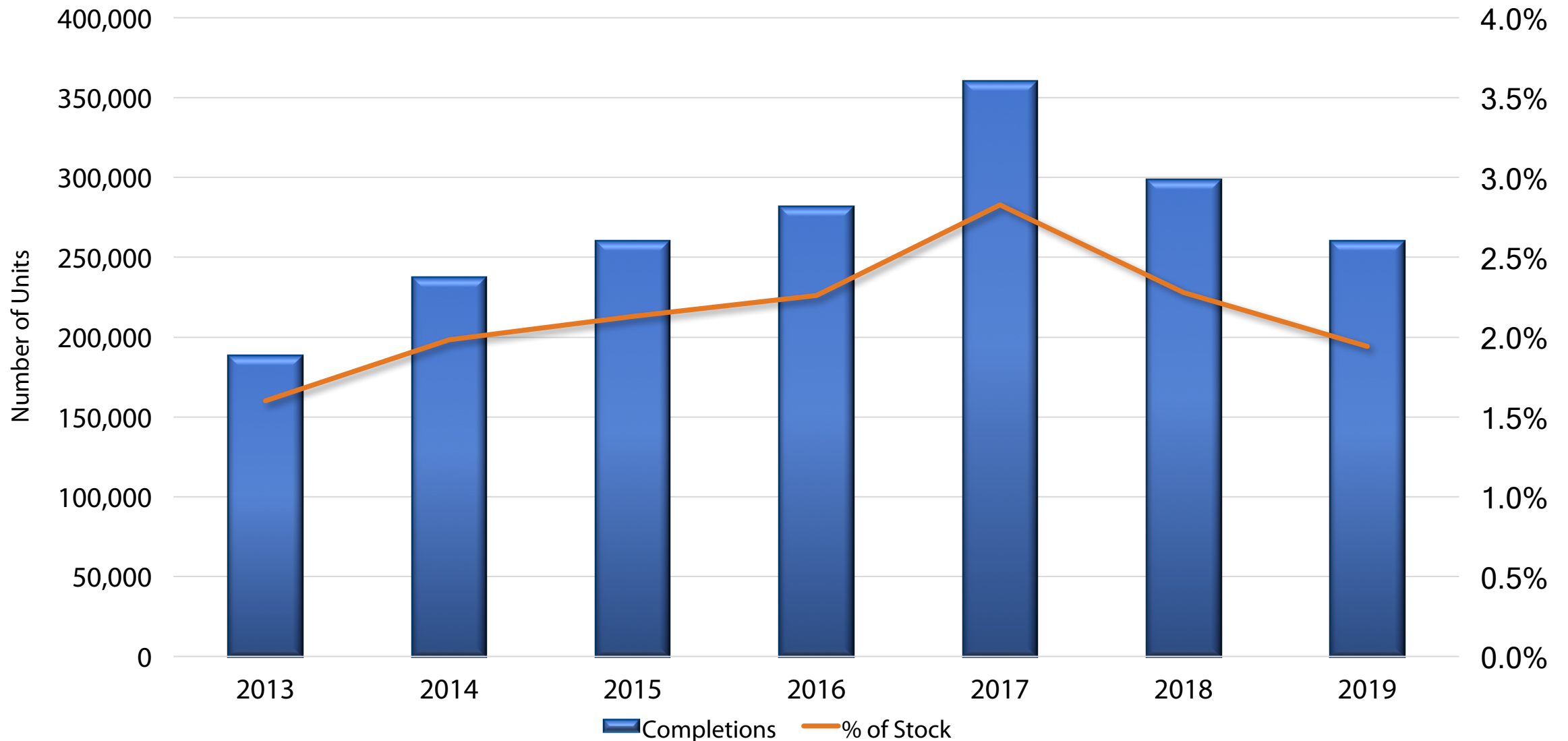


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## Bisnow's Big South Multifamily Event

