

SEPTEMBER 29, 2019

GO Virginia Region 3

EMPIRICAL ASSESSMENT

ECONOMIC AND LABOR MARKET CONDITIONS



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About Mangum Economics, LLC

Mangum Economics, LLC is a Richmond, Virginia based firm that specializes in producing objective economic, quantitative, and qualitative analysis in support of strategic decision making. Much of our recent work relates to IT & Telecom Infrastructure (data centers, terrestrial and subsea fiber), Renewable Energy, and Economic Development. Examples of typical studies include:

POLICY ANALYSIS

Identify the intended and, more importantly, unintended consequences of proposed legislation and other policy initiatives.

ECONOMIC IMPACT ASSESSMENTS AND RETURN ON INVESTMENT ANALYSES

Measure the economic contribution that businesses and other enterprises make to their localities.

WORKFORCE ANALYSIS

Project the demand for, and supply of, qualified workers.

CLUSTER ANALYSIS

Use occupation and industry clusters to illuminate regional workforce and industry strengths and identify connections between the two.

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Executive Summary

Consistent with the requirements of the GO Virginia initiative, this report provides an empirical assessment of economic and labor market conditions within GO Virginia Region 3. The principal findings from that assessment are as follows:

REGIONAL ECONOMY

Over the last five years, employment and wage growth in GO Virginia Region 3 has under-performed statewide trends. However, there are significant differences in the performance and composition of the economies of the three Planning Districts (PDCs) that comprise Region 3 – Commonwealth PDC, Southside PDC, and West Piedmont PDC

- The private sector accounts for about the same proportion of total employment in Region 3 as it does statewide in Virginia. In 2018, private sector employment accounted for 80 percent of total employment in Region 3 as a whole, 68 percent in the Commonwealth PDC, 82 percent in the Southside PDC, and 84 percent in the West Piedmont PDC as compared to 82 percent statewide in Virginia.
- Region-wide, total private employment growth in Region 3 was below that of the state as a whole over the last five years – 2.8 percent in Region 3 as a whole, 8.1 percent in the Commonwealth PDC, minus 0.3 percent in the Southside PDC, and 2.5 percent in the West Piedmont PDC as compared to 7.4 percent statewide in Virginia.
- Region-wide, private sector average weekly wage growth in Region 3 was a little above the statewide average over the last five years – 10.3 percent in Region 3 as a whole, 9.2 percent in the Commonwealth PDC, 10.4 percent in the Southside PDC, and 10.6 percent in the West Piedmont PDC as compared to 10.1 percent statewide in Virginia.
- Private sector average weekly wages in Region 3 are below the statewide average. In 2018, private sector average weekly wages were \$668 in Region 3 as a whole, \$651 in the Commonwealth PDC, \$690 in the Southside PDC, and \$666 in the West Piedmont PDC as compared to \$1,113 statewide in Virginia.
- Over the one year period from 2017 to 2018, the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 668 jobs), 2) Accommodation and Food Services (up 368 jobs), and 3) Wholesale Trade (up 80 jobs). While the three industry sectors with the largest employment losses were: 1) Health Care and Social Assistance (down 389 jobs), 2) Construction (down 223 jobs), and 3) Manufacturing (down 180 jobs).
- Over the five-year period from 2013 to 2018, the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 1,633 jobs), 2) Accommodation and Food Services (up 742 jobs), and 3) Health Care and Social Assistance (up 454 jobs). While the three industry sectors with the largest employment losses were: 1) Transportation and

Warehousing (down 343 jobs), 2) Professional, Scientific, and technical Services (down 213 jobs), and 3) Information (down 167 jobs).

- In 2017, Region 3 identified nine target industry clusters. Four of those were identified as Tier 1 or Primary clusters: 1) Forestry, 2) Lighting and Electrical Equipment, 3) Plastics, 4) and Vulcanized and Fired Materials. Three were identified as Tier 2 or Secondary clusters: 1) Business Services, 2) Food Processing and Manufacturing, and 3) Distribution and Electronic Commerce. Two were identified as emerging clusters: 1) Aerospace Vehicles and Defense, and 2) Production Technology and Heavy Machinery.
- Of Region 3's nine identified target industry clusters, in 2018 the three largest were: 1) Business Services (8,976 jobs), 2) Distribution and Electronic Commerce (5,566 jobs), and 3) Plastics (3,212 jobs). While, the three highest paying were: 1) Food Processing and Manufacturing (\$1,085 per week), 2) Vulcanized and Fired Materials (\$992 per week), and, and 3) Plastics (\$931 per week).¹
- Over the one year period between 2017 and 2018, the target industry clusters exhibiting the largest employment growth were: 1) Plastics (up 228 jobs), 2) Vulcanized and Fired Materials (up 69 jobs), and 3) Food Processing and Manufacturing (up 5 jobs).²
- Over the five year period between 2013 and 2018, the target industry clusters exhibiting the largest employment growth were: 1) Plastics (up 667 jobs), 2) Distribution and Electronic Commerce (up 393 jobs), and 3) Vulcanized and Fired Materials (up 97 jobs).³

ECONOMIC DRIVERS

GO Virginia Region 3 is home to a large and diverse number of high-performing industries.

- We assessed the relative economic performance of specific industries within Region 3 using a Composite Economic Performance Index that took into account each industry's relative employment footprint, short-term and long-term employment growth, short-term and long-term wage growth, industry wage as a proportion of the average wage for the region, proportion of industry output exported out of Region 3, and employment multiplier.
- That analysis identified 80 industries within Region 3 that exhibited a Composite Economic Performance Index that was above the median for the region and 40 industries that were performed in the upper quartile.

¹ Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

² Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

³ Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

WORKFORCE GAPS

Our “gap analysis” of potential shortfalls in the pipeline of completers graduating from regional post-secondary education programs in Region 3 relative to the occupation-driven demand for trained workers from those programs showed that:

- The most binding workforce gaps were in “middle-skill” occupations that require a less than a two-year, post-secondary certificate. For example:
 - Industry and Machinery Mechanics
 - Machinists
 - Medical Assistants

FORWARD-LOOKING DATA

Our analysis of forward-looking data required by GO Virginia guidelines drew heavily from the TEconomy Partners report, *Regional Entrepreneurial Assessment Project*. That analysis showed that:

- Between 2012 and 2017, the share of the working-age population with at least a bachelor’s degree grew by 10 percent, which was equal to the 10 percent growth rate for the state as a whole.
- Start-up activity in Region 3 is occurring mainly in the sectors targeted by the region’s GO Virginia initiative: Advanced Manufacturing, Health Care, and Natural Resource Products.
- Most patents issued in Region 3 are to government organizations.

Introduction

Consistent with the requirements of the GO Virginia initiative, this report provides an updated assessment of economic and labor market conditions within GO Virginia Region 3. Region 3 is comprised of cities of Danville and Martinsville; and the counties of Amelia, Brunswick, Buckingham, Charlotte, Cumberland, Halifax, Henry, Lunenburg, Mecklenburg, Nottoway, Patrick, Pittsylvania, and Prince Edward. Region 3 is generally consistent with the service areas of the Commonwealth Regional Council, Southside, and West Piedmont Planning District Commissions (PDCs).

This report was commissioned by GO Virginia Region 3 and produced by Mangum Economics.

Economic Profile

In this section, we provide a context for the analysis to follow by reviewing recent economic trends within GO Virginia Region 3, and the three Planning Districts that comprise Region 3 (Commonwealth PDC, Southside PDC, and West Piedmont PDC).⁴

EMPLOYMENT BY OWNERSHIP CATEGORY

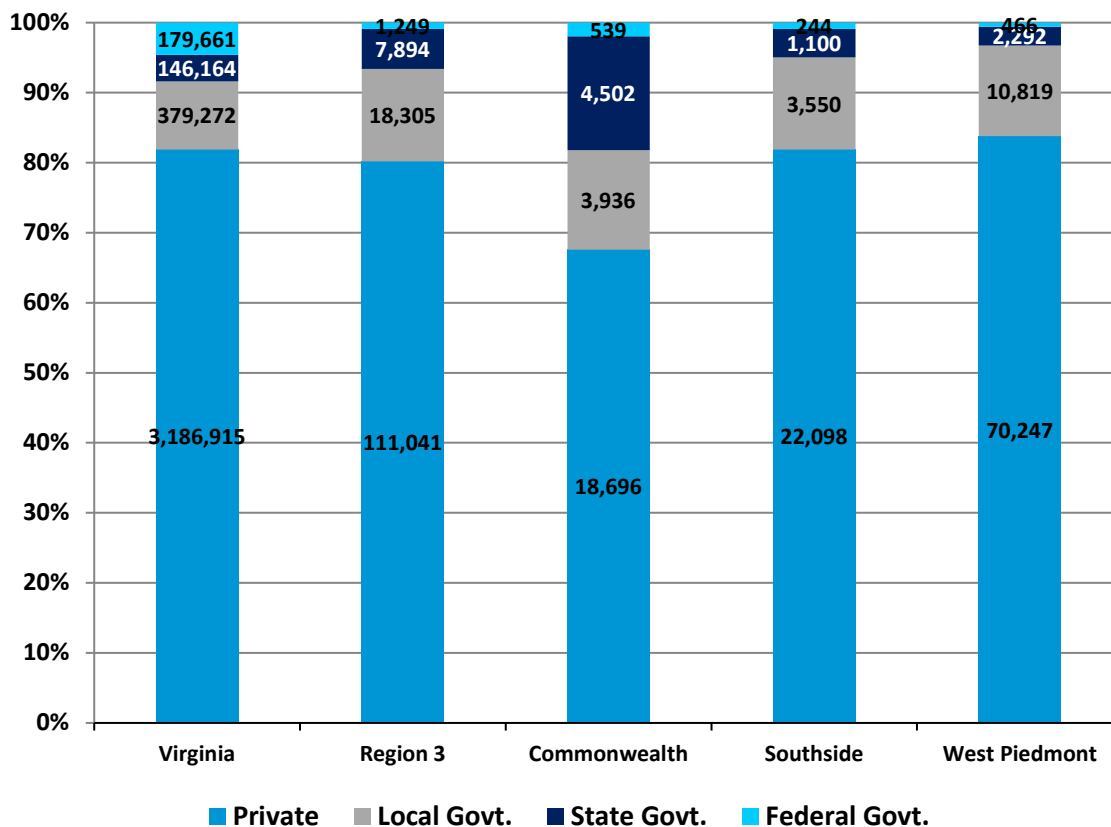
Figure 1 depicts employment by ownership category in Virginia, GO Virginia Region 3, and the three Planning Districts that are encompassed by Region 3, in 2018. As these data depict, where in Virginia as a whole private sector employment accounted for 82 percent of total employment, in Region 3 that figure was 80 percent. While at the PDC level, private sector employment accounted for: 1) 68 percent of total employment in the Commonwealth PDC, 2) 82 percent of total employment in the Southside PDC, and 3) 84 percent of total employment in the West Piedmont PDC. The significant difference in private employment in the Commonwealth PDC is attributable to the fact that state government employment accounted for 16 percent of total employment in that PDC, which is likely attributable to the three state correctional institutions in that PDC (*i.e.*, the Buckingham, Dillwyn, and Lunenburg Correctional Centers).

Consistent with the GO Virginia initiative's focus on private sector development, in the remainder of this section we will focus exclusively on private sector employment and wages.

⁴ The Commonwealth Regional Council PDC encompasses the counties of Amelia, Buckingham, Charlotte, Lunenburg, and Prince Edward. The Southside PDC encompasses of the counties of Brunswick, Halifax, and Mecklenburg. The West Piedmont PDC encompasses the cities of Danville and Martinsville, and the counties of Franklin, Henry, Patrick, and Pittsylvania. These PDC service areas closely match that of GO Virginia Region 3, but they do not perfectly overlap. Franklin County is included in the West Piedmont PDC, but is not part of Region 3, while Cumberland County and Nottoway County are part of Region 3, but are not included in either of the three PDCs.



Figure 1: Employment by Ownership Category – 2018⁵



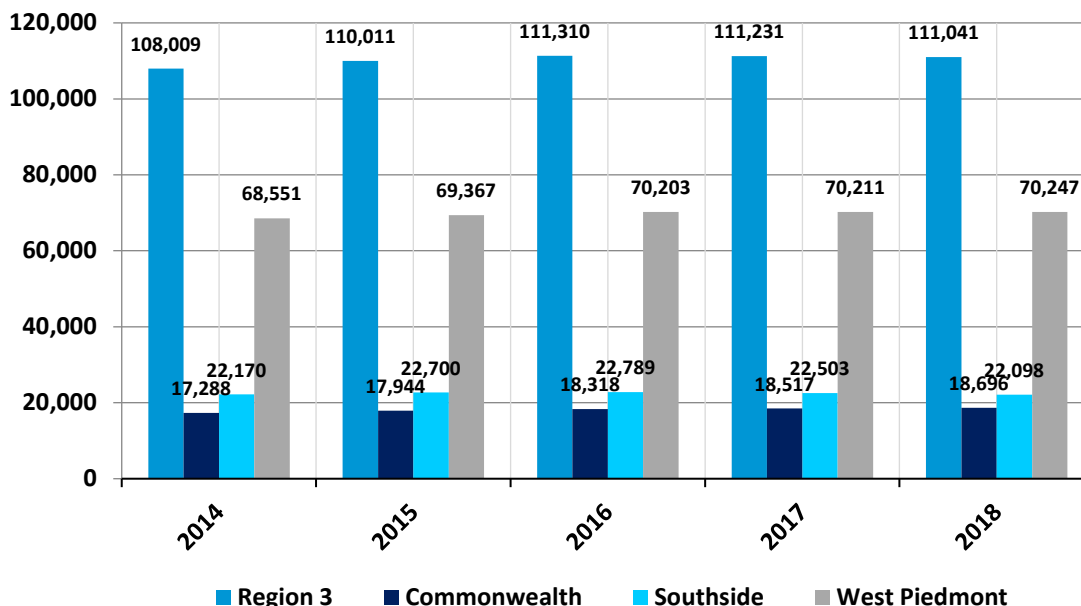
TOTAL PRIVATE EMPLOYMENT

Figure 2 provides data on total private employment trends in GO Virginia Region 3, and the three Planning Districts that it encompasses for the period from 2014 through 2018. Overall this five year period, Region 3 experienced an increase of 3,032 jobs, or 2.8 percent growth in total private employment. By way of comparison, over the same period the state of Virginia as a whole experienced 7.4 percent growth in total private employment.

⁵ Source: Virginia Employment Commission.



Figure 2: Total Private Employment in GO Virginia Region 3 and Planning Districts – 2014 to 2018⁶



To control for seasonality and provide a point of reference, Figures 3 and 4 compare the annual change in total private employment in Region 3 and the three Planning Districts that it encompasses to that of the state of Virginia as a whole over the same five-year period. Any point above the zero line in this graph indicates annual employment growth, while any point below the zero line indicates annual employment decline. As these data indicate, with the exception of the Commonwealth PDC, annual private employment growth in Region 3 and its Planning Districts tracked below the statewide norm over this period. In 2018, annual private employment growth was 1.5 percent in Virginia statewide, as compared to minus 0.2 percent in Region 3, plus 1.0 percent in the Commonwealth PDC, minus 1.8 percent in the Southside PDC, and plus 0.1 percent in the West Piedmont PDC.

Finally, Figure 5 depicts the cumulative annual growth in total private employment in Region 3 and the three Planning Districts that it encompasses between 2014 and 2018. Here again, with the exception of the Commonwealth PDC, cumulative annual total private employment growth in Region 3 and its Planning Districts tracked below the statewide norm over this period. As these data show, over this period: 1) Virginia experienced a 7.4 percent cumulative increase in total private employment, 2) Region 3 experienced a 2.8 percent increase; 3) the Commonwealth PDC experienced an 8.1 percent increase, 4) the Southside PDC experienced a 0.3 percent decline, and 5) the West Piedmont PDC experienced a 2.5 percent increase.

⁶ Source: Virginia Employment Commission.



