



Employment Trends and Workforce Analysis of Lexington Kentucky

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Executive Summary

In June 2021, the Lexington/Fayette Urban County Government (LFUCG) commissioned the University of Kentucky's Center for Business and Economic Research (CBER) to study several issues related to Lexington's employment and workforce. LFUCG had four main objectives: analyze Lexington's employment trends; assess its workforce characteristics and challenges; examine migration, commuting, and remote work trends; and analyze the economic impact of hypothetical expansions in several of Lexington's main industrial sectors. This report is organized into four chapters.

Chapter 1 describes the long-run employment and wage trends for select sectors in Lexington. The analysis compares these trends to those in the Lexington/Fayette County MSA, Kentucky, and the nation. For most of the past two decades, Lexington's employment grew somewhat faster than employment in Kentucky and the nation. However, employment growth has varied over this period. From 2015 to 2019, Lexington's employment grew at a slower pace than national employment.

Chapter 2 examines Lexington's workforce. It compares labor force and unemployment rates across several demographic groups to determine who might face barriers to participating in the workforce. The analysis shows that Lexington's population is generally more likely to be in the workforce than those in the rest of Kentucky or the nation. However, even with Lexington's high rates of labor force participation, some of Lexington's residents still face barriers to being in the work force. Chapter 2 also briefly discusses the impact of automation on the workforce. While automation can reduce the demand for some workers, particularly lower-skilled workers, it creates new jobs that often require more skills and pay higher wages. Adoption of automation can be an important factor in an area remaining competitive, but workers who are displaced will likely need training to adapt to the changing needs of employers.

Chapter 3 examines commuting patterns, remote work, and migration. There is a high degree of commuting to and from Fayette County. The number of jobs located in Fayette County that are filled by workers who live in other counties has grown steadily. While many workers shifted to remote work during the pandemic, the share of people working remotely has decrease significantly since COVID related restrictions were eased. Widespread adoption of remote work could potentially reduce Lexington's occupational license tax by 6% to 12%. However, these estimates should be viewed as upper bounds on the potential fiscal impact based on whether a job could be performed remotely. Not all jobs that could be performed remotely will make this shift.

Chapter 4 discusses how new establishments locating in Lexington could affect the area's economy. Economists often use economic impact analysis to analyze how activity in a new establishment could support local employment in other businesses. As a new establishment purchases inputs from other local businesses and its workers purchase goods and services in the local economy, a new establishment can help support other workers in the city. However, the employment supported does not necessarily represent a net increase in employment in the area because the new establishment might simply displace other businesses. Chapter 4 examines several hypothetical scenarios to show how a new establishment in different sectors could potentially support other employment in the area. The chapter also discusses several issues that economic impact analysis should address to accurately measure the employment effects of a new project.

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Chapter 1 Lexington-Fayette County Employment and Wage Trends

The following analysis examines the long-run employment and wage trends in Lexington-Fayette County Kentucky. The charts and tables below compare trends in Lexington-Fayette County to trends in the Lexington/Fayette County Metropolitan Statistical Area (MSA), Kentucky, and the United States. The Lexington/Fayette County MSA consists of Bourbon, Clark, Fayette, Jessamine, Scott, and Woodford Counties.

Data for this analysis comes from the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW). The QCEW represents a comprehensive count of employment covered by unemployment insurance. Each quarter, employers across the nation must report the number of workers they employed, and the wages paid to these workers during the quarter. The data does not include workers who are not covered by unemployment insurance such as self-employed workers and farm workers.

Employment and wage trends are shown for total employment and eleven major industrial sectors: natural resources and mining; construction; manufacturing; trade, transportation, and utilities; information; financial activities; professional and business services; education and health services; leisure and hospitality; other services; and public administration. Trends are also provided for 24 subsectors that were selected in consultation with LFUCG staff. The NAICS codes for each of the major sectors are provided at the end of this report. It should be noted that most government workers are assigned to the public administration sector. However, some government workers are classified in other sectors. For example, jobs in government owned hospitals are typically classified as health services employment.

For each sector, employment and wage trends from 1990 to 2020 are summarized in three charts and a table. The charts for wages show average weekly wages. Wages are stated in 2020 dollars and adjusted for inflation using the Consumer Price Index for all urban consumers and all items. The charts for employment show the average annual employment for each sector. To compare trends across different geographic areas, employment levels for each year are shown as a percent of employment in 1990. For example, Lexington's construction sector employment was 7,247 in 1990. By 2019, employment in this sector had increased to 9,918, an increase of 37 percent from its level in 1990.

A table for each sector shows the average annual growth rate over select periods. Rates are shown for both weekly wages and for employment. For example, Lexington's construction employment grew at an annual rate of 4.2 percent from 2015 to 2019. This rate was faster than the growth rate for Kentucky and the nation.

The pandemic had significant effects on employment and wages in 2020. During the first months of the pandemic, employment fell dramatically as businesses reduced operations to help slow the spread of COVID-19 and customers avoided certain activities. Employment began to recover as businesses reopened. Because employment changes in 2020 were so different than the long-term trend, the tables show the percent change in employment and wages for 2020 separately. While month-to-month employment showed significant swings, the data shown in the following charts and tables reflect the average employment for 2020.

The pandemic also affected average wages. Many of the job losses were in retail stores, restaurants, and entertainment sectors, which often paid lower wages. As lower paid jobs declined, average wages in some sectors increased. Therefore, changes in average wages from 2019 to 2020 should be interpreted with caution.

The pandemic significantly altered the economy. Some of these changes will be temporary and fade overtime as consumers and businesses resume more normal activities. However, other changes, such as the adoption of technology by some sectors, may be permanent. It is still too early to determine how many of the changes will remain.

Key Points:

Lexington's total employment grew somewhat faster than state and national employment over the past two decades. From 1990 to 2019, Lexington's employment grew by 38.4 percent compared to 34.5 percent for Kentucky and 36.4 percent for the nation. However, employment growth has varied over time. For example, Lexington recovered from the Great Recession faster than Kentucky and the nation. From 2011 to 2015, Lexington's employment grew at an average annual rate of two percent. The U.S. grew at 1.6 percent and Kentucky grew at 1.4 percent during this time. From 2015 to 2019, however, Lexington's employment grew at a slower rate than the nation.

Lexington has experienced strong growth compared to the nation in several sectors while lagging in others. The following discussion highlights some of the notable trends in Lexington's employment across sectors.

Lexington's **manufacturing** sector has been declining since the 1990s. While manufacturing employment for the state and nation recovered somewhat since the Great Recession, Lexington's manufacturing employment continued to fall. This was not the case, however, for pharmaceutical and medical manufacturing. From 2006 to 2010, employment in this subsector grew by 14.4 percent annually and the high rate of growth continued until the pandemic.

Since 2010, employment in Lexington's **construction** sector has outpaced the MSA, state, and nation. However, jobs in both residential and non-residential building construction grew faster in the MSA from 2015 to 2019. Other construction subsectors, which are not shown, include heavy and civil engineering construction and special trades construction. Average weekly wages were generally higher for construction jobs in Lexington than in the MSA and Kentucky. However, wages across these areas generally move together.

Employment in Lexington's **trade, transportation, and utilities** sector grew quickly from 2011 to 2015, but declined in the years prior to the pandemic. Within this sector, warehousing employment grew significantly faster in Lexington and the MSA than in the rest of Kentucky and the U.S. This growth occurred through 2018. However, Lexington's employment in this sector contracted somewhat in years just before the pandemic. Wages paid in warehousing increased during the 2000s and 2010s. By 2012, average weekly wages paid in Lexington were similar to the wages paid nationally.

Lexington experienced slower job growth than the nation in several sectors including **financial activities**, and **professional and business services**. Lexington's real estate employment peaked in 2008 just before

the housing market contracted. Real estate employment began recovering in 2016 and is approaching levels just before the Great Recession. Employment growth was slow in professional and technical services and in computer system designs. These two subsectors appear to be growing at a faster pace nationally.

Lexington's **education and health services** sector accounted for 14.2 percent of the city's employment in 1990. At the time, this sector accounted for a similar share of employment in Kentucky (13.7 percent) and the U.S. (13.2 percent). Growth in this sector was particularly strong for Lexington from 2000 through 2015 but slowed somewhat over the past few years. In 2019, education and health services accounted for 26 percent of total employment in Lexington, while only 23.6 percent in both Kentucky and the U.S.

Hospital employment in Lexington was volatile from 2004 to 2013. It is not clear what caused the volatility. Hospital employment grew steadily in both Kentucky and the nation. One possible explanation is the classification of hospital employment. For example, if publicly owned hospitals were reported as government employment in some years and hospitals in other years, the total employment would fluctuate simply due to the classification. While this is a possible explanation, it is not clear that this is the cause of the volatility.

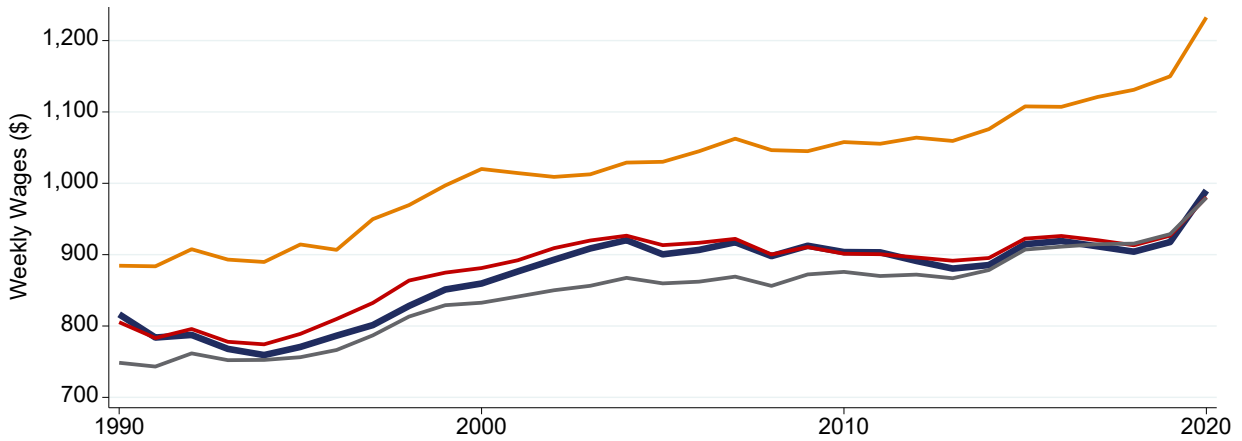
Home health care employment jumped in 2018 after several years of little growth. Employment of doctors' offices jumped in 2015 but has declined in the years since. In recent years, nursing and residential care facilities in Lexington and the MSA have expanded their employment levels faster than those in the rest of the state and the nation.

Lexington's **leisure and hospitality** employment has generally followed national trends. The city's accommodations employment declined from 1990 through 2010 before increasing again in recent years. As of 2019, Lexington's accommodations employment was 28 percent down from 1990, and employment in this sector fell further when the pandemic hit.

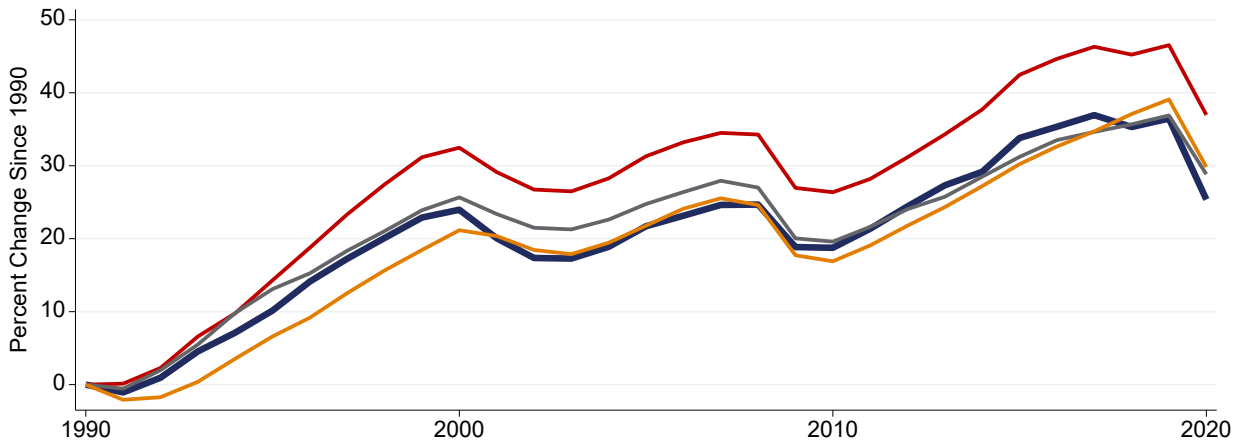
All Sectors

— Lexington
 — MSA
 — KY
 — US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

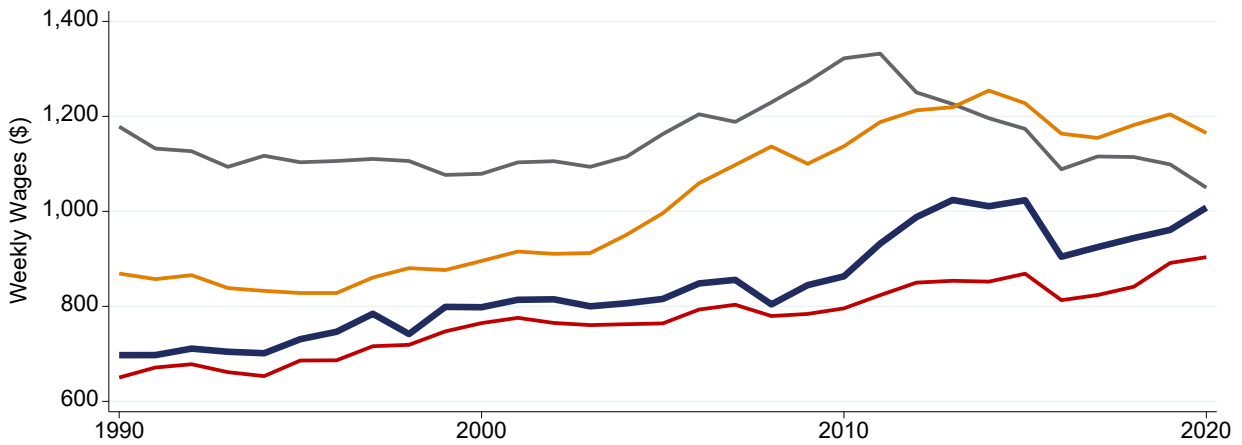
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-0.9	-0.3	0.2	0.6	1.7	2.5	2.4	1.2
1996-2000	1.8	1.9	1.7	1.9	2.2	2.8	2.0	2.3
2001-2005	1.2	0.9	0.8	0.3	-0.3	-0.1	0.0	0.3
2006-2010	0.1	-0.1	0.4	0.6	0.3	-0.1	-0.5	-0.5
2011-2015	0.5	0.7	0.6	0.8	2.0	2.0	1.4	1.6
2015-2019	0.2	0.2	0.5	0.9	0.7	0.8	0.8	1.5
2019-2020	7.0	5.4	5.1	6.7	-6.6	-5.5	-5.5	-5.8

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

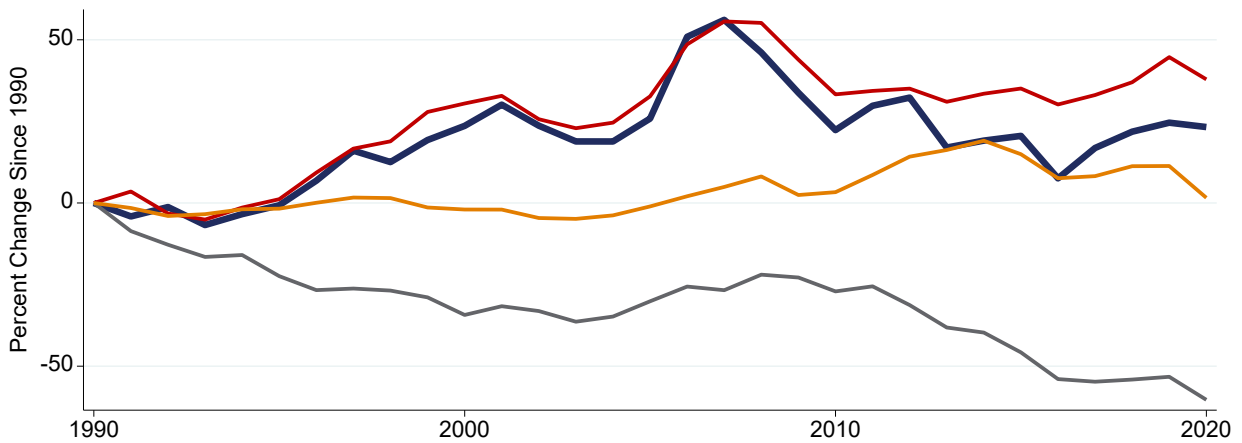
Natural Resources and Mining

— Lexington
 — MSA
 — KY
 — US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

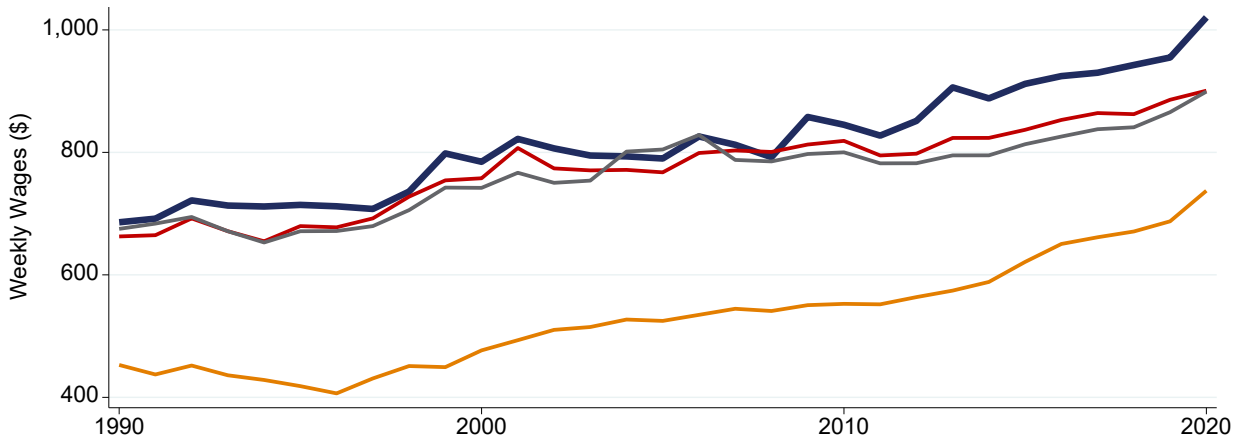
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.9	1.1	-1.3	-0.9	-0.1	0.2	-4.9	-0.4
1996-2000	1.8	2.2	-0.4	1.6	4.5	5.2	-3.3	-0.1
2001-2005	0.4	0.0	1.5	2.1	0.4	0.3	1.2	0.2
2006-2010	1.1	0.8	2.6	2.7	-0.6	0.1	0.9	0.9
2011-2015	3.5	1.8	-2.4	1.5	-0.3	0.3	-5.7	2.1
2015-2019	-1.6	0.6	-1.6	-0.5	0.8	1.7	-3.6	-0.8
2019-2020	4.9	1.4	-4.4	-3.2	-1.1	-4.7	-15.1	-8.7

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

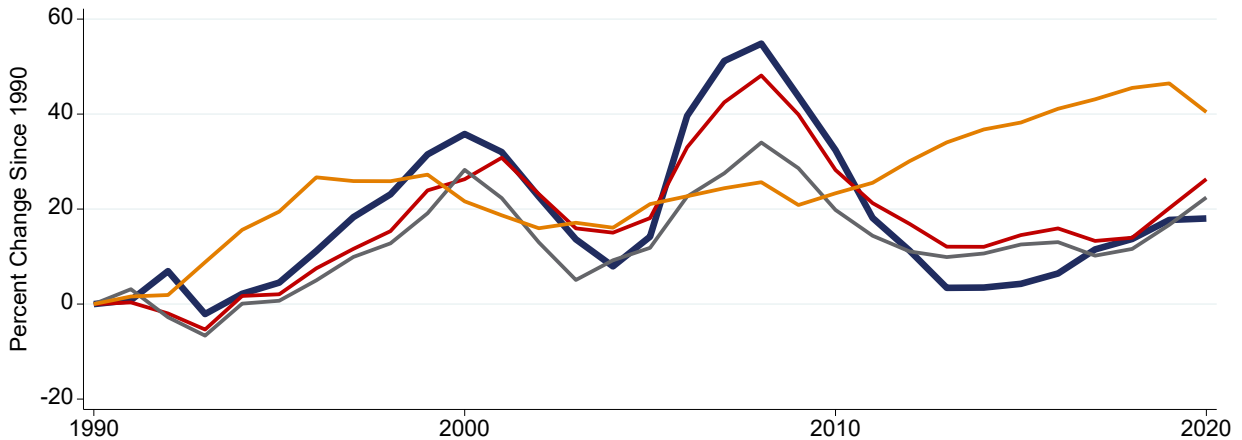
Agriculture and Forestry

— Lexington
 — MSA
 — KY
 — US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