Jeff Adler  
Vice President, Yardi Matrix

# National Supply Continues to Grow, but will Likely Peak

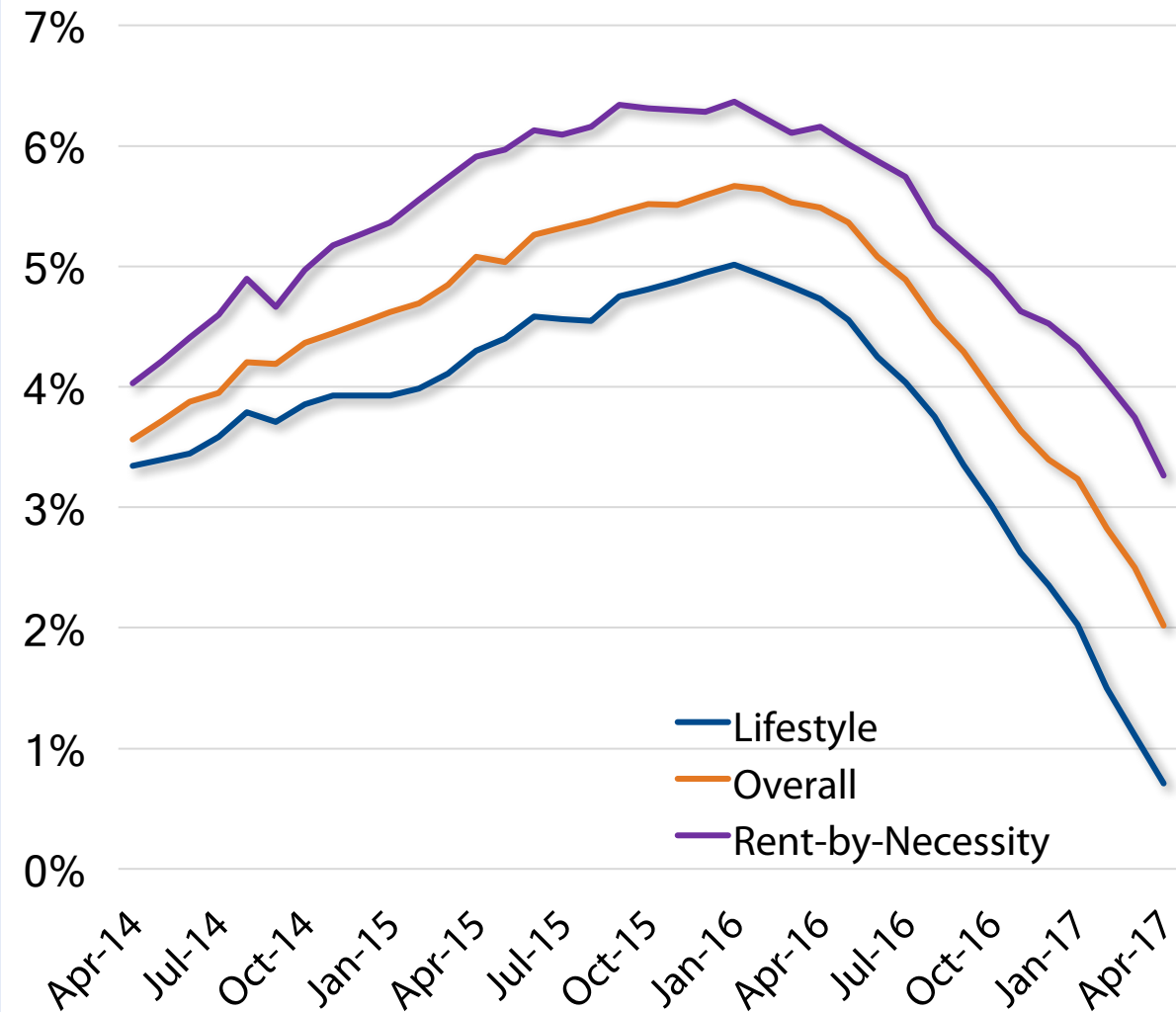


Source: Yardi® Matrix

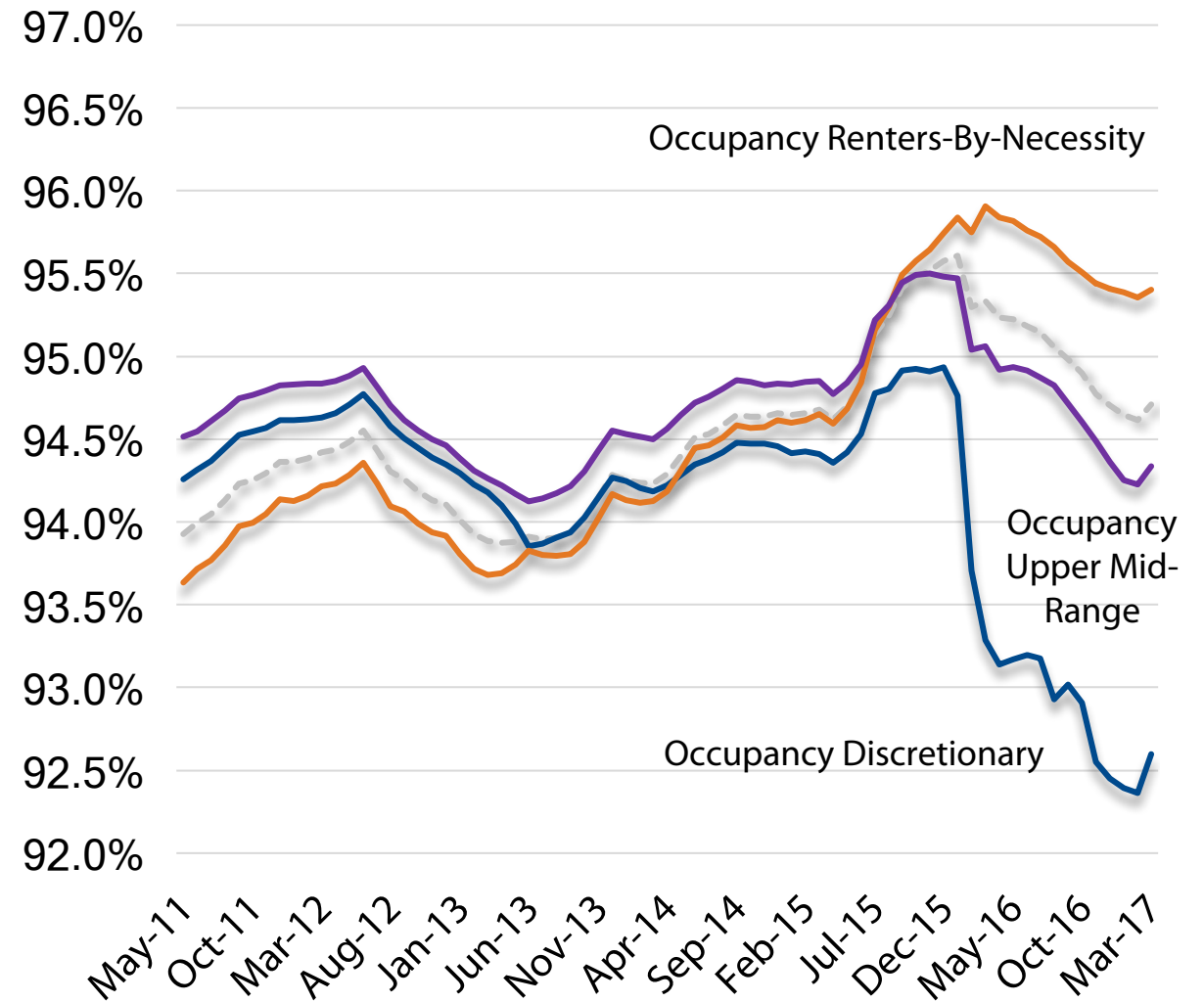


# National Rent Growth and Occupancy Have Crested

## Year-over-Year Rent Growth, Current Month



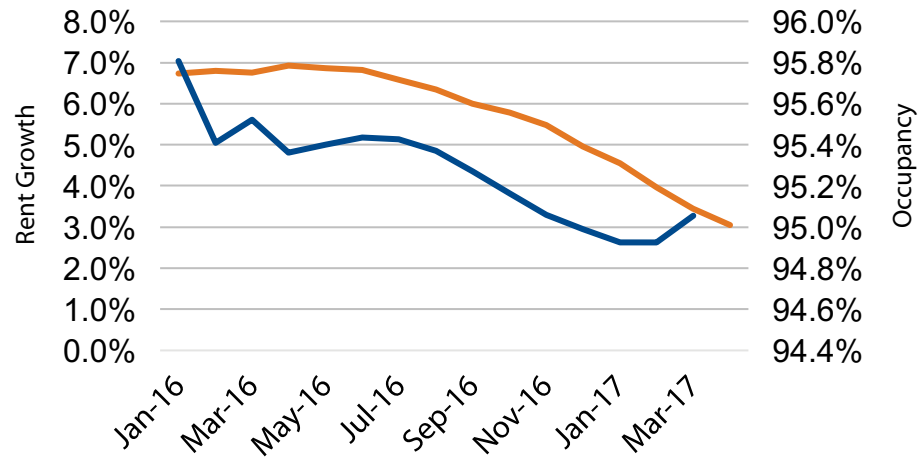
## Occupancy Rate by Asset Class



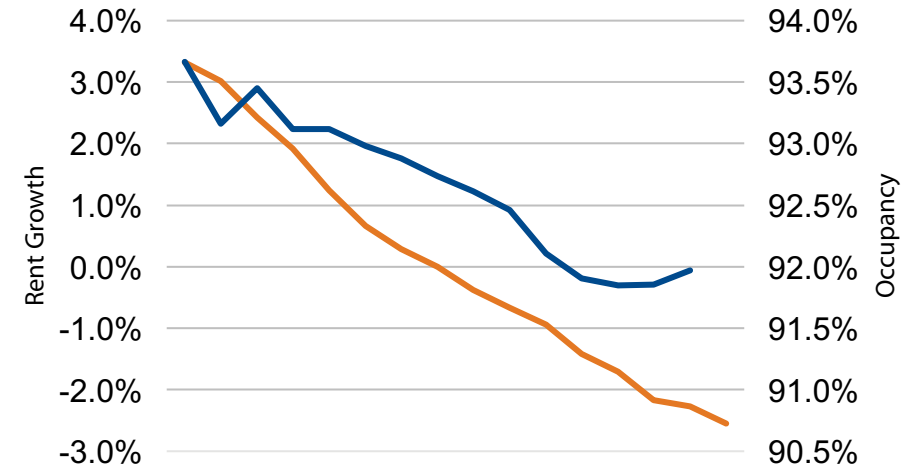
Source: Yardi® Matrix

# Rent Growth and Occupancy: Texas

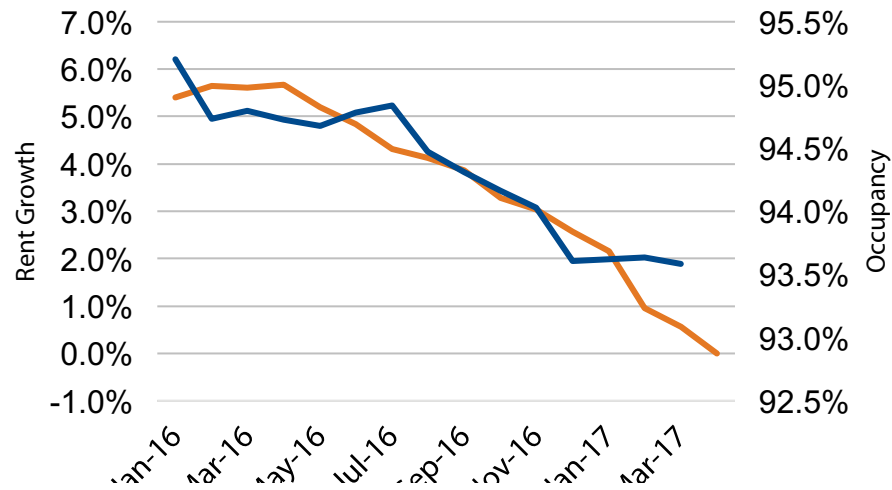
## Dallas



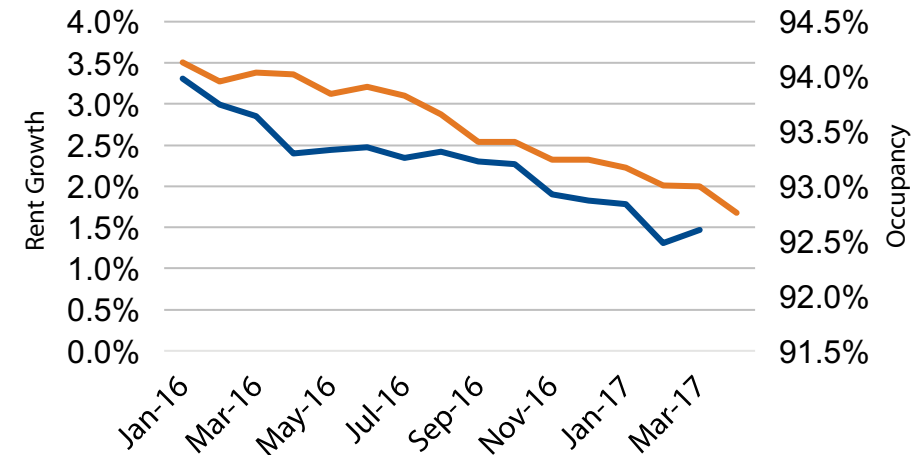
## Houston



## Austin



## San Antonio



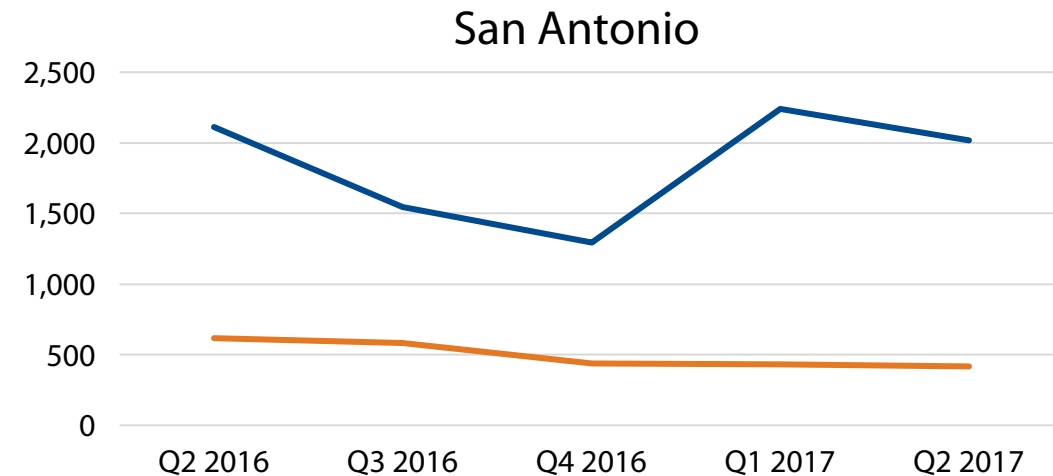
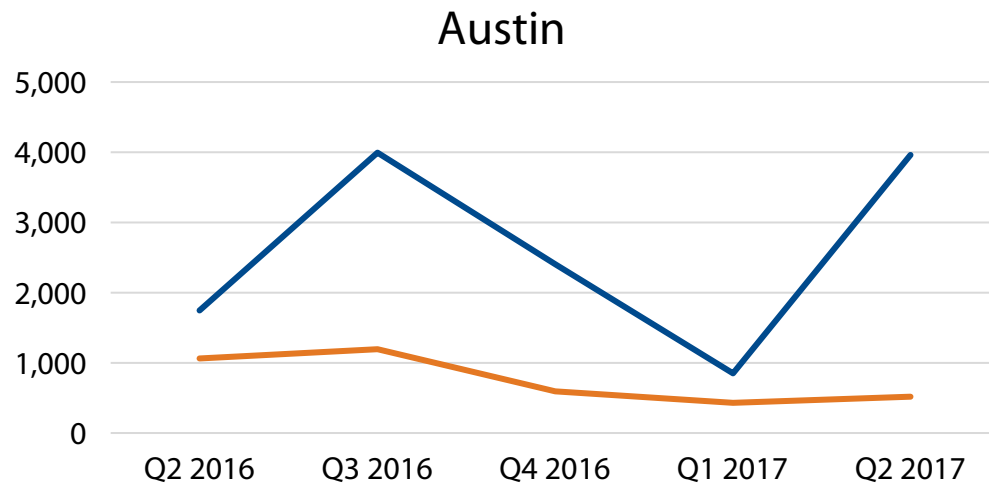
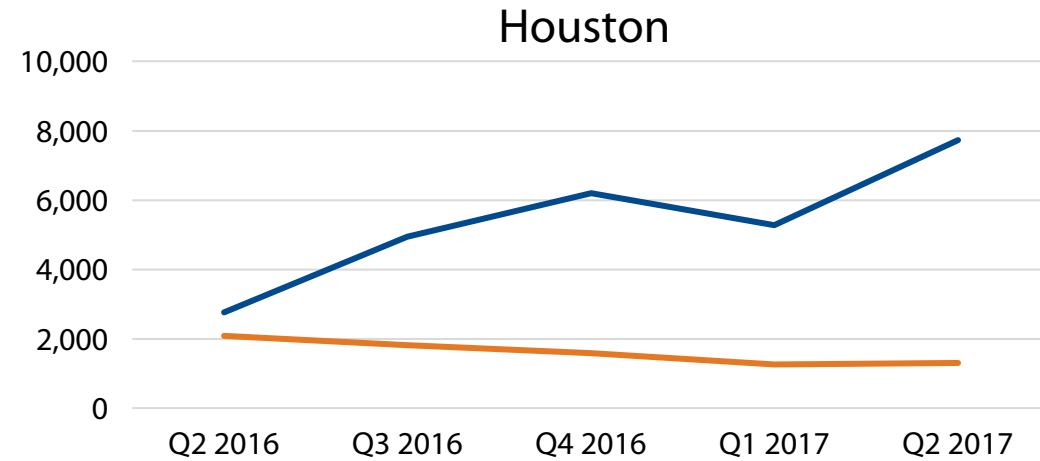
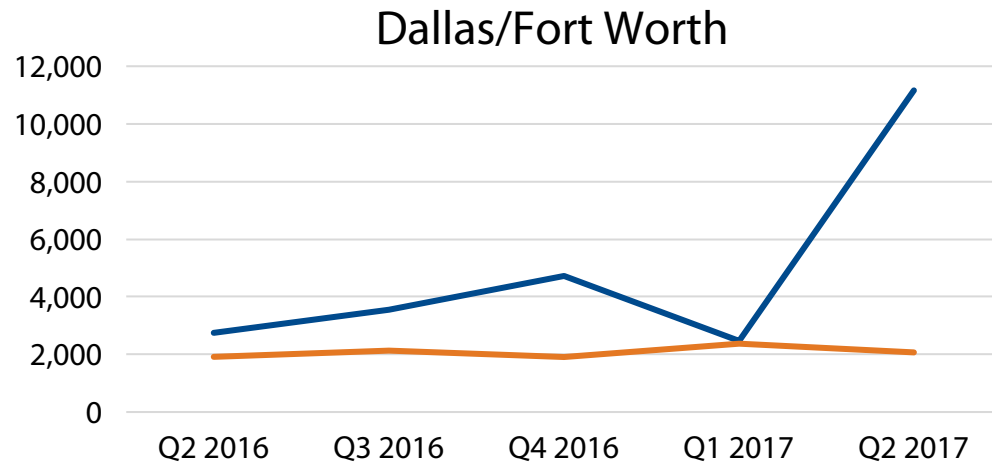
Source: Yardi® Matrix