Figure 3: Annual Change in Total Private Employment in GO Virginia Region 3 – 2014 to 2018⁷

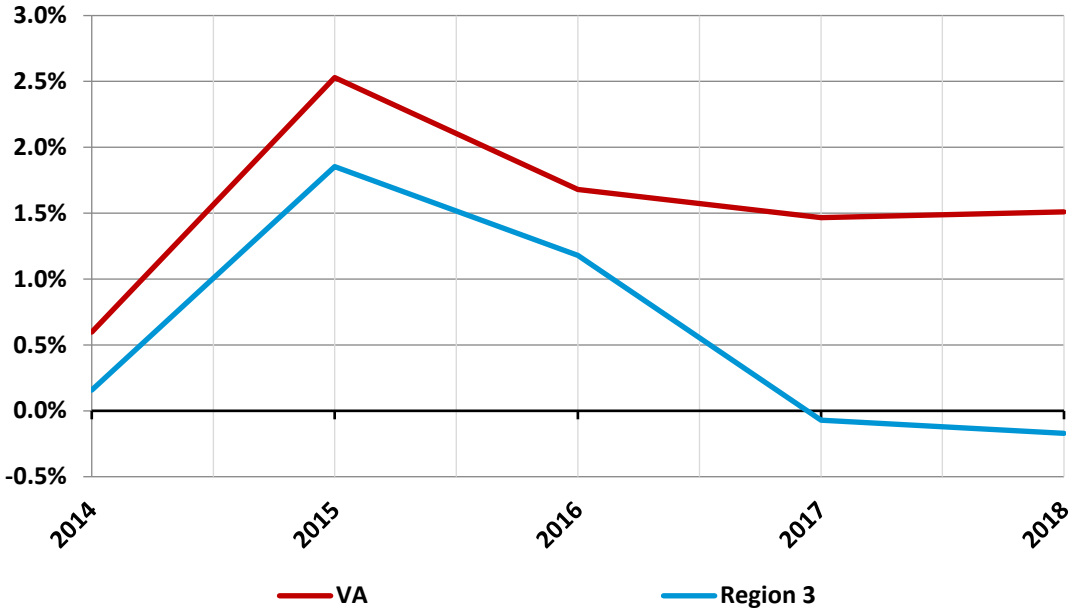
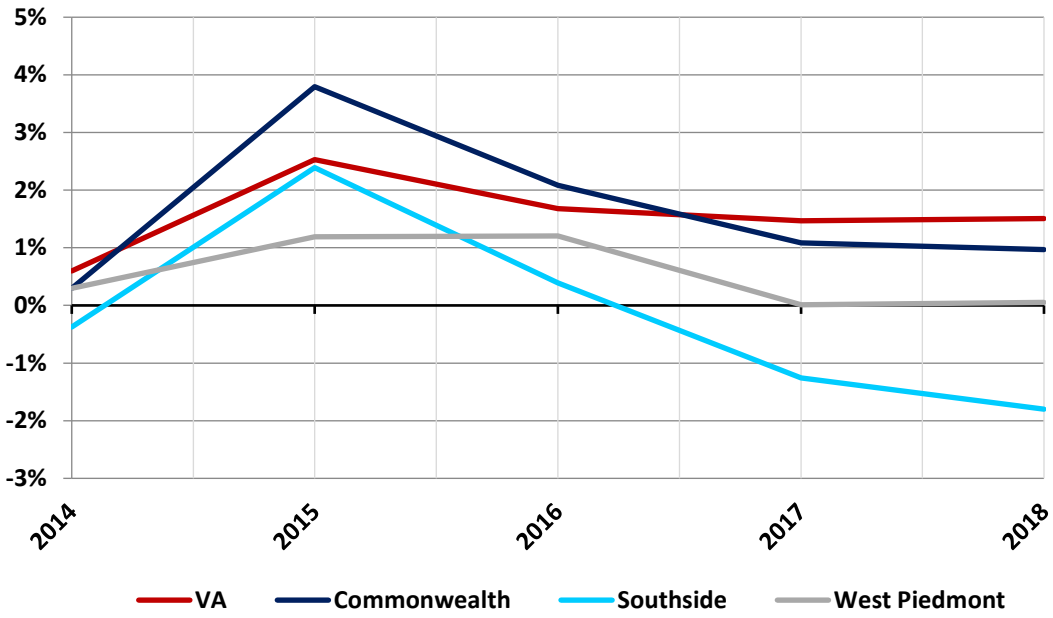


Figure 4: Annual Change in Total Private Employment in GO Virginia Region 3 by PDC – 2014 to 2018⁸

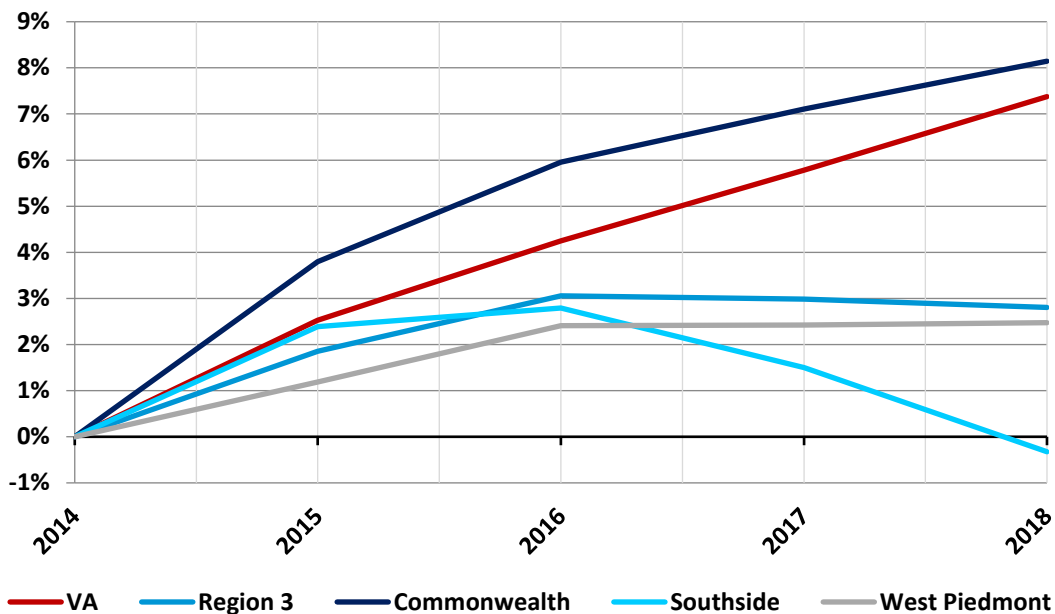


⁷ Source: Virginia Employment Commission.

⁸ Source: Virginia Employment Commission.



Figure 5: Cumulative Growth in Total Private Employment in GO Virginia Region 3 and Planning Districts – 2014 to 2018⁹



PRIVATE SECTOR AVERAGE WEEKLY WAGES

Figure 6 provides data on trends in private sector average weekly wages in GO Virginia Region 3, and the three Planning Districts that it encompasses for the period from 2014 through 2018. While Figure 7 depicts the cumulative growth in private sector average weekly wages in each geography between 2014 and 2018 on an annual basis (unadjusted for inflation). As these data show, over this period private sector average weekly wages increased by: 1) 10.1 percent statewide in Virginia, 2) 10.3 percent in Region 3, 3) 9.2 percent in the Commonwealth PDC, 4) 10.4 percent in the Southside PDC, and 5) 10.6 percent in the West Piedmont PDC (unadjusted for inflation).

⁹ Source: Virginia Employment Commission.



Figure 6: Private Average Weekly Wages in GO Virginia Region 3 and Planning Districts – 2014 to 2018¹⁰

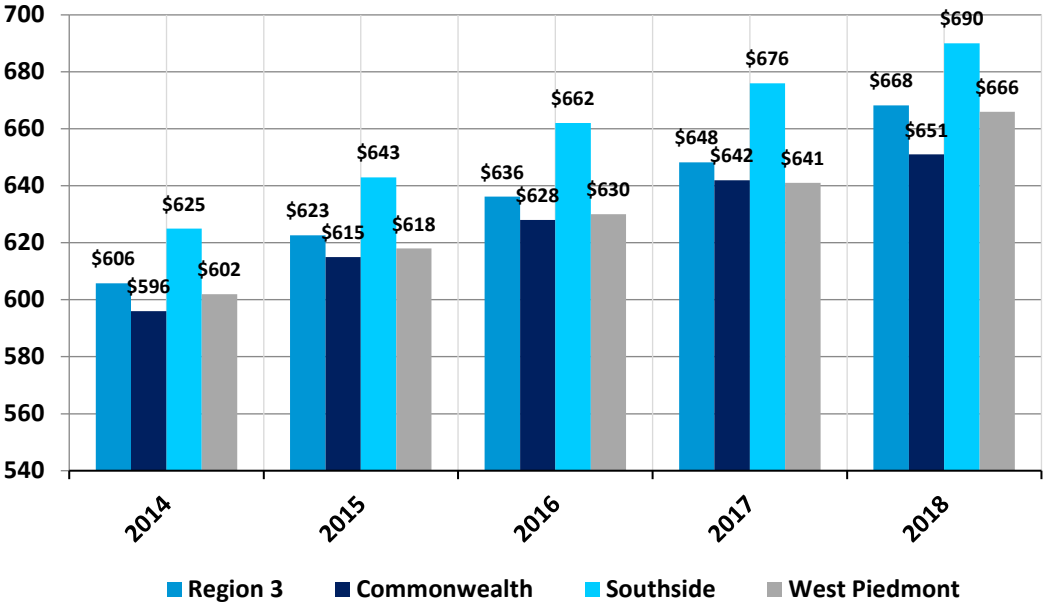
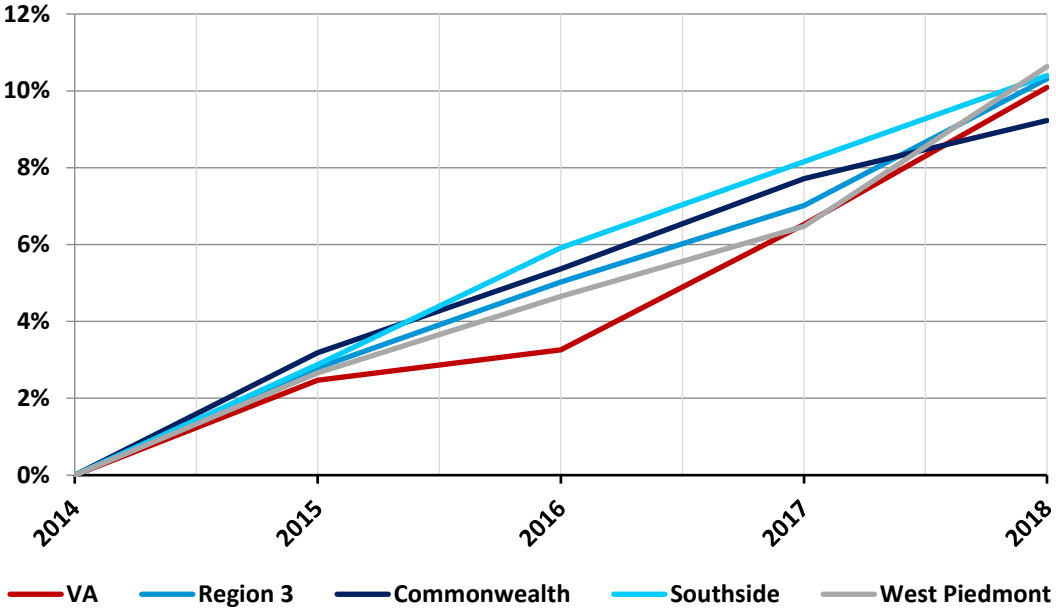


Figure 7: Cumulative Nominal Growth in Private Average Weekly Wages in GO Virginia Region 3 and Planning Districts – 2014 to 2018¹¹



¹⁰ Source: Virginia Employment Commission.

¹¹ Source: Virginia Employment Commission.

EMPLOYMENT BY MAJOR INDUSTRY

In this portion of the section, we provide a drill-down for employment and wages by major industry sector in GO Virginia Region 3 and the three Planning Districts it encompasses. As shown in Figure 8, in 2018 the three largest industry sectors in Region 3 were: 1) Manufacturing (20,396 jobs), 2) Health Care and Social Assistance (20,116 jobs), and 3) Retail Trade (17,301 jobs).

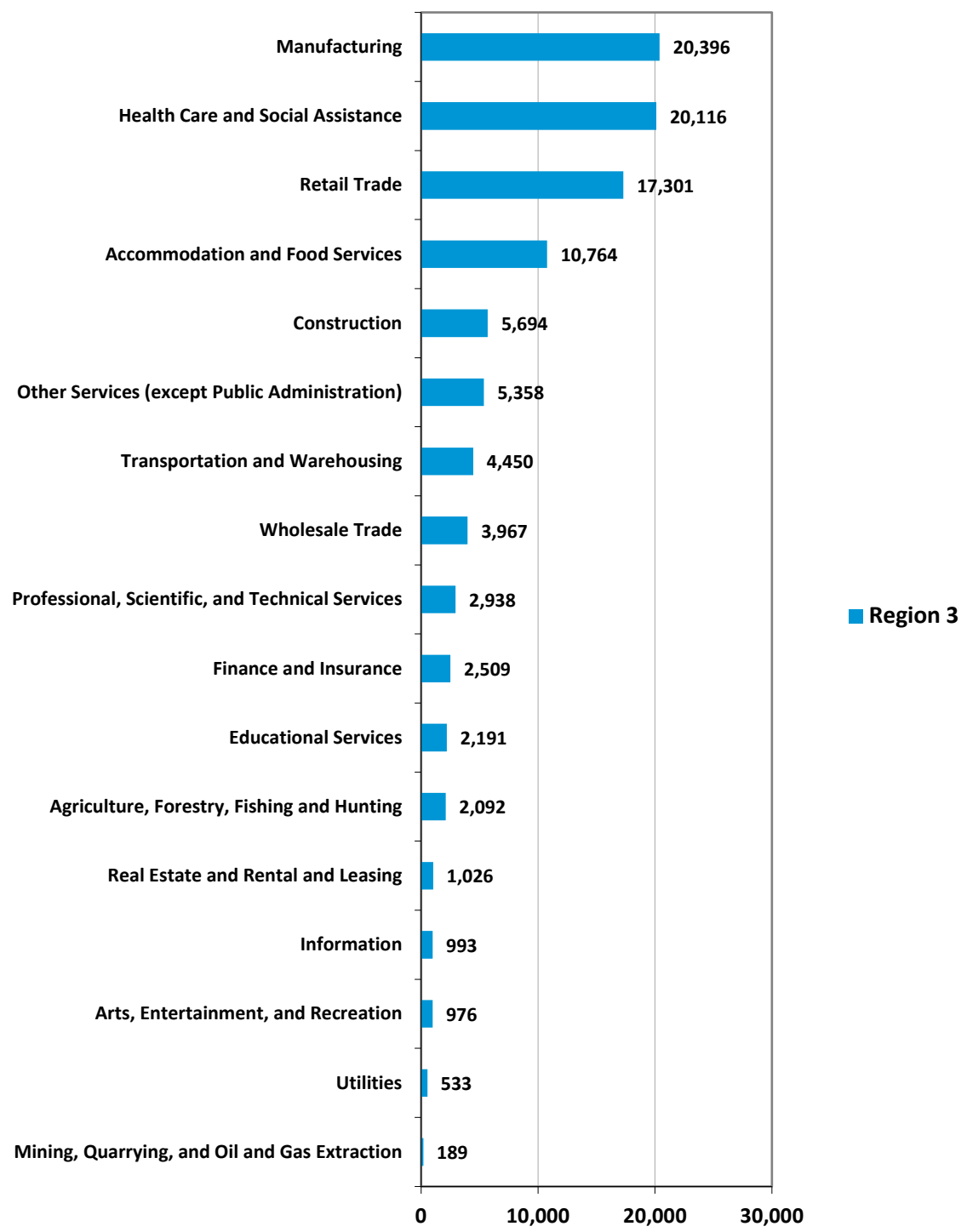
Figure 9 provides a similar breakdown by PDC. In 2018 the three largest industry sectors in the Commonwealth PDC were: 1) Health Care and Social Assistance (4,135 jobs), 2) Retail Trade (2,941 jobs), and 3) Accommodation and Food Service (1,945 jobs). In the Southside PDC, the three largest industry sectors that year were: 1) Health Care and Social Assistance (4,013 jobs), 2) Manufacturing (3,400 jobs), and 3) Retail Trade (3,203 jobs). While in the West Piedmont PDC, the three largest industry sectors were: 1) Manufacturing (15,076 jobs), 2) Health Care and Social Assistance (11,968 jobs), and 3) Retail Trade (11,157 jobs).

Figures 10 and 11 provide similar data for average weekly wages in 2018. As shown in Figure 10, in 2018 the three highest paying industry sectors in Region 3 were: 1) Utilities (\$1,878 per week), 2) Mining, Quarrying, and Oil and Gas Extraction (\$997 per week), and 3) Wholesale Trade (\$950 per week).

Figure 11 provides the same rankings by PDC. In 2018 the three highest paying sectors in the Commonwealth PDC were: 1) Utilities (\$1,912 per week), 2) Mining, Quarrying, and Oil and Gas Extraction (\$1,023 per week), and 3) Professional, Scientific, and Technical Services (\$949 per week). In the Southside PDC, the three highest paying industry sectors that year were: 1) Utilities (\$1,973 per week), 2) Mining, Quarrying, and Oil and Gas Extraction (\$1,168 per week), and 3) Professional, Scientific, and Technical Services (\$1,140 per week). While in the West Piedmont PDC, the three highest paying industry sectors were: 1) Utilities (\$1,629 per week), 2) Wholesale Trade (\$948 per week), and 3) Finance and Insurance (\$914 per week).