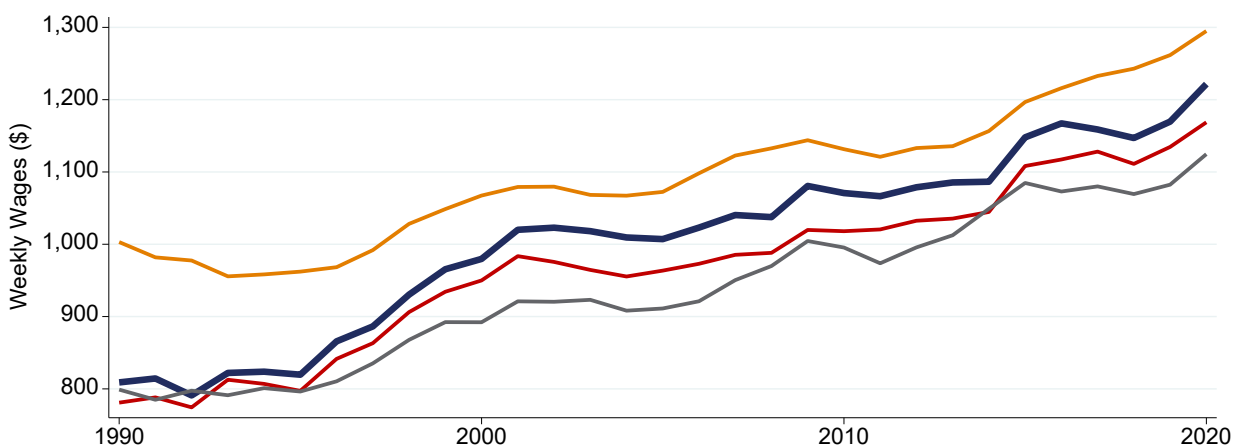
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.8	0.5	-0.1	-1.6	0.9	0.4	0.1	3.6
1996-2000	1.9	2.2	2.0	2.6	5.4	4.4	5.0	0.4
2001-2005	0.1	0.3	1.6	2.0	-3.4	-1.3	-2.7	0.0
2006-2010	1.4	1.3	-0.1	1.0	3.0	1.7	1.4	0.4
2011-2015	1.5	0.4	0.3	2.3	-4.7	-2.2	-1.2	2.2
2015-2019	1.2	1.4	1.6	2.6	3.1	1.2	0.9	1.5
2019-2020	6.9	1.7	3.9	7.3	0.3	5.1	4.9	-4.1

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

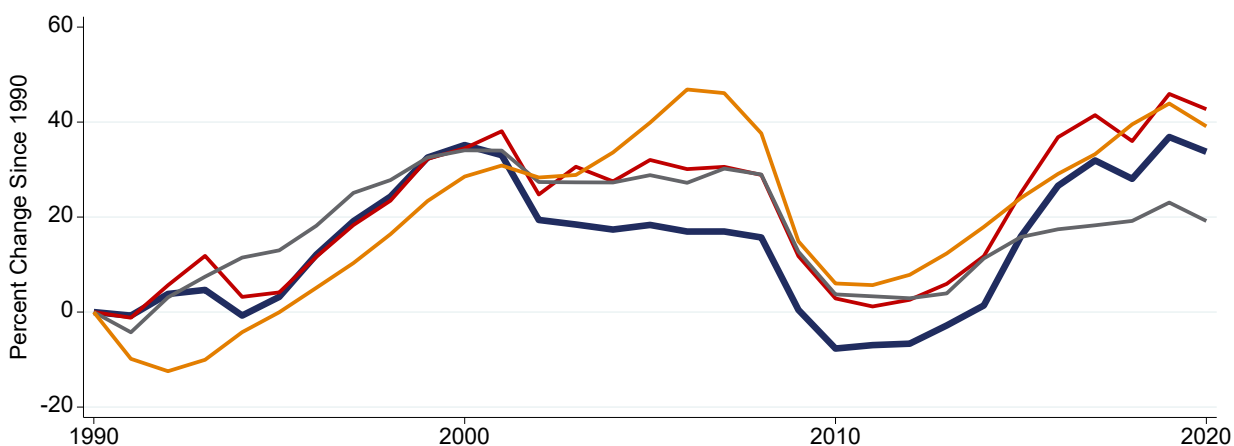
Construction

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

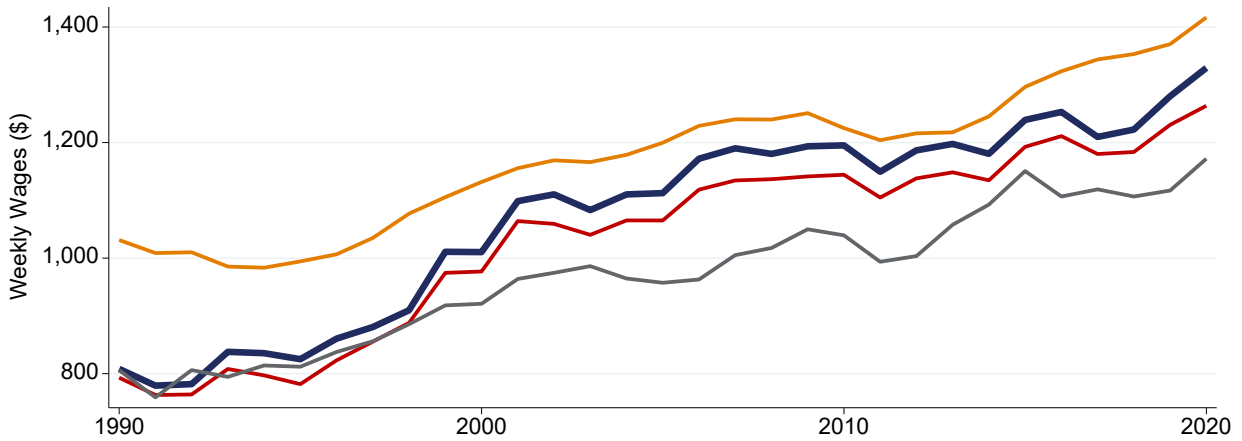
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.3	0.4	-0.1	-0.8	0.6	0.8	2.5	0.0
1996-2000	3.6	3.6	2.3	2.1	5.5	5.2	3.5	5.0
2001-2005	0.6	0.3	0.4	0.1	-2.6	-0.4	-0.8	1.8
2006-2010	1.2	1.1	1.8	1.1	-4.8	-4.9	-4.2	-5.3
2011-2015	1.4	1.7	1.7	1.1	4.7	4.0	2.2	3.1
2015-2019	0.5	0.6	-0.1	1.3	4.2	3.9	1.5	3.7
2019-2020	4.4	3.0	3.9	2.6	-2.3	-2.2	-3.1	-3.3

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

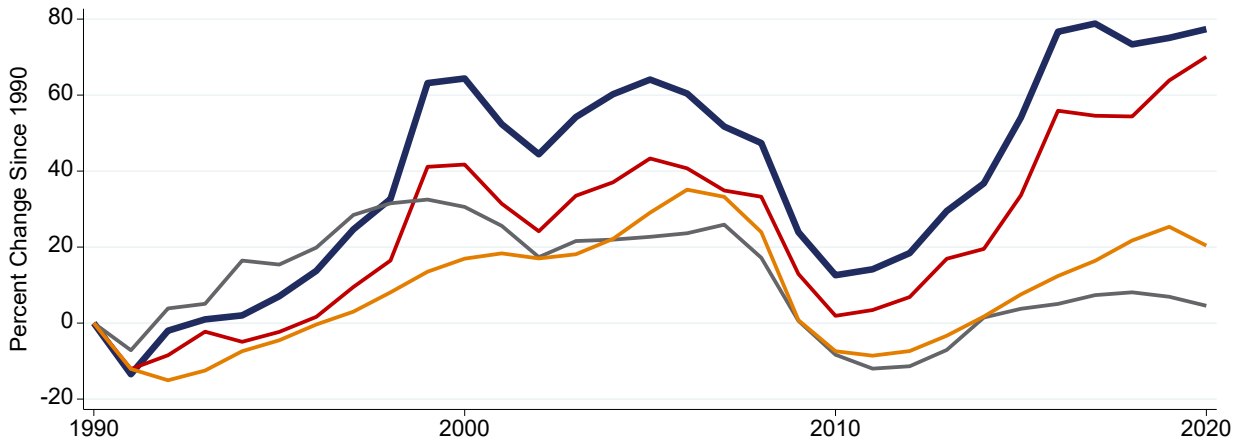
Construction of Buildings

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

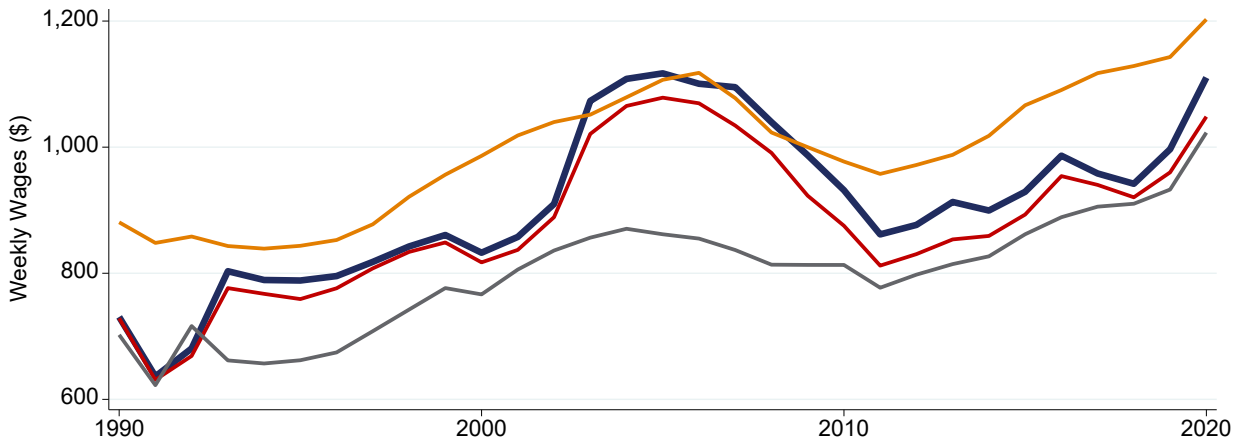
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.4	-0.3	0.1	-0.7	1.4	-0.5	2.9	-0.9
1996-2000	4.1	4.6	2.6	2.6	9.0	7.7	2.5	4.1
2001-2005	1.9	1.7	0.8	1.2	0.0	0.2	-1.2	2.0
2006-2010	1.4	1.4	1.7	0.4	-7.3	-6.6	-5.7	-6.4
2011-2015	0.7	0.8	2.1	1.1	6.5	5.6	2.5	3.0
2015-2019	0.8	0.8	-0.7	1.4	3.2	5.2	0.8	3.9
2019-2020	3.8	2.7	4.9	3.4	1.3	3.8	-2.2	-4.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

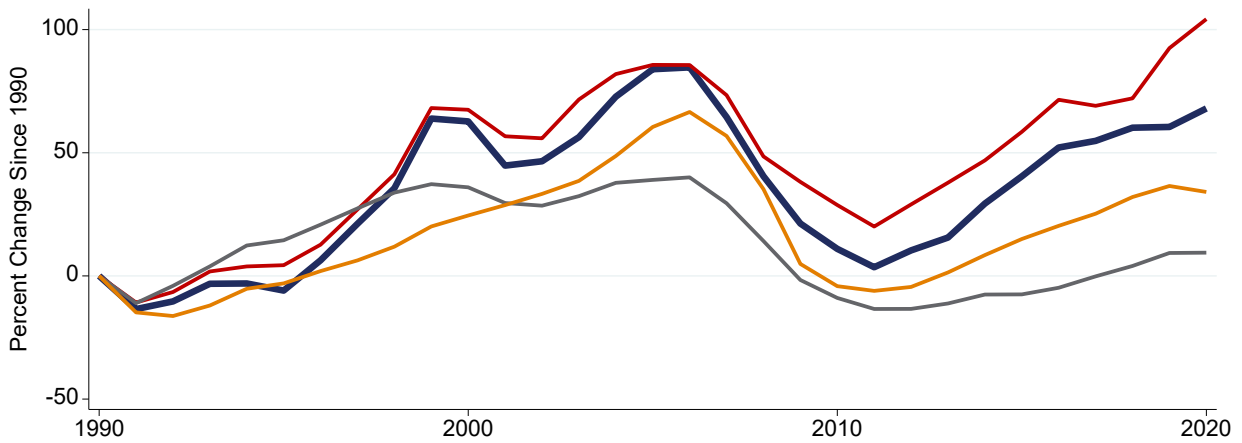
Residential Building Construction

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

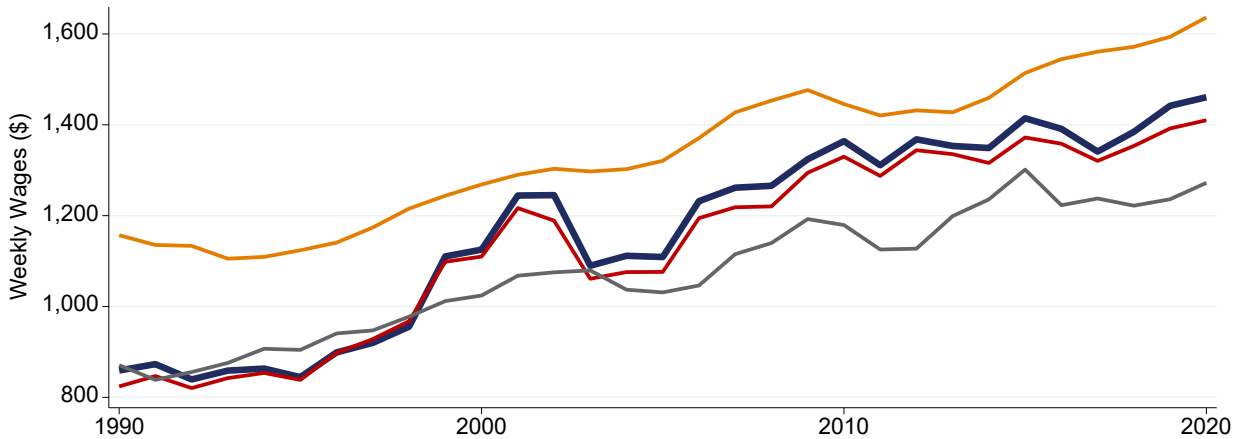
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	1.5	0.8	-1.2	-0.9	-1.2	0.9	2.7	-0.6
1996-2000	1.1	1.5	3.0	3.2	11.6	9.9	3.5	5.1
2001-2005	6.1	5.7	2.4	2.3	2.5	2.1	0.4	5.2
2006-2010	-3.6	-4.1	-1.2	-2.5	-9.6	-7.1	-8.1	-9.8
2011-2015	-0.1	0.4	1.2	1.8	4.8	4.2	0.3	3.7
2015-2019	1.8	1.8	2.0	1.7	3.4	5.0	4.3	4.4
2019-2020	11.4	9.2	9.7	5.2	4.7	6.1	0.1	-1.8

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

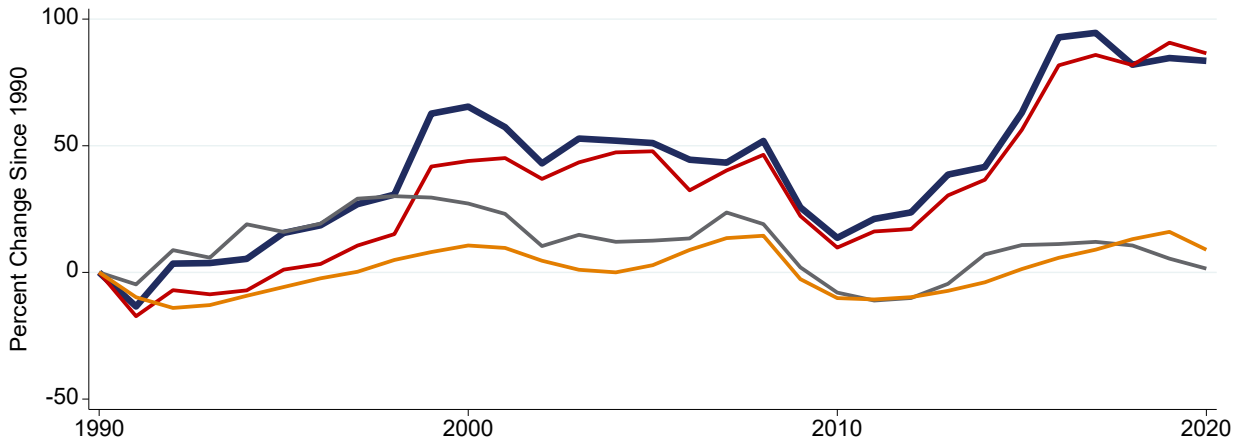
Non-residential Construction

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

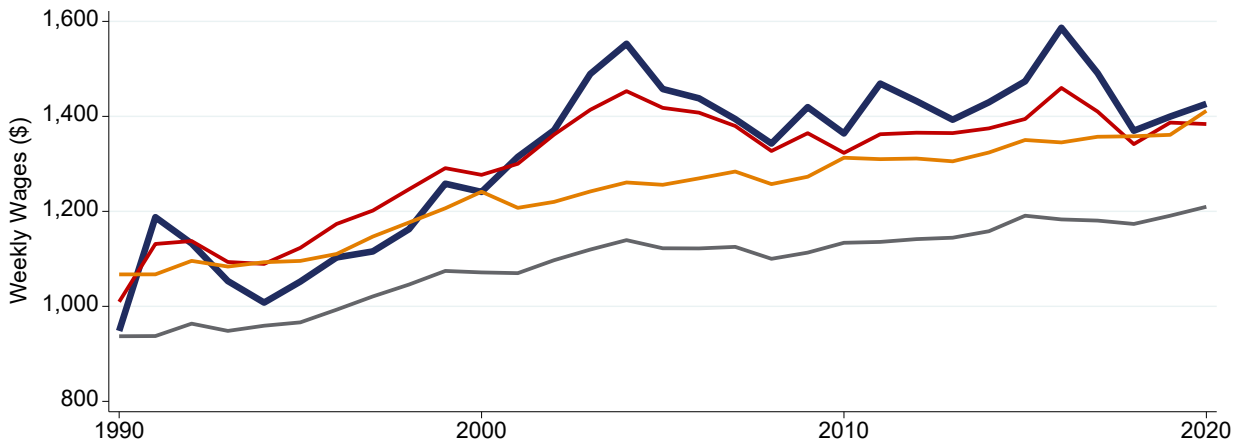
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-0.3	0.3	0.8	-0.6	2.9	0.2	3.0	-1.2
1996-2000	5.9	5.8	2.5	2.5	7.4	7.3	1.9	3.3
2001-2005	-0.3	-0.6	0.1	0.8	-1.8	0.5	-2.4	-1.4
2006-2010	4.2	4.3	2.7	1.8	-5.5	-5.8	-3.9	-2.7
2011-2015	0.7	0.6	2.0	0.9	7.5	7.3	3.8	2.4
2015-2019	0.5	0.4	-1.3	1.3	3.2	5.1	-1.2	3.4
2019-2020	1.3	1.3	2.9	2.7	-0.6	-2.2	-3.7	-6.1