— Year-Over-Year Rent Growth

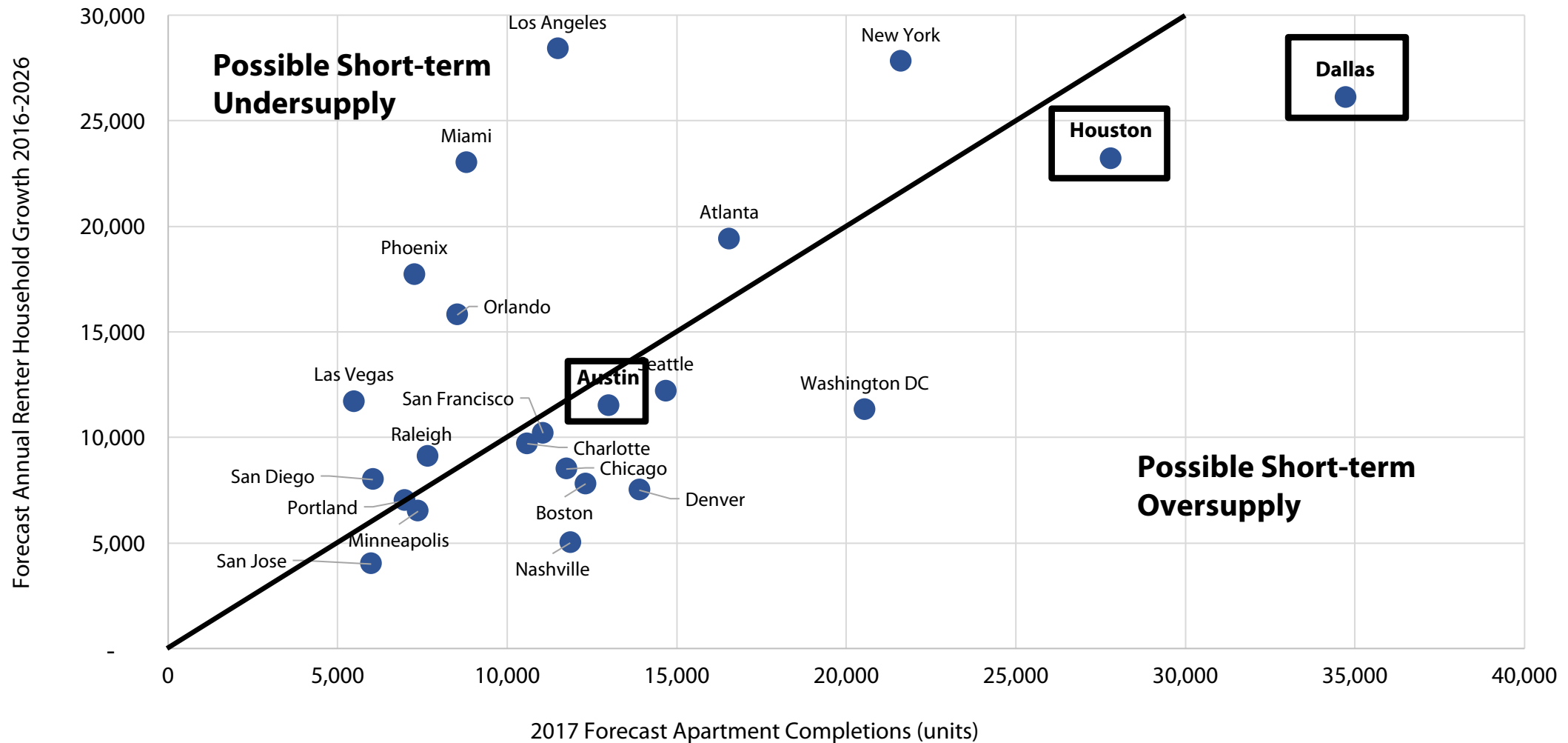
— Overall Occupancy Rate



# Absorption and Completions: Texas



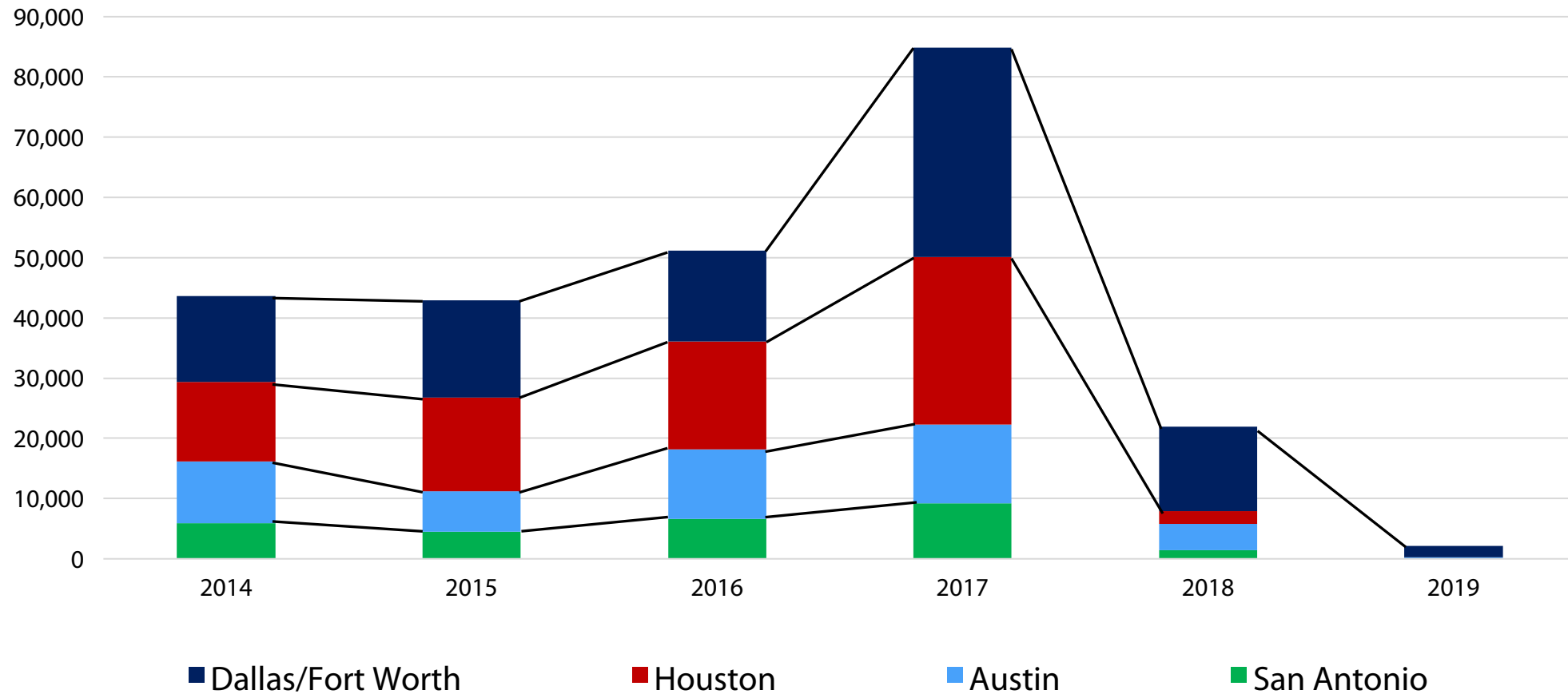
# Forecast Household Formation and Apartment Supply Growth



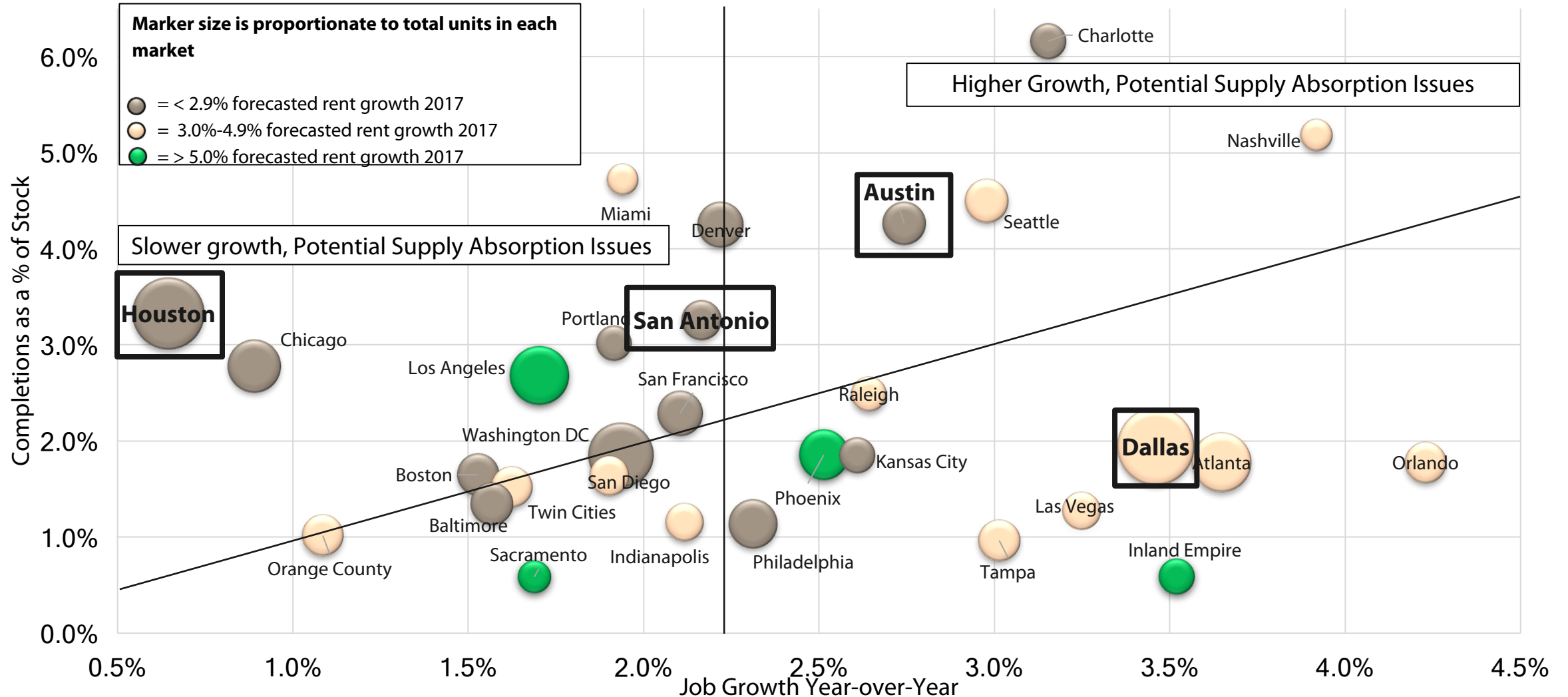
# Apartment Completions: Major Texas Markets

Completions ballooned in 2016 and 2017, but are expected to pull back in 2018

Historic and Forecast Apartment Completions – Top 4 Texas Markets



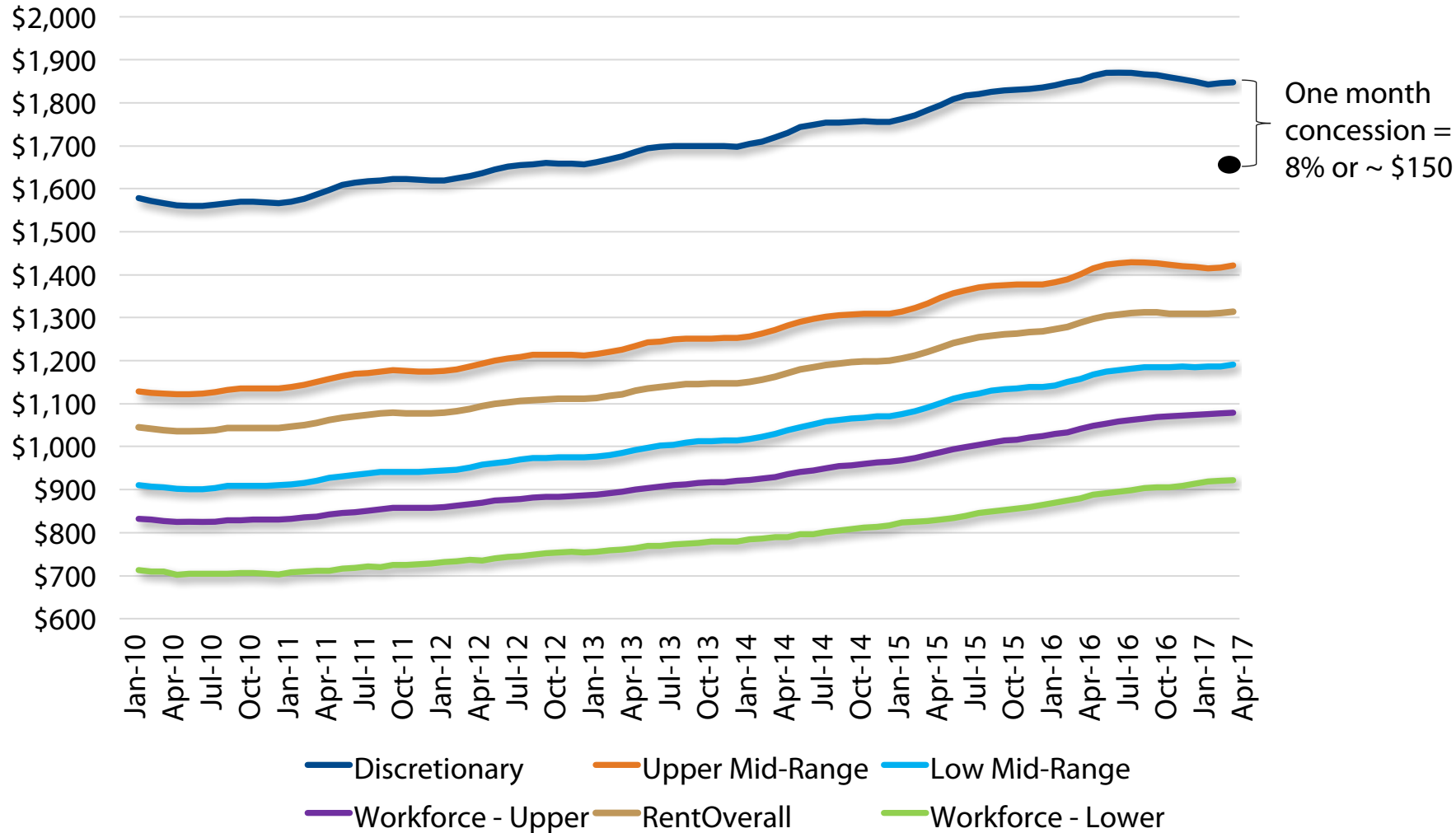
# Employment vs. Supply; It's Getting Bumpy