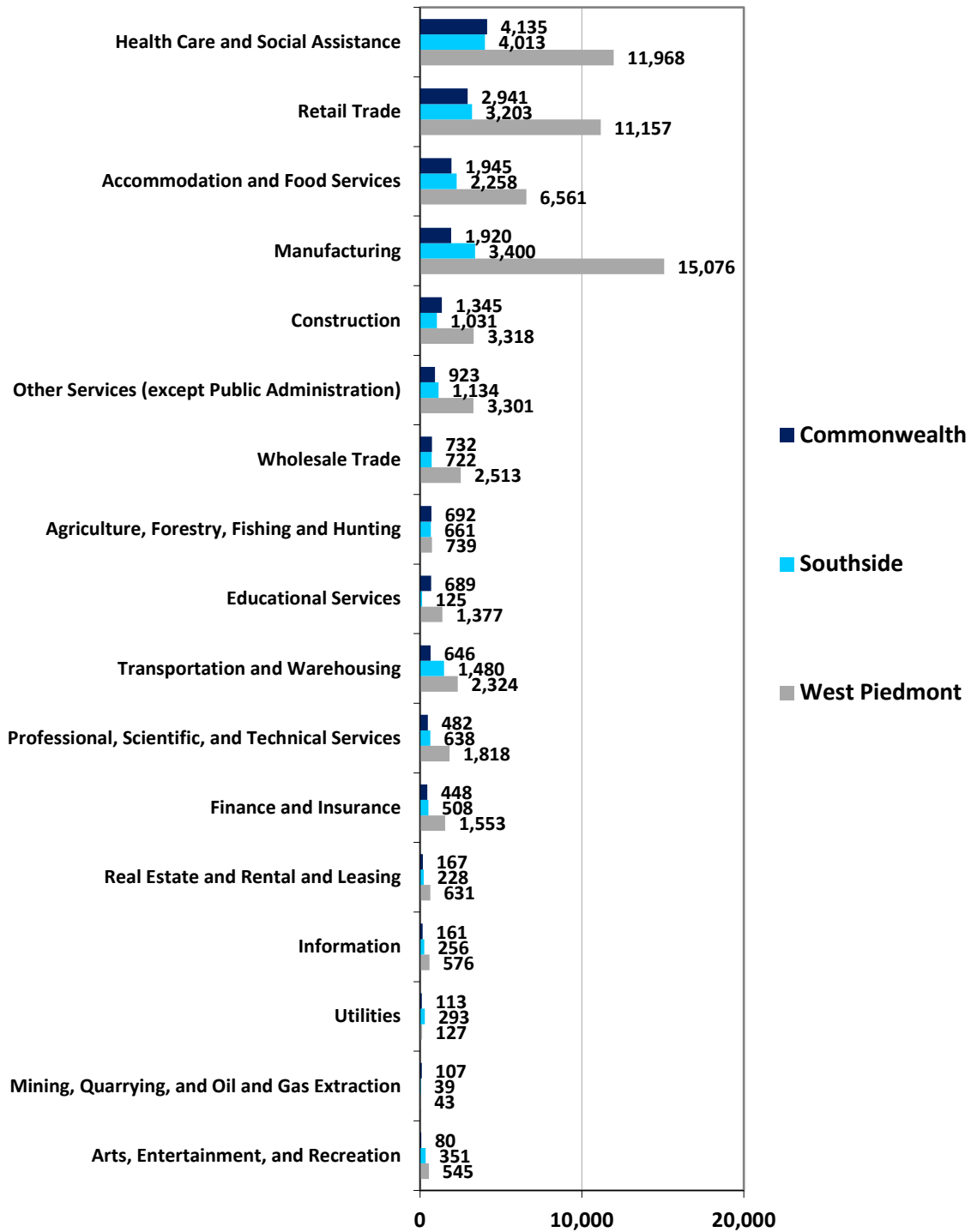
Figure 8: Private Employment by Major Industry Sector in Region 3 – 2018¹²



¹² Source: Virginia Employment Commission.



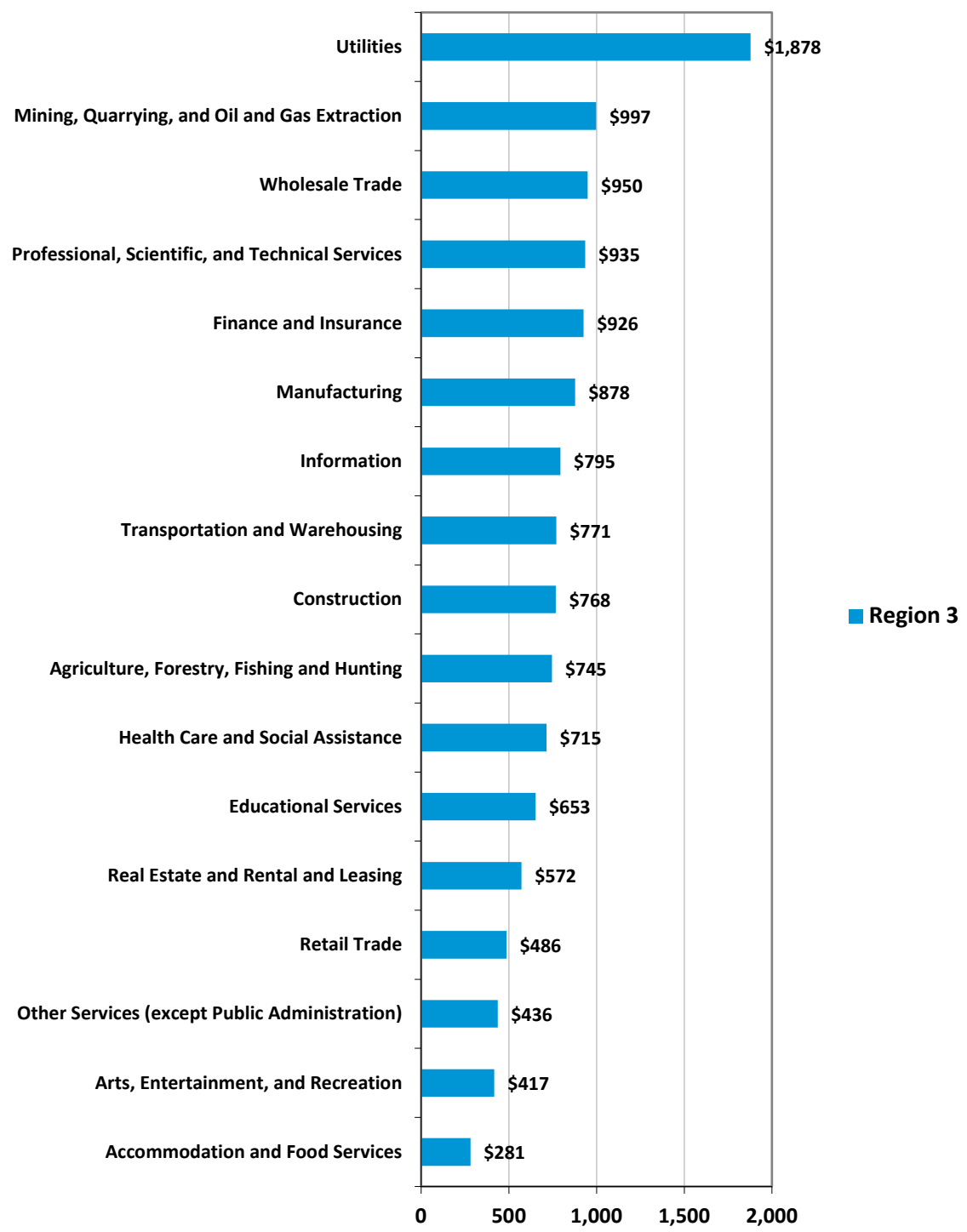
Figure 9: Private Employment by Major Industry Sector in Region 3 by PDC – 2018¹³



¹³ Source: Virginia Employment Commission.



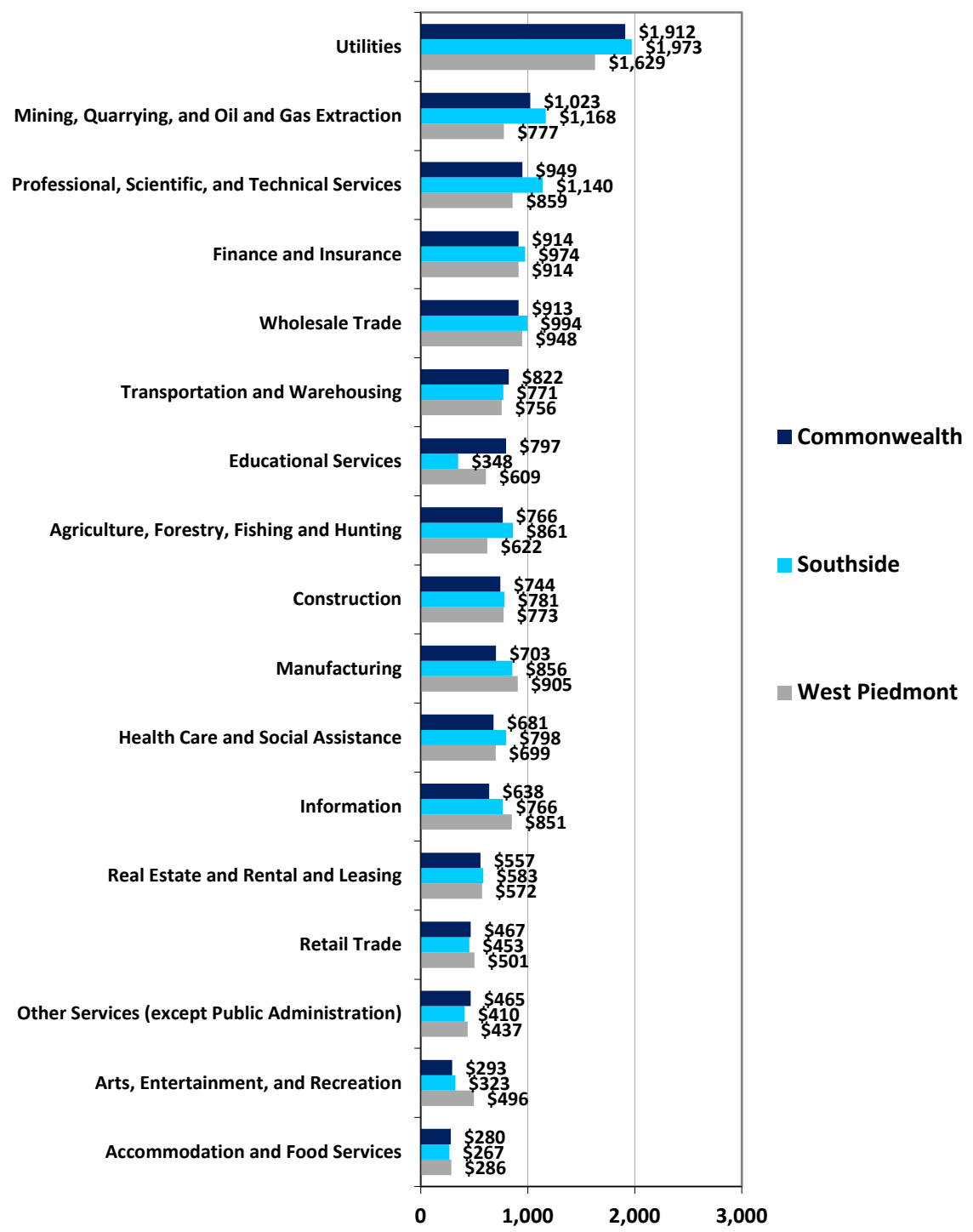
Figure 10: Private Average Weekly Wages by Major Industry Sector in Region 3 – 2018¹⁴



¹⁴ Source: Virginia Employment Commission.



Figure 11: Private Average Weekly Wages by Major Industry Sector in Region 3 by PDC – 2018¹⁵



¹⁵ Source: Virginia Employment Commission.

Finally, Figures 12 through 15 depict one year (2017 to 2018) and five year (2013 to 2018) employment changes in Region 3 and the three Planning Districts it encompasses. As shown in Figure 12, over the one year period between 2017 and 2018 the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 668 jobs), 2) Accommodation and Food Services (up 368 jobs), and 3) Wholesale Trade (up 80 jobs). While at the other end of the spectrum, the three industry sectors in Region 3 with the largest employment losses between 2017 and 2018 were: 1) Health Care and Social Assistance (down 389 jobs), 2) Construction (down 223 jobs), and 3) Manufacturing (down 180 jobs). Figure 13 provides similar data for one year employment growth at a Planning District level.

As shown in Figure 14, over the five year period between 2013 and 2018 the three industry sectors in Region 3 with the largest employment growth were: 1) Other Services (up 1,633 jobs), 2) Accommodation and Food Services (up 742 jobs), and 3) Health Care and Social Assistance (up 454 jobs). While at the other end of the spectrum, the three industry sectors in Region 3 with the largest employment losses between 2013 and 2018 were: 1) Transportation and Warehousing (down 343 jobs), 2) Professional, Scientific, and Technical Services (down 213 jobs), and 3) Information (down 167 jobs). Figure 15 provides similar data for five year employment growth at a Planning District level.



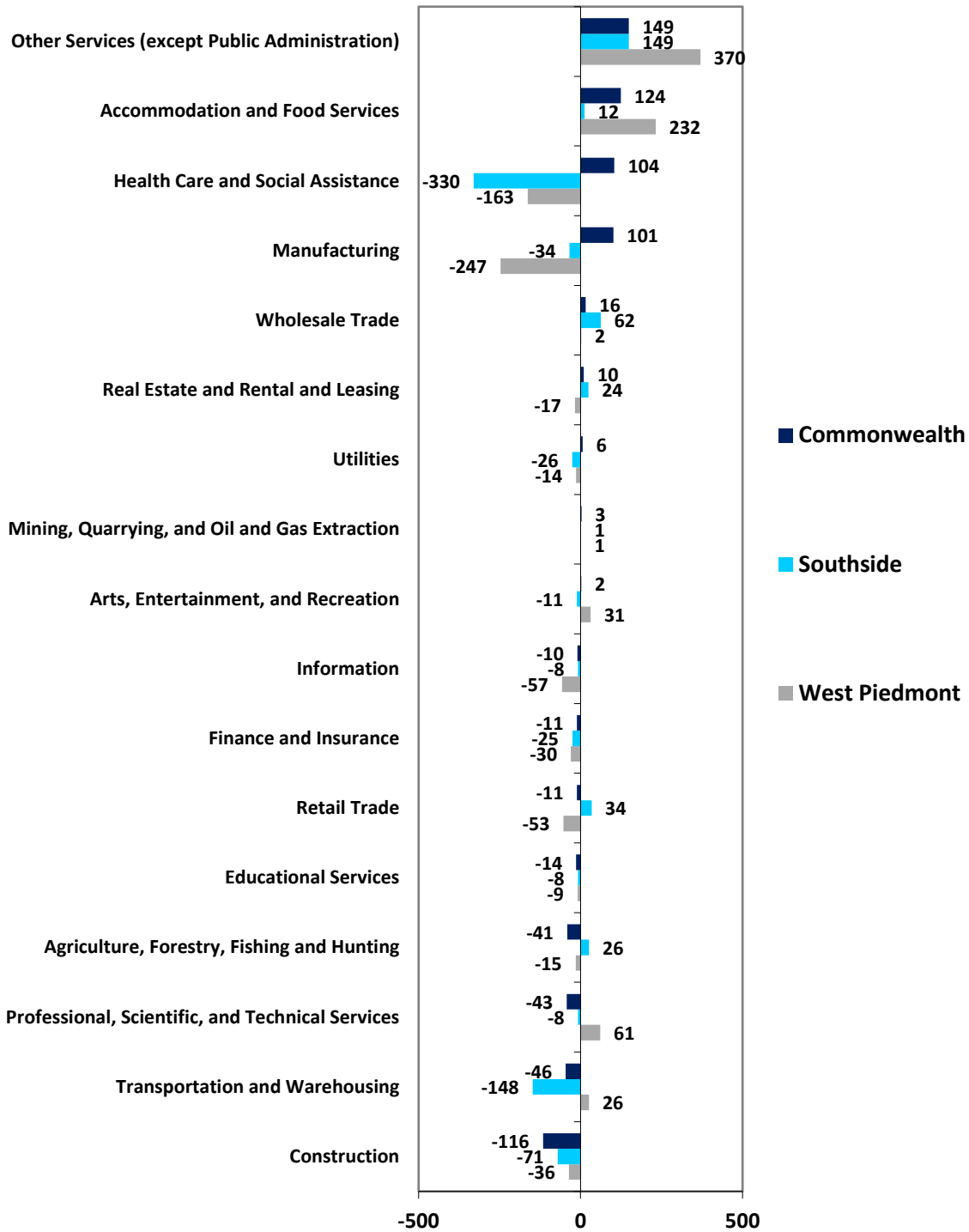
Figure 12: One Year Change in Private Employment by Major Industry Sector in Region 3 (2017 to 2018)¹⁶



¹⁶ Source: Virginia Employment Commission.