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

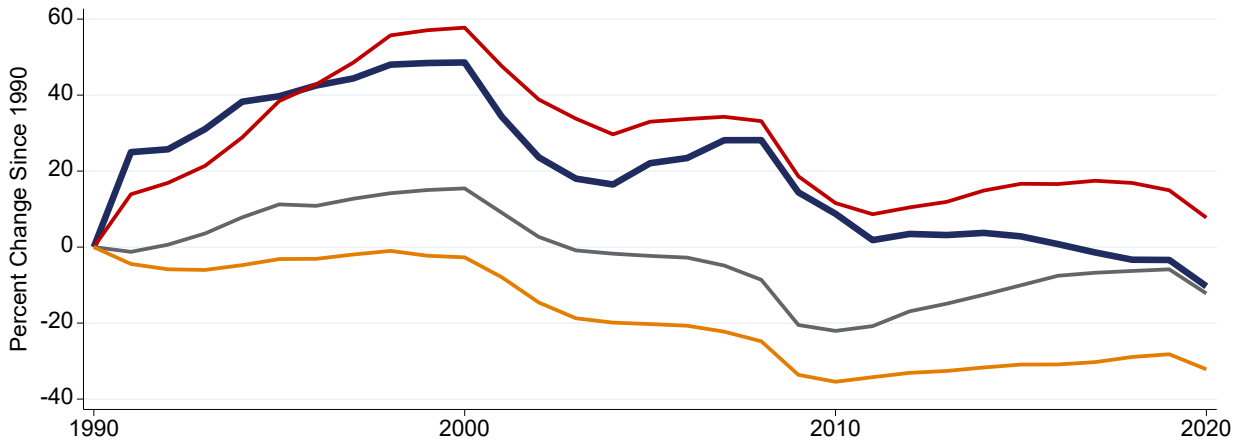
Manufacturing

— Lexington
 — MSA
 — KY
 — US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

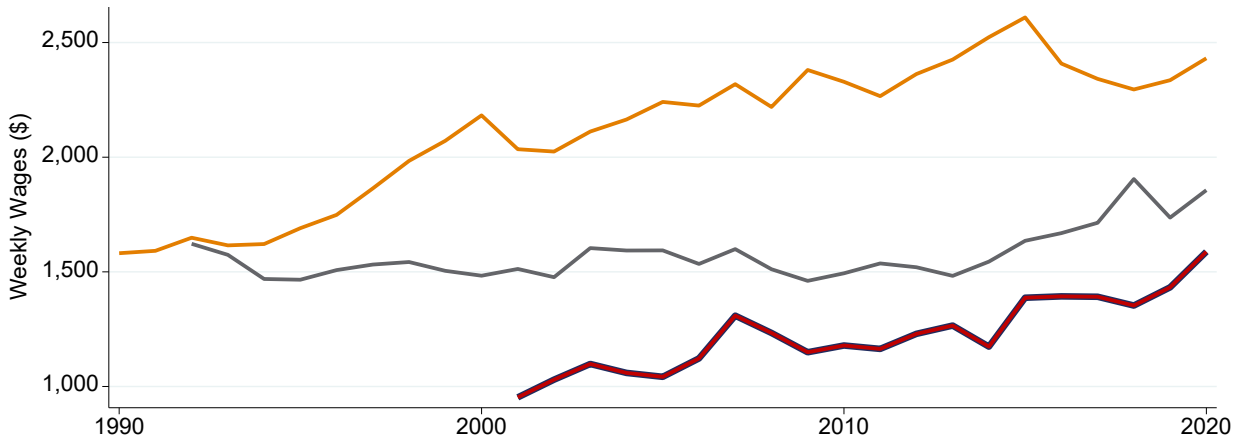
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	2.1	2.2	0.6	0.5	6.9	6.7	2.2	-0.7
1996-2000	3.4	2.6	2.1	2.5	1.2	2.6	0.7	0.1
2001-2005	3.3	2.1	0.9	0.2	-3.9	-3.4	-3.3	-3.9
2006-2010	-1.3	-1.4	0.2	0.9	-2.3	-3.4	-4.4	-4.1
2011-2015	1.6	1.1	1.0	0.6	-1.1	0.9	2.9	1.4
2015-2019	-1.3	-0.1	0.0	0.2	-1.5	-0.4	1.1	1.0
2019-2020	1.9	-0.2	1.6	3.7	-7.2	-6.3	-6.8	-5.5

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

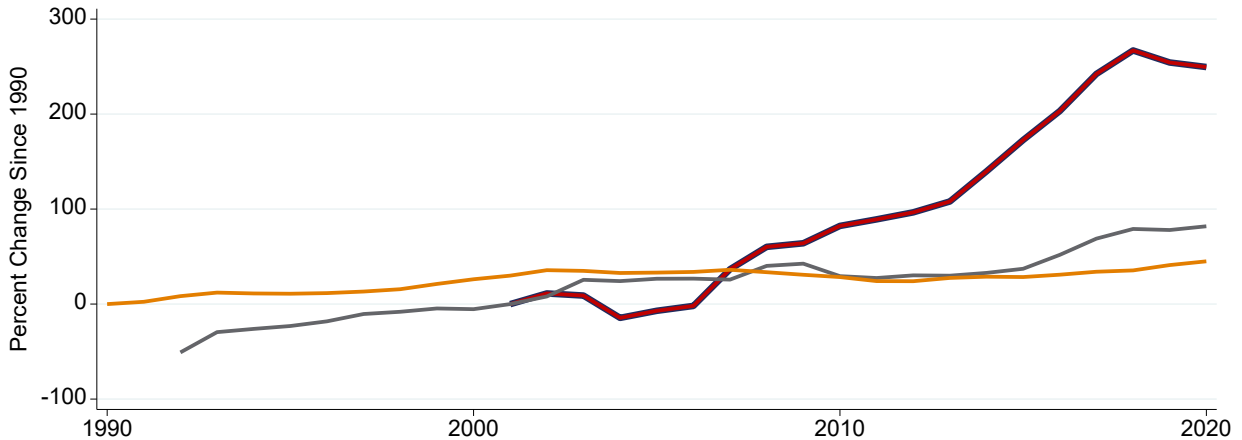
Pharmaceutical and Medical Manufacturing

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

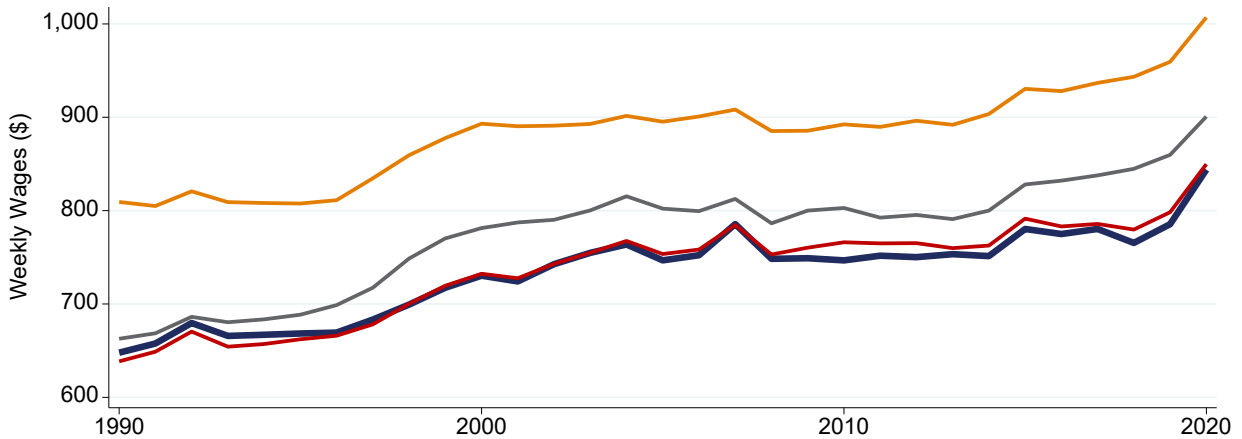
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	--	--	0.0	1.3	--	--	--	2.1
1996-2000	--	--	0.2	5.2	--	--	4.2	2.6
2001-2005	--	--	1.4	0.5	--	--	6.0	1.1
2006-2010	2.5	2.5	-1.3	0.8	14.4	14.4	0.4	-0.7
2011-2015	3.3	3.3	1.8	2.3	8.4	8.4	1.2	0.0
2015-2019	0.8	0.8	1.5	-2.7	6.8	6.8	6.7	2.4
2019-2020	10.8	10.8	6.9	4.1	-1.3	-1.3	2.2	2.8

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

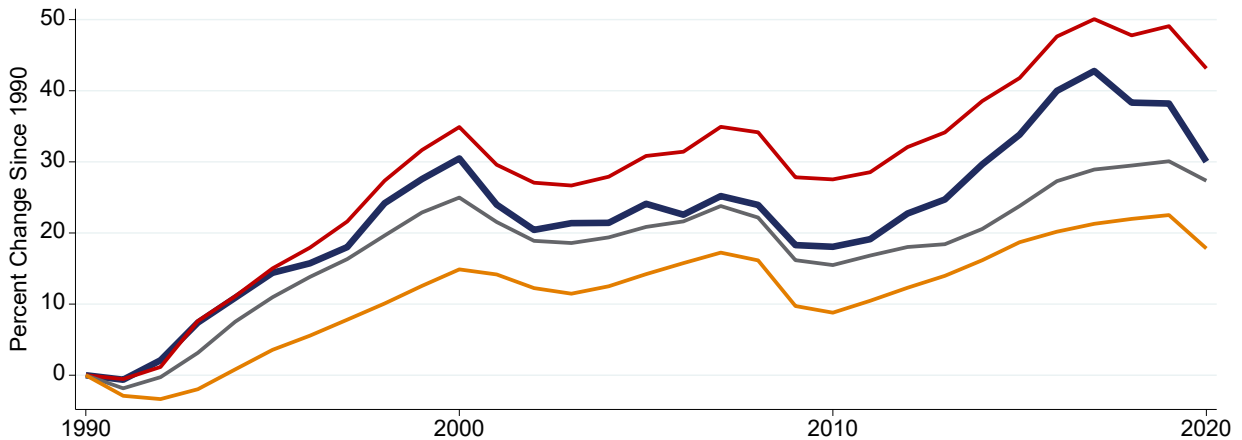
Trade, Transportation, and Utilities

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

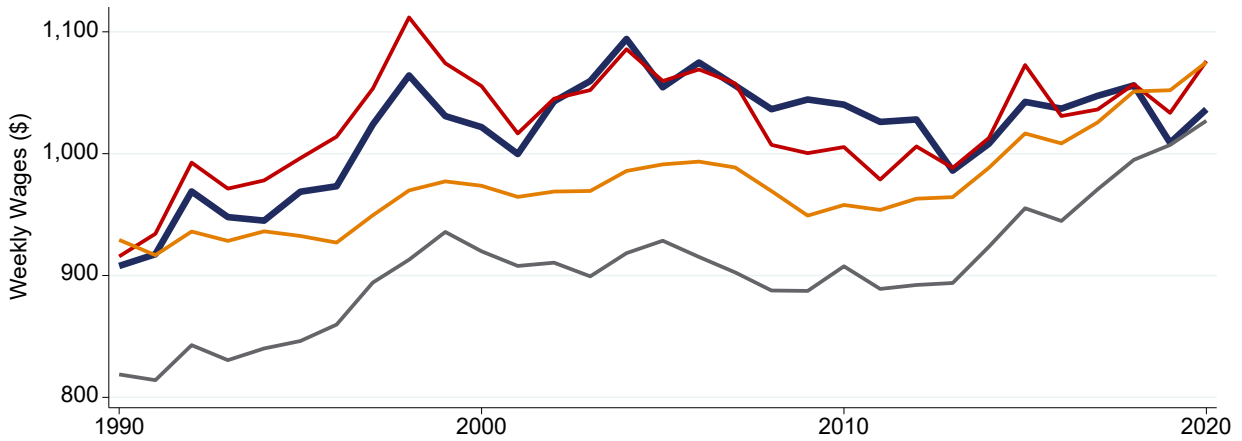
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.4	0.6	0.7	-0.1	2.6	2.8	2.0	0.7
1996-2000	1.7	1.9	2.4	1.9	2.7	3.2	2.3	2.0
2001-2005	0.4	0.5	0.5	0.1	-1.0	-0.6	-0.7	-0.2
2006-2010	0.0	0.3	0.0	-0.1	-1.0	-0.5	-0.9	-1.0
2011-2015	0.8	0.6	0.6	0.8	2.4	2.0	1.3	1.6
2015-2019	0.1	0.1	0.9	0.7	0.8	1.3	1.1	0.8
2019-2020	7.4	6.4	4.7	4.9	-5.8	-3.9	-2.1	-3.7

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

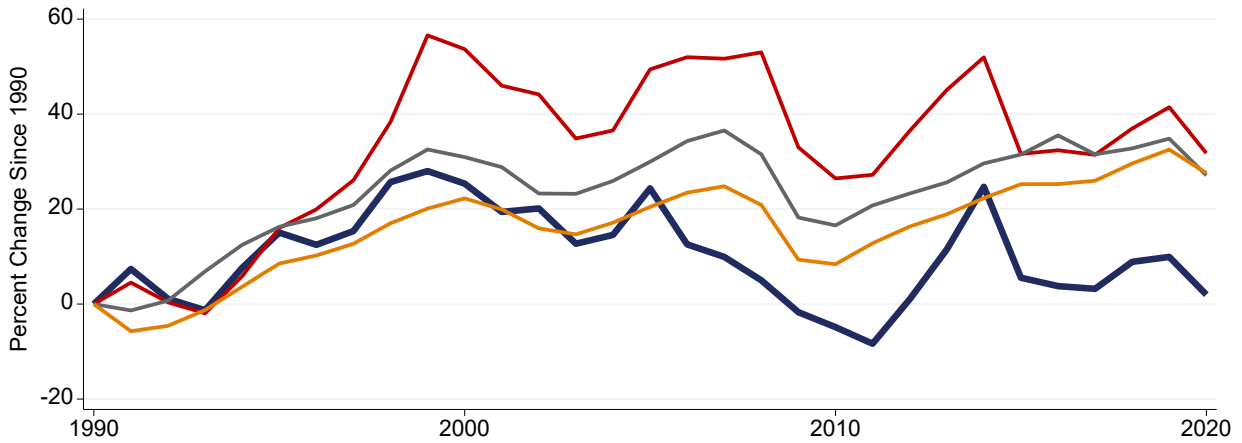
Truck Transportation

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

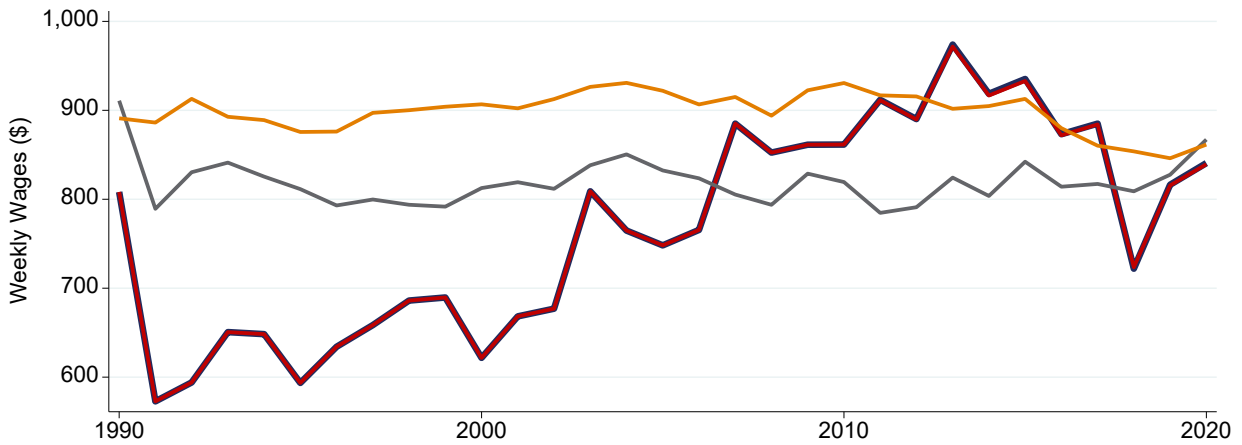
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	1.3	1.7	0.7	0.1	2.8	3.0	3.1	1.7
1996-2000	1.1	1.2	1.7	0.9	1.7	5.8	2.4	2.4
2001-2005	0.6	0.1	0.2	0.4	-0.2	-0.6	-0.2	-0.3
2006-2010	-0.3	-1.0	-0.5	-0.7	-5.2	-3.3	-2.2	-2.1
2011-2015	0.0	1.3	1.0	1.2	2.1	0.8	2.4	2.9
2015-2019	-0.8	-0.9	1.3	0.9	1.0	1.8	0.6	1.4
2019-2020	2.7	4.1	2.0	2.2	-7.2	-6.8	-5.7	-3.7

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

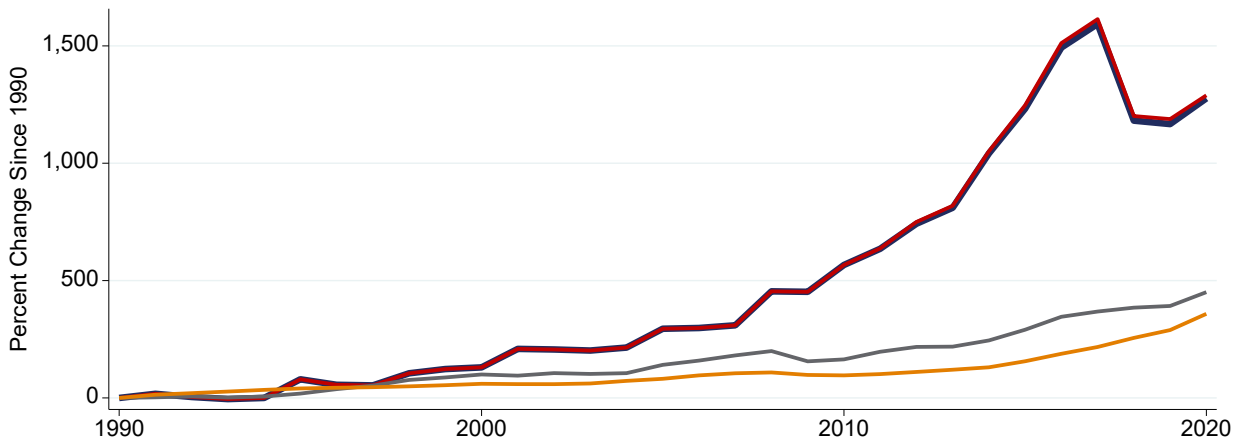
Warehousing

— Lexington
 — MSA
 — KY
 — US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

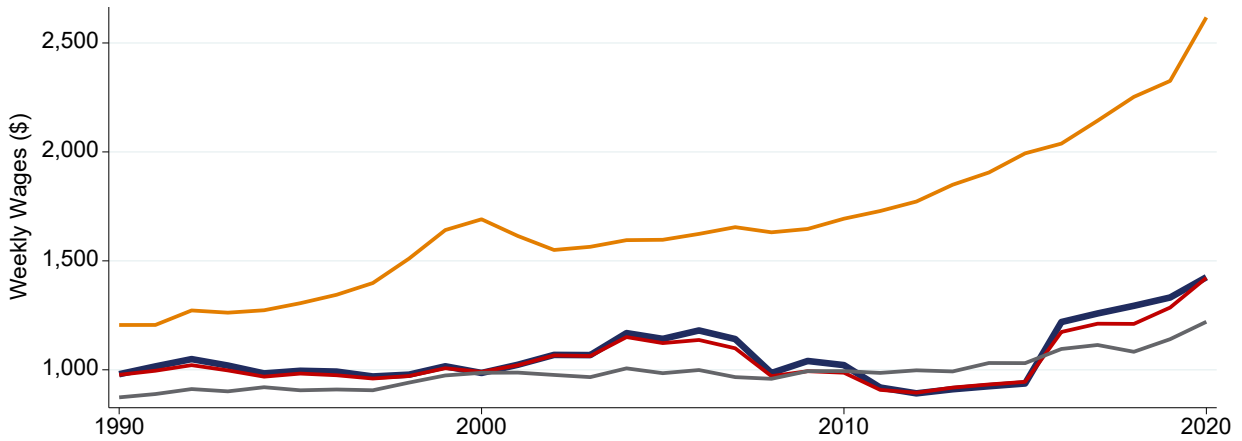
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-6.0	-6.0	-2.2	-0.4	12.4	12.4	3.4	7.1
1996-2000	0.9	0.9	0.1	0.7	5.1	5.1	11.0	2.8
2001-2005	3.8	3.8	0.5	0.3	11.4	11.4	3.8	2.5
2006-2010	2.9	2.9	-0.3	0.2	11.0	11.0	1.9	1.6
2011-2015	1.7	1.6	0.5	-0.4	14.9	15.1	8.1	5.5
2015-2019	-3.3	-3.3	-0.5	-1.9	-1.3	-1.1	5.9	10.9
2019-2020	3.0	2.9	4.7	1.8	8.6	7.8	11.9	17.6