Source: Yardi® Matrix

# Average Rent Spreads by Asset Type Have Stabilized

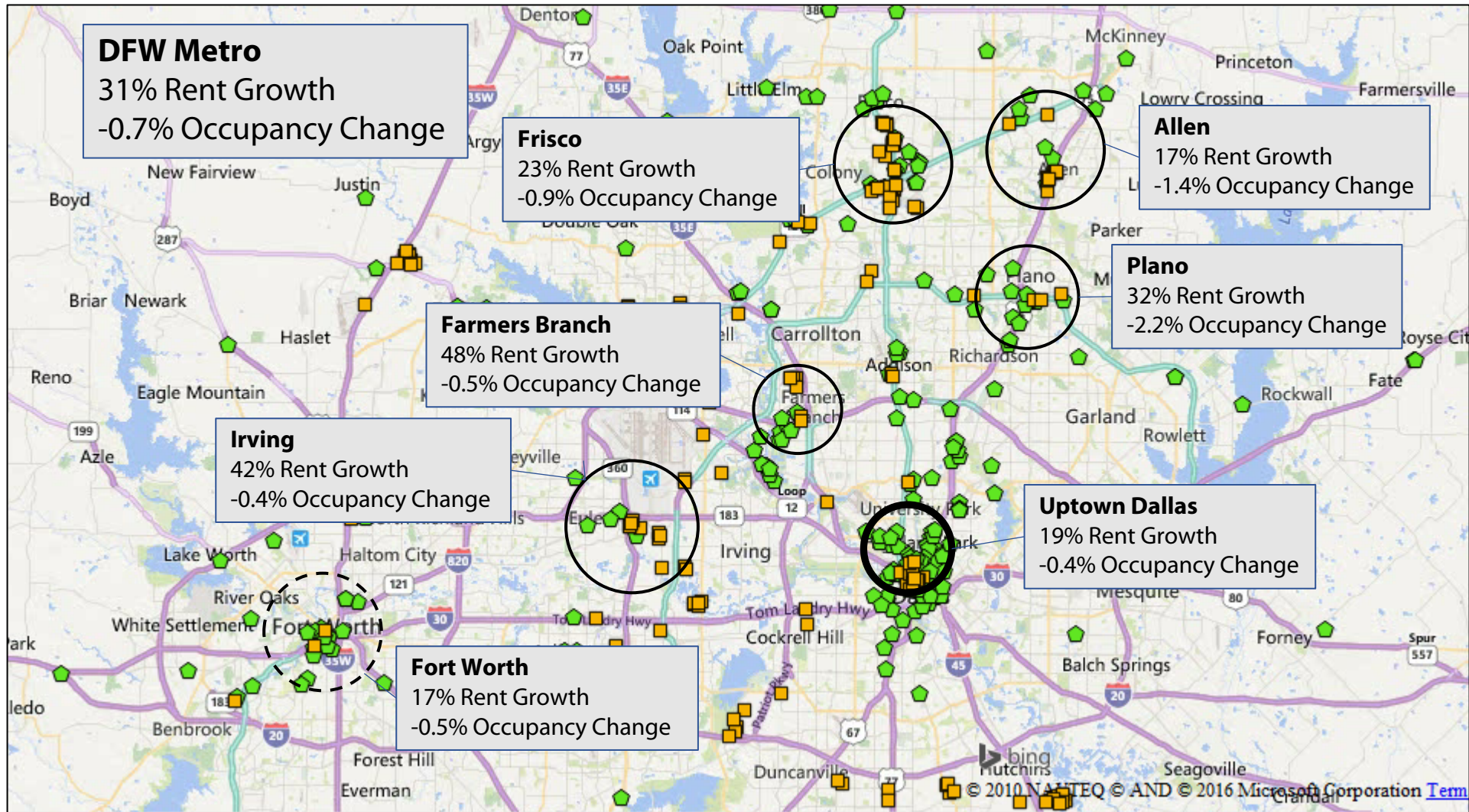
## Average Rental Rate by Asset Class



2010-2017 CAGR	
2.6%	Discretionary
3.9%	Upper Mid-Range
4.5%	Low Mid-Range
4.4%	Workforce-Upper
4.4%	Workforce-Lower
3.9%	Overall

	Apr 2010	Apr 2017
Discretionary-Upper-Mid	\$444	\$427
Discretionary-Lower-Mid	\$662	\$657

# Dallas-Fort Worth – Intellectual Capital Nodes



Source: Yardi®Matrix

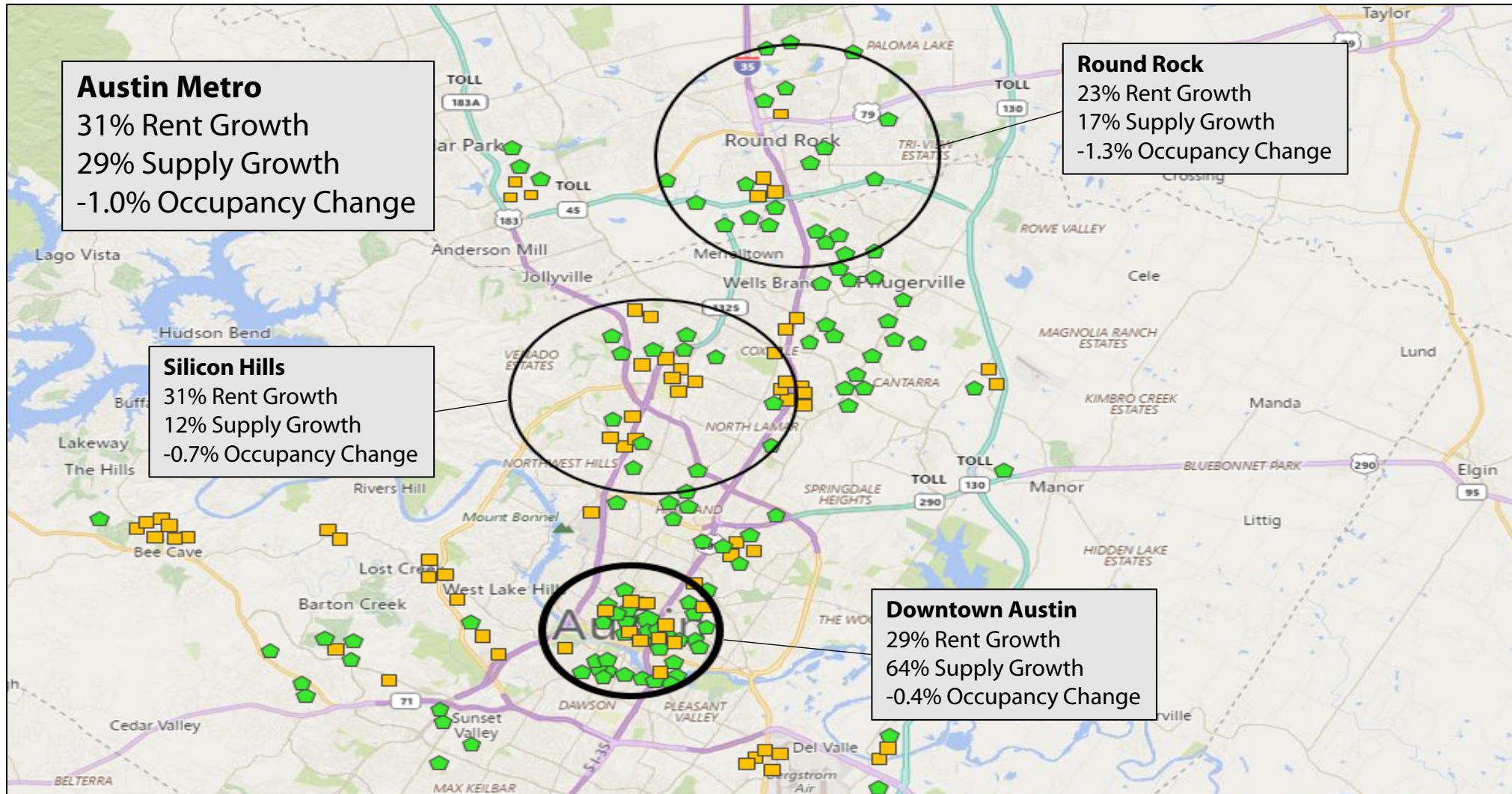
\* Rent growth based on May 2012 through May 2017

\* Change in occupancy based on April 2016 through April 2017

- Office Development
- ◆ Multifamily Development



# Austin – Intellectual Capital Nodes



Source: Yardi®Matrix

\* Rent growth based on May 2012 through May 2017

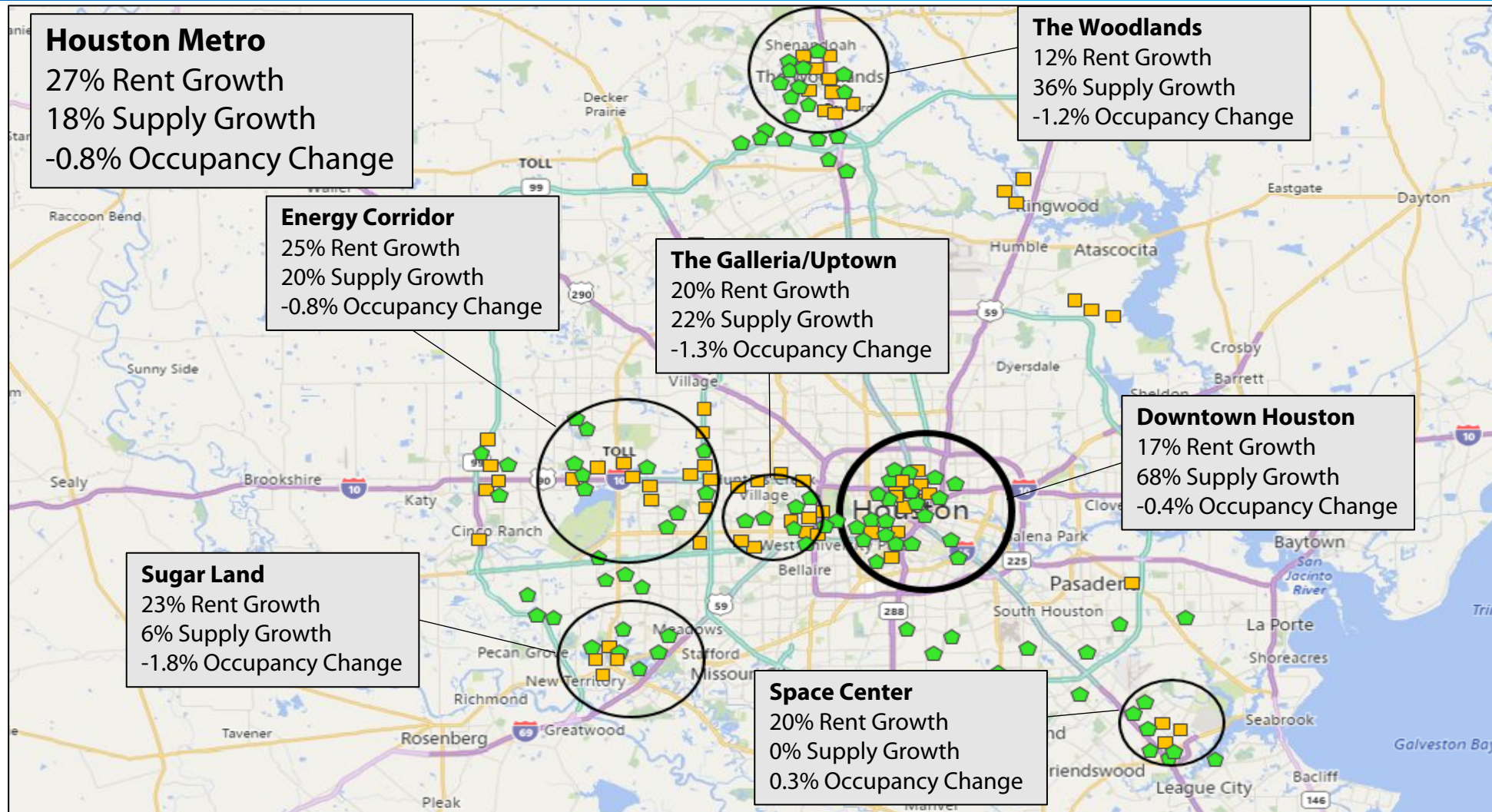
\* Change in occupancy based on April 2016 through April 2017