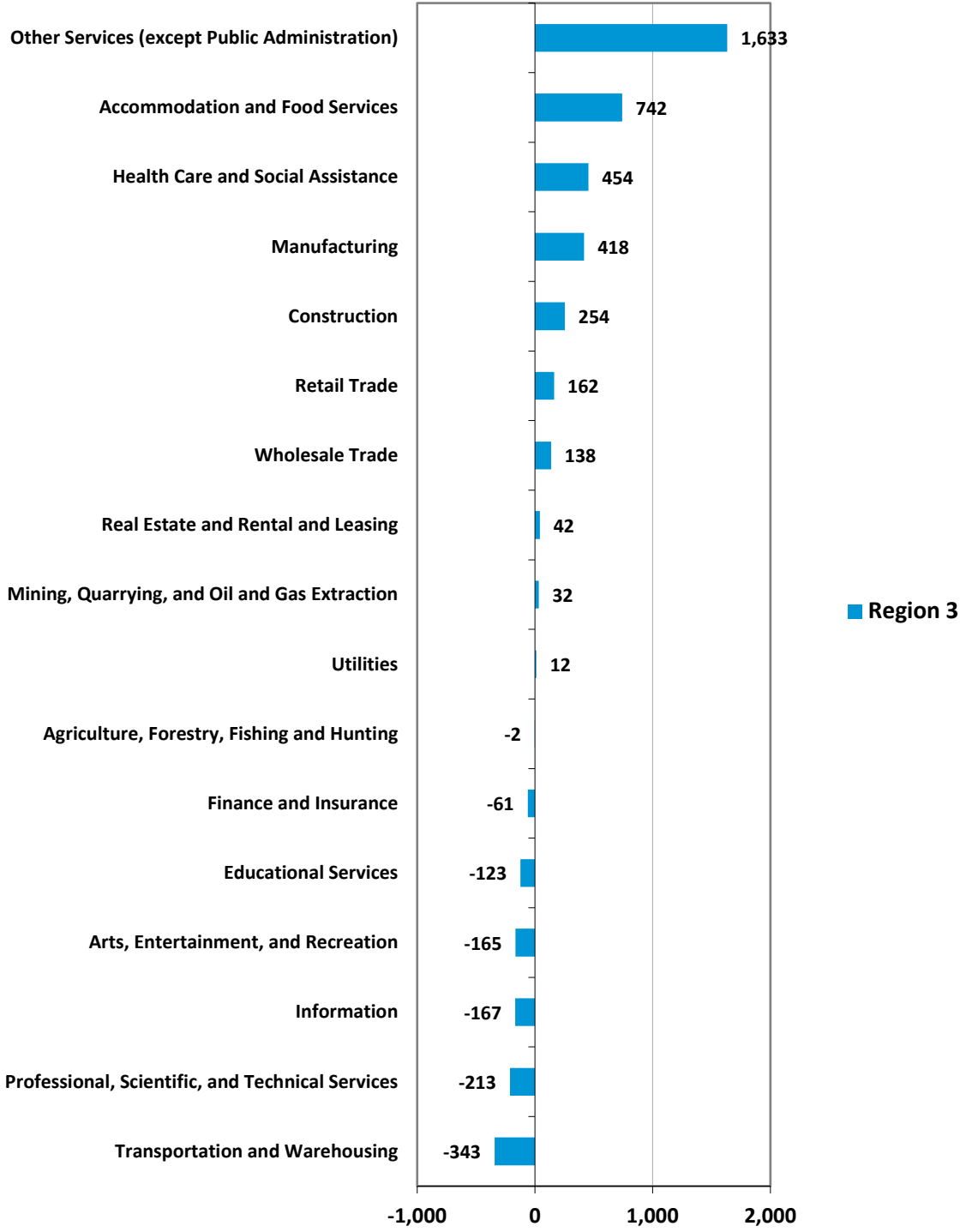
Figure 13: One Year Change in Private Employment by Major Industry Sector in Region 3 by PDC (2017 to 2018)¹⁷



¹⁷ Source: Virginia Employment Commission.



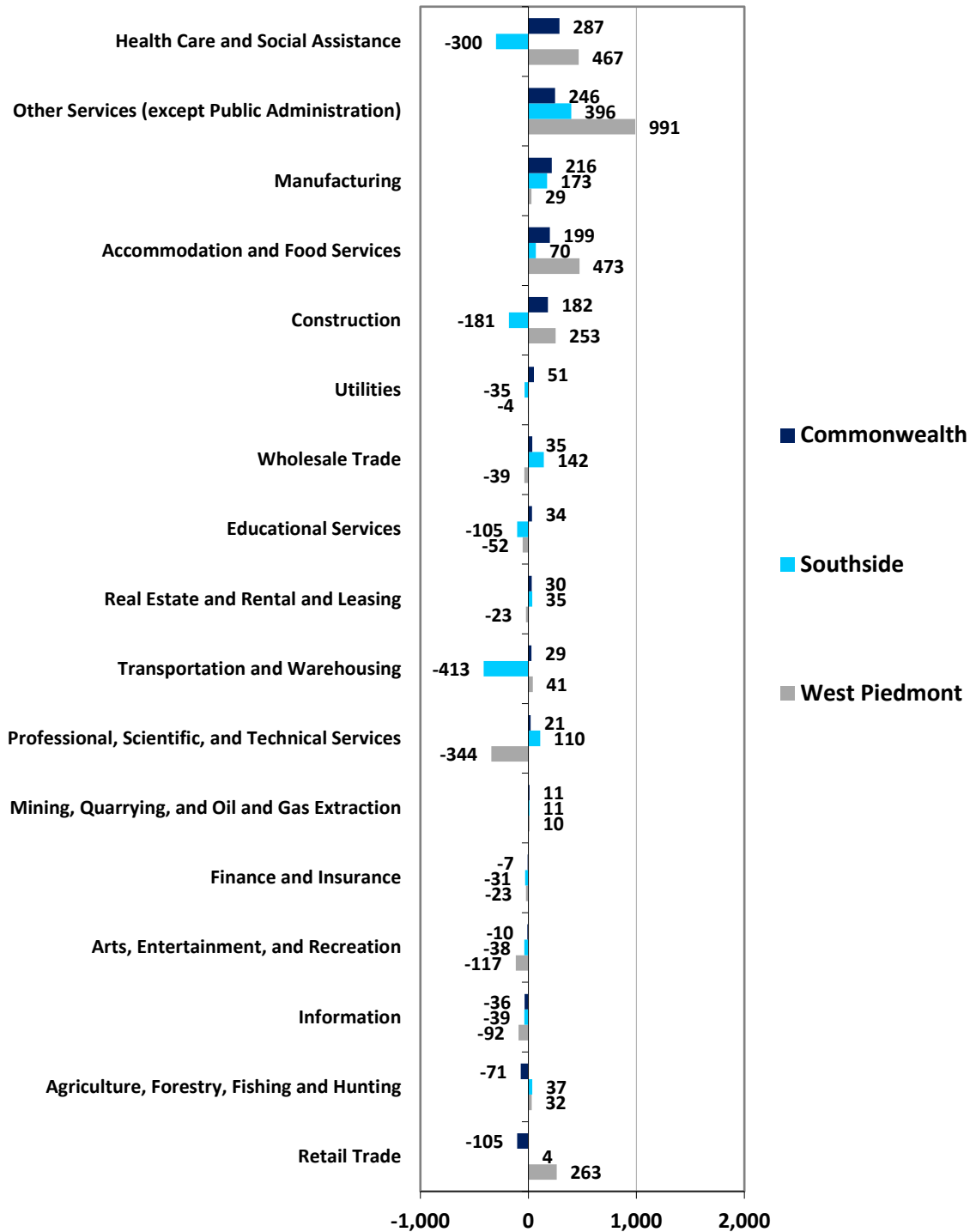
Figure 14: Five Year Change in Private Employment by Major Industry Sector in Region 3 (2013 to 2018)¹⁸



¹⁸ Source: Virginia Employment Commission.



Figure 15: Five Year Change in Private Employment by Major Industry Sector in Region 3 by PDC (2013 to 2018)¹⁹



¹⁹ Source: Virginia Employment Commission.

EMPLOYMENT BY TARGET CLUSTER

In this portion of the section, we provide a drill-down for employment and wages for each of GO Virginia Region 3's nine identified target industry clusters. Those clusters are:

Primary:

1. [Forestry](#)²⁰
2. [Lighting and Electrical Equipment](#)²¹
3. [Plastics](#)²²
4. [Vulcanized and Fired Materials](#)²³

Secondary:

5. [Business Services](#)²⁴
6. [Food Processing and Manufacturing](#)²⁵
7. [Distribution and Electronic Commerce](#)²⁶

²⁰This cluster includes: Forestry and Logging (NAICS 113) and Support Activities for Forestry (NAICS 1153).

²¹ This cluster includes: Electric Lighting Equipment Manufacturing (NAICS 3351), Electrical Equipment Manufacturing (NAICS 3353), and Other Electrical Equipment and Component Manufacturing (NAICS 3359).

²²This cluster includes: Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing (NAICS 3252), Plastics Product Manufacturing (NAICS 3261), Industrial Machinery Manufacturing (NAICS 3332), and Other Miscellaneous Manufacturing (NAICS 3399).

²³This cluster includes: Rubber Product Manufacturing (NAICS 3262), Clay Product and Refractory Manufacturing (NAICS 3271), Glass and Glass Product Manufacturing (NAICS 3272), and Other Nonmetallic Mineral Product Manufacturing (NAICS 3279).

²⁴This cluster includes: Taxi and Limousine Service (NAICS 4853), Other Transit and Ground Passenger Transportation (NAICS 4859), Data Processing, Hosting, and Related Services (NAICS 5182), Automotive Equipment Rental and Leasing (NAICS 5321), Lessors of Nonfinancial Intangible Assets (except Copyrighted Works) (NAICS 5331), Legal Services (NAICS 5411), Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412), Architectural, Engineering, and Related Services (NAICS 5413), Computer Systems Design and Related Services (NAICS 5415), Management, Scientific, and Technical Consulting Services (NAICS 5416), Other Professional, Scientific, and Technical Services (NAICS 5419), Management of Companies and Enterprises (NAICS 5511), Facilities Support Services (NAICS 5612), Employment Services (NAICS 5613), Business Support Services (NAICS 5614), and Other Support Services (NAICS 5619).

²⁵This cluster includes: Animal Food Manufacturing (NAICS 3111), Grain and Oilseed Milling (NAICS 3112), Sugar and Confectionery Product Manufacturing (NAICS 3113), Fruit and Vegetable Preserving and Specialty Food Manufacturing (NAICS 3114), Dairy Product Manufacturing (NAICS 3115), Bakeries and Tortilla Manufacturing (NAICS 3118), Other Food Manufacturing (NAICS 3119), Beverage Manufacturing (NAICS 3121), Glass and Glass Product Manufacturing (NAICS 3272), and Farm Product Raw Material Merchant Wholesalers (NAICS 4245).

²⁶This cluster includes: Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232), Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234), Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4335), Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236),

Emerging:

8. [Aerospace vehicles and Defense](#)²⁷
9. [Production Technology and Heavy Machinery](#)²⁸

In interpreting the information that follows, it is important to be aware that at this level of reporting the employment and wage data publicly provided by the Virginia Employment Commission are often subject to data suppression. That occurs when an industry contained in the cluster has a sufficiently small number of employees or employers that the Virginia Employment Commission is prohibited from publicly releasing those data because they could divulge employment or wages in an individual firm. As a result, the data presented in the following tables will in some cases unavoidably under-represent actual employment.

As shown in Figure 16, in 2018 the three largest target industry clusters in Region 3 were: 1) Business Services (8,976 jobs), 2) Distribution and Electronic Commerce (5,566 jobs), and 3) Plastics (3,212 jobs). While as shown in Figure 17, the three highest paying target industry clusters in Region 3 that year were: 1) Food Processing and Manufacturing (\$1,085 per week), 2) Vulcanized and Fired Materials (\$992 per week), and Plastics (\$931 per week).

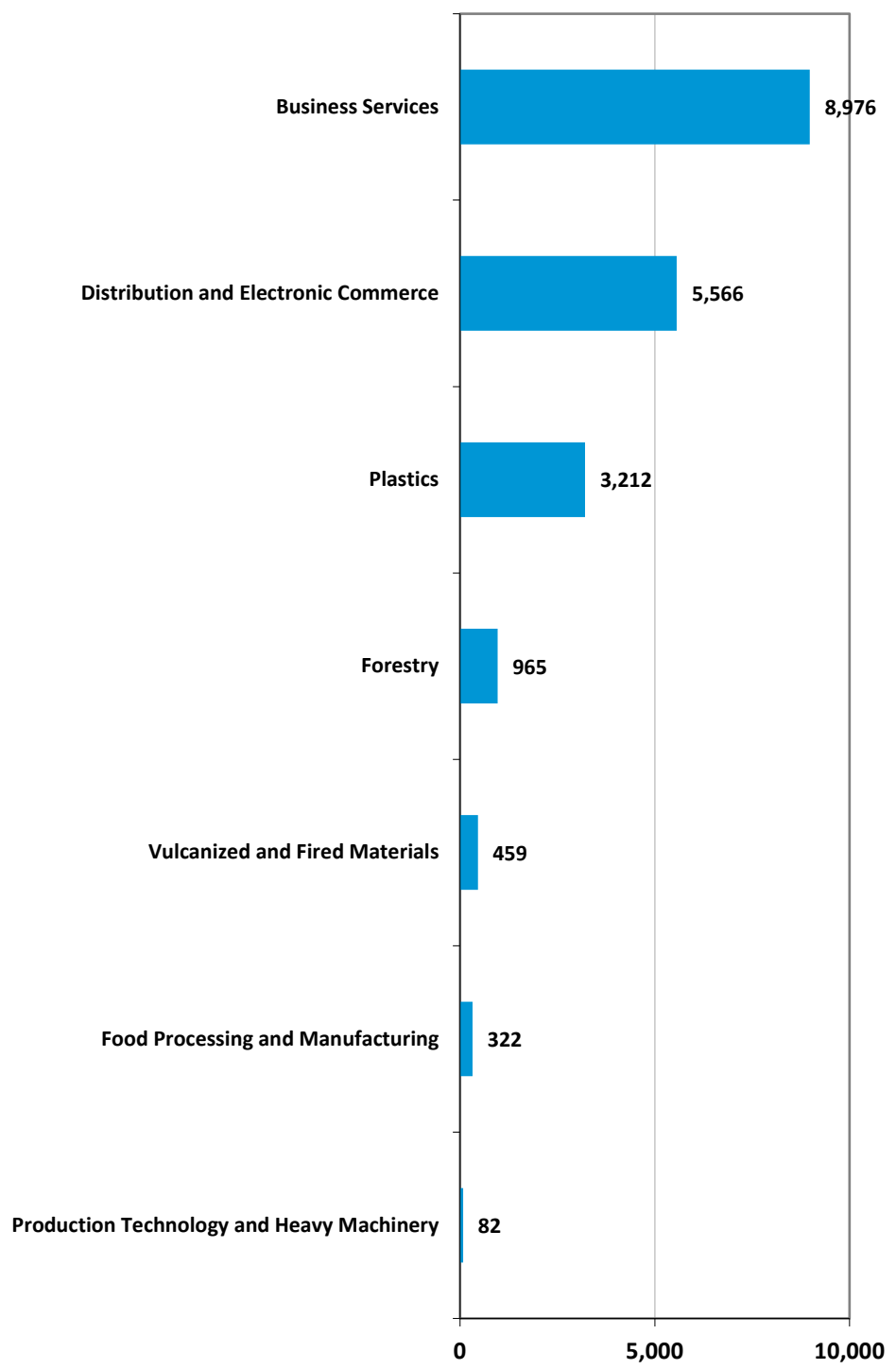
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238), Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239), Paper and Paper Product Merchant Wholesalers (NAICS 4241), Drugs and Druggists' Sundries Merchant Wholesalers (NAICS 4242), Apparel, Piece Goods, and Notions Merchant Wholesalers (NAICS 4243), Grocery and Related Product Wholesalers (NAICS 4244), Farm Product Raw Material Merchant Wholesalers (NAICS 4245), Chemical and Allied Products Merchant Wholesalers (NAICS 4246), Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247), Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers (NAICS 4248), Miscellaneous Nondurable Goods Merchant Wholesalers (NAICS 4249), Wholesale Electronic Markets and Agents and Brokers (NAICS 4251), (NAICS 4541), Warehousing and Storage (NAICS 4931), Business Support Services (NAICS 5614), and Other Support Services (NAICS 5619).

²⁷This cluster includes: Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345) and Aerospace Product and Parts Manufacturing (NAICS 3364).

²⁸This cluster includes: Other Fabricated Metal Product Manufacturing (NAICS 3329), Agriculture, Construction, and Mining Machinery Manufacturing (NAICS 3331), Industrial Machinery Manufacturing (NAICS 3332), Commercial and Service Industry Machinery Manufacturing (NAICS 3333), Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 3334), Engine, Turbine, and Power Transmission Equipment Manufacturing (NAICS 3336), Other General Purpose Machinery Manufacturing (NAICS 3339), and Railroad Rolling Stock Manufacturing (NAICS 3365).