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

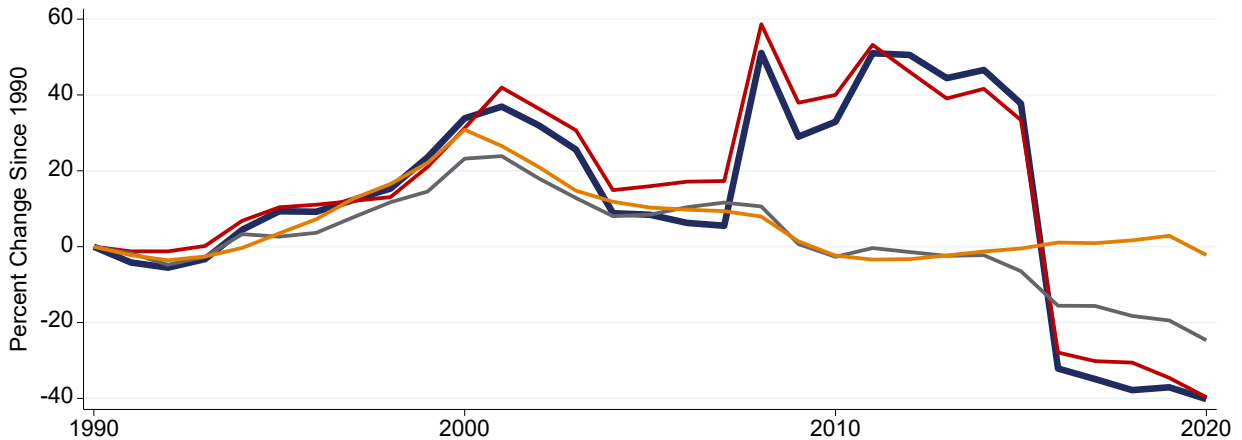
Information

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

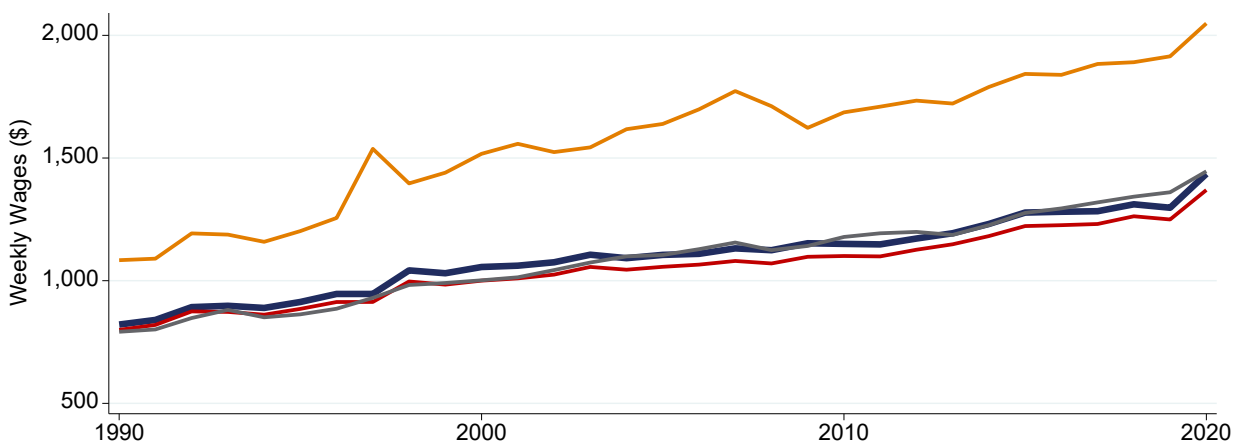
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-0.1	-0.3	0.7	1.6	2.7	2.8	0.6	0.7
1996-2000	-0.2	0.2	1.7	5.3	4.1	3.5	3.7	4.7
2001-2005	2.9	2.5	-0.2	-1.2	-3.8	-2.2	-2.2	-3.2
2006-2010	-2.1	-2.5	0.0	1.1	4.0	3.7	-1.7	-2.2
2011-2015	-1.7	-0.9	0.6	3.3	0.7	-0.9	-0.6	0.3
2015-2019	8.1	7.2	2.2	3.9	-16.7	-15.4	-3.2	0.8
2019-2020	8.2	11.5	6.9	12.5	-6.5	-9.0	-6.5	-5.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

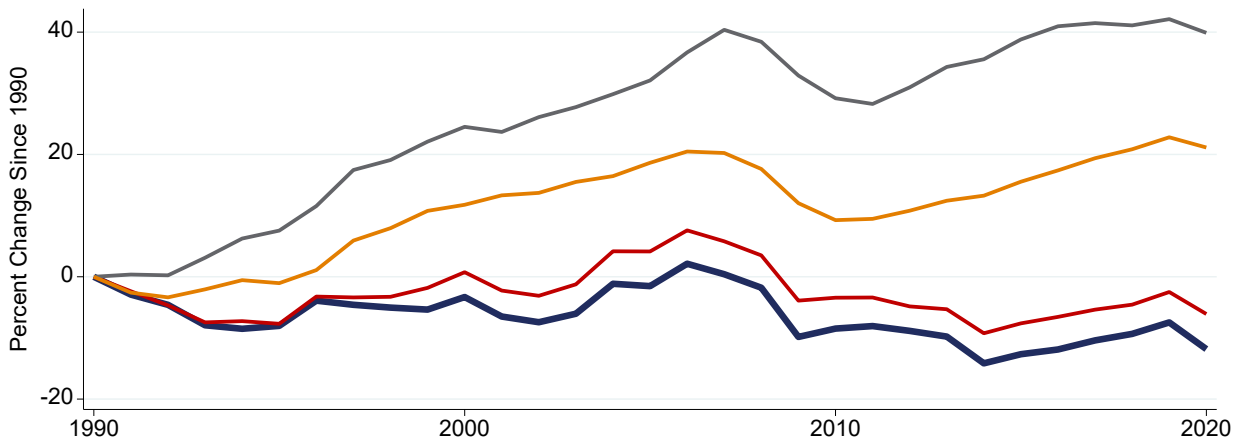
Financial Activities

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

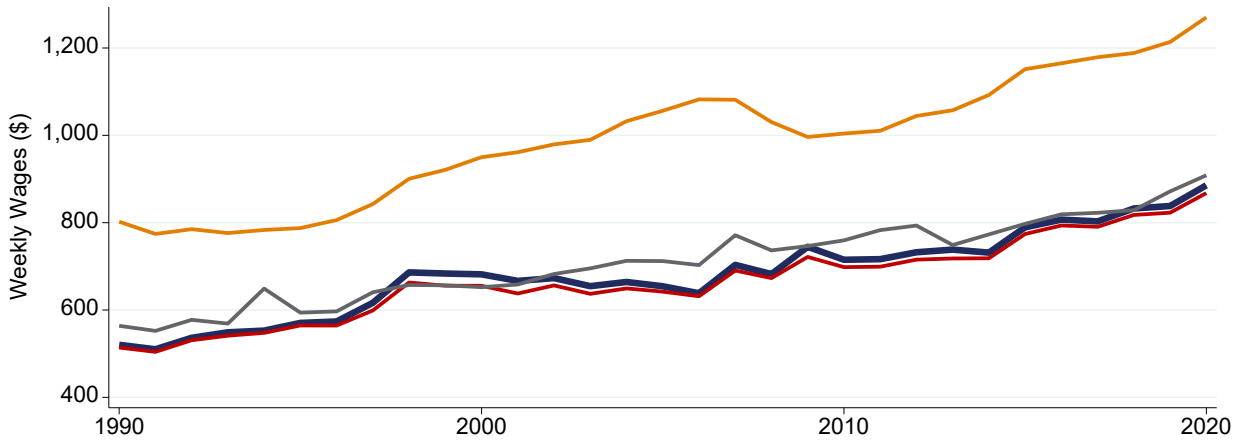
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	2.2	2.1	1.7	2.1	-1.3	-1.3	1.4	-0.2
1996-2000	2.9	2.5	3.0	4.7	1.1	1.9	3.0	2.4
2001-2005	0.9	1.1	2.0	1.6	0.5	0.8	1.2	1.2
2006-2010	0.9	0.9	1.3	0.6	-1.3	-1.4	-0.4	-1.6
2011-2015	2.1	2.1	1.6	1.8	-0.9	-0.9	1.4	1.1
2015-2019	0.3	0.4	1.6	1.0	1.3	1.3	0.6	1.5
2019-2020	10.4	9.4	6.3	7.0	-4.5	-3.6	-1.6	-1.4

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

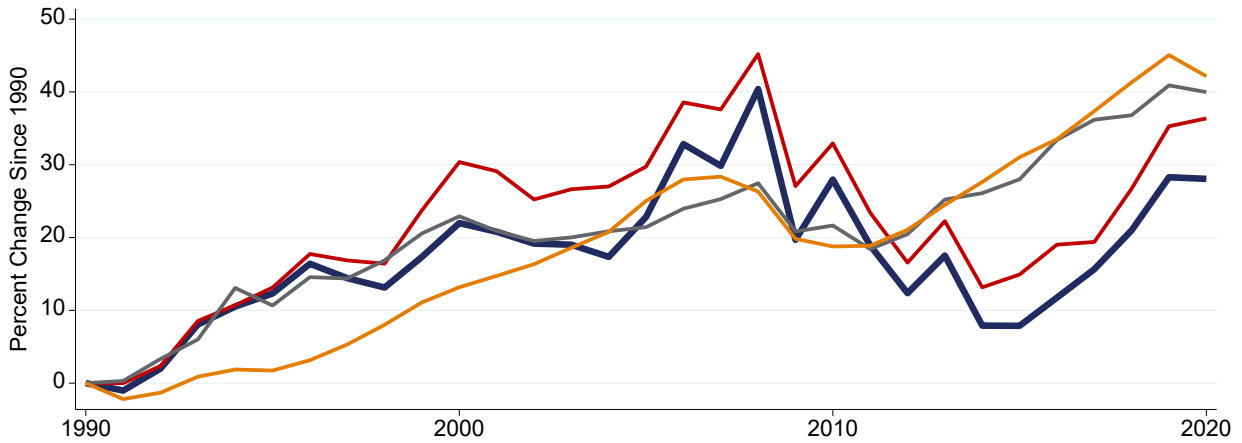
Real Estate

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

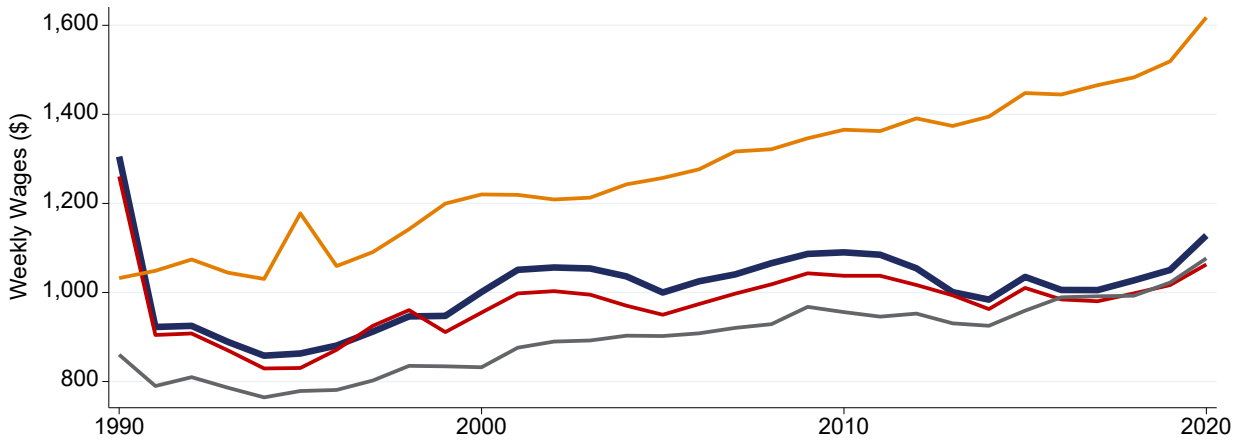
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	1.9	1.9	1.0	-0.4	2.3	2.5	2.0	0.4
1996-2000	3.6	3.0	1.9	3.8	1.7	2.9	2.1	2.1
2001-2005	-0.8	-0.4	1.8	2.1	0.1	-0.1	-0.2	2.0
2006-2010	1.8	1.7	1.3	-1.0	0.8	0.5	0.0	-1.0
2011-2015	2.0	2.1	1.0	2.8	-3.4	-2.9	1.0	2.0
2015-2019	1.5	1.5	2.3	1.3	4.4	4.2	2.4	2.6
2019-2020	5.7	5.5	4.2	4.7	-0.2	0.8	-0.7	-2.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

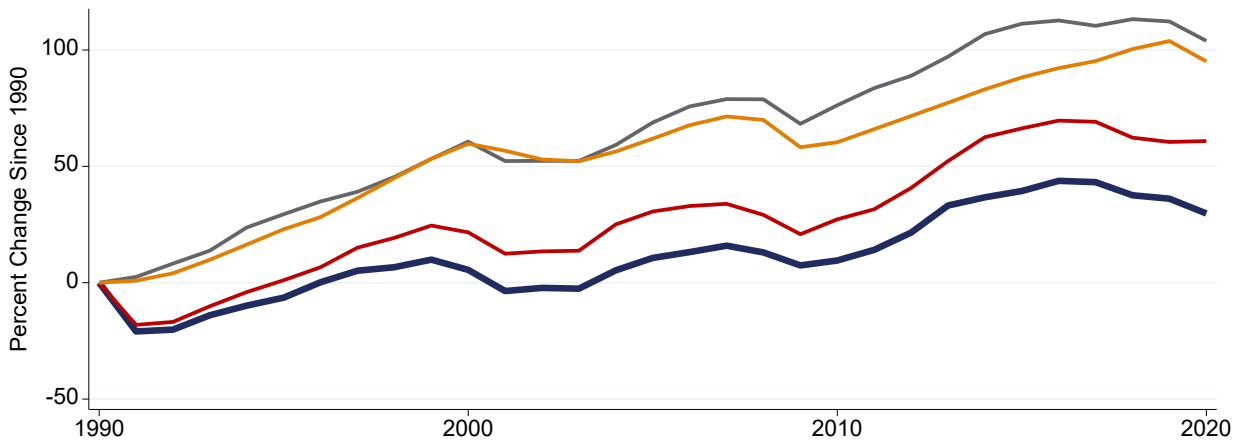
Professional and Business Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

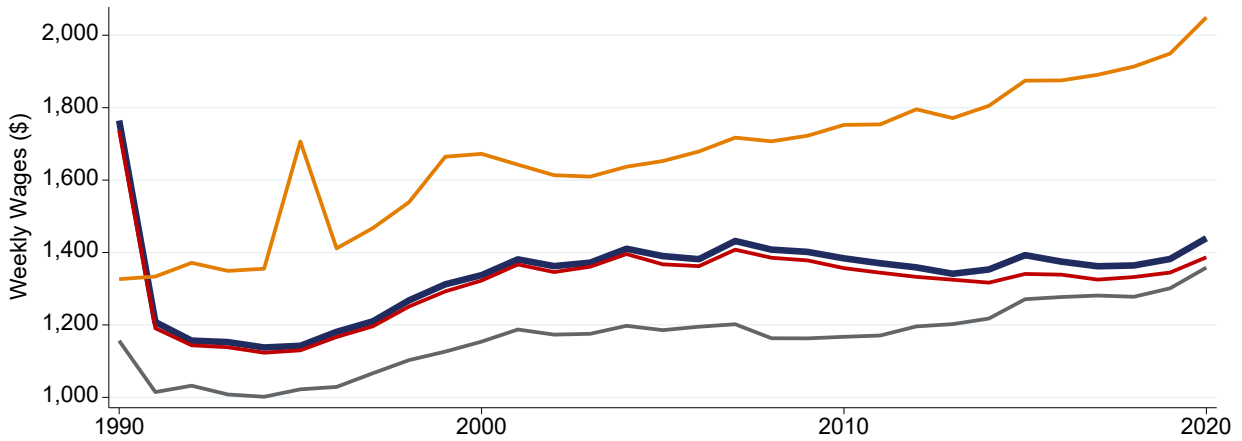
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-7.9	-8.0	-2.0	2.6	-1.3	0.2	5.2	4.2
1996-2000	3.0	2.8	1.3	0.7	2.4	3.8	4.4	5.3
2001-2005	0.0	-0.1	1.6	0.6	1.0	1.5	1.0	0.3
2006-2010	1.7	1.8	1.2	1.6	-0.2	-0.5	0.9	-0.2
2011-2015	-1.0	-0.5	0.0	1.2	4.9	5.5	3.6	3.2
2015-2019	0.4	0.2	1.6	1.2	-0.6	-0.9	0.1	2.0
2019-2020	7.4	4.5	5.3	6.5	-4.7	0.2	-3.9	-4.3

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

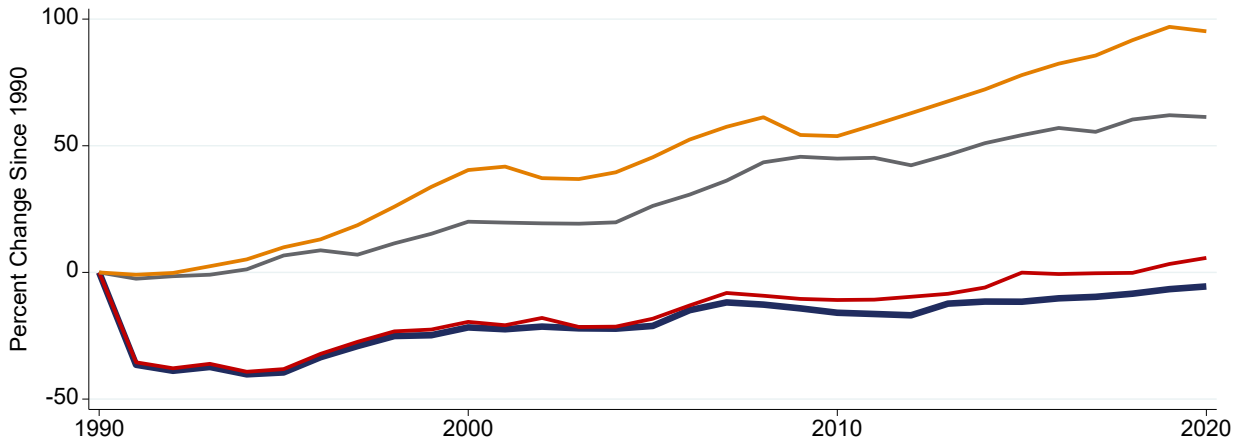
Professional and Technical Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

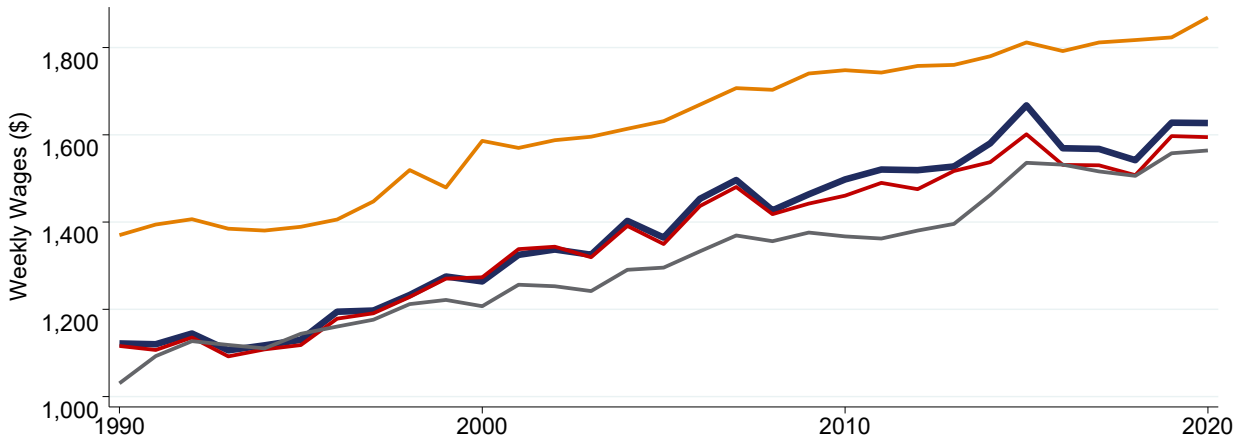
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-8.3	-8.2	-2.3	5.1	-9.6	-9.2	1.2	1.9
1996-2000	3.2	3.2	2.4	-0.3	5.3	5.4	2.3	4.9
2001-2005	0.8	0.7	0.6	-0.2	0.2	0.3	1.0	0.8
2006-2010	-0.1	-0.2	-0.3	1.2	1.3	1.8	2.8	1.1
2011-2015	0.1	-0.2	1.6	1.3	1.0	2.3	1.1	2.9
2015-2019	-0.2	0.1	0.6	1.0	1.4	0.8	1.3	2.6
2019-2020	4.1	3.1	4.3	5.1	1.1	2.3	-0.4	-0.8