■ Office Development

◆ Multifamily Development



# Houston – Intellectual Capital Nodes



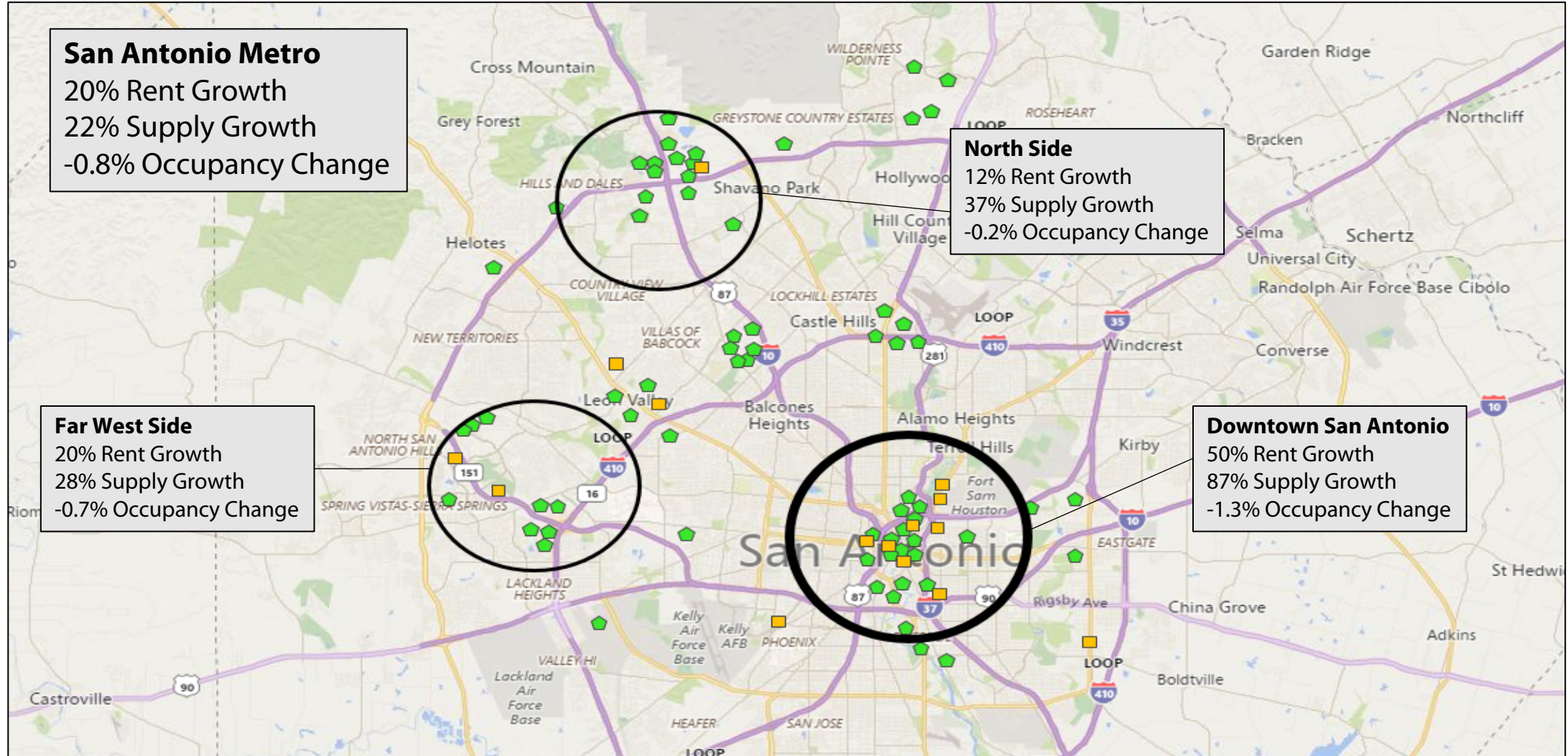
Source: Yardi®Matrix

\* Rent growth based on May 2012 through May 2017

\* Change in occupancy based on April 2016 through April 2017



# San Antonio – Intellectual Capital Nodes



Source: Yardi®Matrix

\* Rent growth based on May 2012 through May 2017

\* Change in occupancy based on April 2016 through April 2017

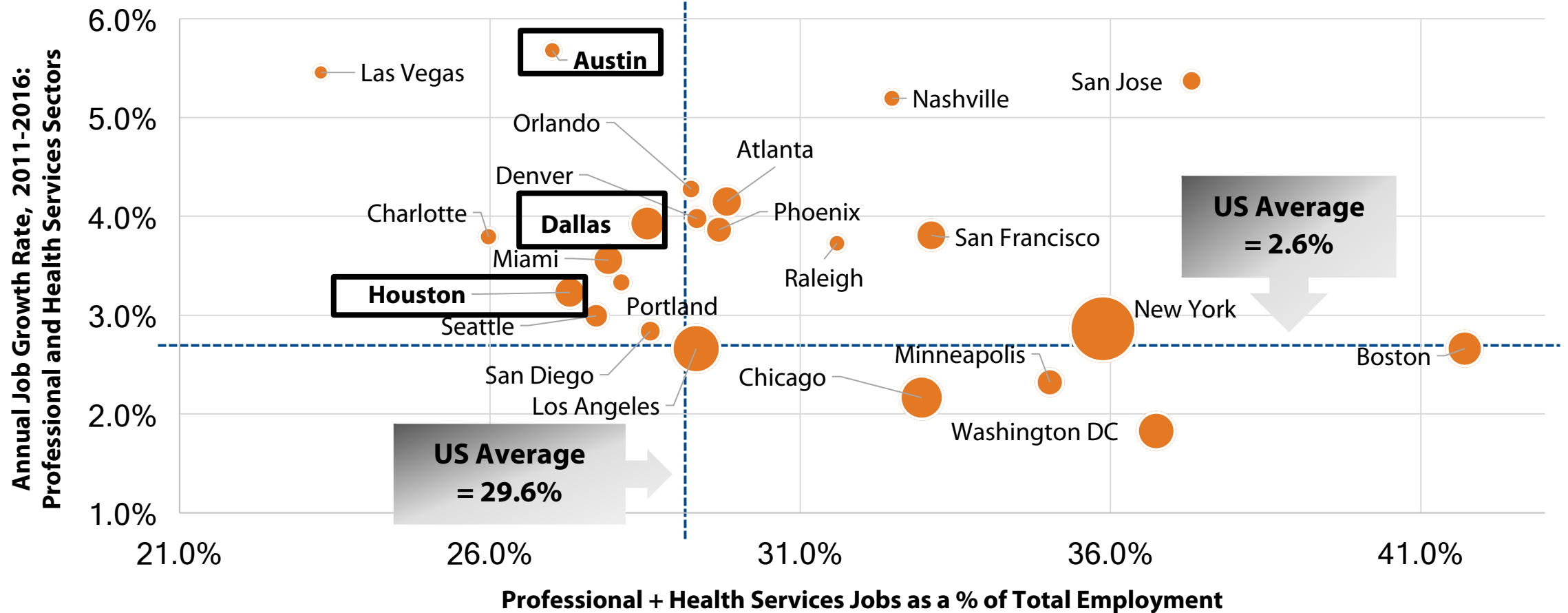
■ Office Development

◆ Multifamily Development

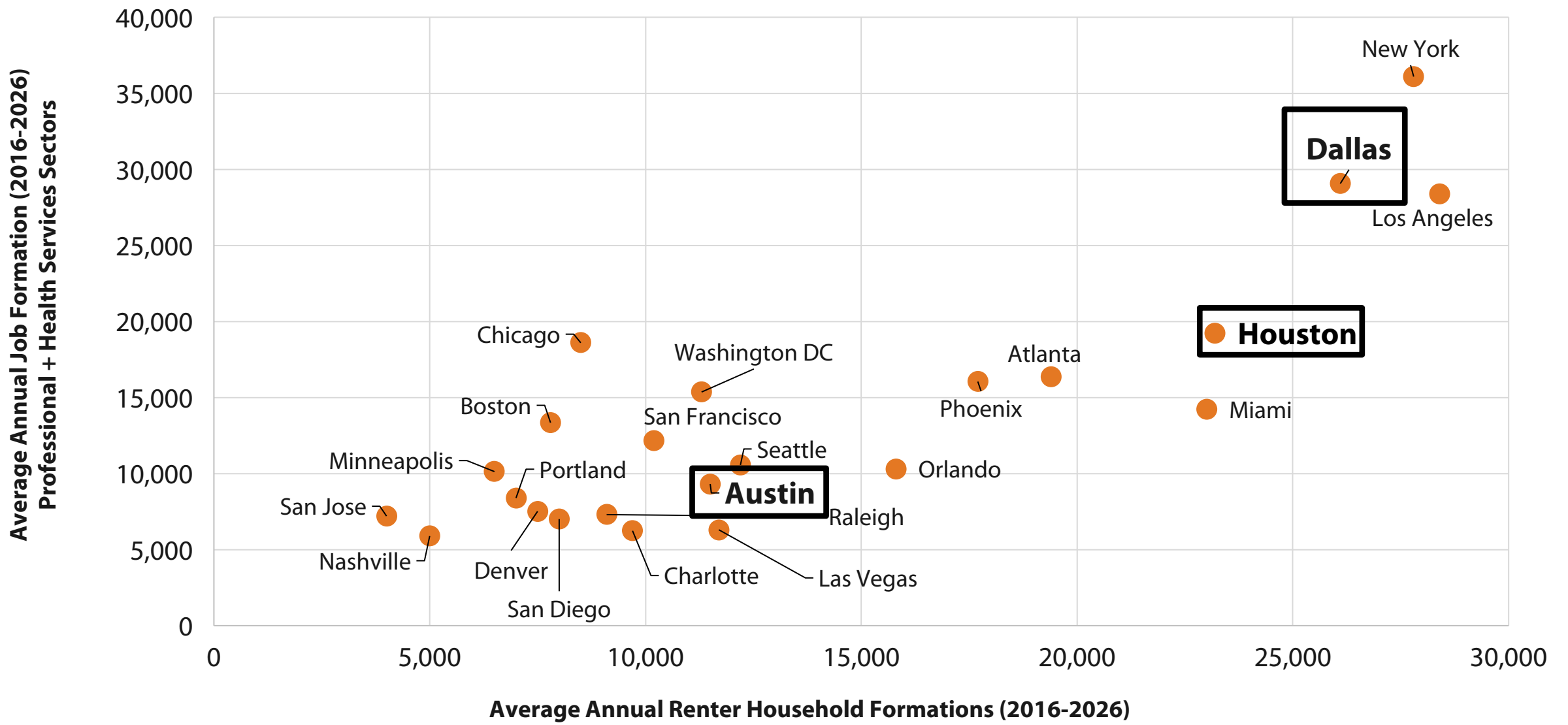


# Employment Growth Rate, 2011-2016

## Professional and Health Services Jobs are Driving Employment Growth *(bubble size reflects # of jobs in professional and health services)*



# Forecasted Job Formation vs Renter HH Formation



Source: Bureau of Labor Statistics (BLS); Moody's Analytics



# Technology's Impact on the Future of Real Estate

## Employment Drivers

- **Position where wealth is created and where "place" will increase in value**
- Focus on live, work, play, then "Fulfill" /Store
- Technology permeates all industries – Tech, Transportation, Energy, Healthcare, Manufacturing
- Mobility – Always on, anywhere
  - Connectivity, Data Storage, Security
- Internet of Things – Interactive sensors
- Collaboration- free up trapped resources
- Autonomous Vehicles – cars, trucks, drones
- Robotics – The highly skilled survive
- Healthcare – Is data and is direct
- Artificial Intelligence – What it means to decide
- Energy – Solar & Batteries
- 3D Printing – Manufacturing without people

## Inside the Building

- 1G Connectivity, 40x High Speed
- Internet of Things - Sensors
- Mobility – You and the Space
- Virtual Reality – Construction, Leasing and space utilization
- Robotics - Maintenance
- Usage of Space – Flexible designs
- Data manipulation and Data collection
- **Drive out Low Value Added Labor Cost**

## Among the Community

- Filling societal gaps in infrastructure
- Education
  - Coding
  - Trade Schools/Skills... For Now
- Social connectedness
- Sensors in the grid – The interactive city
  - Panasonic in Denver
- 1G Infrastructure – Chattanooga, TN
- Non-coercive diversity and creative expression
- **Drive Up Value Added of Remaining Labor**

# Technology Impact Continued

In the future, space will have to be more flexible as the pace of use changes

“Play”

Retail

Existing lower end retail will merge with office to salvage value

Experience driven-

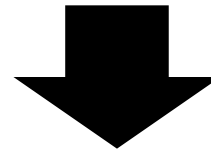
less so “things”

Industrial replaces retail space

“Work”

Office

Will merge with retail experiences and short term living experiences



Already happening on small scale

“Live”

Multifamily

Proximity is already important, work and play will become increasingly important in “urban-like nodes” in what has been suburbia

# Conclusion – Contact

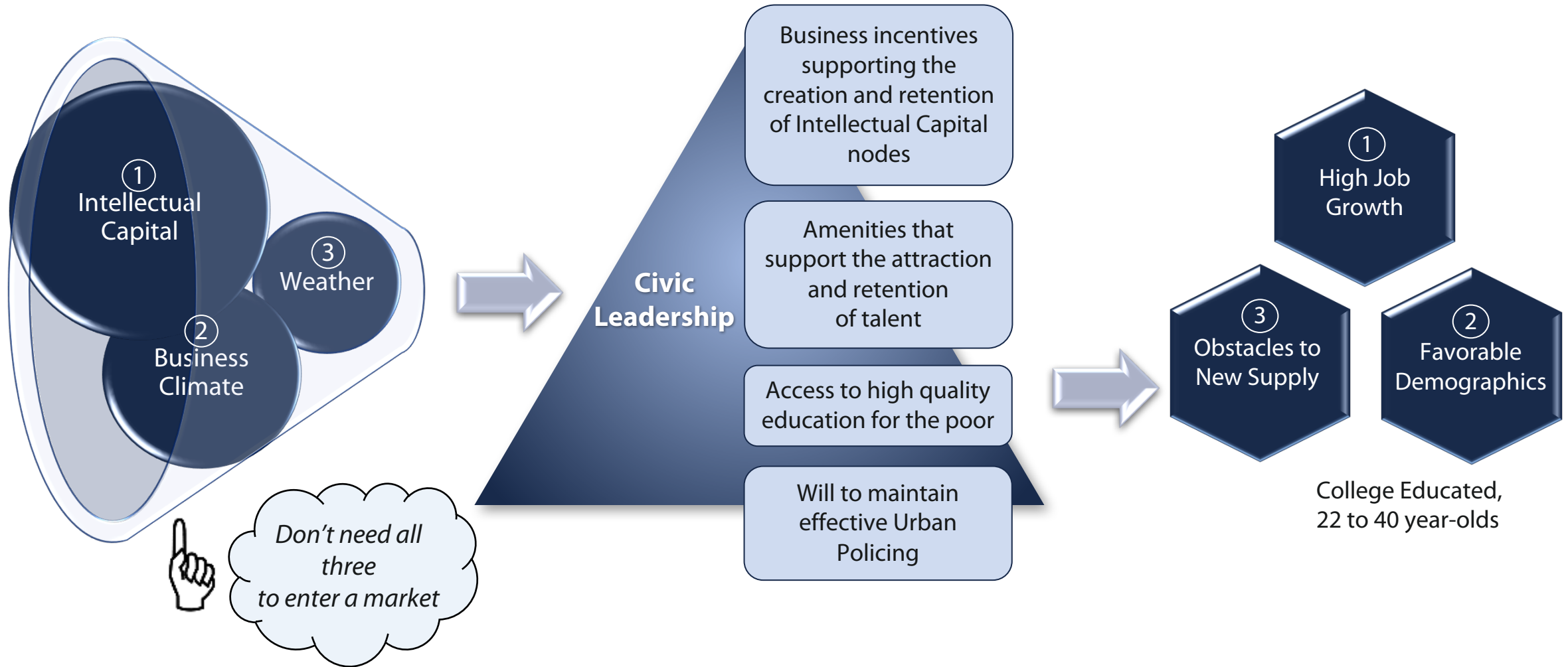
- **Jeff Adler**, Vice President & General Manager of Yardi Matrix
  - [Jeff.Adler@Yardi.com](mailto:Jeff.Adler@Yardi.com), 1-800-866-1124 x2403



