Amazon & Other Factors Affecting the Washington Region’s Economy

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Amazon in Arlington: Context
Density by Metro Area: Jobs Per Land Square Mile

Density: Arlington County vs. City of Seattle

<table>
<thead>
<tr>
<th></th>
<th>Arlington County</th>
<th>Seattle City</th>
<th>Arlington as a % of Seattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sq. Mi.</td>
<td>26</td>
<td>83</td>
<td>31%</td>
</tr>
<tr>
<td>Residents</td>
<td>234,965</td>
<td>724,745</td>
<td>32%</td>
</tr>
<tr>
<td>--- Per Sq. Mi.</td>
<td>9,037</td>
<td>8,732</td>
<td>103%</td>
</tr>
<tr>
<td>Private Office Space (MMs SF)</td>
<td>32</td>
<td>55</td>
<td>58%</td>
</tr>
<tr>
<td>--- Per Sq. Mi.</td>
<td>1.2</td>
<td>0.7</td>
<td>186%</td>
</tr>
</tbody>
</table>

Sources: U.S. Census; Cushman & Wakefield; The Stephen S. Fuller Institute at the Schar School, GMU
Job Change in Arlington County*
2000 – 2017 (in thousands)

HQ2 Avg: +2,366 over 16 years

Sources: U.S. Bureau of Labor Statistics (QCEW), The Stephen S. Fuller Institute at the Schar School, GMU
*Excludes military jobs

Percent of Residents*
With a Bachelor’s Degree Or More, 2017

Sources: U.S. American Community Survey; The Stephen S. Fuller Institute at the Schar School, GMU
*Aged 25+
Share of Commuters Taking Public Transportation
Workplace Geography, 2017

Sources: U.S. American Community Survey; The Stephen S. Fuller Institute at the Schar School, GMU

Share of Households
Living in Buildings with 50+ Units, 2017

Sources: U.S. American Community Survey; The Stephen S. Fuller Institute at the Schar School, GMU
Share of 2+ Worker Households, 2017

Regional Price Levels, Compared to the U.S., 2017

Sources: U.S. American Community Survey; The Stephen S. Fuller Institute at the Schar School, GMU

Sources: U.S. Bureau of Economic Analysis; The Stephen S. Fuller Institute at the Schar School, GMU
Growth vs Change

Private Sector Jobs in the Washington Region:
Net Change Compared to Gross Flows By Year (000s)

Sources: U.S. Bureau of Labor Statistics; LEHD (Q2, Beta, v3Q2018); The Stephen S. Fuller Institute at the Schar School, GMU
* As of prior quarter
% of the Washington Region’s Workers Born in DC, VA, or MD by Industry

Source: U.S. Census Bureau (2014-2016 ACS Microdata); The Stephen S. Fuller Institute at the Schar School, GMU

Share of Residents* That Moved in the Past Year By Place of Current Residence, 2017

* Excludes children less than one years old

Source: U.S. Census (2017 American Community Survey) The Stephen S. Fuller Institute at the Schar School, GMU
Growth in the Washington Region:
Jobs, Residents, Housing, & Home Price (2000 = 100)

Sources: U.S. Census Bureau; U.S. Bureau of Labor Statistics; ShowingTime by RBI; The Stephen S. Fuller Institute at the Schar School, GMU
* Adjusted for the Consumer Price Index of all items except shelter
NOTE: Geography used for median rent in 2005-2013 excludes Culpeper and Rappahannock

Growth in the City of Alexandria:
Jobs, Residents, Housing, & Home Price (2000 = 100)

Sources: U.S. Census Bureau; U.S. Bureau of Labor Statistics; ShowingTime by RBI; The Stephen S. Fuller Institute at the Schar School, GMU
* Adjusted for the Consumer Price Index of all items except shelter
Amazon: Forecasts of Housing Demand

Amazon-Related Household at Full Build-Out
Assumes 37,850 HQ2 jobs

<table>
<thead>
<tr>
<th></th>
<th>Household w/ an HQ2 Job</th>
<th>Household w/ a Job Supported by HQ2 Spending (1)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arlington County, VA</td>
<td>6,097</td>
<td>766</td>
<td>6,662</td>
</tr>
<tr>
<td>Alexandria City, VA</td>
<td>1,890</td>
<td>723</td>
<td>2,613</td>
</tr>
<tr>
<td>Rest of Northern Virginia</td>
<td>17,329</td>
<td>13,381</td>
<td>30,709</td>
</tr>
<tr>
<td>Rest of Virginia</td>
<td>642</td>
<td>14,967</td>
<td>15,609</td>
</tr>
<tr>
<td>D.C.</td>
<td>4,909</td>
<td>469</td>
<td>5,377</td>
</tr>
<tr>
<td>Maryland</td>
<td>6,047</td>
<td>1,515</td>
<td>7,562</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>363</td>
<td>508</td>
<td>871</td>
</tr>
<tr>
<td><strong>Total (2)</strong></td>
<td><strong>37,276</strong></td>
<td><strong>32,328</strong></td>
<td><strong>69,604</strong></td>
</tr>
</tbody>
</table>

Source: The Stephen S. Fuller Institute at the Schar School, GMU

(1) Includes payroll and operations expenditures
(2) A small share of the workers holding HQ2-related jobs are anticipated to cohabitate either with another HQ2-related worker or become part of an existing household. Therefore, the number of households is projected to be fewer than the number of jobs. Only the indirect and induced jobs located in the Commonwealth were analyzed.
### Amazon-Related Owners in Select Jurisdictions