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

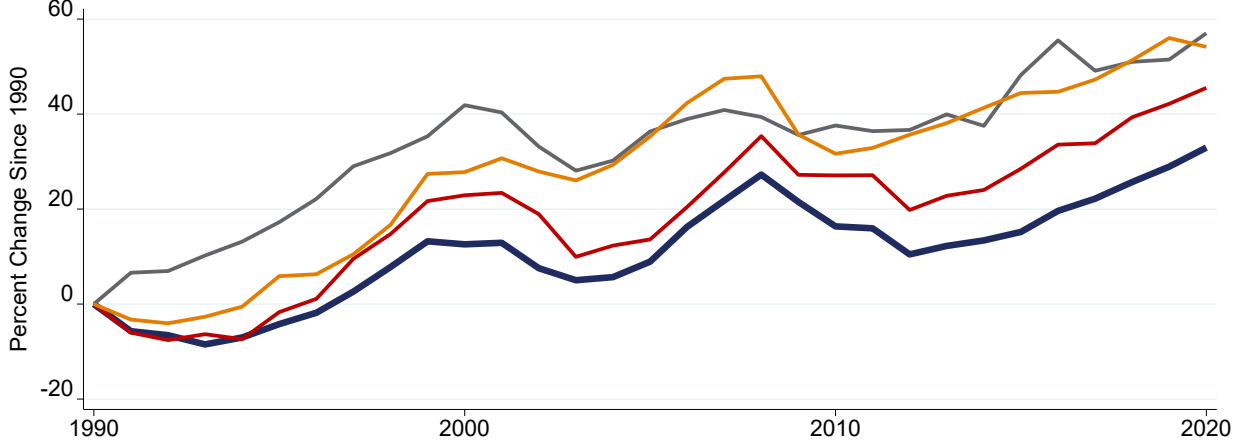
Architectural and Engineering Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

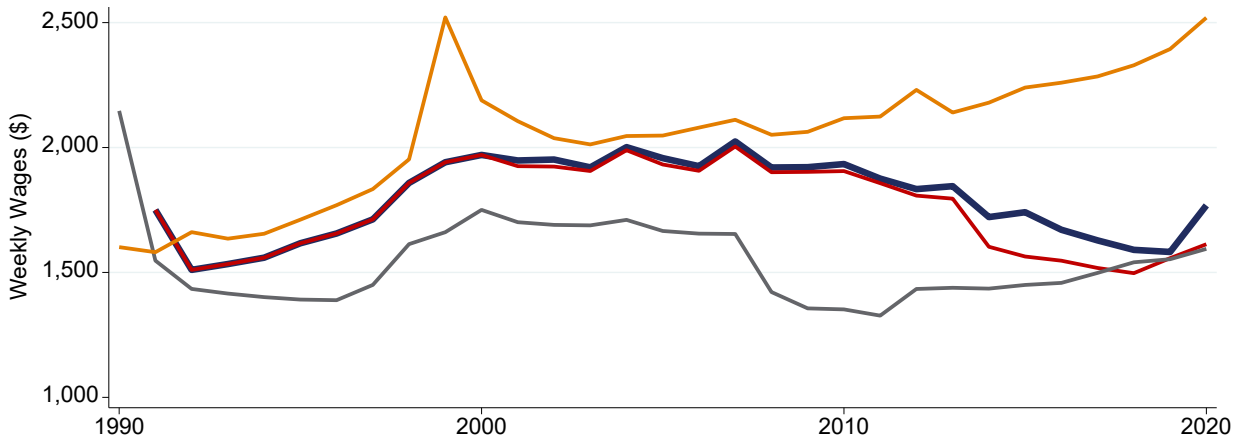
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.1	0.0	2.0	17.0	-0.9	-0.3	2.2	1.0
1996-2000	2.3	2.6	1.2	-11.9	3.3	4.6	3.1	3.7
2001-2005	1.5	1.2	1.5	0.7	-0.7	-1.6	-0.7	1.2
2006-2010	1.9	1.6	1.1	1.4	1.3	2.3	0.5	-0.5
2011-2015	2.2	1.9	2.0	0.6	-0.2	0.2	0.9	1.8
2015-2019	-0.6	-0.1	0.3	0.2	2.9	2.6	0.7	1.9
2019-2020	0.0	-0.2	0.4	2.4	3.1	2.4	3.7	-1.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

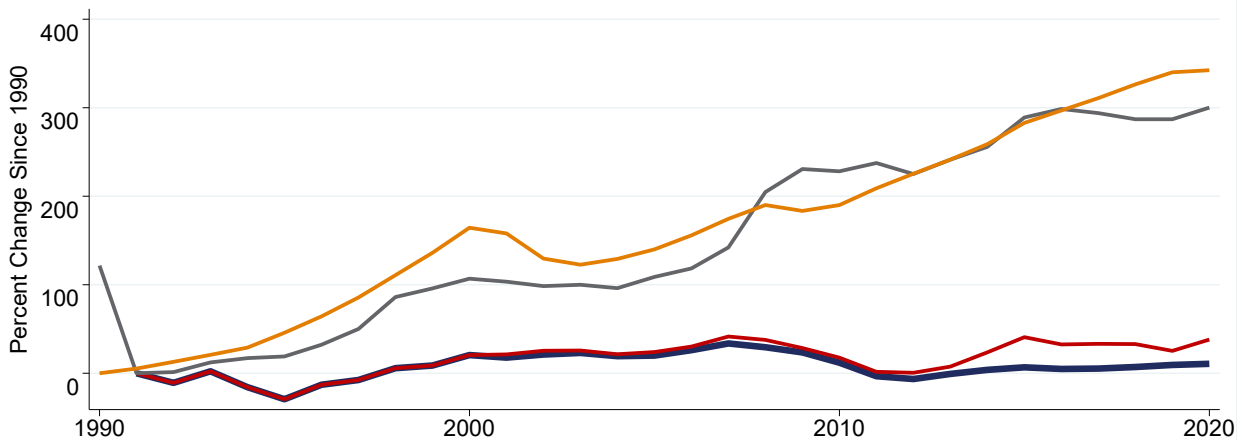
Computer System Design

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

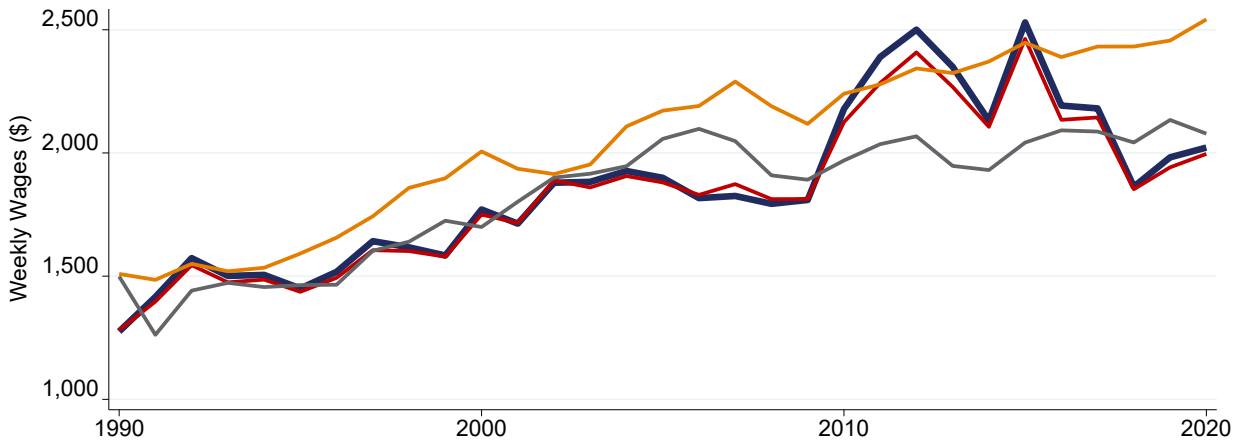
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.0	0.0	-8.3	1.3	0.0	0.0	-11.7	7.8
1996-2000	4.0	4.0	4.7	5.0	11.3	11.3	11.7	12.6
2001-2005	-0.1	-0.4	-1.0	-1.3	-0.1	0.6	0.2	-1.9
2006-2010	-0.2	-0.3	-4.1	0.7	-1.4	-1.0	9.5	3.9
2011-2015	-2.1	-3.9	1.4	1.1	-1.0	3.7	3.5	5.7
2015-2019	-2.4	-0.1	1.7	1.7	0.6	-2.9	-0.1	3.5
2019-2020	11.8	3.6	2.7	5.2	1.2	10.2	3.4	0.5

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

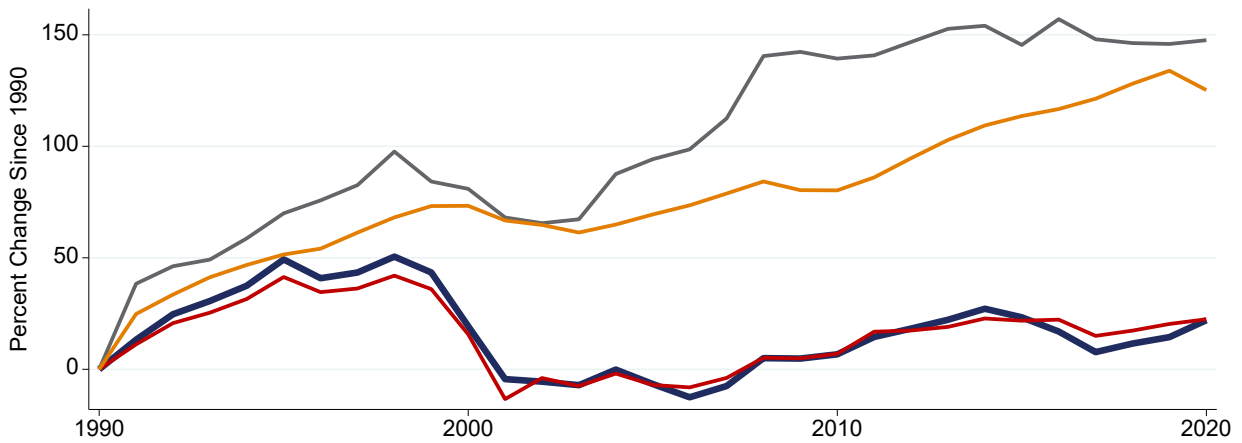
Management of Companies

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

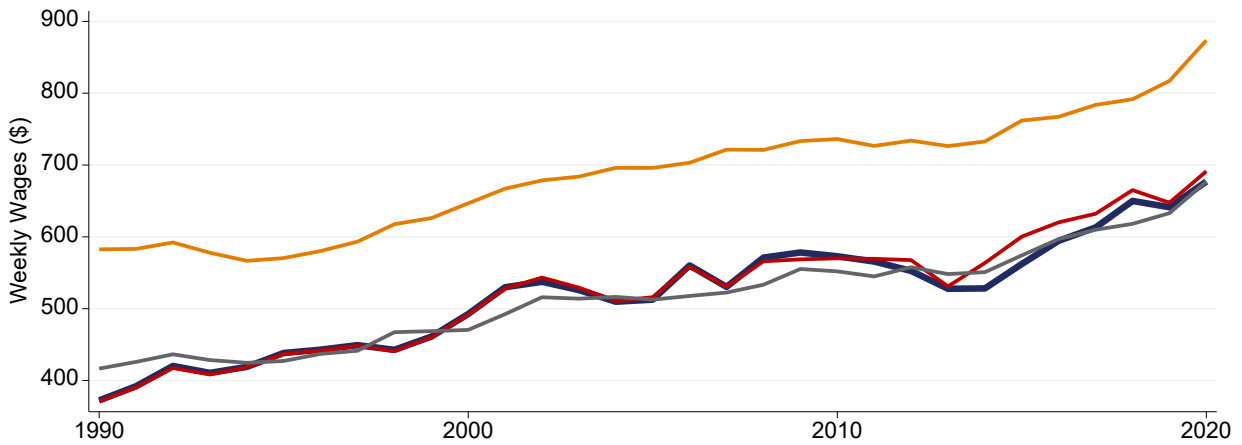
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	2.6	2.3	-0.5	1.1	8.3	7.2	11.2	8.7
1996-2000	4.1	4.0	3.0	4.7	-4.4	-3.9	1.3	2.7
2001-2005	1.4	1.4	3.9	1.6	-4.8	-4.3	1.4	-0.4
2006-2010	2.8	2.5	-0.9	0.6	2.7	2.8	4.3	1.2
2011-2015	3.0	3.0	0.7	1.8	2.9	2.6	0.5	3.5
2015-2019	-5.9	-5.8	1.1	0.1	-1.9	-0.3	0.0	2.3
2019-2020	2.0	2.8	-2.6	3.5	6.6	1.7	0.7	-3.7

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

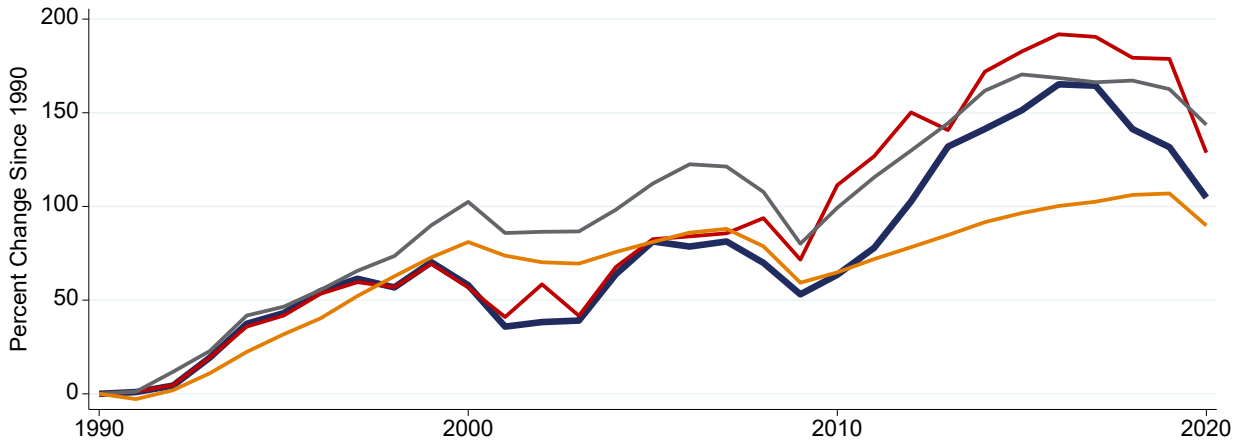
Administrative and Support Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

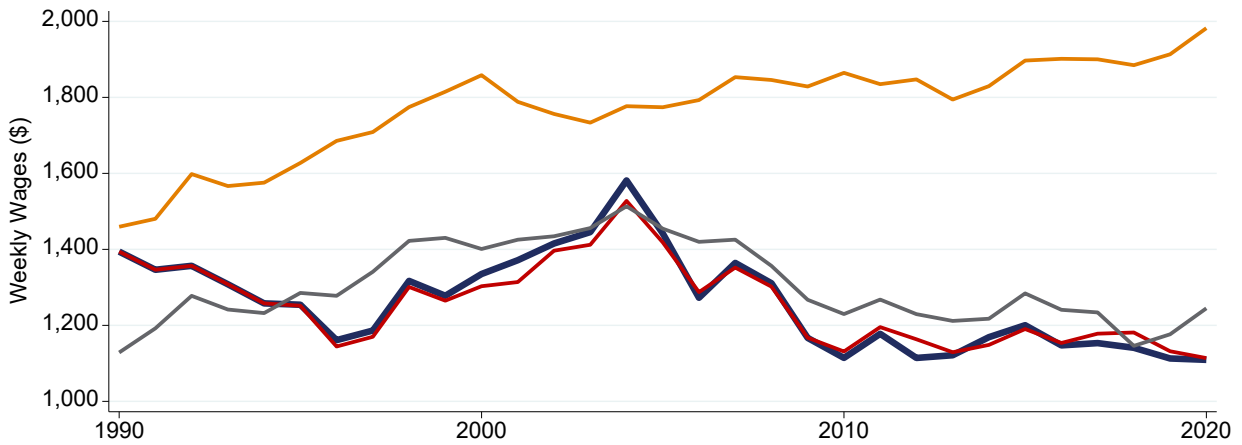
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	3.3	3.3	0.5	-0.4	7.4	7.2	7.9	5.6
1996-2000	2.4	2.4	2.0	2.5	2.0	2.0	6.7	6.5
2001-2005	0.8	1.0	1.7	1.5	2.8	3.1	0.9	0.0
2006-2010	2.3	2.0	1.5	1.1	-2.0	3.0	-1.2	-1.9
2011-2015	-0.4	1.0	0.8	0.7	9.0	6.0	6.3	3.6
2015-2019	3.3	1.9	2.5	1.8	-2.0	-0.4	-0.7	1.3
2019-2020	5.6	6.8	6.9	6.9	-11.6	-17.9	-7.2	-8.2

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

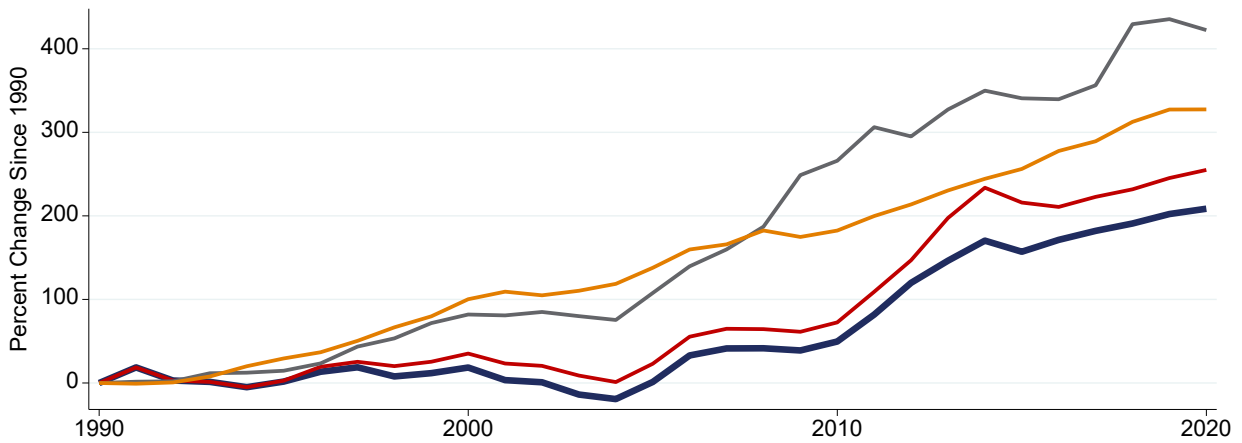
Management and Technical Consulting

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

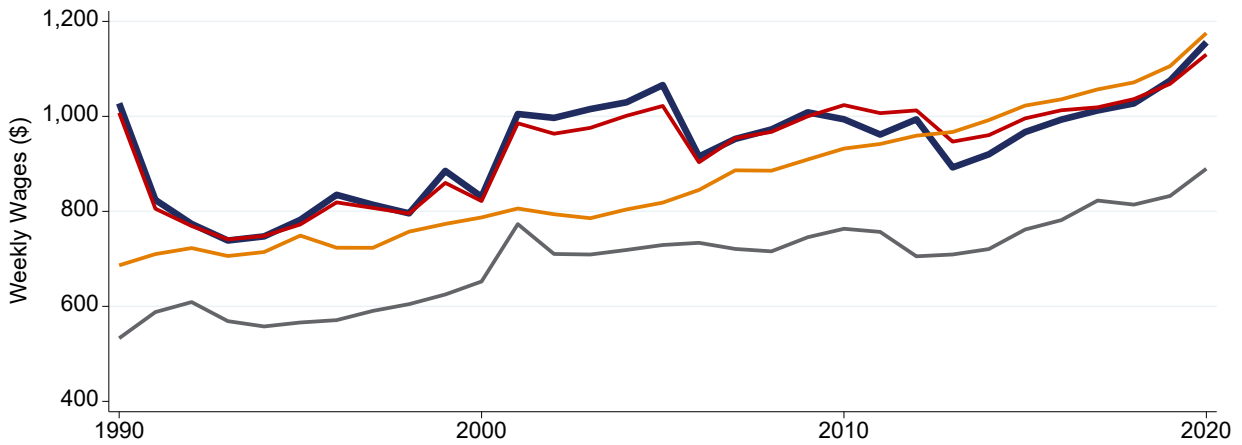
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-2.1	-2.1	2.6	2.2	0.3	0.5	2.8	5.3
1996-2000	1.3	0.8	1.7	2.7	3.1	5.6	9.7	9.1
2001-2005	1.6	1.7	0.8	-0.9	-3.1	-1.9	2.7	3.5
2006-2010	-5.0	-4.4	-3.3	1.0	8.1	7.0	12.0	3.5
2011-2015	1.5	1.0	0.9	0.3	11.4	12.9	3.8	4.7
2015-2019	-1.9	-1.3	-2.2	0.2	4.1	2.2	5.0	4.7
2019-2020	-0.3	-1.6	5.8	3.6	2.1	2.8	-2.5	0.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