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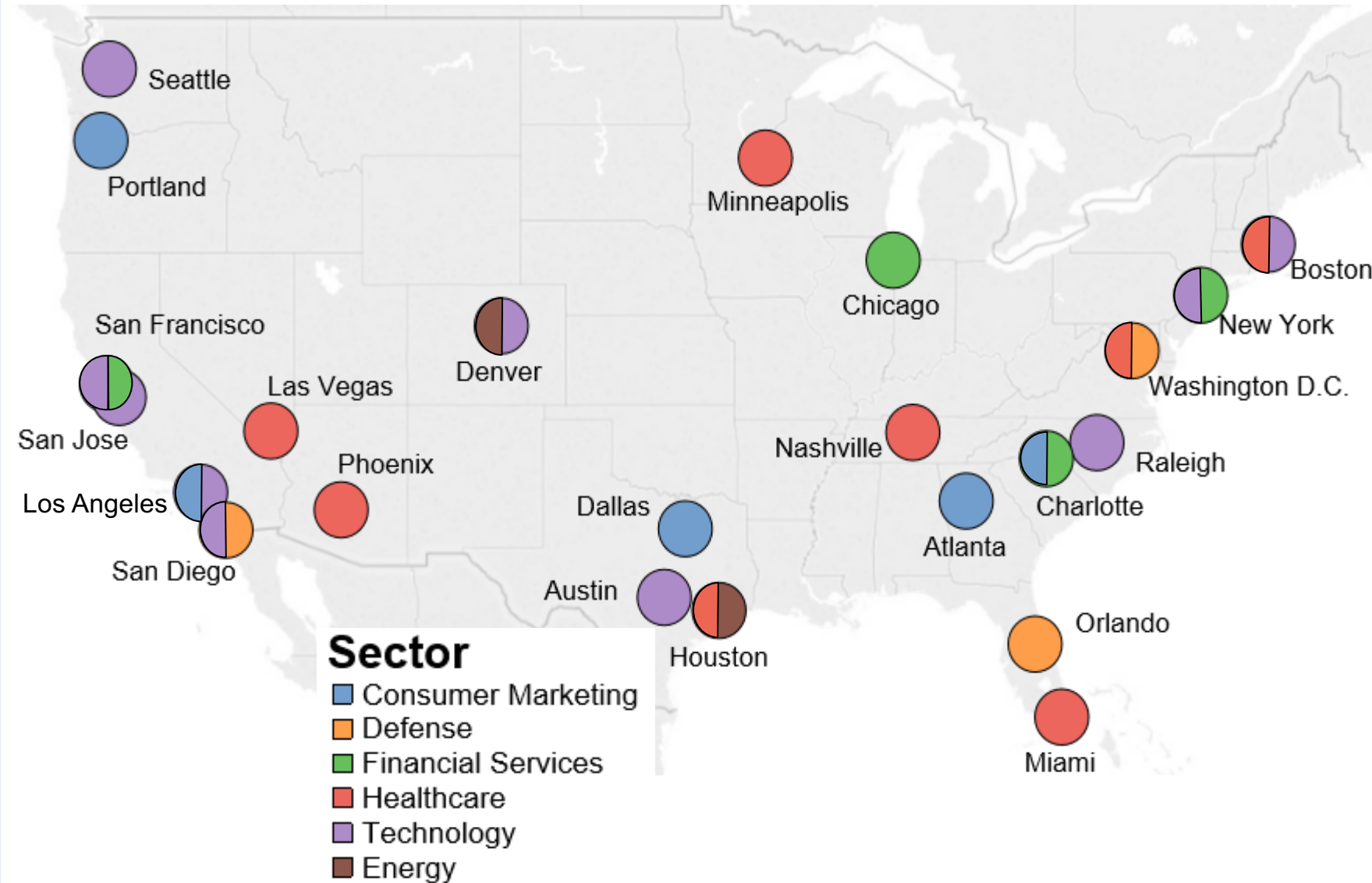
## Appendix

# The Investment Decision-Making Process



Source: National Resource Network Anchor Institutions Report, 2015; ULI Emerging Trends in Real Estate Report, 2015, 2016; Stephen Klineberg, Kinder Institute for Urban Research; Levitz, Jennifer. "Charter School Battle Heats Up." *The Wall Street Journal* 11 Oct. 2015

# Major U.S. Multifamily Markets – Our “Curated” Group



Source: Yardi® Matrix

- Based on population growth
- Driven heavily by growing tech, financial services, health care, universities, consumer marketing – Intellectual Capital
- Mostly in “Smile” States, with exception of a few Midwestern Markets

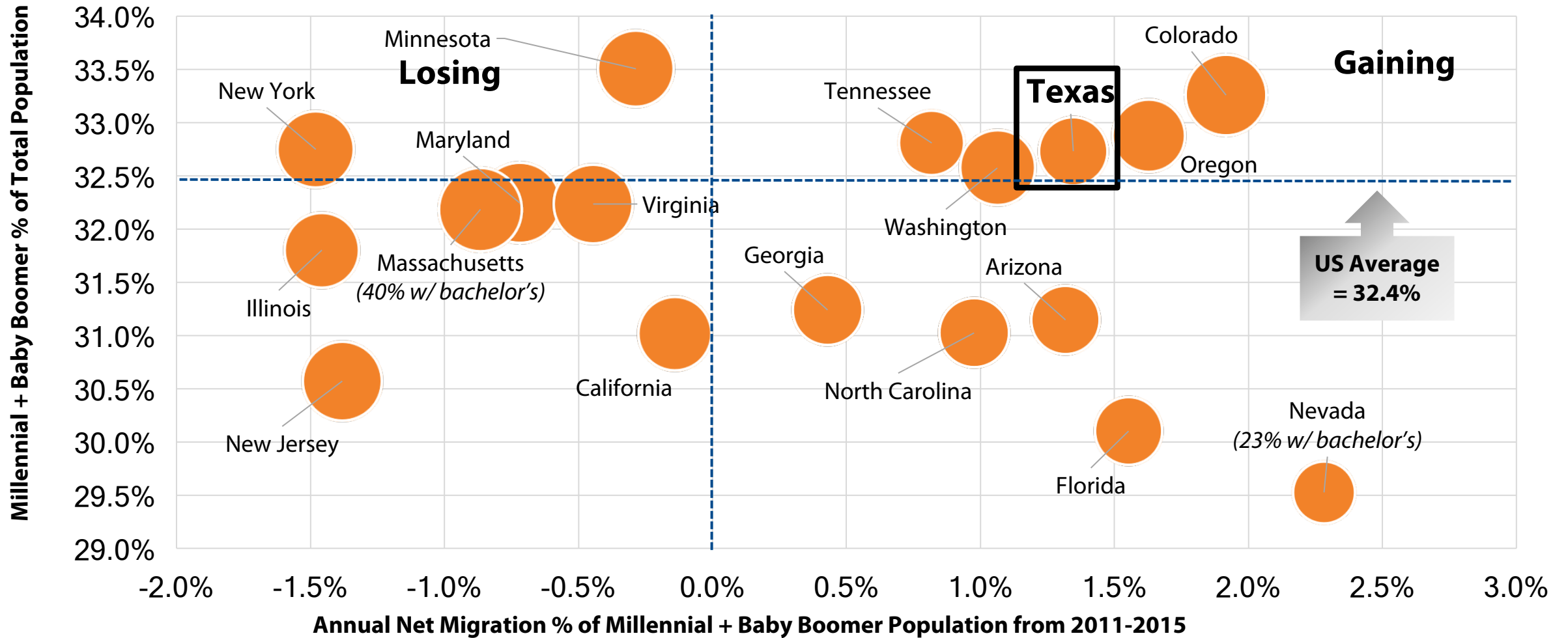
# Projected Market Placement Within Population Growth Cycle

Some markets ' population growth are diminishing as cost/supply considerations push growth to lower cost cities; some late stage cities are accelerating, while certain markets are on a steadier growth path

Growth Diminishing	Growth Accelerating	Growth Steady	Larger Markets, Slower % Growth
San Francisco	Orlando	<b>Dallas</b>	New York
Bay Area	Raleigh	Atlanta	Los Angeles
Denver	<b>Austin</b>	Miami	Boston
	Charlotte	San Diego	Chicago
	Las Vegas	Minneapolis	Washington D.C.
	Phoenix	<b>Houston</b>	
		Nashville	
		Seattle	
		Portland	

# Boomer and Millennial Net Migration

**Millennials (age cohort 26-35) & Baby Boomers (ages 56-65) are Driving Net Migration**  
*(bubble size reflects % of population with bachelor's degree)*



Source: U.S. Census Bureau (BOC); Internal Revenue Service (IRS)

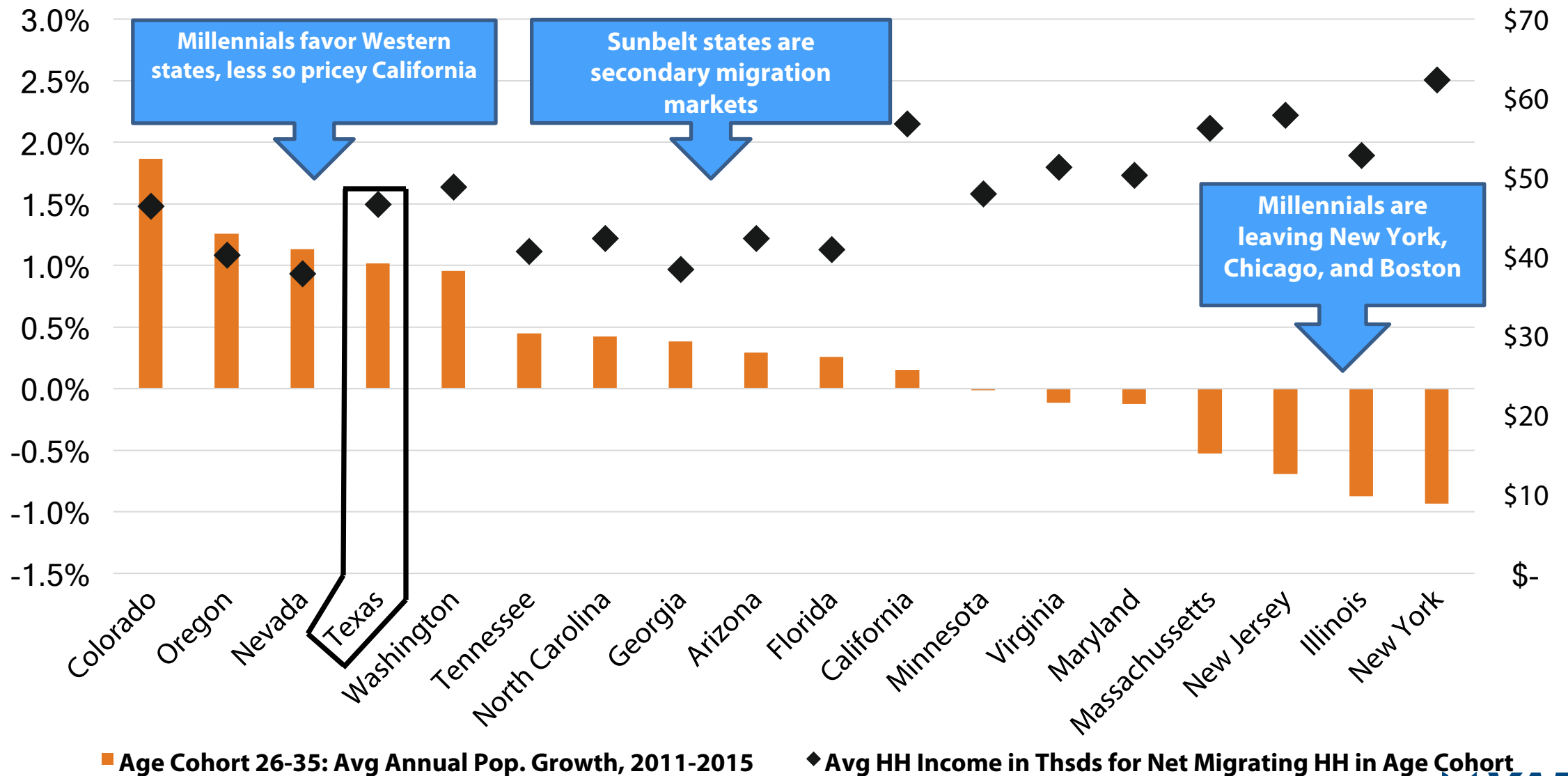
# Clear Winners/Losers for Key In-Migration Groups Among States