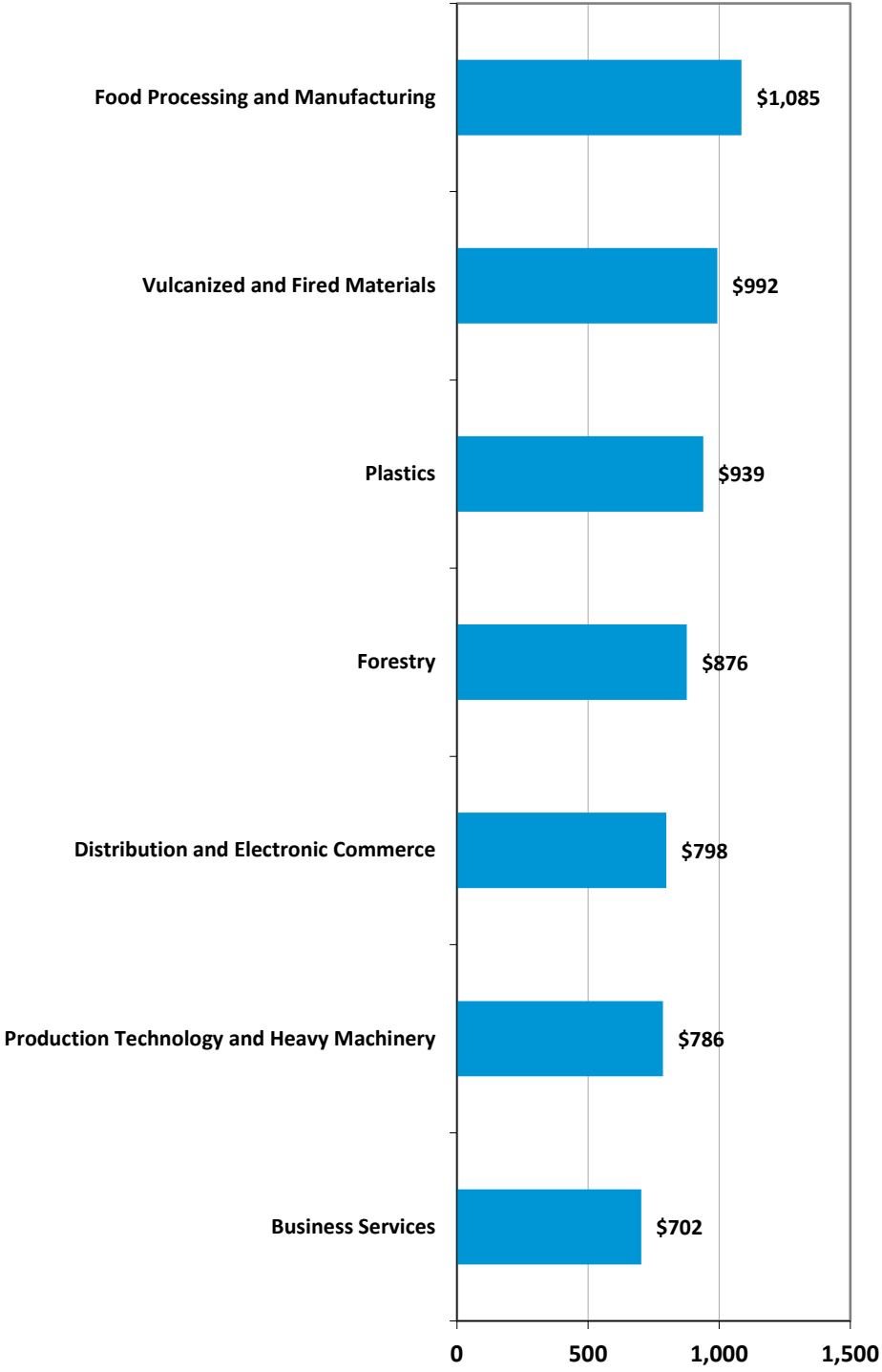
Figure 16: Private Employment by Target Industry Cluster in Region 3 – 2018²⁹



²⁹ Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.



Figure 17: Private Average Weekly Wages by Target Industry Cluster in Region 3 – 2018³⁰



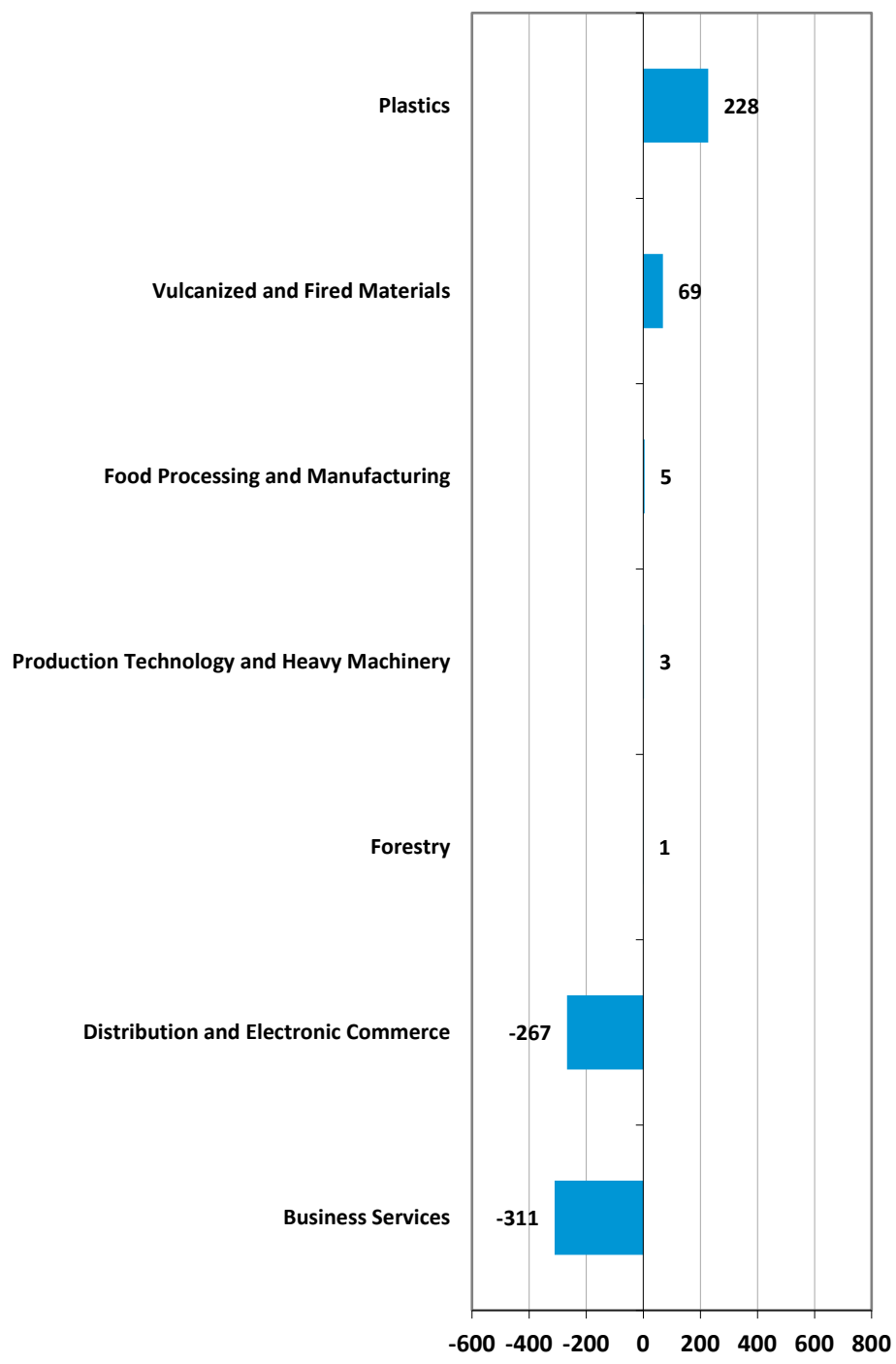
³⁰ Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

Finally, Figures 18 and 19 depict one-year (2017 to 2018) and five-year (2013 to 2018) employment changes in Region 3 for each of the identified target industry clusters. As shown in Figure 18, over the one year period between 2017 and 2018 five target industry clusters in Region 3 experienced employment growth: 1) Plastics (up 228 jobs), 2) Vulcanized and Fired Materials (up 69 jobs), 3) Food Processing and Manufacturing (up 5 jobs), 4) Production Technology and Heavy Machinery (up 3 jobs), and Forestry (up 1 job). While two target industry clusters experienced employment declines: 1) Business Services (down 311 jobs), and 2) Distribution and Electronic Commerce (down 267 jobs).

As shown in Figure 19, over the five year period between 2013 and 2018 six target industry clusters in Region 6 experienced employment growth: 1) Plastics (up 667 jobs), 2) Distribution and Electronic Commerce (up 393 jobs), 3) Vulcanized and Fired Materials (up 97 jobs), 4) Production Technology and Heavy Machinery (up 79 jobs), 5) Forestry (up 51 jobs), and 6) Food Processing and Manufacturing (up 16 jobs). While one target industry cluster experienced an employment decline: 1) Business Services (down 131 jobs).



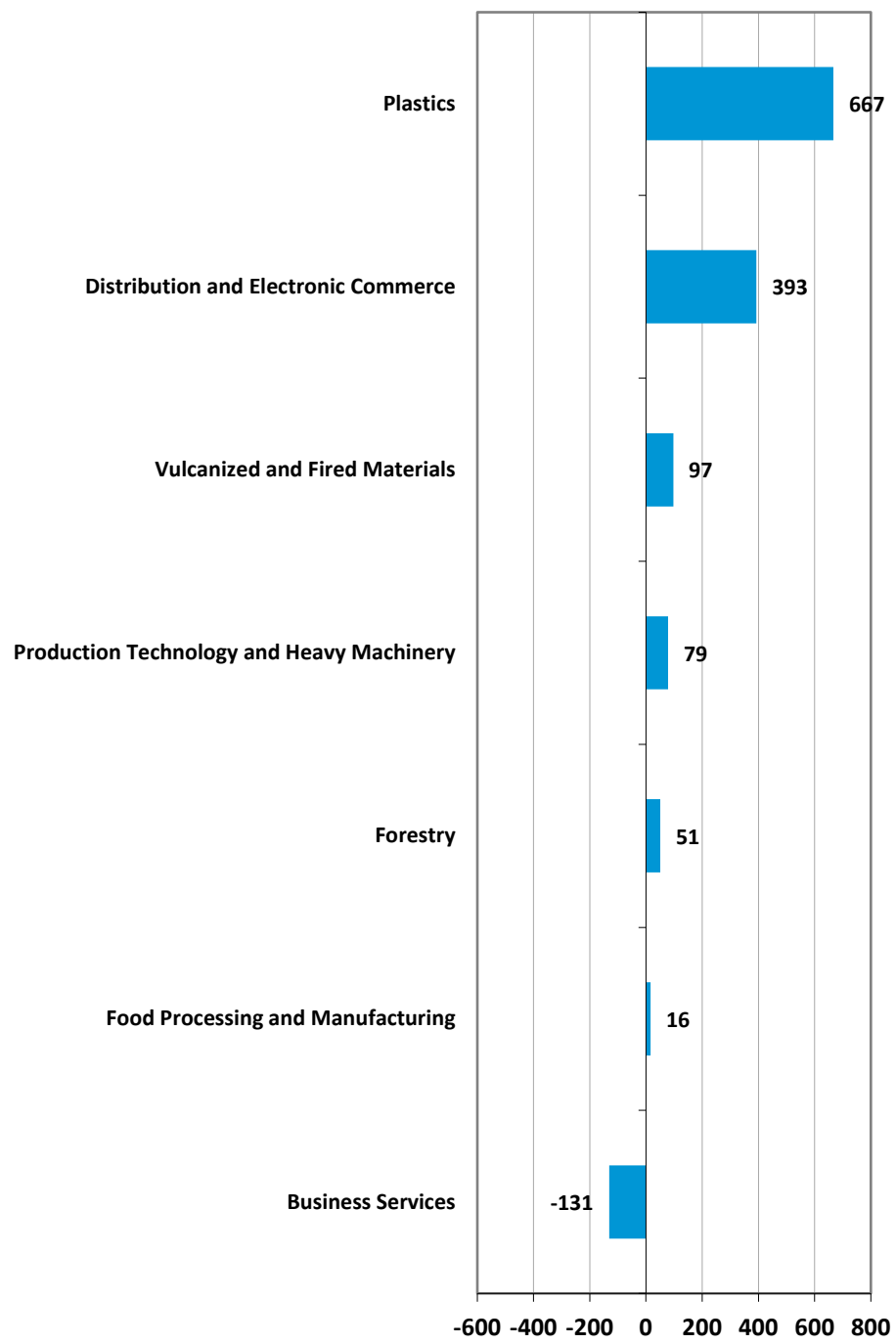
Figure 18: One Year Change in Private Employment by Target Industry Cluster in Region 3 (2017 to 2018)³¹



³¹ Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.



Figure 19: Five Year Change in Private Employment by Target Industry Cluster in Region 6 (2013 to 2018)³²



³² Source: Virginia Employment Commission. Data for the Aerospace Vehicles and Defense, and Lighting and Electrical Equipment target clusters were not available due to data suppression issues.

Economic Drivers

In this section, we identify those industries that make an above average contribution to the growth of GO Virginia Region 3's economy and the economies of the three Planning Districts that comprise Region 3.

METHOD

To identify these economic driver industries, we employ a composite economic performance index that is based on eight individual metrics. These metrics were selected based on GO Virginia's prioritization of fast-growing, export industries, that offer high wages, and have a significant economic impact. Each metric, and the weight that it is given in the composite economic performance index is listed below.

10. [Employment Location Quotient or "LQ" \(weight = 11 percent\)](#): This metric measures the relative employment footprint of an industry.³³ If it is greater than one, that indicates that the industry has a larger employment footprint in the area than one would expect based on the statewide norm. If it is less than one, the industry has a smaller employment footprint than one would expect based on the statewide norm.
11. [Short-Term Employment Growth or "ST Emp." \(weight = 11 percent\)](#): This metric measures one-year employment growth in an industry.³⁴
12. [Long-Term Employment Growth or "LT Emp." \(weight = 11 percent\)](#): This metric measures five-year employment growth in an industry.³⁵
13. [Short-Term Wage Growth or "ST Wage" \(weight = 11 percent\)](#): This metric measures one-year wage growth in an industry.³⁶

³³ More specifically, the employment location quotient is calculated as: $LQ = ((\text{area private employment in industry } i) / (\text{total area private employment})) / ((\text{statewide private employment in industry } i) / (\text{total statewide private employment}))$. Data Source: derived from Virginia Employment Commission data.

³⁴ More specifically, short-term employment growth is calculated as: $ST \text{ emp} = ((2018 \text{ area private employment in industry } i) - (2017 \text{ area private employment in industry } i))$. Data Source: derived from Virginia Employment Commission data.

³⁵ More specifically, long-term employment growth is calculated as: $LT \text{ emp} = ((2018 \text{ area private employment in industry } i) - (2013 \text{ area private employment in industry } i))$. Data Source: derived from Virginia Employment Commission data.

³⁶ More specifically, short-term wage growth is calculated as: $ST \text{ wage} = ((2018 \text{ area private weekly wage in industry } i) - (2017 \text{ area private weekly wage in industry } i))$. Data Source: derived from Virginia Employment Commission data.

14. [Long-Term Wage Growth or “LT Wage” \(weight = 11 percent\)](#): This metric measures five-year wage growth in an industry.³⁷
15. [Relative Wage or “Rel. Wage” \(weight = 11 percent\)](#): This metric measures the wage in an industry relative to the average wage across all industries.³⁸ If it is greater than one, the wage in the industry is higher than the average wage for the area. If it is less than one, the wage in the industry is lower than the average wage for the area.
16. [Industry Exports or “Exports” \(weight = 17 percent\)](#): This metric measures the proportion of an industry’s output that is exported outside of Region 3.³⁹
17. [Type I Multiplier or “Type I Mult.” \(weight = 17 percent\)](#): This metric measures the direct and indirect employment impact the industry has on Region 3. It is an indication of the depth and breadth of an industry’s economic roots within an area. The larger the metric, the larger the proportion of the industry’s operational expenditures that go to suppliers and employees within the area, so the smaller the leakage of dollars outside of the area.⁴⁰

Each metric was produced for all industries at a four-digit NAICS level in GO Virginia Region 3 where sufficient data were available, and at a three-digit level when suppression issues necessitated a higher level of aggregation.⁴¹ Each industry is ranked on each metric relative to all other industries. Those rankings are then weighted and summed to produce the composite economic performance index for that industry. The larger the index, the higher the economic performance of that industry relative to all other industries within the study area.

CAVEATS

It is important to point out that the employment and wage data used in this section are taken from the Virginia Employment Commission’s Quarterly Census of Employment and Wages. Although these data provide the most comprehensive look at regional labor market data available, they are subject to limitations. Because these data are based on unemployment insurance reports filed by employers, they only reflect “covered” employment – employment that is covered by unemployment insurance. As a result, certain categories of employment (e.g., self-employed) and employment in certain industries

³⁷ More specifically, long-term wage growth is calculated as: $LT\ wage = ((2018\ area\ private\ weekly\ wage\ in\ industry\ i) - (2013\ area\ private\ weekly\ wage\ in\ industry\ i))$. Data Source: derived from Virginia Employment Commission data.

³⁸ More specifically, relative wage is calculated as: $Rel.\ wage = (2018\ private\ weekly\ wage\ in\ industry\ i) / (2018\ area\ private\ weekly\ wage\ across\ all\ industries)$. Data Source: derived from Virginia Employment Commission data.

³⁹ More specifically, industry exports is calculated as: $Exports = (2016\ industry\ output\ exported\ outside\ of\ Region\ 6) / (2016\ total\ industry\ output\ produced\ in\ Region\ 3)$. Data Source: derived from IMPLAN data.

⁴⁰ Data Source: IMPLAN.

⁴¹ NAICS stands for North American Industry Code System. It is a coding taxonomy that the U.S. Bureau of Labor Statistics uses to classify industries. It is a six-digit code, where the first two digits denote major industry sectors such as Manufacturing or Retail Trade. Going beyond two digits increases the granularity of the classification.

(e.g., agriculture) may be under-reported. In addition, the Virginia Employment Commission is required to suppress data when disclosure of those data could be used to identify employment and wages in a specific firm. This generally occurs when there is only one major employer in that industry within the region.

RESULTS

Table 1 provides a listing of the economic drivers in GO Virginia Region 3. In addition, economic driver industries that are within one of GO Virginia Region 3's nine identified target industry clusters are identified by cluster number and highlighted in yellow:

Primary:

1. [Forestry](#)
2. [Lighting and Electrical Equipment](#)
3. [Plastics](#)
4. [Vulcanized and Fired Materials](#)

Secondary:

5. [Food Processing and Manufacturing](#)
6. [Business Services](#)
7. [Distribution and Electronic Commerce](#)

Emerging:

8. [Aerospace vehicles and Defense](#)
9. [Production Technology and Heavy Machinery](#)

Economic drivers are defined as industries that demonstrated a composite economic performance index that was above the median for the study area. Each composite economic performance index was calculated in accordance with the method described above. Bolded entries in Table 1 rank in the first quartile for performance (*i.e.*, top 25 percent).



Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Timber Tract Operations	1	21.46	2	67	8.3%	48.6%	1.42	0.27	1.25	123.3
Veneer, Plywood, and Engineered Wood Product Manufacturing		11.35	-65	127	12.1%	20.9%	1.52	0.89	1.34	121.0
Sawmills and Wood Preservation		8.00	15	54	-3.6%	18.0%	1.22	0.81	1.43	113.8
Plastics and Rubber Products Manufacturing	3	9.13	96	573	6.5%	9.6%	1.66	0.98	0.63	110.0
Furniture and Home Furnishing Merchant Wholesalers	7	4.99	-11	36	16.5%	76.3%	2.18	0.14	1.21	108.4
Specialized Freight Trucking		2.14	-29	25	5.6%	29.2%	1.26	0.28	1.25	106.8
Nonmetallic Mineral Mining and Quarrying		1.67	2	-11	1.0%	14.0%	1.59	0.54	2.10	105.3
Securities and Commodity Contracts Intermediation and Brokerage		0.57	5	22	11.3%	29.7%	4.20	0.09	1.26	105.2
Management of Companies and Enterprises	5	0.36	8	159	5.1%	21.4%	2.22	0.15	1.23	103.8
Data Processing, Hosting, and Related Services	5	0.76	8	117	-10.4%	35.5%	1.36	0.15	1.40	103.5
Furniture Stores		2.89	19	41	4.1%	21.7%	0.95	0.18	1.21	103.3
General Medical and Surgical Hospitals		0.77	554	443	14.2%	21.2%	1.42	0.07	1.21	103.2
Architectural, Engineering, and Related Services	5	0.21	62	-17	22.3%	36.4%	1.96	0.08	1.28	102.4
Logging	1	12.45	10	6	3.0%	27.8%	1.30	0.38	1.16	102.0
Other Financial Investment Activities		0.09	-4	8	26.9%	493.3%	4.61	0.08	1.54	101.7
Other Ambulatory Health Care Services		1.87	20	127	2.8%	14.3%	1.01	0.29	1.21	101.2
Nonstore Retailers		2.15	715	119	-6.7%	9.7%	0.95	0.28	1.26	101.2
Traveler Accommodation		0.59	29	38	6.6%	15.2%	0.51	0.96	1.24	99.9

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Other Wood Product Manufacturing		10.69	-89	112	5.6%	3.0%	1.04	0.89	1.27	99.8
Fabricated Metal Product Manufacturing	9	1.21	12	42	6.1%	21.9%	1.28	0.97	0.36	99.4
Food Manufacturing	6	1.34	46	451	3.7%	16.1%	1.20	0.95	0.30	98.4
Poultry and Egg Production		7.62	-31	-19	6.7%	14.9%	1.24	0.93	1.21	96.9
Outpatient Care Centers		1.51	112	326	6.0%	10.6%	1.23	0.07	1.21	96.6
Warehousing and Storage	7	1.96	-48	-68	7.9%	25.6%	1.13	0.52	1.24	96.3
Machinery Manufacturing	9	0.62	12	13	14.7%	22.0%	1.25	0.99	0.24	96.1
Clay Product and Refractory Manufacturing	4	7.19	4	2	-3.1%	11.1%	1.11	0.93	1.25	96.0
Waste Collection		0.81	1	28	4.5%	36.1%	1.26	0.05	1.26	95.9
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesale		0.95	10	38	6.3%	14.1%	1.35	0.14	1.21	95.3
Miscellaneous Durable Goods Merchant Wholesalers	7	1.93	127	126	-4.5%	17.6%	1.15	0.14	1.21	94.8
Facilities Support Services	5	1.56	3	-31	3.4%	18.2%	1.16	0.86	1.22	94.7
Agencies, Brokerages, and Other Insurance Related Activities		0.72	-17	37	3.2%	21.6%	1.26	0.11	1.95	94.5
Glass and Glass Product Manufacturing	6	5.24	-5	25	4.7%	14.0%	1.72	0.94	0.91	94.0
Investigation and Security Services		0.53	198	261	40.1%	92.6%	1.14	0.04	1.14	93.4
Offices of Real Estate Agents and Brokers		0.41	9	10	16.9%	54.2%	1.12	0.01	1.37	92.4
Cattle Ranching and Farming		6.74	-4	-28	-0.7%	13.1%	0.87	0.79	1.33	91.5
Other Professional, Scientific, and Technical Services	5	0.61	0	47	1.6%	21.3%	0.91	0.21	1.25	90.9

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manu	3	3.22	168	101	-6.0%	-4.7%	1.35	0.99	0.76	90.8
Electric Power Generation, Transmission and Distribution		1.66	-39	7	10.9%	21.3%	2.94	0.35	0.57	89.2
Offices of Physicians		1.10	65	403	1.3%	8.7%	1.94	0.09	1.16	89.0
General Merchandise Stores.		1.81	-4	145	4.1%	12.4%	0.68	0.15	1.22	88.4
Lawn and Garden Equipment and Supplies Stores		1.92	17	48	0.7%	14.5%	0.85	0.13	1.21	88.4
Medical and Diagnostic Laboratories		0.27	21	54	11.1%	29.5%	1.17	0.08	1.17	87.7
Lumber and Other Construction Materials Merchant Wholesalers		0.61	7	-53	4.5%	23.8%	1.63	0.14	1.21	87.1
Support Activities for Road Transportation		0.31	5	5	13.0%	23.8%	0.75	0.11	1.24	86.1
Commercial and Industrial Machinery and Equipment (except Automotive and EI		2.33	-21	105	7.2%	9.6%	1.25	0.18	1.11	86.0
Specialized Design Services		0.22	6	5	51.1%	57.6%	1.16	0.01	1.24	85.9
Building Material and Supplies Dealers		1.53	34	87	-1.6%	10.3%	0.85	0.13	1.21	85.6
Travel Arrangement and Reservation Services		0.10	-3	-4	10.3%	47.8%	1.22	0.05	1.29	85.4
Transportation Equipment Manufacturing	8	0.13	12	51	9.8%	13.0%	1.30	0.90	0.46	85.1
Employment Services	5	1.17	68	-711	8.6%	21.9%	0.54	0.26	1.19	84.8
Insurance Carriers		0.11	-3	-11	6.8%	18.9%	1.67	0.05	1.83	84.5
Independent Artists, Writers, and Performers		0.15	-1	0	23.5%	9.5%	0.66	0.26	1.39	84.2
Amusement Parks and Arcades		0.10	4	8	23.7%	54.0%	0.33	0.20	1.21	83.5

Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers		1.17	7	22	-2.1%	16.0%	1.20	0.14	1.21	83.0
RV (Recreational Vehicle) Parks and Recreational Camps		1.36	7	1	-3.2%	6.6%	0.60	0.99	1.24	83.0
Machinery, Equipment, and Supplies Merchant Wholesalers	7	0.99	-27	-53	5.3%	24.5%	1.50	0.14	1.21	82.7
Oilseed and Grain Farming		0.94	4		3.0%		0.59	0.86	1.31	82.5
Support Activities for Forestry	1	3.03	-12	13	15.6%	26.9%	1.45	0.03	1.08	81.7
Computer Systems Design and Related Services	5	0.09	-31	91	1.5%	78.3%	1.74	0.10	1.21	81.2
Services to Buildings and Dwellings		0.86	24	321	2.3%	12.1%	0.65	0.19	1.14	81.0
Highway, Street, and Bridge Construction		0.76	244	137	26.3%	20.1%	1.24			80.5
Scientific Research and Development Services		0.13	-2	-11	-6.4%	23.7%	2.10	0.12	1.31	80.5
Wholesale Electronic Markets and Agents and Brokers	7	0.26	-8	-140	4.6%	61.4%	1.97	0.14	1.21	79.8
Gasoline Stations		1.96	4	-106	1.8%	10.5%	0.51	0.28	1.24	79.5
Sporting Goods, Hobby, and Musical Instrument Stores		0.81	-32	5	18.1%	22.2%	0.66	0.08	1.23	79.5
Fabric Mills		3.37	6		2.2%		1.11	0.99	0.86	79.3
Support Activities for Crop Production		1.17	17	20	21.3%	28.4%	0.87	0.03	1.08	79.2
Other Miscellaneous Store Retailers		1.47	134	123	-10.0%	6.0%	1.10	0.04	1.23	79.1
Drycleaning and Laundry Services		0.56	30	-87	23.6%	5.4%	0.50	0.29	1.21	78.3
Professional and Commercial Equipment and Supplies Merchant Wholesalers	7	0.11	2	2	4.0%	14.0%	1.77	0.14	1.21	78.0



Table 1: Region 3 – Industries Demonstrating Above Median Economic Performance

Industry	Cluster	LQ	ST Emp	LT Emp.	ST Wage	LT Wage	Rel. Wage	Exports	Type 1 Mult.	P-INDEX
Merchant Wholesalers, Nondurable Goods	7	1.50	-4	2	2.6%	7.6%	1.20	0.14	1.21	77.4
Other Transit and Ground Passenger Transportation	5	0.48	3	-33	4.8%	11.8%	0.49	0.16	1.31	76.8
Other Crop Farming		5.07	-7	-23	0.1%	23.2%	0.99	0.71	0.90	76.7
General Freight Trucking		1.40	-58	-284	0.4%	11.8%	1.16	0.28	1.25	76.6
Cement and Concrete Product Manufacturing		1.32	0	1	0.1%	19.0%	1.15	0.48	0.74	76.4
Consumer Goods Rental		2.40	-23	-80	5.4%	3.0%	0.90	0.19	1.22	75.9
Paper Manufacturing		1.54	21	-295	0.2%	5.1%	1.24	0.97	0.77	75.5
Radio and Television Broadcasting		0.52	26	7	4.4%	9.9%	0.72	0.01	1.38	75.4
Business Support Services	5	1.18	-497	303	2.4%	-0.9%	0.59	0.35	1.22	75.0
Colleges, Universities, and Professional Schools		1.11	27	28	-2.0%	-3.1%	0.94	0.18	1.19	75.0

Workforce Gap Analysis

In this section, we compare the occupation-driven demand for trained workers in GO Virginia Region 3 to the pipeline of completers graduating from regional post-secondary education programs, to identify potential gaps between the two.

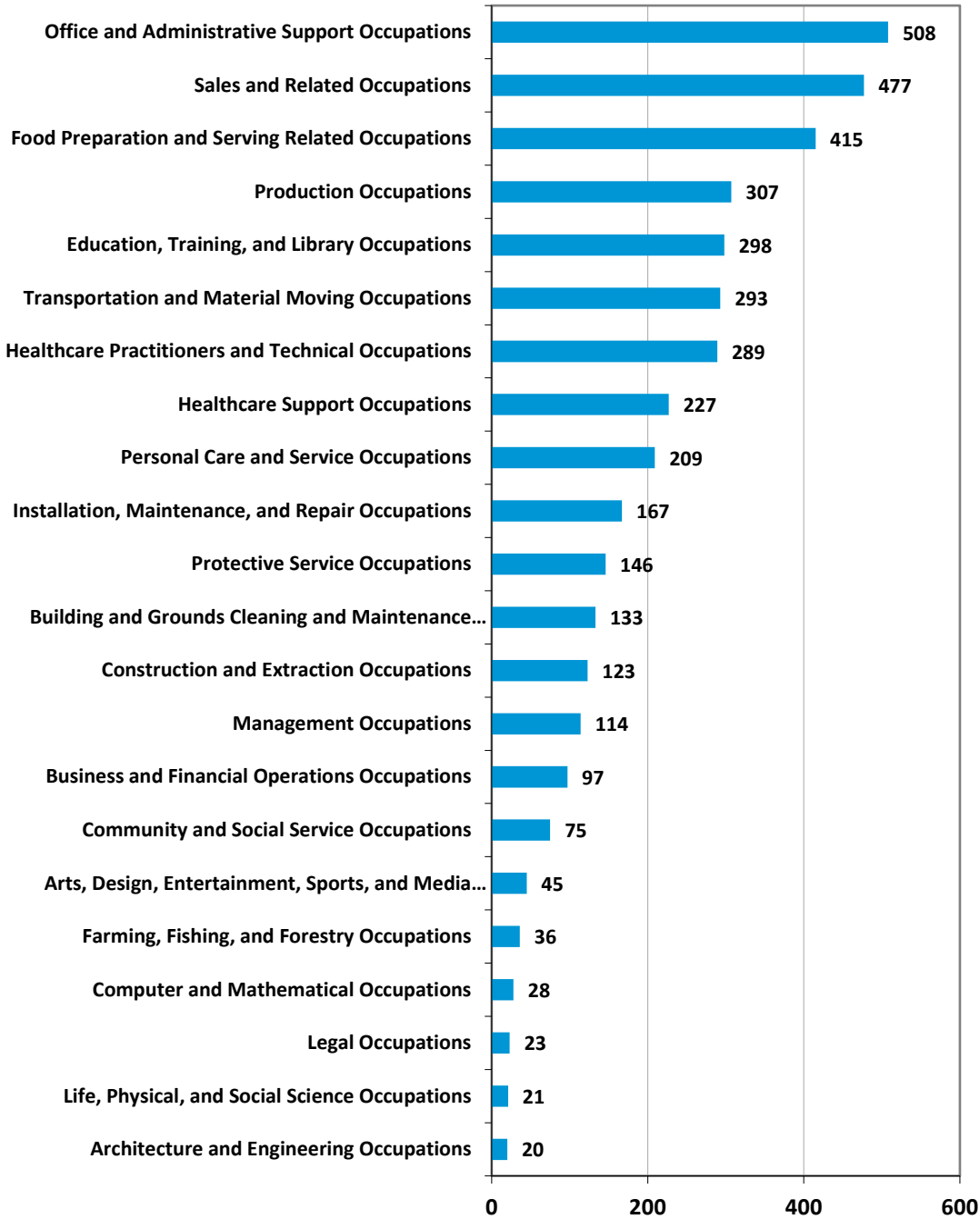
REGIONAL DEMAND FOR TRAINED WORKERS

To estimate the occupation-driven demand for trained workers in Region 3, we start with the most recent sub-state occupational employment projections from the Virginia Employment Commission. According to those projections, between 2014 and 2024 Region 3 will experience approximately 4,049 job openings each year.⁴² Figure 20 provides a breakdown of these annual openings by major occupation category.

⁴² Source: Virginia Employment Commission, “2014 to 2024 Sub-state Occupational Employment Projections.” It should be noted that the Virginia Employment Commission produces sub-state employment projections for Workforce Development Areas only. The Workforce Development Areas that most closely associated with GO Virginia Region 3 are the South Central Virginia and West Piedmont. The South Central Virginia and West Piedmont Workforce Development Areas encompass the Region 3 localities of the cities of Danville and Martinsville, and the counties of Amelia, Brunswick, Buckingham, Charlotte, Halifax, Henry, Lunenburg, Mecklenburg, Patrick, Pittsylvania, and Prince Edward. However, the South Central Virginia and West Piedmont Workforce Development Areas do not include the Region 3 localities of Cumberland County and Nottoway County, and they do include Franklin County, which is not part of Region 3.



Figure 20: Projected Average Annual Openings in Region 3 by Major Occupation Category – 2014 to 2024⁴³



⁴³ Data Source: Virginia Employment Commission.

REGIONAL SUPPLY OF COMPLETERS

To estimate the regional supply of completers from those education and training programs identified in the demand analysis, we use 2017-18 completions data from the U.S. Department of Education’s IPEDS Data Center for all post-secondary institutions within Region 3.⁴⁴

COMPARING DEMAND AND SUPPLY

In the next step of the process, we use a crosswalk developed by the National Crosswalk Service Center to “map” occupations into the specific education and training program(s) necessary for entrance into that occupation.⁴⁵ It is important to realize that these relationships are often many-to-many (one occupation maps into multiple programs, or one program maps into multiple occupations). Our approach specifically takes this into account by “allocating” completers across occupations based on the number of annual openings associated with each occupation. Through this process, we are able to use the occupational employment projections for Region 3 to estimate the occupation-driven demand for trained workers in Region 3.

CAVEATS

In interpreting the results of this analysis, it is important to keep the following caveats in mind:

- Multi-campus institutions report enrollment and completion data to the IPEDS Data Center through their main campus only. As a practical matter, this means that all enrollment and completions are reported “as if” they occurred at the main campus.
- Post-secondary institutions do not report completions for non-credit or specialized workforce training classes to the IPEDS Data Center. As a result, completers from these programs may not be captured in the pipeline of completers graduating from regional post-secondary education programs.
- For these reasons, the training “gaps” identified in this section are correctly viewed as “potential” gaps in the regional pipeline of trained workers. They identify areas where there may be an insufficient supply of programs or program graduates within the region, and where further conversations with employers and educators/training providers may be advisable.

⁴⁴ More specifically, those data capture degree and certificate completions in 2017-18 from Averett University, Averett University Non-Traditional Programs, Danville Community College, Danville Regional Medical Center School of Health Professions, Ferrum College, Hampden-Sydney College, Longwood University, Patrick Henry Community College, and Southside Community College.

⁴⁵ The National Crosswalk Service Center is funded by the U.S. Department of Labor, Employment and Training Administration.