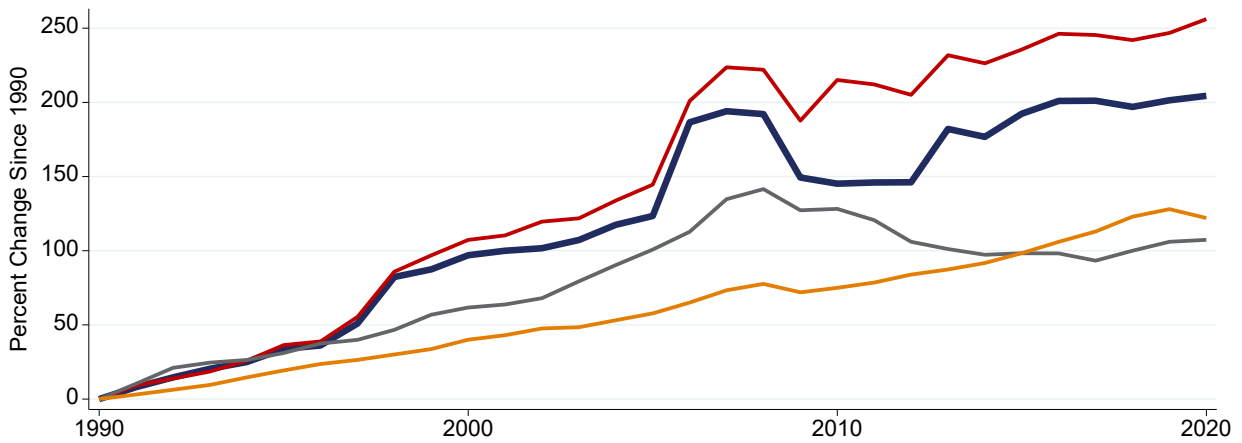
Other Professional and Technical Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

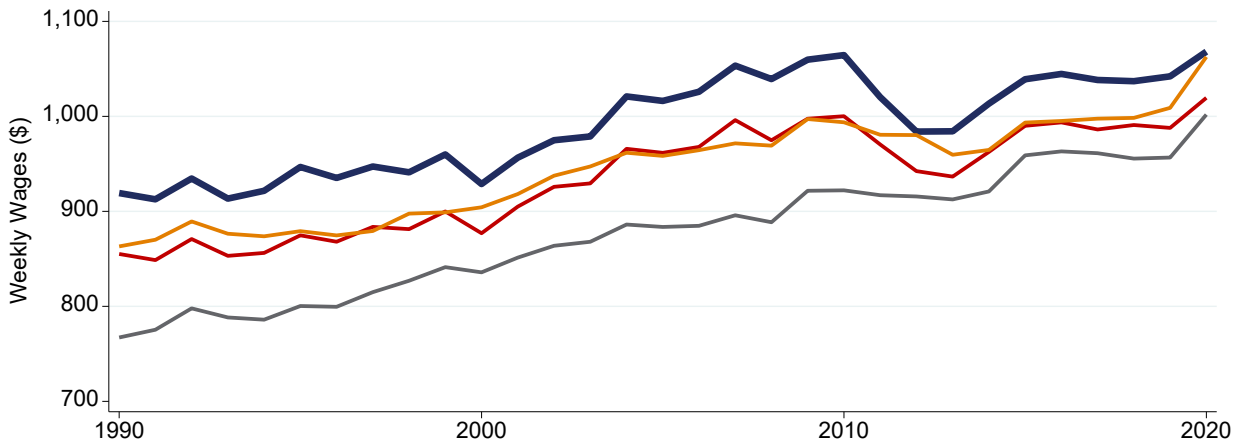
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-5.3	-5.2	1.1	1.7	6.0	6.4	5.5	3.5
1996-2000	1.2	1.2	2.8	1.2	8.0	8.7	4.3	3.3
2001-2005	5.1	4.5	2.2	0.9	2.6	3.4	4.4	2.4
2006-2010	-1.4	0.0	0.9	2.4	1.9	5.2	2.6	2.0
2011-2015	-0.5	-0.6	0.0	1.7	3.6	1.3	-2.8	2.5
2015-2019	2.7	1.8	2.1	1.9	0.8	0.8	0.9	3.5
2019-2020	7.5	5.8	6.8	6.2	1.0	2.7	0.6	-2.6

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

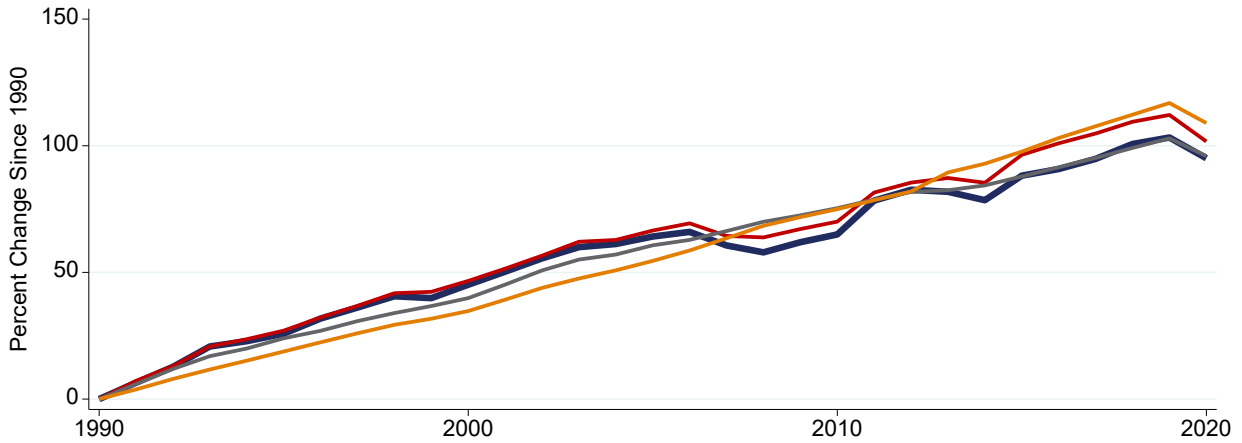
Education and Health Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

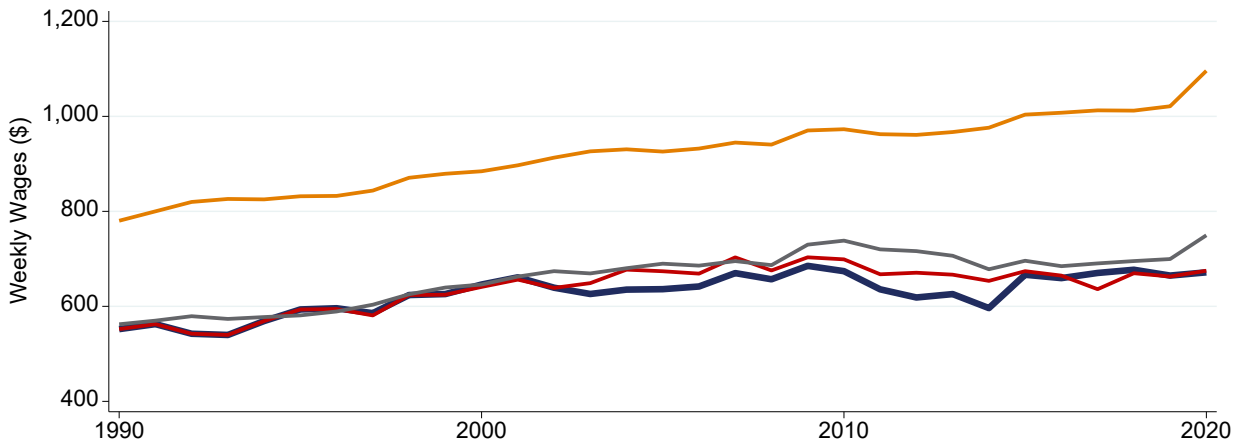
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.8	0.4	0.3	0.2	-1.8	-0.9	3.9	2.6
1996-2000	0.2	0.4	0.2	0.6	1.8	2.0	2.2	2.2
2001-2005	2.1	2.2	1.3	0.9	6.5	6.0	2.2	2.3
2006-2010	0.2	0.2	0.9	0.8	2.3	2.2	1.5	1.8
2011-2015	0.7	0.7	0.7	0.1	2.5	2.6	0.5	1.5
2015-2019	0.8	0.6	0.0	0.6	1.4	1.5	1.0	1.7
2019-2020	2.6	3.1	4.2	5.3	-1.2	-2.1	-3.9	-3.7

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

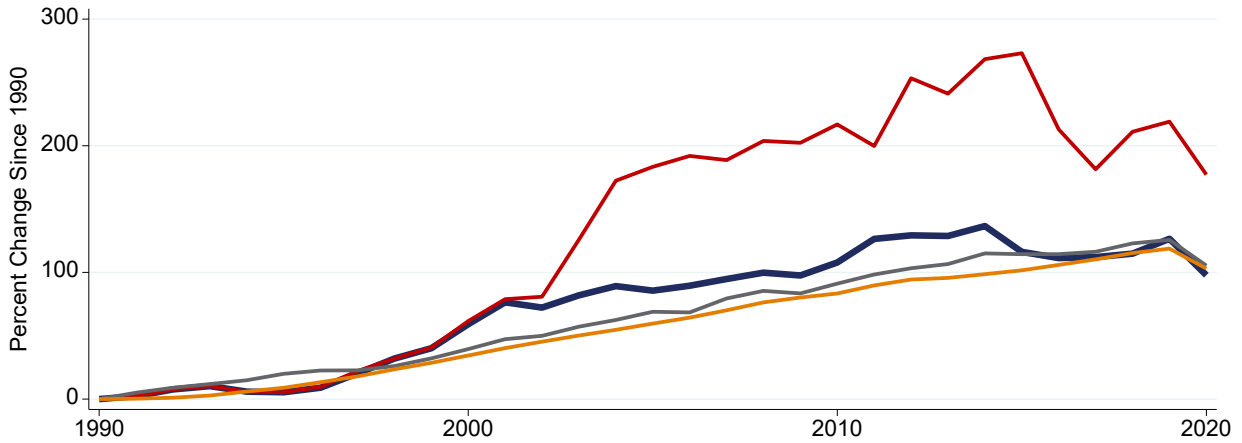
Educational Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

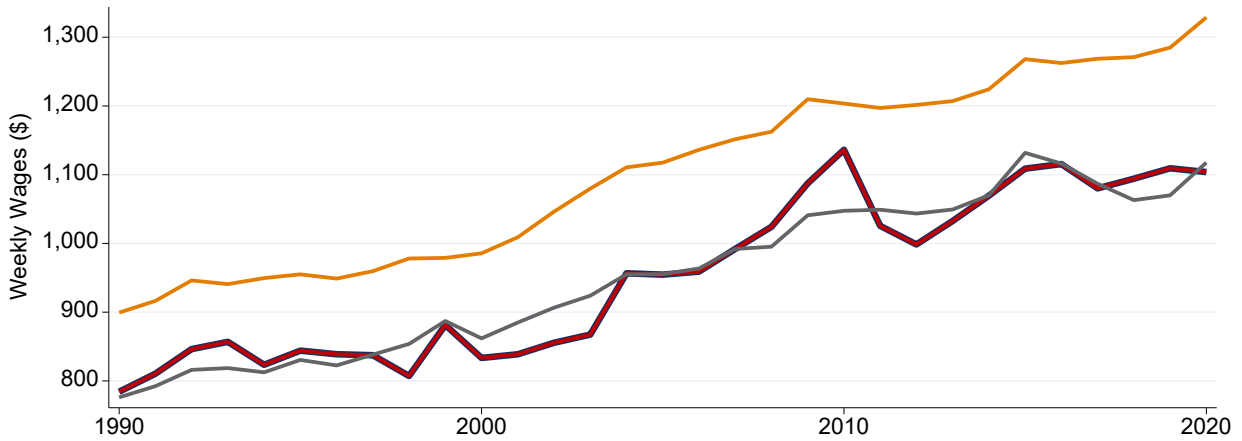
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	1.5	1.5	-0.5	0.1	1.1	1.1	3.7	1.7
1996-2000	1.7	1.6	-0.7	0.8	8.6	8.9	2.3	2.7
2001-2005	-0.3	1.0	1.5	0.3	3.1	11.9	1.5	1.9
2006-2010	1.2	0.8	1.0	0.8	2.3	2.4	0.8	1.1
2011-2015	-0.2	-0.8	0.4	0.3	0.8	3.2	-0.2	0.2
2015-2019	-0.1	-0.4	-0.5	0.8	1.2	-3.8	-0.4	0.9
2019-2020	1.0	1.8	4.3	6.0	-12.7	-13.1	-5.8	-5.3

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

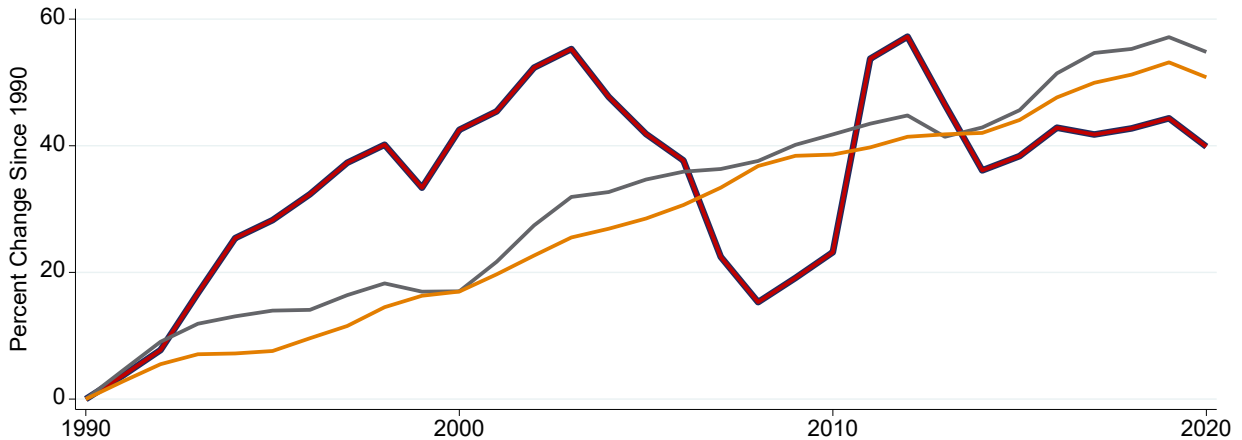
Hospitals

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

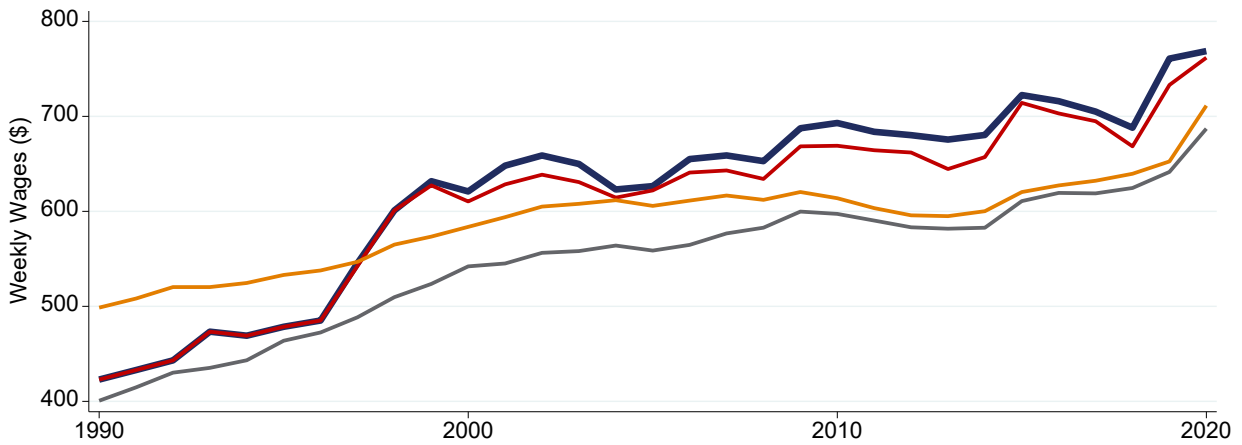
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	2.1	2.1	1.3	1.2	3.4	3.4	2.5	1.2
1996-2000	-0.5	-0.5	0.7	0.6	0.5	0.5	0.5	1.0
2001-2005	3.0	3.0	2.2	2.3	-0.1	-0.1	3.1	1.8
2006-2010	2.7	2.7	1.5	1.6	-1.4	-1.4	2.6	1.4
2011-2015	-0.6	-0.6	1.4	1.0	2.2	2.2	0.1	0.6
2015-2019	0.3	0.3	-0.8	0.5	1.1	1.1	-0.4	1.7
2019-2020	0.7	0.7	3.7	3.5	-2.5	-2.5	-1.8	-1.1

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

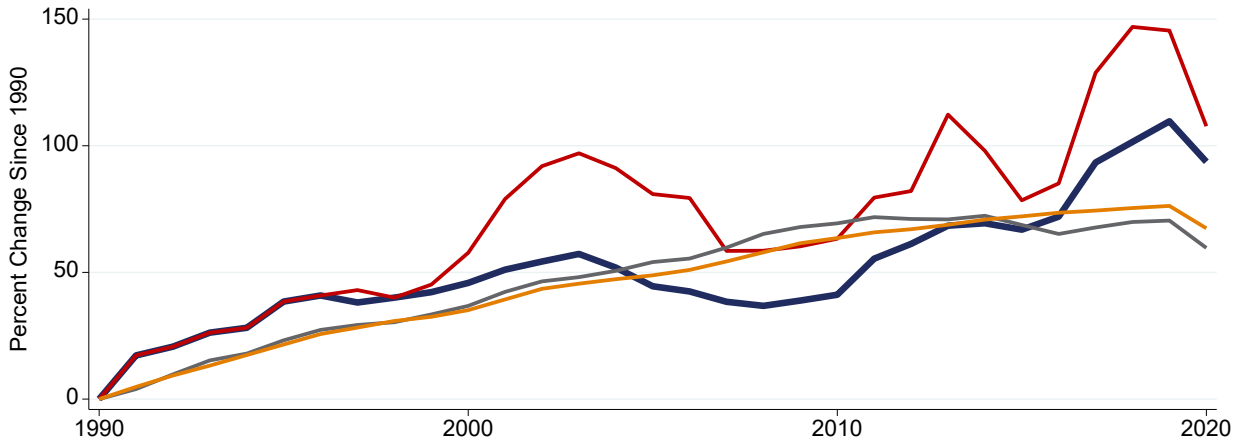
Nursing and Residential Care Facilities

— Lexington
 — MSA
 — KY
 — US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

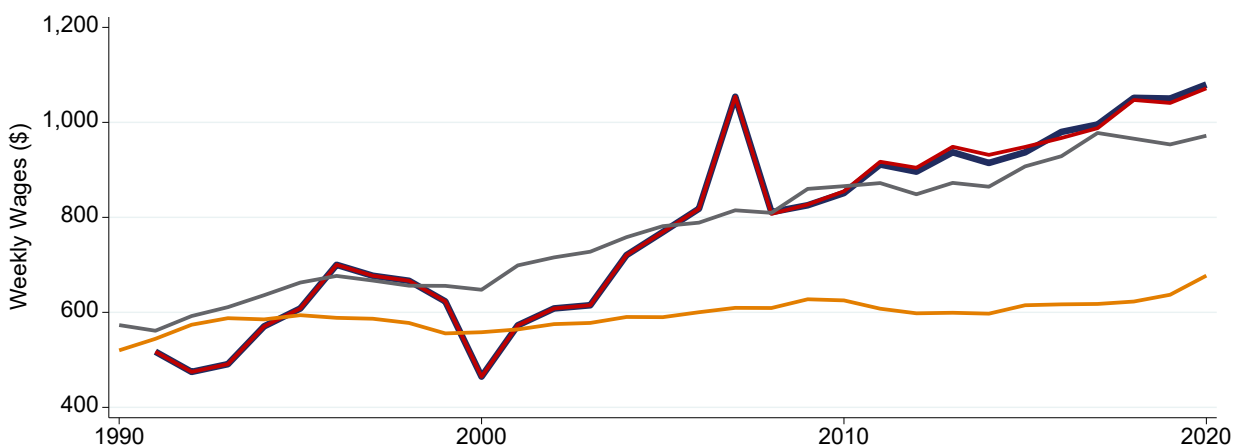
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	2.5	2.5	2.7	1.1	6.7	6.7	4.0	3.7
1996-2000	5.3	5.0	3.2	1.6	1.0	2.6	2.3	1.9
2001-2005	0.3	0.5	0.4	0.7	0.1	3.1	2.1	1.9
2006-2010	2.0	1.5	0.8	0.3	-0.3	-1.9	0.6	1.8
2011-2015	0.8	1.2	0.5	0.1	3.2	1.6	-0.1	0.9
2015-2019	1.3	0.7	1.3	1.2	5.5	7.9	1.2	0.5
2019-2020	1.0	3.9	6.8	8.8	-7.6	-15.4	-6.2	-5.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