Some markets' growth are diminishing as cost/supply considerations push growth to lower cost cities; some late stage cities are accelerating, while certain markets are on a steadier growth path

Winners	Losers
North Carolina	Massachusetts
Georgia	New York
Tennessee	New Jersey
Florida	Maryland
<b>Texas</b>	Virginia
Colorado	Illinois
Arizona	Minnesota
Nevada	California
Washington	
Oregon	

# Millennial Generation Net Migration by State

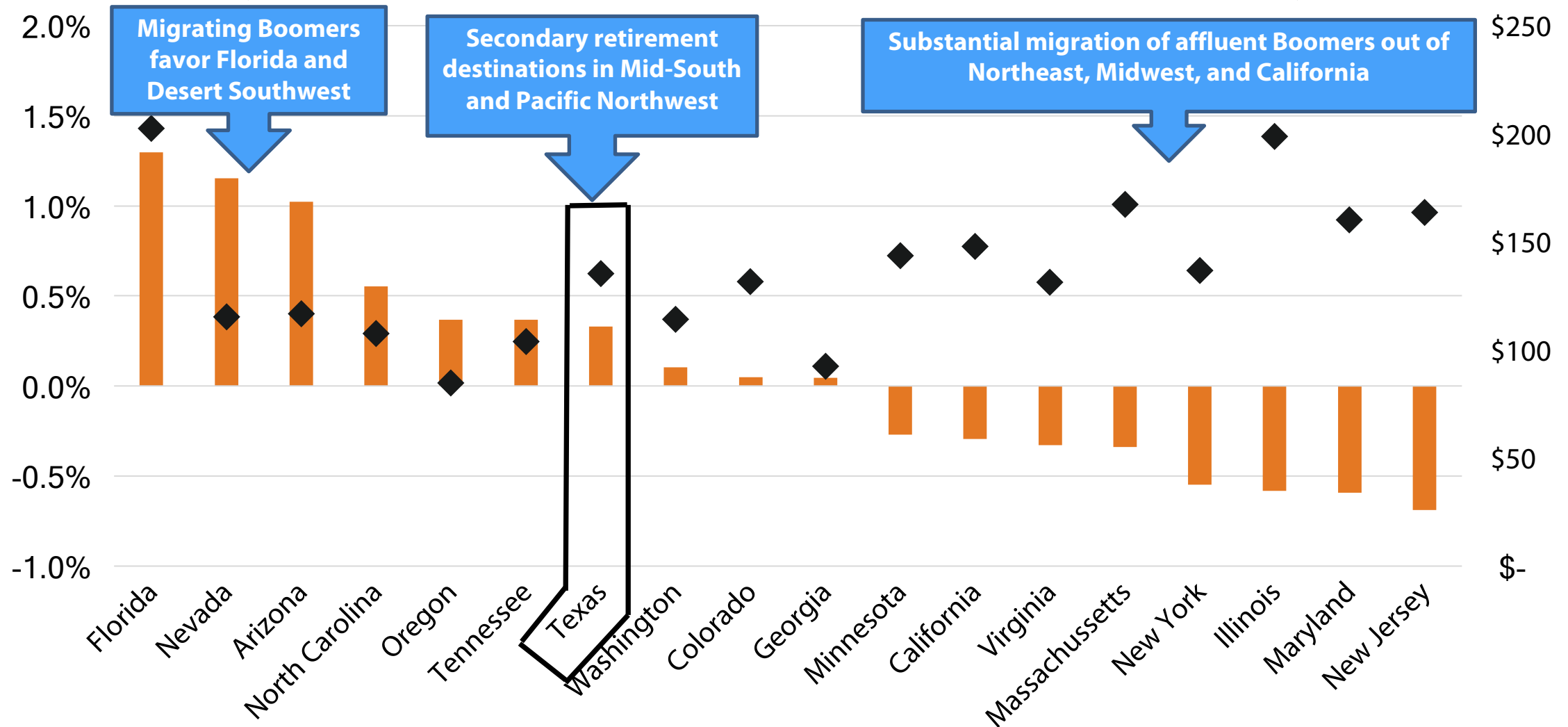
## Millennial Population Growth from Net Migration and HH Income by State



Source: U.S. Census Bureau (BOC); Internal Revenue Service (IRS)

# Boomer Generation Net Migration By State

## Baby Boomer Population Growth from Net Migration and HH Income by State



■ Age Cohort 56-65: Avg Annual Pop. Growth, 2011-2015

◆ Avg HH Income in Thsds for Net Migrating HH in Age Cohort

Source: U.S. Census Bureau (BOC); Internal Revenue Service (IRS)

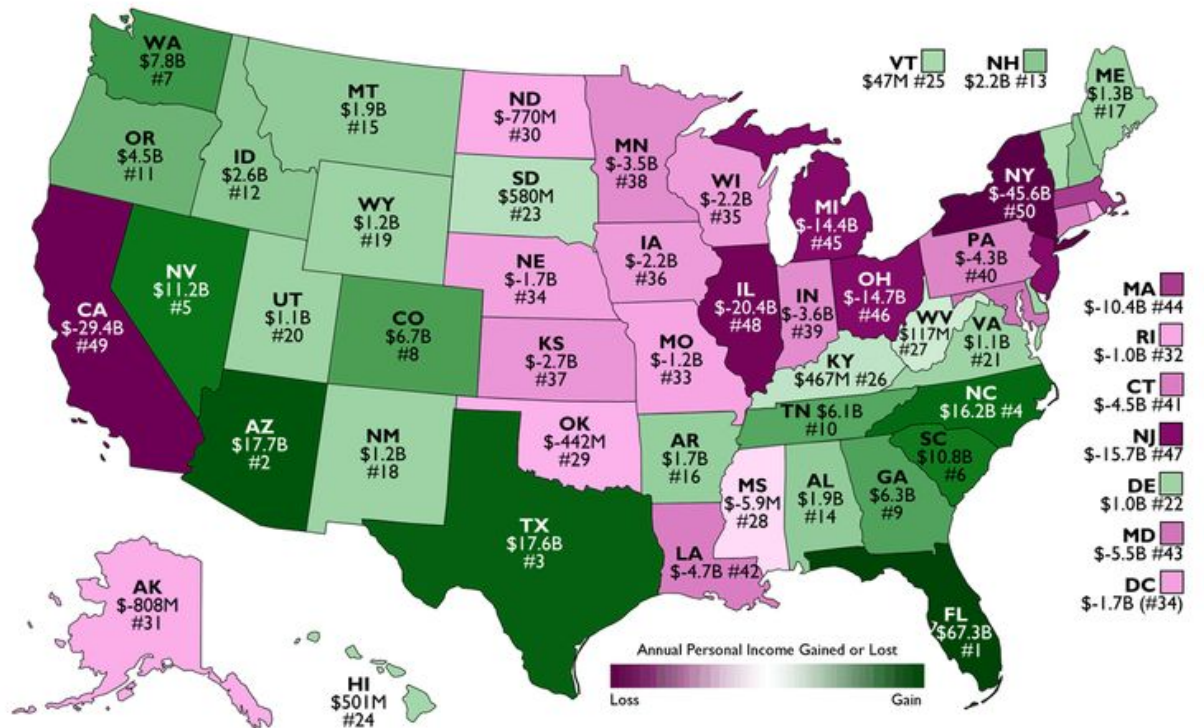
# Wealth Also Migrating Towards Secondary Markets

Retiring Boomers and mobile Millennials highlight population and income shifts

Business friendliness and relative affordability common among growing markets

## Migration of Personal Incomes Between States, 2000-2010

TAX FOUNDATION Since 1937



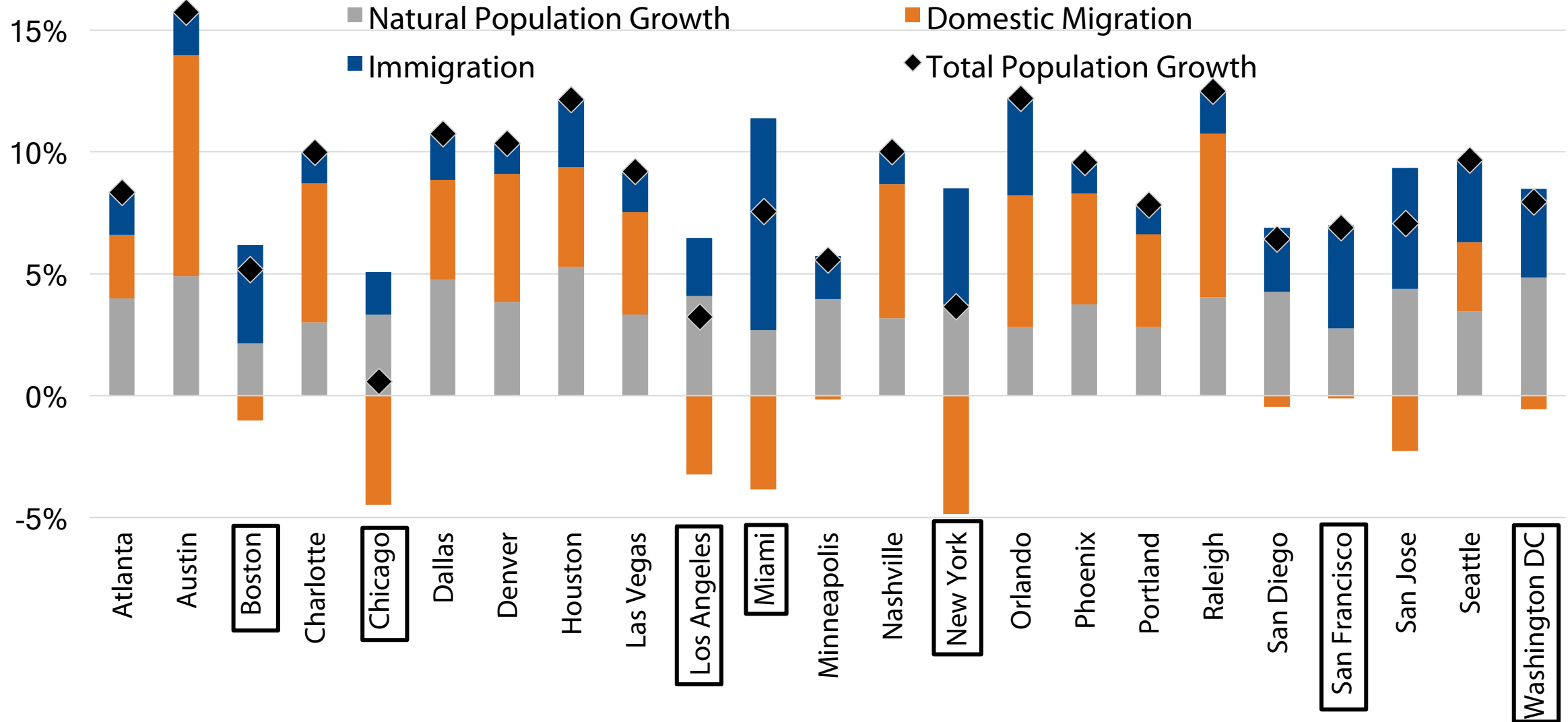
Source: IRS; Tax Foundation calculations  
Note: Figures shown are the net aggregate adjusted gross income (AGI) of migrants moving into or out of states between 2000 and 2010. Figures are in real 2010 dollars. Does not include foreign migration, births, or deaths. Published August 19, 2013.