Assumes 37,850 HQ2 jobs, includes indirect & induced effects

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Owners at Full Build-Out</th>
<th>Closed Sales in 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virginia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arlington County</td>
<td>2,071</td>
<td>3,030</td>
</tr>
<tr>
<td>Alexandria City</td>
<td>1,085</td>
<td>2,580</td>
</tr>
<tr>
<td>Fairfax County*</td>
<td>13,698</td>
<td>16,300</td>
</tr>
<tr>
<td>Prince William County**</td>
<td>4,013</td>
<td>8,330</td>
</tr>
<tr>
<td>Loudoun County</td>
<td>3,665</td>
<td>6,630</td>
</tr>
<tr>
<td>D.C.</td>
<td>2,410</td>
<td>8,900</td>
</tr>
<tr>
<td><strong>Maryland</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montgomery County</td>
<td>2,737</td>
<td>12,430</td>
</tr>
<tr>
<td>Prince George's County</td>
<td>1,886</td>
<td>10,230</td>
</tr>
</tbody>
</table>

Sources: RealEstate Business Intelligence, LLC; The Stephen S. Fuller Institute at the Schar School, GMU

*Includes the cities of Fairfax and Falls Church    ** Includes the cities of Manassas and Manassas Park

### Amazon-Related Renters in Select Jurisdictions

Assumes 37,850 HQ2 jobs, includes indirect & induced effects

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Renters at Full Build-Out</th>
<th>Renters in 2016</th>
<th>Total % Increase from 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virginia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arlington County</td>
<td>4,792</td>
<td>57,133</td>
<td>8.4%</td>
</tr>
<tr>
<td>Alexandria City</td>
<td>1,528</td>
<td>41,808</td>
<td>3.7%</td>
</tr>
<tr>
<td>Fairfax County*</td>
<td>4,893</td>
<td>134,425</td>
<td>3.6%</td>
</tr>
<tr>
<td>Prince William County**</td>
<td>1,087</td>
<td>49,891</td>
<td>2.2%</td>
</tr>
<tr>
<td>Loudoun County</td>
<td>716</td>
<td>25,552</td>
<td>2.8%</td>
</tr>
<tr>
<td>D.C.</td>
<td>2,968</td>
<td>169,875</td>
<td>1.7%</td>
</tr>
<tr>
<td><strong>Maryland</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montgomery County</td>
<td>625</td>
<td>132,098</td>
<td>0.5%</td>
</tr>
<tr>
<td>Prince George's County</td>
<td>396</td>
<td>121,333</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Sources: U.S. Census Bureau (2016 ACS Microdata); The Stephen S. Fuller Institute at the Schar School, GMU

*Includes the cities of Fairfax and Falls Church    ** Includes the cities of Manassas and Manassas Park
Distribution of Households by Household Income Washington Region

Current Households

HQ2-Related Households

Sources: U.S. Census Bureau (2014-2016 ACS Microdata); The Stephen S. Fuller Institute at the Schar School, GMU
NOTE: in 2016 $

Amazon-Related Households in Alexandria by Household Type

Source: The Stephen S. Fuller Institute at the Schar School, GMU
Amazon-Related Renters by Income
City of Alexandria (2016 $s)

Avg. Affordable Rent:

- <$75k: $1,210
- $75-124.9k: $2,615
- $125-199.9k: $4,000
- $200k+: $6,780

Source: The Stephen S. Fuller Institute at the Schar School, GMU

Key Changes Affecting Housing
Largest 15 Employment Metros as % of U.S.

- Jobs: Base Share in 2000 = 34.2%, Share of 2000-2017 Increase = 41.9%
- Housing Units: Base Share in 2000 = 30.7%, Share of 2000-2017 Increase = 30.0%
- Personal Income: Base Share in 2000 = 39.2%, Share of 2000-2017 Increase = 40.1%

Sources: U.S. Census Bureau; U.S. Bureau of Labor Statistics; U.S. Bureau of Economic Analysis; The Stephen S. Fuller Institute at the Schar School, GMU

Population by Age, Washington Region, 1990

Sources: U.S. Census Bureau (1970-79 Intercensal Estimates & 2018 Population Estimates); The Stephen S. Fuller Institute at the Schar School, GMU
Population by Age, Washington Region

Sources: U.S. Census Bureau (1970-79 Intercensal Estimates & 2018 Population Estimates); The Stephen S. Fuller Institute at the Schar School, GMU

% Of Housing Stock Occupied for 20+ Years:
Householder 50+, No Children, 2+ Extra Bedrooms, Washington Region

Sources: U.S. Census Bureau (1990 Decennial microdata & 2017 ACS microdata); The Stephen S. Fuller Institute at the Schar School, GMU
Distribution of Wages & Income, Washington Region

WAGES

- 90th Percentile
- Median (50th Percentile)
- 10th Percentile

HOUSEHOLD INCOME

- 90th Percentile
- Median (50th Percentile)
- 10th Percentile

Key Changes Affecting Worker Retention

Sources: U.S. Bureau of Labor Statistics; U.S.; The Stephen S. Fuller Institute at the Schar School, GMU. NOTE: CPI Adjusted
Workers by Age, Washington Region, 2017

Private Sector Workers 65+ Transitioning to Fulltime Nonemployment (retirees), Washington Region

Sources: U.S. Census Bureau (2017 ACS Microdata); The Stephen S. Fuller Institute at the Schar School, GMU
Population Growth By Component Change
Washington Region (in 000s)

Net Domestic Migration
Net International Migration
Natural Increase
Total

Sources: U.S. Census Bureau (Intercensal, v2009 and v2017 Population Estimates); The Stephen S. Fuller Institute at the Schar School, GMU
*Estimate

Domestic Migration in the Washington Region
2000 to 2015

In-Migration
Out-Migration

Preliminary / Data Discontinuity

Sources: Internal Revenue Service; The Stephen S. Fuller Institute at the Schar School, GMU
*Preliminary
Thank You

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