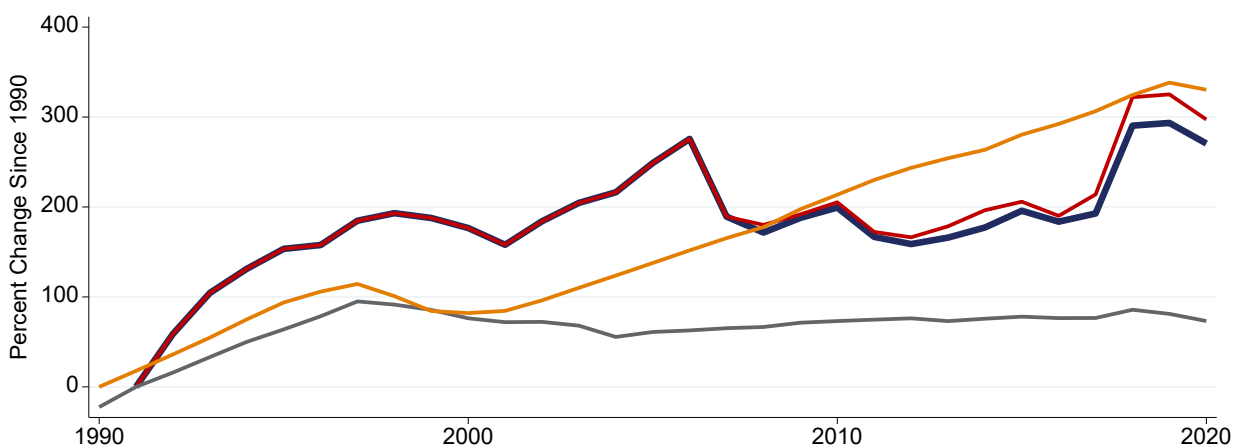
Home Health Care Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

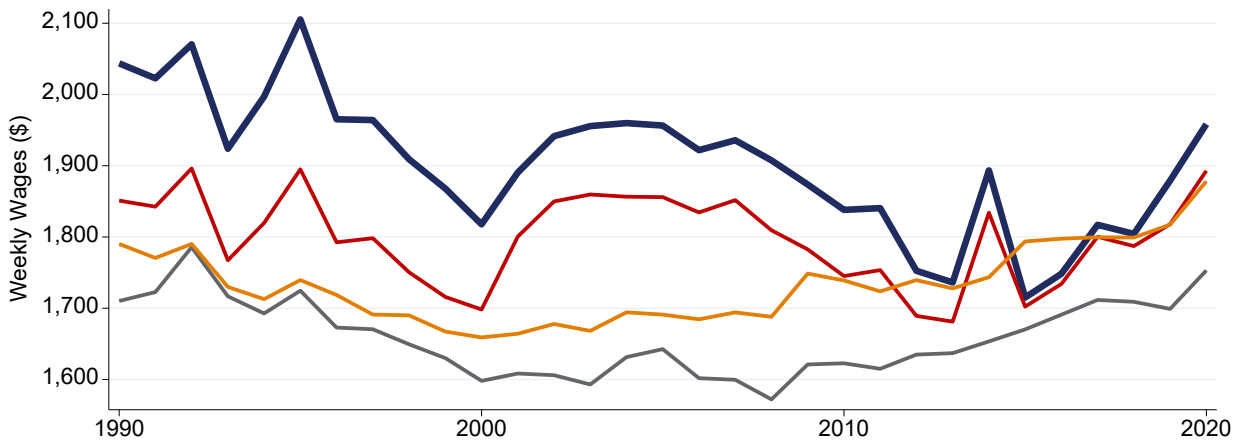
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	--	--	2.9	2.7	--	--	16.2	14.2
1996-2000	-5.2	-5.2	-0.5	-1.2	1.8	1.8	1.5	-1.2
2001-2005	10.6	10.6	3.8	1.1	4.8	4.8	-1.8	5.4
2006-2010	2.1	2.1	2.1	1.2	-3.0	-2.6	1.5	5.7
2011-2015	1.9	2.1	0.9	-0.3	-0.2	0.0	0.6	3.9
2015-2019	2.9	2.4	1.2	0.9	7.4	8.6	0.4	3.6
2019-2020	2.8	3.0	1.9	6.3	-5.8	-6.6	-4.4	-1.8

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

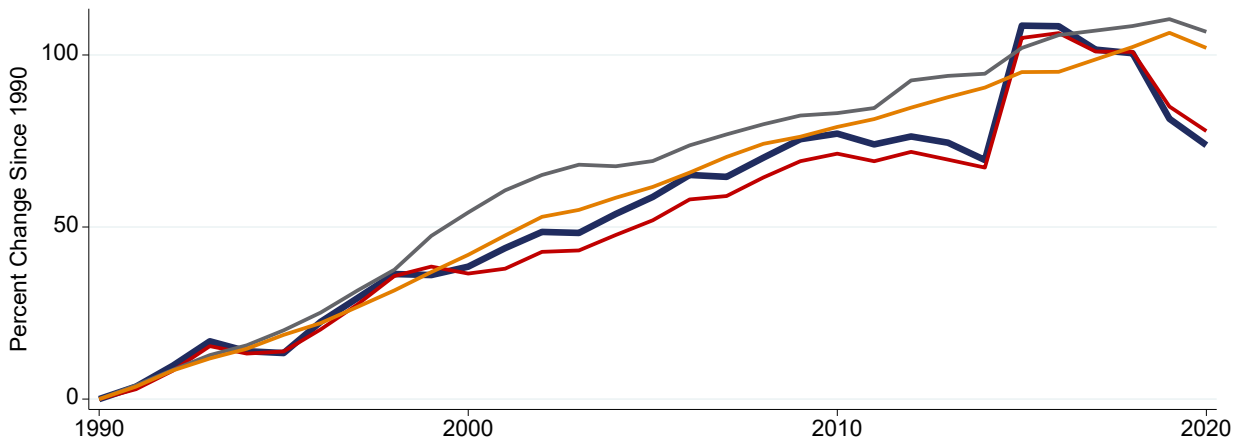
Ambulatory Care, Offices of Physicians

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

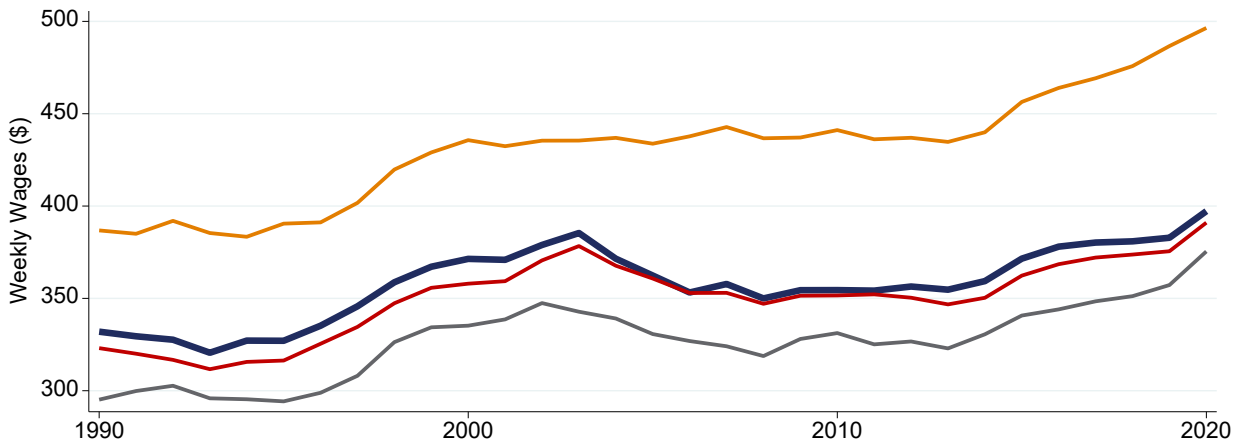
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.6	0.5	0.1	-0.6	2.5	2.6	3.9	3.5
1996-2000	-2.9	-2.2	-1.5	-1.0	4.1	3.7	5.2	3.7
2001-2005	1.5	1.8	0.5	0.4	2.8	2.2	1.9	2.7
2006-2010	-1.2	-1.2	-0.3	0.6	2.2	2.4	1.9	2.2
2011-2015	-1.4	-0.5	0.6	0.6	3.3	3.6	2.0	1.8
2015-2019	2.3	1.7	0.4	0.3	-3.4	-2.5	1.1	1.5
2019-2020	4.2	4.1	3.2	3.4	-4.2	-3.8	-1.8	-2.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

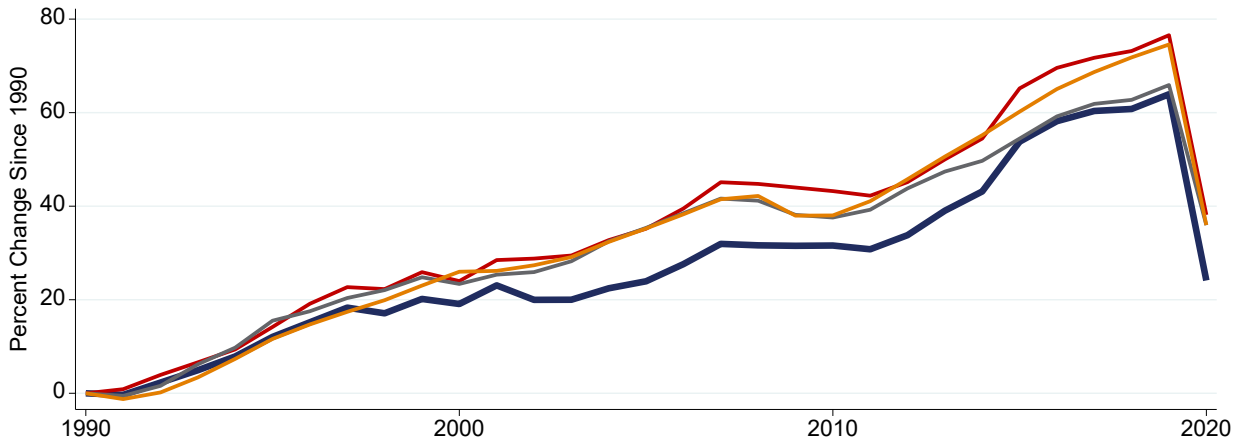
Leisure and Hospitality

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

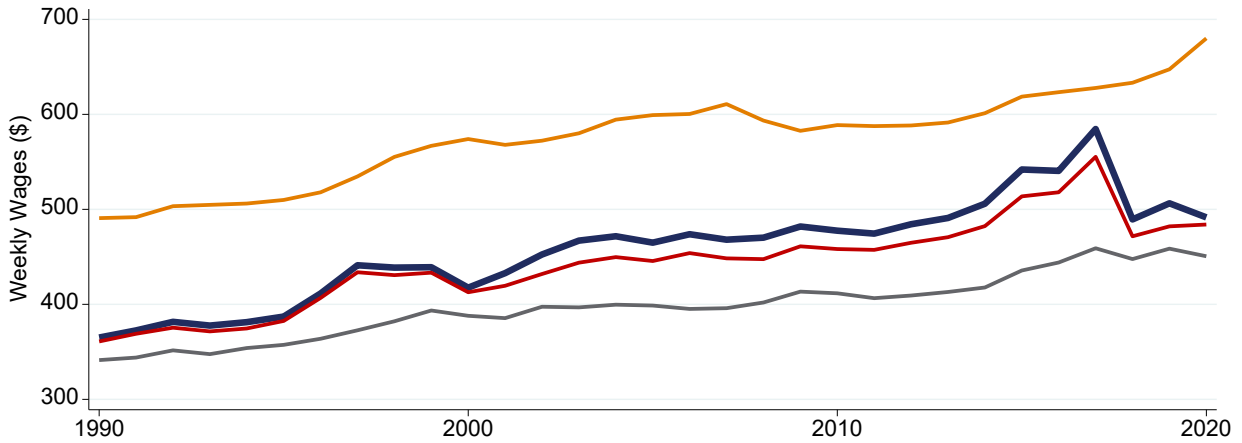
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-0.3	-0.4	-0.1	0.1	2.3	2.7	2.9	2.2
1996-2000	2.6	2.5	2.6	2.1	1.2	1.7	1.4	2.4
2001-2005	-0.5	0.2	-0.3	0.1	0.8	1.7	1.8	1.7
2006-2010	-0.4	-0.5	0.0	0.4	1.2	1.2	0.3	0.4
2011-2015	0.9	0.6	0.5	0.6	3.2	2.9	2.2	2.9
2015-2019	0.8	0.9	1.1	1.5	1.6	1.7	1.8	2.1
2019-2020	4.0	4.3	5.2	2.3	-24.1	-21.6	-18.1	-22.0

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

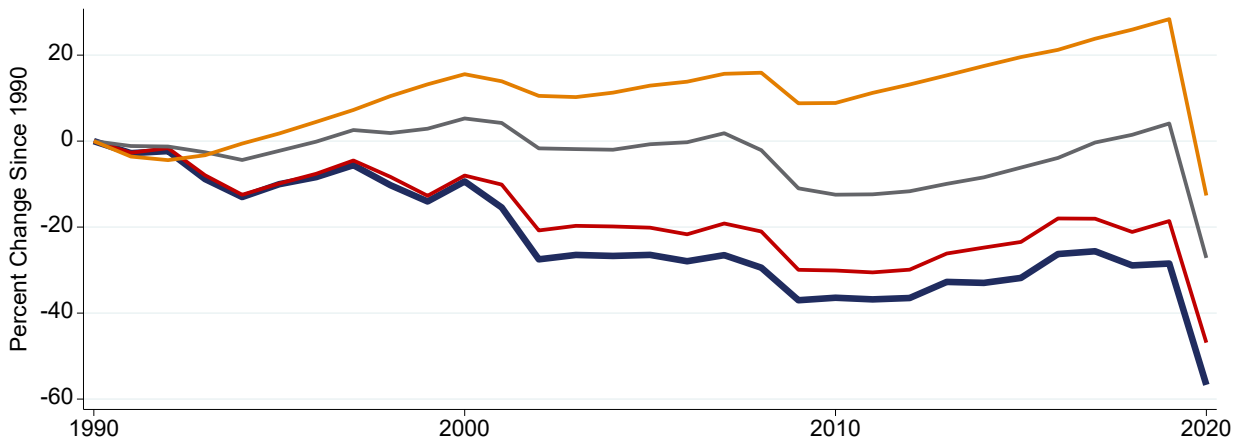
Accommodations

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

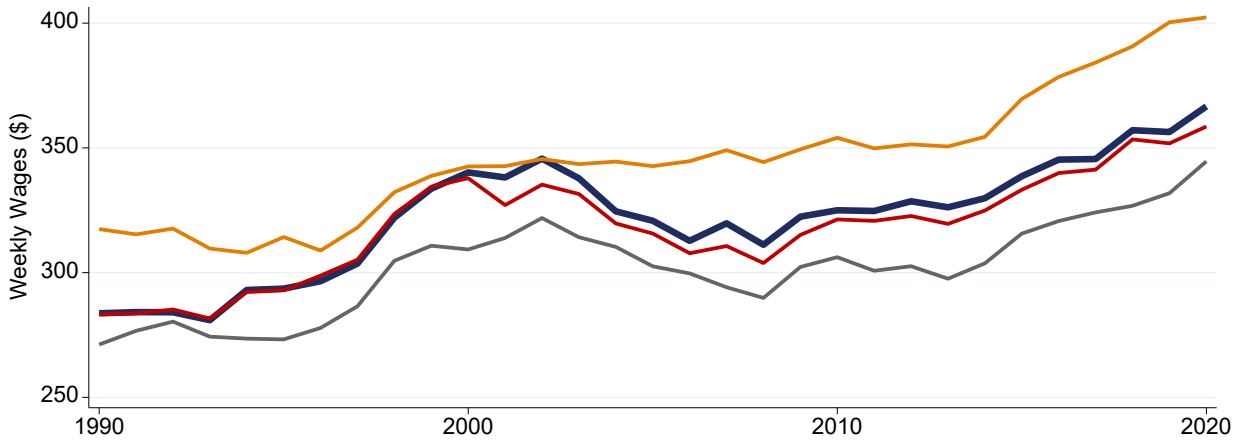
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	1.2	1.2	0.9	0.8	-2.1	-2.1	-0.5	0.3
1996-2000	1.5	1.5	1.7	2.4	0.1	0.4	1.8	2.6
2001-2005	2.2	1.5	0.6	0.9	-4.1	-2.8	-1.1	-0.2
2006-2010	0.5	0.6	0.7	-0.3	-2.9	-2.6	-2.5	-0.6
2011-2015	2.6	2.3	1.1	1.0	1.4	1.8	1.1	2.0
2015-2019	-1.7	-1.6	1.3	1.2	1.2	1.6	2.6	1.9
2019-2020	-2.9	0.4	-1.7	5.0	-39.4	-34.7	-30.0	-31.5

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

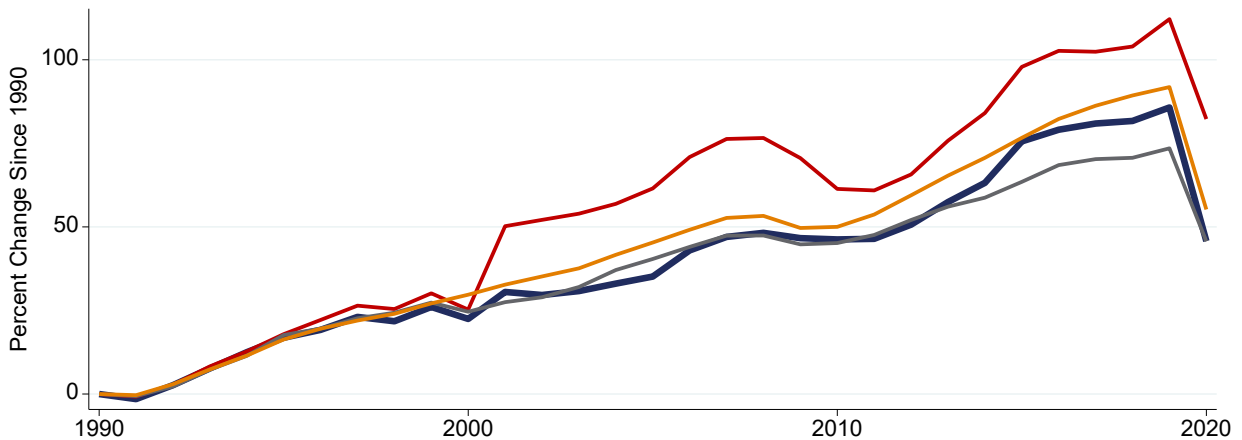
Food Services

— Lexington
 — MSA
 — KY
 — US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