[taxfoundation.org/maps](http://taxfoundation.org/maps)



# Foreign Immigration is the Key to Gateway City Growth

Population Growth, 2011-2016



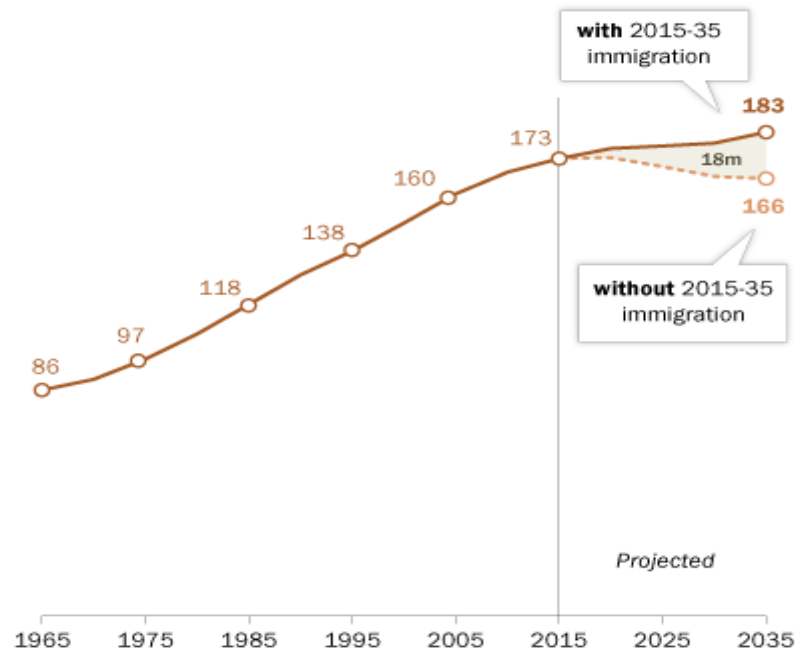
Source: U.S. Census Bureau (BOC); Moody's Analytics

# Immigrant Impact

The future of growth in the American workforce is dependent on the continued flow of immigrants

## Without future immigrants, working-age population in U.S. would decrease by 2035

Working-age population (25-64), in millions



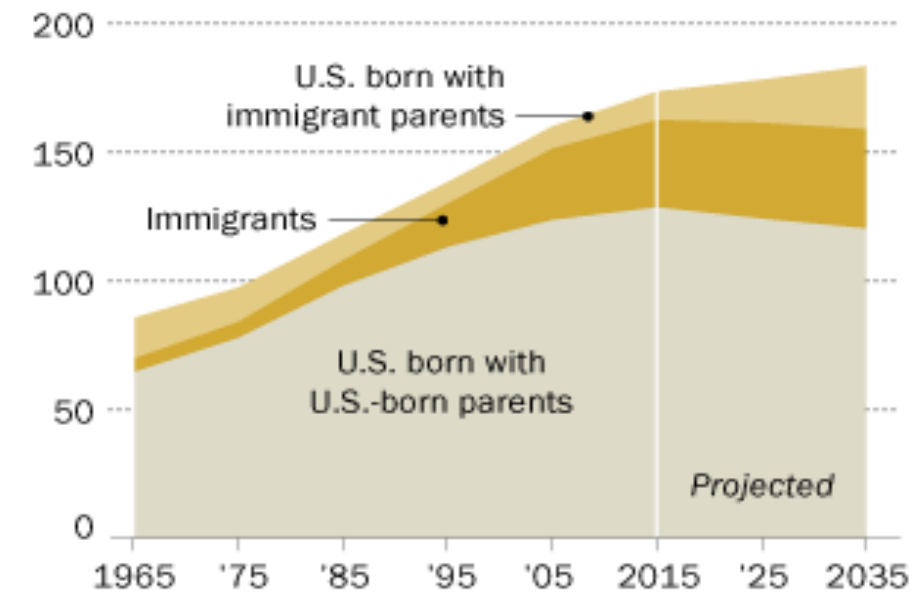
Note: Numbers for 2015 onward are projections.

Source: Pew Research Center estimates for 1965-2015 based on adjusted census data; Pew Research Center projections for 2015-2035.

PEW RESEARCH CENTER

## Immigrants and their U.S.-born children expected to drive growth in U.S. working-age population

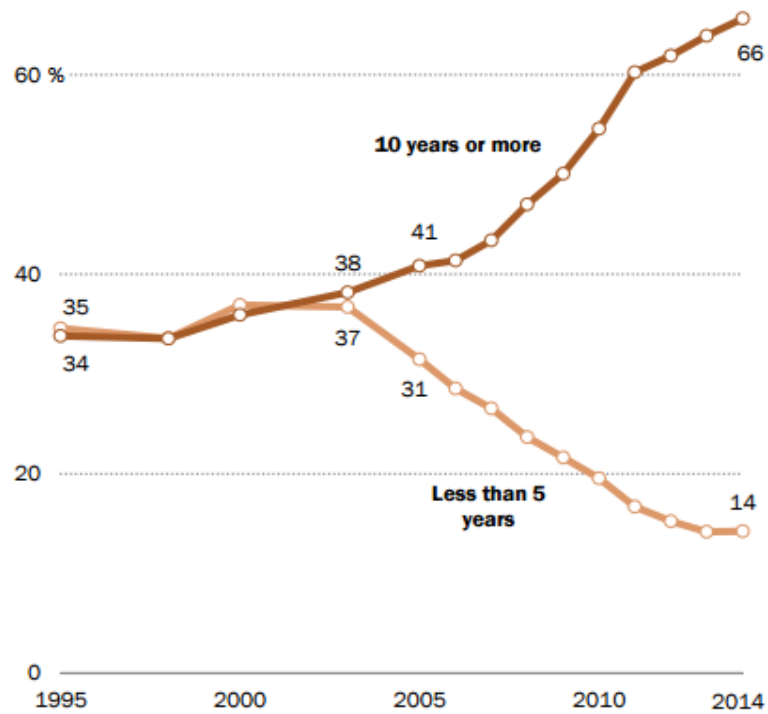
Working-age population (25-64), in millions



# Unauthorized Immigrants Staying Longer

## Larger share of unauthorized immigrants are long-term residents

% of adult unauthorized immigrants, by duration of U.S. residence

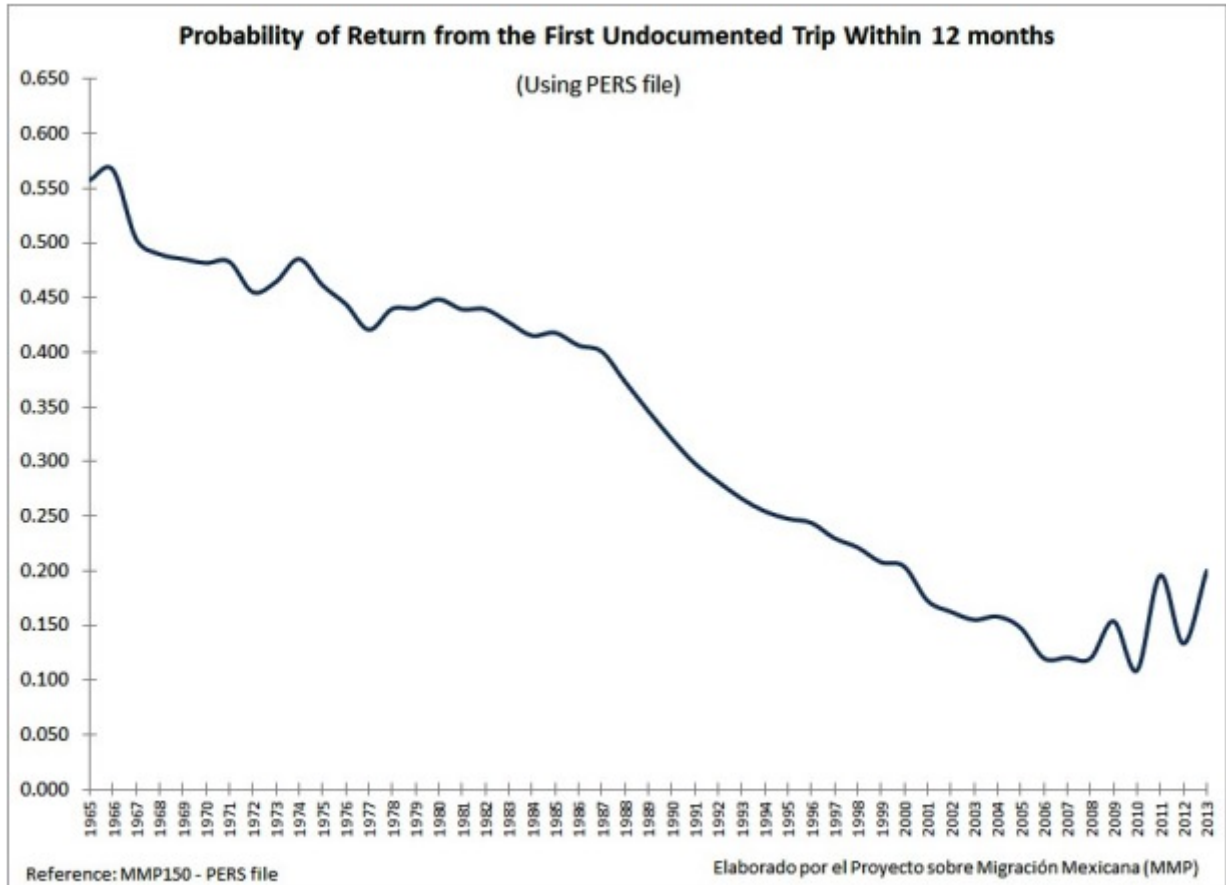


Note: Data labels are for 1995, 2003, 2005 and 2014.

Source: Pew Research Center estimates for 2005-2014 based on augmented American Community Survey data (IPUMS); for 1995, 1998, 2000 and 2003 based on March Supplements of the Current Population Survey.

"Overall Number of U.S. Unauthorized Immigrants Holds Steady Since 2009"

PEW RESEARCH CENTER



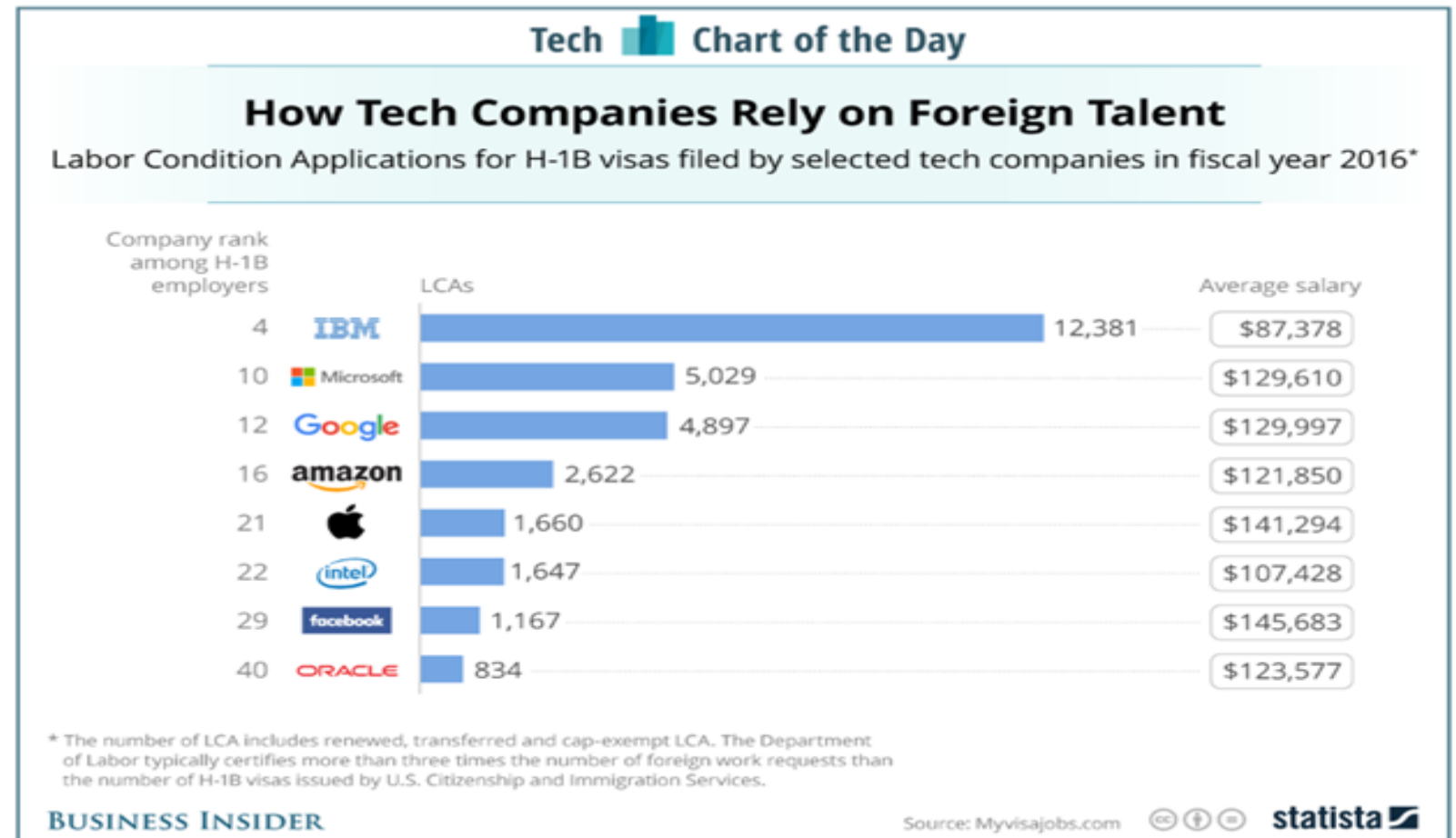
Reference: MMP150 - PERS file

Elaborado por el Proyecto sobre Migración Mexicana (MMP)

# Technology Industry Relies on H-1B Visas

Changes to H1-B visa allocation hurt Indian outsourcing firms but helped the Tech sector

Tech companies are prominent seekers of H-1B workers, and are paying competitive salaries



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