PERCENTAGE OF REGIONAL NEED MET

Table 2 provides detail on the proportion of demand, in terms of projected annual openings, that is being met by the existing supply of post-secondary education completers from institutions of higher education within Region 3, for those occupations that are projected to have at least ten average annual openings between 2014 and 2024.

In these tables:

- **Occupation:** Is an occupation within the specified cluster.
- **Avg. Annual Openings:** Is the projected number of average annual openings for the given occupation over the period from 2014 to 2024.
- **Typical Educ. Level:** Is the level of educational attainment typically associated with the given occupation.
- **Cert:** Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received a less than two-year postsecondary education certificate.
- **Assoc:** Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received an associate's degree.
- **BA:** Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received a bachelor's degree.
- **MA:** Is the number of 2017-18 completers from education and training programs in Region 3 associated with the given occupation that received a master's degree.
- **Total Comp:** Is the total number of 2017-18 completions from education and training programs in Region 3 associated with the given occupation.
- **% of Need Met:** Is the percentage of demand for trained workers in the given occupation that was met through regional education and training programs.

Most of the binding workforce gaps identified in table 2 pertain to “middle-skill” occupations that require a less than a two-year, post-secondary certificate, where the identified gaps could potentially be problematic. Those occupations are:

- Industry and Machinery Mechanics
- Machinists
- Medical Assistants



Table 2: Potential Gaps in Pipeline of Trained Workers in Region 3

Occupation	Occupational Demand		Supply of Completers					% of Need Met.
	Avg. Annual Openings	Typical Educ. Level	Cert.	Assoc.	BA	MA	Total Comp.	
Personal Care Aides	129	HS						0%
Nursing Assistants	126	HS						0%
Office Clerks, General	82	HS						0%
Registered Nurses	78	Associates		109	79		188	100%
Customer Service Representatives	73	HS						0%
Licensed Practical and Licensed Vocational Nurses	59	Certificate	239				239	100%
Correctional Officers and Jailers	53	HS	1				1	2%
Elementary School Teachers, Except Special Education	50	BA			3		3	7%
Home Health Aides	45	HS						0%
Heavy and Tractor-Trailer Truck Drivers	44	HS						0%
First-Line Supervisors of Retail Sales Workers	43	HS						0%
General and Operations Managers	41	Associates		7	22 2	74	303	100%
Secondary School Teachers, Except Special and Career/Technic	40	BA			25 9	18	277	100%
Teacher Assistants	38	Some College		5			5	13%
Maintenance and Repair Workers, General	37	HS						0%
Receptionists and Information Clerks	35	HS						0%
First-Line Supervisors of Food Preparation and Serving Workers	33	HS	8				8	23%
Police and Sheriff's Patrol Officers	31							0%
Automotive Service Technicians and Mechanics	27		36				36	100%
Sales Representatives, Wholesale and Manufacturing, Except T	25	BA						0%
Tellers	22	HS						0%
Accountants and Auditors	21				11		11	52%



Table 2: Potential Gaps in Pipeline of Trained Workers in Region 3

Occupation	Occupational Demand		Supply of Completers					% of Need Met.
	Avg. Annual Openings	Typical Educ. Level	Cert.	Assoc.	BA	MA	Total Comp.	
Cooks, Restaurant	21	HS	5				5	23%
Bus Drivers, School or Special Client	21	HS						0%
Middle School Teachers, Except Special and Career/Technical	20	BA			8	8	17	83%
Secretaries and Administrative Assistants, Except Legal, Med	20	HS						0%
Logging Equipment Operators	20	Less than HS						0%
Industrial Machinery Mechanics	20	Certificate						0%
Sawing Machine Setters, Operators, and Tenders, Wood	20	HS						0%
Light Truck or Delivery Services Drivers	19	HS						0%
First-Line Supervisors of Office and Administrative Support	18	HS						0%
Machinists	16	Certificate						0%
First-Line Supervisors of Production and Operating Workers	15	HS						0%
Inspectors, Testers, Sorters, Samplers, and Weighers	15	HS						0%
Bookkeeping, Accounting, and Auditing Clerks	14	HS						0%
Child, Family, and School Social Workers	13	BA			28		28	100%
Physicians and Surgeons, All Other	13							0%
Insurance Sales Agents	13	BA						0%
Carpenters	13							0%
Highway Maintenance Workers	13	HS						0%
Emergency Medical Technicians and Paramedics	12	Certificate	13	13			26	100%
Cooks, Institution and Cafeteria	12	Less than HS	3				3	23%
Medical Assistants	11	Certificate						0%
Electricians	11	Certificate	8				8	74%



Table 2: Potential Gaps in Pipeline of Trained Workers in Region 3

Occupation	Occupational Demand		Supply of Completers					% of Need Met.
	Avg. Annual Openings	Typical Educ. Level	Cert.	Assoc.	BA	MA	Total Comp.	
First-Line Supervisors of Mechanics, Installers, and Repaire	11	HS						0%

Forward-Looking Assessment

This section summarizes information for Region 3 tied to GO Virginia's four priority areas: talent development, start-up companies, scale-ups, and site development for new business prospects. The information in this section relies heavily on a report for the region commissioned by the statewide board of GO Virginia.⁴⁶

TALENT DEVELOPMENT

Between 2012 and 2017, the share of the working-age population with at least a bachelor's degree grew by 10 percent, which was equal to the 10 percent growth rate for the state as a whole or the 12 percent growth rate for the entire United States.

Talent development is facilitated by the Patrick Henry Community College's Dalton IDEA Center Fab Lab that provides a key resource for prototyping, 3D printing, plus access to accelerator services. Additionally, the Southern Virginia Higher Education Center's Innovation Center a resource for design, prototyping, other business services.

START-UP COMPANIES

In Region 3, between 2013 and 2017, on average 30 percent of job growth comes from early-stage startups that have been in business for 5 years or less. This is consistent with other rural regions; however, it is still well below the measure in the state of Virginia overall and the nation as a whole. However, the 10-year survival rate for businesses in the region is roughly equivalent to the statewide 10-year survival rate (52 percent for the region vs 53.5 percent for the state as a whole). In general, the net employment gains from surviving startup firms outpaces employment loss from startup failures across Region 3.

Startup activity in the region is occurring mainly in the sectors targeted by the region's GO Virginia initiative: Advanced Manufacturing, Health Care, and Natural Resource Products. Table 3 shows the number of start-ups and start-up employment within the region.

⁴⁶ TEconomy Partners, *Regional Entrepreneurial Assessment Project: Briefing Report, Region 3: Southside*, 2018.

Table 3. – Start-Up Data by Major Industry Cluster for Region 3

Major Industry Cluster	Number of Start-ups in Cluster	Number of Start-ups Surviving by 2017	Number of High Growth Start-ups in Cluster**	Start-up Employment Levels, 2017	Start-ups Industry Cluster Employment Concentration Index*
Agriculture & Food Processing	195	113	9	599	2.73
Business Services	544	291	28	1,246	0.69
Energy, Natural Resources, & Finished Products	109	57	6	524	2.08
Engineering, R&D, Testing & Technical Services	43	25	5	131	0.33
Financial & Insurance Services	123	59	3	162	0.40
Health Care Services	57	35	11	498	1.20
Information Technology & Communications Services	50	25	6	186	0.32
Life Sciences	26	15	0	87	0.56
Manufacturing	98	59	9	488	1.69
Ship Building, Aerospace, & Defense	1	1	0	5	0.11
Transportation, Distribution and Logistics	332	137	33	670	0.76

*Startups Employment Concentration Index represents specialization of startup activity in certain industry clusters given overall state trends. **Defined as greater than 25 percent annualized employment growth over the life of the company.

Patent activity is one way to measure the development impact of start-up companies. Patent awards have relatively stable year over year from 40 in 2014 to 41 in 2017. The overwhelming majority of patents issued to assignees in the region are to government organizations. Of the technology patents issued from 2010 to 2017, they address a relatively narrow range of needs. Table 4 shows the types of technology patents issued in the area.

Table 4. – Technology Class Patents Issued in Region 3, 2010-2017

Technology Class Area	Number of Patents
Network arrangements or protocols for real-time communications	9
Optical components or elements other than lenses	8

Source: U.S. Patent & Trademark Office data from Thomson Reuters Thomson Innovation patent analysis database

SCALE-UPS

Startups are making important contributions to all of Region 3’s major industry clusters. However, just 30% of quarterly growth in traded sectors from 2013-2017 is being generated by early stage startups. So, scale-up of new businesses is weak. In 2010, 150 traded sector companies were launched in Region 3. In 2017, 64 were still in business (a 42.7% survival rate), and those companies created 502 jobs. Table 5 shows how the survival of traded-sector start-ups in the region and their employment changed over time.

Table 5. – Traded-Sector Start-Up Survival and Employment, 2007-2017⁴⁷

Founding Year of Startup Cohort	Number of Startups in Traded Sector Industries	Number of Startups Surviving by 2017	Survival Rate by 2017	Start-up Employment Levels 2017
2007	111	32	28.8%	219
2008	100	33	33.0%	200
2009	80	25	31.3%	202
2010	150	64	42.7%	502
2011	76	27	35.5%	147
2012	135	63	46.7%	343
2013	133	50	37.6%	246
2014	103	57	55.3%	453
2015	112	74	66.1%	326
2016	100	79	79.0%	508
2017	97	97	100%	510

⁴⁷ Data Source: Business Dynamics Research Consortium database.

Data Appendix

ANNUAL EMPLOYMENT CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A1 – Annual Change in Employment in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.1%	3.4%	-0.7%	-0.1%	3.5%
Agriculture, Forestry, Fishing and Hunting	6.4%	-0.9%	-2.5%	-1.4%	-1.4%
Arts, Entertainment, and Recreation	-8.2%	-5.2%	-3.7%	-0.2%	2.3%
Construction	1.7%	5.9%	5.4%	-4.2%	-3.8%
Educational Services	-3.8%	2.3%	1.8%	-4.1%	-1.4%
Finance and Insurance	-2.5%	1.2%	0.5%	1.0%	-2.6%
Health Care and Social Assistance	0.8%	3.1%	0.2%	0.2%	-1.9%
Information	-3.0%	2.2%	-3.3%	-4.0%	-7.0%
Manufacturing	0.6%	0.7%	1.7%	0.0%	-0.9%
Mining, Quarrying, and Oil and Gas Extraction	-1.3%	12.9%	6.9%	-1.6%	2.7%
Other Services (except Public Administration)	-0.1%	4.2%	3.3%	17.0%	14.2%
Professional, Scientific, and Technical Services	-5.0%	3.4%	13.0%	-16.4%	0.3%
Real Estate and Rental and Leasing	-1.8%	1.2%	-2.0%	5.3%	1.7%
Retail Trade	-0.2%	1.6%	1.4%	-1.6%	-0.2%
Transportation and Warehousing	-0.9%	0.4%	-2.7%	-0.5%	-3.6%
Utilities	8.8%	1.4%	0.7%	-2.1%	-6.0%
Wholesale Trade	1.3%	-2.3%	0.9%	1.6%	2.1%

Table A2 – Annual Change in Employment in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	-1.1%	4.4%	-1.0%	2.0%	6.8%
Agriculture, Forestry, Fishing and Hunting	5.9%	-0.6%	-5.2%	-3.7%	-5.6%
Arts, Entertainment, and Recreation	0.0%	3.3%	-10.8%	-6.0%	2.6%
Construction	0.3%	11.8%	9.4%	2.3%	-7.9%
Educational Services	-2.0%	6.2%	4.4%	-1.3%	-2.0%
Finance and Insurance	-2.9%	1.1%	-1.1%	3.8%	-2.4%
Health Care and Social Assistance	-0.4%	5.2%	0.7%	-0.8%	2.6%
Information	-0.5%	2.6%	-1.5%	-13.6%	-5.8%
Manufacturing	6.6%	2.3%	-0.6%	-1.5%	5.6%
Mining, Quarrying, and Oil and Gas Extraction	1.0%	7.2%	-2.9%	3.0%	2.9%
Other Services (except Public Administration)	7.8%	-4.1%	-11.3%	24.6%	19.3%
Professional, Scientific, and Technical Services	-6.7%	4.4%	8.7%	7.6%	-8.2%
Real Estate and Rental and Leasing	5.8%	-3.4%	3.6%	8.3%	6.4%
Retail Trade	-2.1%	1.0%	-0.1%	-1.8%	-0.4%
Transportation and Warehousing	6.2%	1.1%	0.8%	3.7%	-6.6%
Utilities	62.9%	5.0%	0.0%	0.9%	5.6%
Wholesale Trade	-1.1%	2.8%	3.8%	-2.6%	2.2%

Table A3 – Annual Change in Employment in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.6%	2.8%	-3.5%	0.9%	0.5%
Agriculture, Forestry, Fishing and Hunting	2.4%	2.7%	-4.7%	1.6%	4.1%
Arts, Entertainment, and Recreation	-8.2%	-0.6%	2.5%	-0.5%	-3.0%
Construction	5.7%	8.3%	0.6%	-21.1%	-6.4%
Educational Services	-18.3%	4.8%	-4.6%	-29.3%	-6.0%
Finance and Insurance	0.4%	1.1%	-2.0%	-0.6%	-4.7%
Health Care and Social Assistance	0.6%	1.9%	-1.0%	-0.8%	-7.6%
Information	-5.8%	-4.0%	-4.9%	3.9%	-3.0%
Manufacturing	2.3%	3.2%	0.6%	0.3%	-1.0%
Mining, Quarrying, and Oil and Gas Extraction	3.6%	10.3%	18.8%	0.0%	2.6%
Other Services (except Public Administration)	1.5%	7.9%	5.9%	15.1%	15.1%
Professional, Scientific, and Technical Services	-2.8%	5.8%	10.7%	7.5%	-1.2%
Real Estate and Rental and Leasing	-4.7%	-9.8%	-1.2%	24.4%	11.8%
Retail Trade	-1.4%	1.6%	1.3%	-2.5%	1.1%
Transportation and Warehousing	-5.9%	-3.6%	-2.9%	-2.3%	-9.1%
Utilities	1.2%	-0.3%	-0.3%	-3.3%	-8.2%
Wholesale Trade	-0.5%	1.6%	0.9%	11.7%	9.4%

Table A4 – Annual Change in Employment in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.2%	3.4%	0.4%	-1.0%	3.7%
Agriculture, Forestry, Fishing and Hunting	10.6%	-4.2%	2.3%	-1.6%	-2.0%
Arts, Entertainment, and Recreation	-9.2%	-9.3%	-6.6%	1.0%	6.0%
Construction	0.7%	2.6%	5.9%	0.1%	-1.1%
Educational Services	-2.4%	0.1%	1.4%	-2.2%	-0.6%
Finance and Insurance	-3.3%	1.3%	1.8%	0.7%	-1.9%
Health Care and Social Assistance	1.2%	2.9%	0.4%	0.9%	-1.3%
Information	-2.5%	4.8%	-3.2%	-4.1%	-9.0%
Manufacturing	-0.5%	-0.1%	2.2%	0.1%	-1.6%
Mining, Quarrying, and Oil and Gas Extraction	-12.1%	34.5%	23.1%	-12.5%	2.4%
Other Services (except Public Administration)	-2.9%	5.7%	6.7%	15.8%	12.6%
Professional, Scientific, and Technical Services	-5.1%	2.6%	14.6%	-27.2%	3.5%
Real Estate and Rental and Leasing	-2.6%	5.5%	-3.4%	-0.2%	-2.6%
Retail Trade	0.6%	1.8%	1.8%	-1.3%	-0.5%
Transportation and Warehousing	1.3%	3.4%	-3.5%	-0.4%	1.1%
Utilities	2.3%	3.0%	3.6%	-1.4%	-9.9%
Wholesale Trade	2.4%	-4.5%	0.1%	0.5%	0.1%

CUMULATIVE EMPLOYMENT CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A5 – Cumulative Change in Employment in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.1%	4.5%	3.8%	3.7%	7.4%
Agriculture, Forestry, Fishing and Hunting	6.4%	5.4%	2.8%	1.3%	-0.1%
Arts, Entertainment, and Recreation	-8.2%	-13.0%	-16.2%	-16.4%	-14.5%
Construction	1.7%	7.7%	13.5%	8.8%	4.7%
Educational Services	-3.8%	-1.6%	0.1%	-4.0%	-5.3%
Finance and Insurance	-2.5%	-1.2%	-0.8%	0.2%	-2.4%
Health Care and Social Assistance	0.8%	3.9%	4.1%	4.3%	2.3%
Information	-3.0%	-0.9%	-4.1%	-7.9%	-14.4%
Manufacturing	0.6%	1.3%	3.0%	3.0%	2.1%
Mining, Quarrying, and Oil and Gas Extraction	-1.3%	11.5%	19.1%	17.2%	20.4%
Other Services (except Public Administration)	-0.1%	4.1%	7.6%	25.9%	43.8%
Professional, Scientific, and Technical Services	-5.0%	-1.7%	11.1%	-7.1%	-6.8%
Real Estate and Rental and Leasing	-1.8%	-0.6%	-2.6%	2.5%	4.3%
Retail Trade	-0.2%	1.4%	2.8%	1.1%	0.9%
Transportation and Warehousing	-0.9%	-0.5%	-3.2%	-3.7%	-7.2%
Utilities	8.8%	10.4%	11.1%	8.8%	2.3%
Wholesale Trade	1.3%	-1.0%	-0.1%	1.5%	3.6%



Table A6 – Cumulative Change in Employment in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	-1.1%	3.3%	2.2%	4.3%	11.4%
Agriculture, Forestry, Fishing and Hunting	5.9%	5.2%	-0.3%	-3.9%	-9.3%
Arts, Entertainment, and Recreation	0.0%	3.3%	-7.8%	-13.3%	-11.1%
Construction	0.3%	12.2%	22.8%	25.6%	15.6%
Educational Services	-2.0%	4.1%	8.7%	7.3%	5.2%
Finance and Insurance	-2.9%	-1.8%	-2.9%	0.9%	-1.5%
Health Care and Social Assistance	-0.4%	4.8%	5.6%	4.8%	7.5%
Information	-0.5%	2.0%	0.5%	-13.2%	-18.3%
Manufacturing	6.6%	9.1%	8.4%	6.7%	12.7%
Mining, Quarrying, and Oil and Gas Extraction	1.0%	8.3%	5.2%	8.3%	11.5%
Other Services (except Public Administration)	7.8%	3.4%	-8.3%	14.3%	36.3%
Professional, Scientific, and Technical Services	-6.7%	-2.6%	5.9%	13.9%	4.6%
Real Estate and Rental and Leasing	5.8%	2.2%	5.8%	14.6%	21.9%
Retail Trade	-2.1%	-1.2%	-1.3%	-3.1%	-3.4%
Transportation and Warehousing	6.2%	7.3%	8.1%	12.2%	4.7%
Utilities	62.9%	71.0%	71.0%	72.6%	82.3%
Wholesale Trade	-1.1%	1.6%	5.5%	2.7%	5.0%

Table A7 – Cumulative Change in Employment in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.6%	5.4%	1.7%	2.7%	3.2%
Agriculture, Forestry, Fishing and Hunting	2.4%	5.1%	0.2%	1.8%	5.9%
Arts, Entertainment, and Recreation	-8.2%	-8.7%	-6.4%	-6.9%	-9.8%
Construction	5.7%	14.4%	15.2%	-9.1%	-14.9%
Educational Services	-18.3%	-14.3%	-18.3%	-42.2%	-45.7%
Finance and Insurance	0.4%	1.5%	-0.6%	-1.1%	-5.8%
Health Care and Social Assistance	0.6%	2.5%	1.5%	0.7%	-7.0%
Information	-5.8%	-9.5%	-13.9%	-10.5%	-13.2%
Manufacturing	2.3%	5.5%	6.1%	6.4%	5.4%
Mining, Quarrying, and Oil and Gas Extraction	3.6%	14.3%	35.7%	35.7%	39.3%
Other Services (except Public Administration)	1.5%	9.5%	16.0%	33.5%	53.7%
Professional, Scientific, and Technical Services	-2.8%	2.8%	13.8%	22.3%	20.8%
Real Estate and Rental and Leasing	-4.7%	-14.0%	-15.0%	5.7%	18.1%
Retail Trade	-1.4%	0.2%	1.6%	-0.9%	0.1%
Transportation and Warehousing	-5.9%	-9.3%	-11.9%	-14.0%	-21.8%
Utilities	1.2%	0.9%	0.6%	-2.7%	-10.7%
Wholesale Trade	-0.5%	1.0%	1.9%	13.8%	24.5%

Table A8 – Cumulative Change in Employment in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.2%	4.6%	5.0%	4.0%	7.8%
Agriculture, Forestry, Fishing and Hunting	10.6%	5.9%	8.3%	6.6%	4.5%
Arts, Entertainment, and Recreation	-9.2%	-17.7%	-23.1%	-22.4%	-17.7%
Construction	0.7%	3.3%	9.4%	9.4%	8.3%
Educational Services	-2.4%	-2.2%	-0.8%	-3.0%	-3.6%
Finance and Insurance	-3.3%	-2.0%	-0.3%	0.4%	-1.5%
Health Care and Social Assistance	1.2%	4.2%	4.5%	5.5%	4.1%
Information	-2.5%	2.1%	-1.2%	-5.2%	-13.8%
Manufacturing	-0.5%	-0.5%	1.7%	1.8%	0.2%
Mining, Quarrying, and Oil and Gas Extraction	-12.1%	18.2%	45.5%	27.3%	30.3%
Other Services (except Public Administration)	-2.9%	2.6%	9.5%	26.9%	42.9%
Professional, Scientific, and Technical Services	-5.1%	-2.6%	11.6%	-18.7%	-15.9%
Real Estate and Rental and Leasing	-2.6%	2.8%	-0.8%	-0.9%	-3.5%
Retail Trade	0.6%	2.4%	4.3%	2.9%	2.4%
Transportation and Warehousing	1.3%	4.8%	1.1%	0.7%	1.8%
Utilities	2.3%	5.3%	9.2%	7.6%	-3.1%
Wholesale Trade	2.4%	-2.2%	-2.1%	-1.6%	-1.5%

ANNUAL WAGE CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A9 – Annual Change in Nominal Weekly Wages in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.5%	3.5%	3.6%	2.3%	2.8%
Agriculture, Forestry, Fishing and Hunting	5.2%	5.3%	3.2%	3.9%	2.0%
Arts, Entertainment, and Recreation	2.0%	18.5%	1.7%	13.8%	-14.3%
Construction	5.2%	4.3%	7.1%	-0.5%	3.2%
Educational Services	1.2%	0.6%	0.0%	1.4%	2.2%
Finance and Insurance	2.6%	3.0%	2.8%	6.1%	5.1%
Health Care and Social Assistance	0.9%	2.0%	3.2%	2.0%	3.2%
Information	-1.1%	3.7%	1.2%	2.8%	-3.3%
Manufacturing	3.8%	1.5%	0.2%	0.5%	5.3%
Mining, Quarrying, and Oil and Gas Extraction	1.4%	4.5%	9.0%	-3.0%	-4.2%
Other Services (except Public Administration)	5.3%	2.2%	0.5%	-1.7%	-2.2%
Professional, Scientific, and Technical Services	-5.1%	5.4%	-0.3%	17.1%	2.5%
Real Estate and Rental and Leasing	2.1%	2.7%	-9.1%	-0.3%	6.3%
Retail Trade	2.2%	1.6%	1.1%	2.4%	1.9%
Transportation and Warehousing	4.6%	5.4%	5.1%	0.2%	4.7%
Utilities	4.9%	1.9%	-2.6%	5.7%	9.7%
Wholesale Trade	7.0%	3.8%	3.2%	2.5%	4.6%

Table A10 – Annual Change in Nominal Weekly Wages in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.0%	2.4%	6.2%	-1.1%	2.6%
Agriculture, Forestry, Fishing and Hunting	5.8%	5.5%	1.9%	3.7%	4.4%
Arts, Entertainment, and Recreation	-6.0%	100.4%	-33.8%	-5.2%	0.0%
Construction	4.7%	5.1%	8.3%	2.9%	1.1%
Educational Services	3.4%	0.3%	2.2%	1.7%	3.9%
Finance and Insurance	3.4%	1.0%	3.1%	9.9%	4.0%
Health Care and Social Assistance	2.3%	0.8%	1.1%	4.4%	2.3%
Information	-6.2%	13.5%	13.6%	-16.7%	4.1%
Manufacturing	0.6%	5.7%	2.2%	3.9%	-1.1%
Mining, Quarrying, and Oil and Gas Extraction	4.7%	-0.4%	2.0%	4.8%	0.2%
Other Services (except Public Administration)	3.7%	8.8%	-2.2%	-8.1%	-4.7%
Professional, Scientific, and Technical Services	5.2%	9.2%	15.6%	-6.3%	6.6%
Real Estate and Rental and Leasing	6.9%	2.9%	6.5%	10.8%	2.0%
Retail Trade	2.3%	-3.5%	-1.3%	1.9%	-0.8%
Transportation and Warehousing	2.8%	9.8%	4.7%	3.9%	3.7%
Utilities	-4.8%	3.1%	-0.4%	2.9%	2.2%
Wholesale Trade	-1.2%	1.6%	0.0%	3.2%	1.8%

Table A11 – Annual Change in Nominal Weekly Wages in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	3.0%	2.9%	0.8%	2.0%	3.9%
Agriculture, Forestry, Fishing and Hunting	7.3%	6.0%	6.5%	4.6%	1.9%
Arts, Entertainment, and Recreation	4.2%	9.8%	-2.3%	4.1%	4.9%
Construction	4.7%	6.0%	6.0%	-7.4%	4.4%
Educational Services	-7.8%	-6.8%	-4.3%	-32.4%	-4.7%
Finance and Insurance	0.3%	7.0%	3.3%	8.9%	7.2%
Health Care and Social Assistance	-0.1%	4.6%	4.9%	3.4%	3.8%
Information	-0.8%	2.0%	4.9%	0.1%	-17.1%
Manufacturing	5.7%	-1.6%	0.6%	1.8%	3.5%
Mining, Quarrying, and Oil and Gas Extraction	-8.7%	9.5%	10.0%	-7.6%	-0.5%
Other Services (except Public Administration)	5.4%	-0.7%	2.6%	0.2%	-6.8%
Professional, Scientific, and Technical Services	3.8%	14.5%	9.0%	2.2%	-4.7%
Real Estate and Rental and Leasing	2.8%	9.5%	-1.3%	3.9%	9.6%
Retail Trade	1.7%	-0.2%	2.1%	3.0%	2.0%
Transportation and Warehousing	0.8%	6.1%	2.9%	3.5%	3.9%
Utilities	7.6%	0.6%	-4.1%	8.1%	10.2%
Wholesale Trade	4.1%	3.5%	6.4%	9.5%	7.6%

Table A12 – Annual Change in Nominal Weekly Wages in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	0.8%	4.0%	3.8%	3.3%	2.5%
Agriculture, Forestry, Fishing and Hunting	3.2%	3.5%	2.5%	3.1%	-1.4%
Arts, Entertainment, and Recreation	2.4%	16.4%	10.6%	18.7%	-22.7%
Construction	5.4%	3.3%	7.4%	1.2%	3.6%
Educational Services	1.4%	1.4%	-1.2%	3.4%	1.3%
Finance and Insurance	3.2%	2.3%	2.4%	4.2%	4.8%
Health Care and Social Assistance	0.8%	1.4%	3.2%	0.7%	3.7%
Information	0.3%	2.6%	-3.3%	8.4%	1.9%
Manufacturing	3.9%	1.9%	-0.1%	-0.1%	6.5%
Mining, Quarrying, and Oil and Gas Extraction	-0.4%	19.7%	22.0%	-14.0%	-19.6%
Other Services (except Public Administration)	5.4%	1.4%	1.6%	-0.7%	0.0%
Professional, Scientific, and Technical Services	-9.8%	1.0%	-7.2%	25.8%	5.5%
Real Estate and Rental and Leasing	1.6%	0.3%	-12.8%	-3.4%	6.3%
Retail Trade	2.3%	3.5%	1.5%	2.3%	2.7%
Transportation and Warehousing	8.4%	3.6%	6.8%	-3.4%	5.9%
Utilities	0.2%	5.4%	0.0%	2.0%	15.3%
Wholesale Trade	10.2%	4.6%	3.4%	0.7%	4.5%

CUMULATIVE WAGE CHANGE BY MAJOR INDUSTRY SECTOR AND PLANNING DISTRICT – 2014 TO 2018

Table A13 – Cumulative Change in Nominal Weekly Wages in GO Virginia Region 3 by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	1.5%	5.0%	8.8%	11.3%	14.4%
Agriculture, Forestry, Fishing and Hunting	5.2%	10.8%	14.4%	18.9%	21.3%
Arts, Entertainment, and Recreation	2.0%	20.9%	22.9%	39.9%	19.9%
Construction	5.2%	9.7%	17.6%	16.9%	20.6%
Educational Services	1.2%	1.8%	1.8%	3.1%	5.4%
Finance and Insurance	2.6%	5.7%	8.6%	15.3%	21.2%
Health Care and Social Assistance	0.9%	2.9%	6.1%	8.3%	11.8%
Information	-1.1%	2.5%	3.7%	6.6%	3.1%
Manufacturing	3.8%	5.4%	5.6%	6.2%	11.8%
Mining, Quarrying, and Oil and Gas Extraction	1.4%	6.0%	15.5%	12.0%	7.4%
Other Services (except Public Administration)	5.3%	7.7%	8.2%	6.3%	3.9%
Professional, Scientific, and Technical Services	-5.1%	0.0%	-0.2%	16.8%	19.7%
Real Estate and Rental and Leasing	2.1%	4.9%	-4.6%	-4.9%	1.1%
Retail Trade	2.2%	3.8%	4.9%	7.4%	9.5%
Transportation and Warehousing	4.6%	10.2%	15.8%	16.0%	21.5%
Utilities	4.9%	6.9%	4.1%	10.1%	20.8%
Wholesale Trade	7.0%	11.1%	14.7%	17.5%	22.9%

Table A14 – Cumulative Change in Nominal Weekly Wages in the Commonwealth PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	2.0%	4.4%	10.8%	9.6%	12.4%
Agriculture, Forestry, Fishing and Hunting	5.8%	11.6%	13.6%	17.8%	23.0%
Arts, Entertainment, and Recreation	-6.0%	88.3%	24.6%	18.1%	18.1%
Construction	4.7%	10.0%	19.2%	22.7%	24.0%
Educational Services	3.4%	3.7%	5.9%	7.7%	11.9%
Finance and Insurance	3.4%	4.4%	7.7%	18.3%	23.0%
Health Care and Social Assistance	2.3%	3.1%	4.2%	8.8%	11.3%
Information	-6.2%	6.4%	20.9%	0.7%	4.8%
Manufacturing	0.6%	6.4%	8.7%	13.0%	11.8%
Mining, Quarrying, and Oil and Gas Extraction	4.7%	4.3%	6.3%	11.5%	11.7%
Other Services (except Public Administration)	3.7%	12.9%	10.4%	1.5%	-3.3%
Professional, Scientific, and Technical Services	5.2%	14.8%	32.7%	24.3%	32.5%
Real Estate and Rental and Leasing	6.9%	10.0%	17.1%	29.7%	32.3%
Retail Trade	2.3%	-1.3%	-2.5%	-0.6%	-1.5%
Transportation and Warehousing	2.8%	12.8%	18.1%	22.8%	27.2%
Utilities	-4.8%	-1.9%	-2.3%	0.6%	2.8%
Wholesale Trade	-1.2%	0.5%	0.5%	3.7%	5.5%

Table A15 – Cumulative Change in Nominal Weekly Wages in the Southside PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	3.0%	5.9%	6.8%	8.9%	13.1%
Agriculture, Forestry, Fishing and Hunting	7.3%	13.8%	21.1%	26.7%	29.1%
Arts, Entertainment, and Recreation	4.2%	14.3%	11.7%	16.2%	21.9%
Construction	4.7%	10.9%	17.6%	8.9%	13.7%
Educational Services	-7.8%	-14.0%	-17.7%	-44.4%	-47.0%
Finance and Insurance	0.3%	7.3%	10.9%	20.7%	29.3%
Health Care and Social Assistance	-0.1%	4.4%	9.6%	13.3%	17.5%
Information	-0.8%	1.1%	6.1%	6.2%	-12.0%
Manufacturing	5.7%	4.0%	4.6%	6.6%	10.3%
Mining, Quarrying, and Oil and Gas Extraction	-8.7%	0.0%	10.0%	1.6%	1.1%
Other Services (except Public Administration)	5.4%	4.6%	7.3%	7.6%	0.2%
Professional, Scientific, and Technical Services	3.8%	18.8%	29.6%	32.4%	26.2%
Real Estate and Rental and Leasing	2.8%	12.6%	11.1%	15.4%	26.5%
Retail Trade	1.7%	1.4%	3.6%	6.7%	8.9%
Transportation and Warehousing	0.8%	6.9%	10.0%	13.8%	18.3%
Utilities	7.6%	8.2%	3.8%	12.2%	23.7%
Wholesale Trade	4.1%	7.7%	14.7%	25.5%	35.1%

Table A16 – Cumulative Change in Nominal Weekly Wages in the West Piedmont PDC by Major Industry Sector

Industry	2014	2015	2016	2017	2018
Accommodation and Food Services	0.8%	4.8%	8.9%	12.5%	15.3%
Agriculture, Forestry, Fishing and Hunting	3.2%	6.8%	9.5%	12.9%	11.3%
Arts, Entertainment, and Recreation	2.4%	19.3%	32.0%	56.6%	21.0%
Construction	5.4%	8.9%	17.0%	18.4%	22.7%
Educational Services	1.4%	2.8%	1.6%	5.1%	6.5%
Finance and Insurance	3.2%	5.6%	8.1%	12.7%	18.1%
Health Care and Social Assistance	0.8%	2.2%	5.5%	6.3%	10.3%
Information	0.3%	2.8%	-0.5%	7.9%	9.9%
Manufacturing	3.9%	5.8%	5.7%	5.6%	12.4%
Mining, Quarrying, and Oil and Gas Extraction	-0.4%	19.3%	45.5%	25.1%	0.5%
Other Services (except Public Administration)	5.4%	6.9%	8.6%	7.9%	7.9%
Professional, Scientific, and Technical Services	-9.8%	-8.9%	-15.4%	6.4%	12.3%
Real Estate and Rental and Leasing	1.6%	1.9%	-11.2%	-14.2%	-8.8%
Retail Trade	2.3%	5.9%	7.4%	9.9%	12.8%
Transportation and Warehousing	8.4%	12.3%	20.0%	15.9%	22.7%
Utilities	0.2%	5.6%	5.6%	7.8%	24.3%
Wholesale Trade	10.2%	15.2%	19.2%	20.0%	25.4%