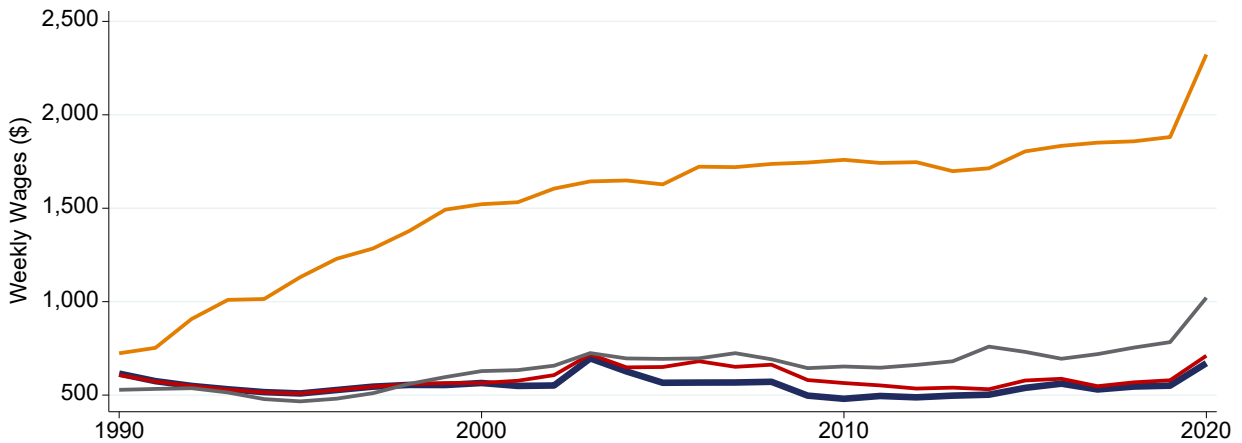
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.7	0.7	0.2	-0.2	3.2	3.3	3.3	3.0
1996-2000	3.0	2.9	2.5	1.7	1.0	1.2	1.2	2.2
2001-2005	-1.2	-1.3	-0.4	0.0	2.0	5.2	2.4	2.3
2006-2010	0.3	0.4	0.2	0.7	1.6	0.0	0.7	0.6
2011-2015	0.8	0.7	0.6	0.9	3.7	4.2	2.4	3.3
2015-2019	1.3	1.4	1.3	2.0	1.4	1.8	1.5	2.1
2019-2020	2.9	1.9	3.8	0.5	-21.5	-14.1	-16.0	-19.1

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

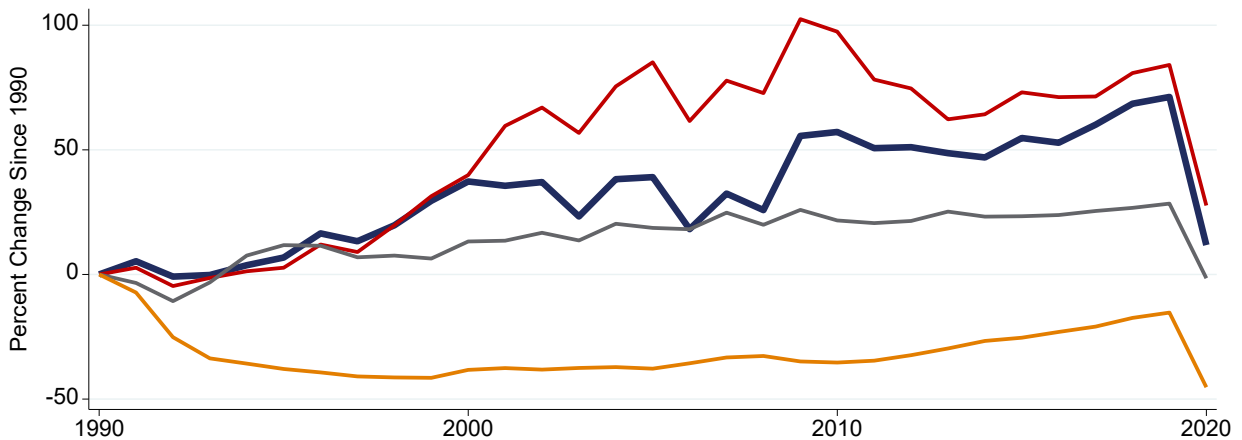
Performing Arts and Spectator Sports

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

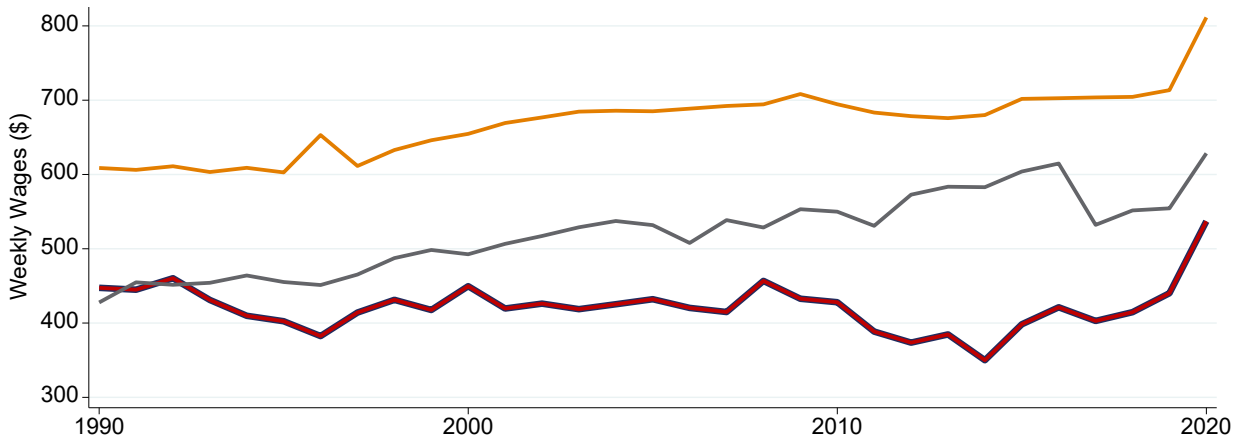
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-3.7	-3.5	-2.5	9.2	1.3	0.5	2.2	-9.0
1996-2000	2.1	2.1	6.1	6.1	5.2	6.4	0.3	-0.1
2001-2005	0.0	2.9	1.9	1.3	0.3	5.8	1.3	0.2
2006-2010	-3.2	-2.8	-1.1	1.6	2.5	1.3	0.1	0.7
2011-2015	2.3	0.5	2.3	0.5	-0.3	-2.6	0.3	2.9
2015-2019	0.5	0.1	1.7	1.1	2.6	1.6	1.0	3.2
2019-2020	21.8	22.6	30.3	23.4	-34.7	-30.6	-23.3	-35.3

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

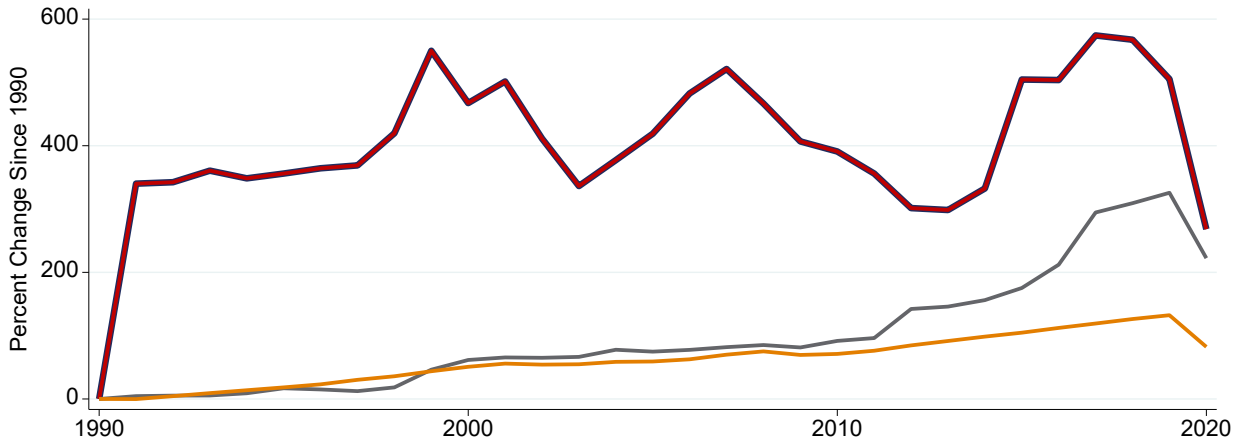
Amusement, Gambling, and Recreation

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

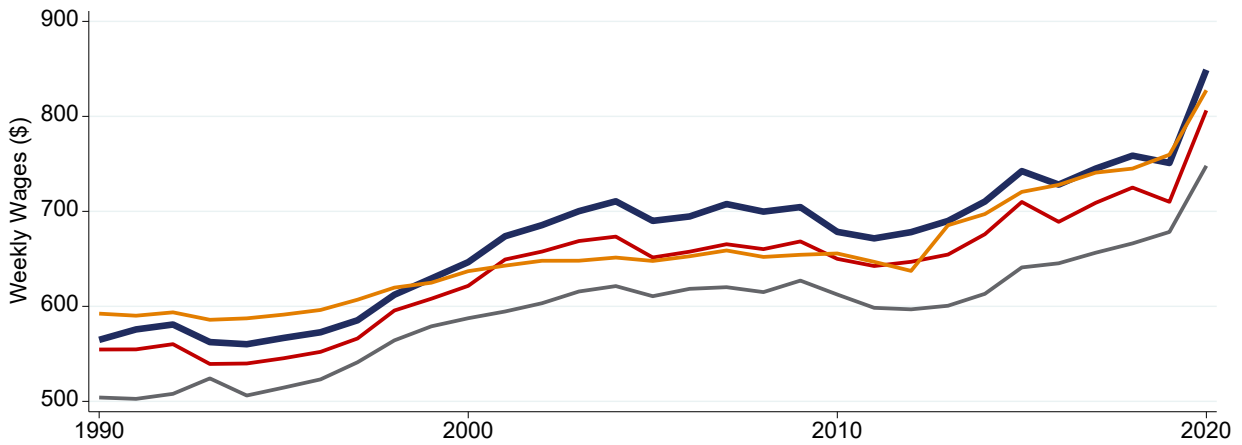
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-2.1	-2.1	-0.2	0.1	35.5	35.5	-0.1	3.0
1996-2000	2.2	2.2	1.5	1.2	4.5	4.5	1.4	3.3
2001-2005	-0.8	-0.8	0.2	1.2	-1.8	-1.8	-1.1	2.0
2006-2010	-0.2	-0.2	-0.2	0.6	-1.1	-1.1	-1.3	0.5
2011-2015	-1.4	-1.4	2.1	0.0	4.3	4.3	-1.9	2.4
2015-2019	2.5	2.5	-2.4	0.0	0.0	0.0	6.8	2.5
2019-2020	22.0	22.0	10.9	12.7	-39.2	-39.2	-20.4	-18.8

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

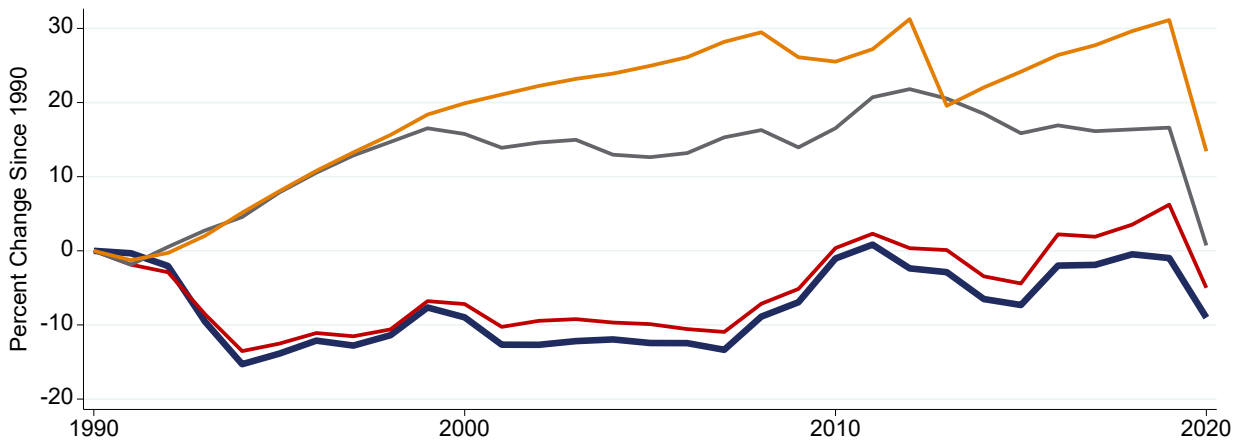
Other Services

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990



Annual Average Growth Rates

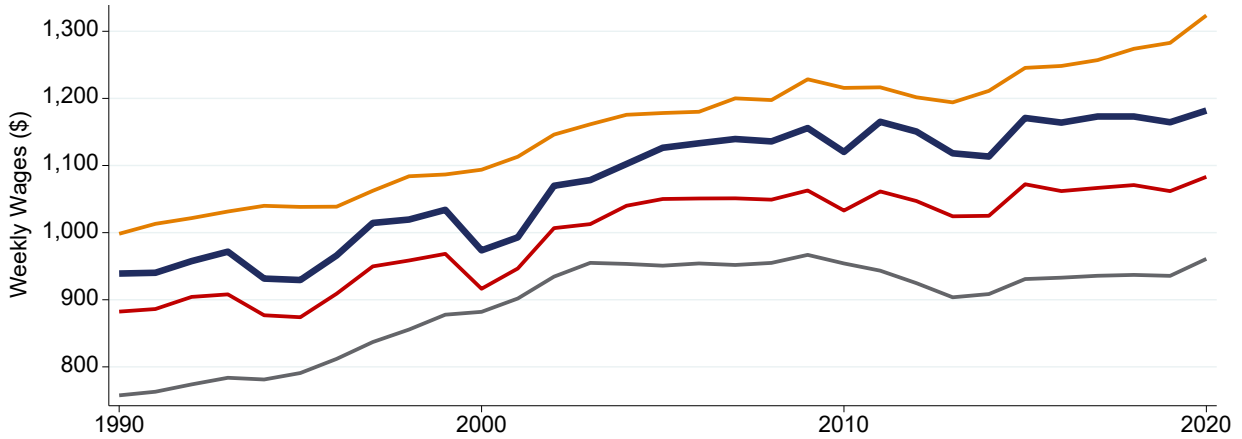
Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	0.1	-0.3	0.4	-0.1	-2.9	-2.6	1.6	1.6
1996-2000	2.7	2.6	2.7	1.5	1.1	1.2	1.4	2.1
2001-2005	1.3	0.9	0.8	0.3	-0.8	-0.6	-0.5	0.8
2006-2010	-0.3	0.0	0.1	0.3	2.5	2.2	0.8	0.1
2011-2015	1.8	1.8	0.9	1.8	-1.3	-1.0	-0.1	-0.3
2015-2019	0.3	0.0	1.4	1.3	1.7	2.7	0.1	1.4
2019-2020	13.1	13.5	10.3	8.9	-8.1	-10.6	-13.5	-13.4

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

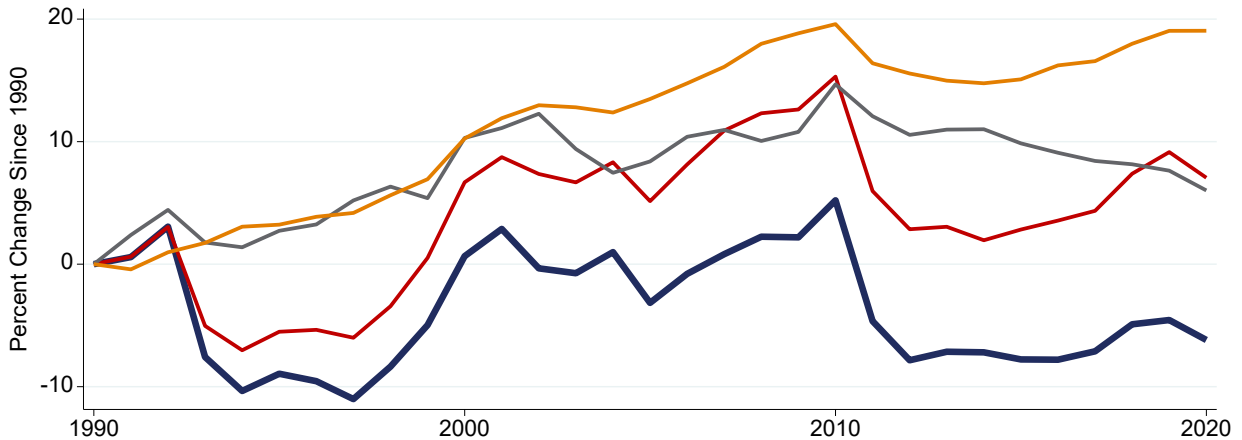
Public Administration

Lexington MSA KY US

Average Weekly Wages



Employment, Percent Change Since 1990

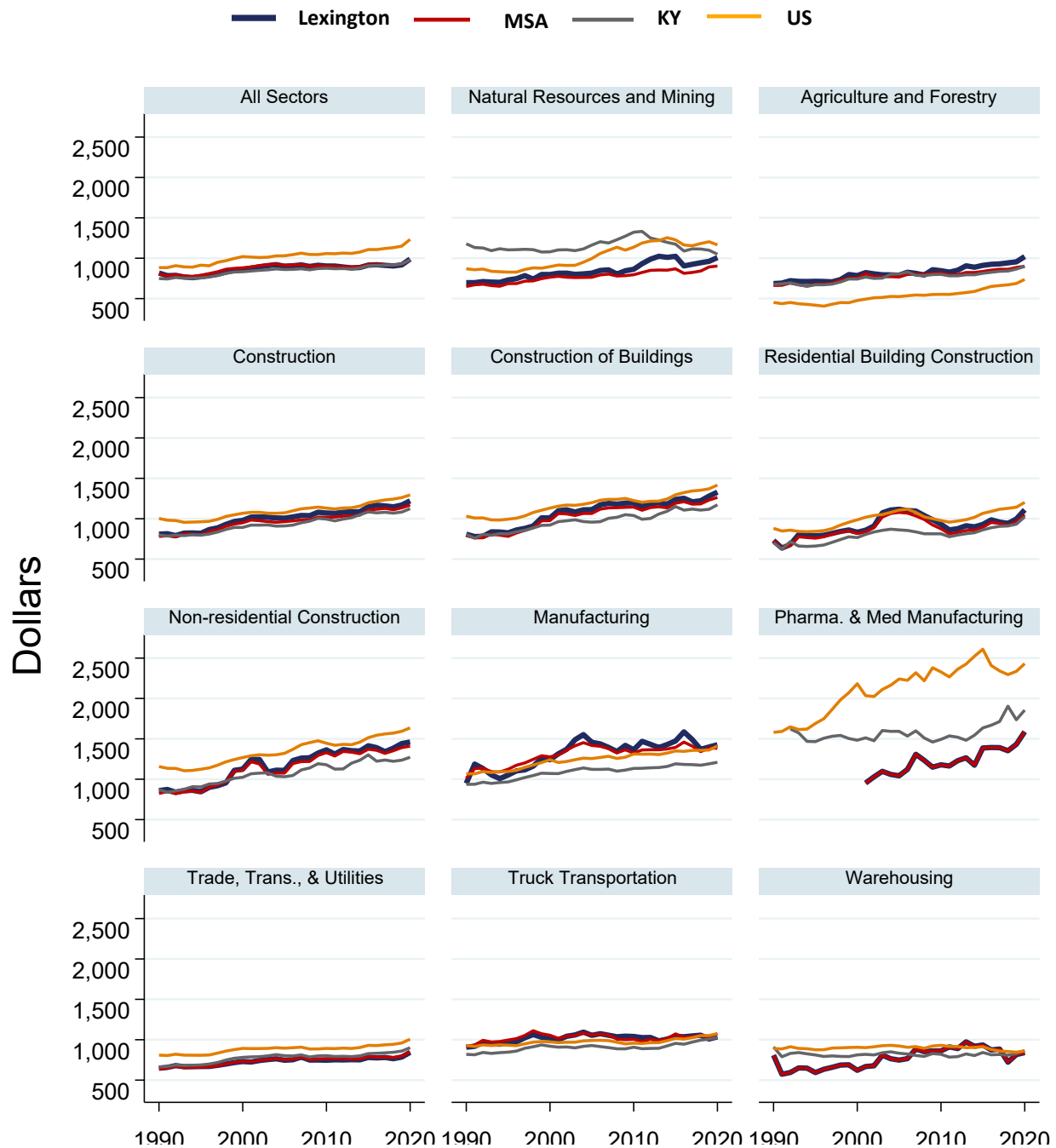


Annual Average Growth Rates

Period	Average Weekly Wage				Employment			
	Lexington	MSA	KY	US	Lexington	MSA	KY	US
1990-1995	-0.2	-0.2	0.9	0.8	-1.9	-1.1	0.5	0.6
1996-2000	0.9	1.0	2.2	1.0	2.0	2.5	1.4	1.3
2001-2005	3.0	2.8	1.5	1.5	-0.8	-0.3	-0.3	0.6
2006-2010	-0.1	-0.3	0.1	0.6	1.7	1.9	1.1	1.1
2011-2015	0.9	0.7	-0.5	0.5	-2.6	-2.3	-0.9	-0.8
2015-2019	-0.1	-0.2	0.1	0.7	0.9	1.5	-0.5	0.8
2019-2020	1.5	2.0	2.7	3.2	-1.7	-1.9	-1.5	0.0

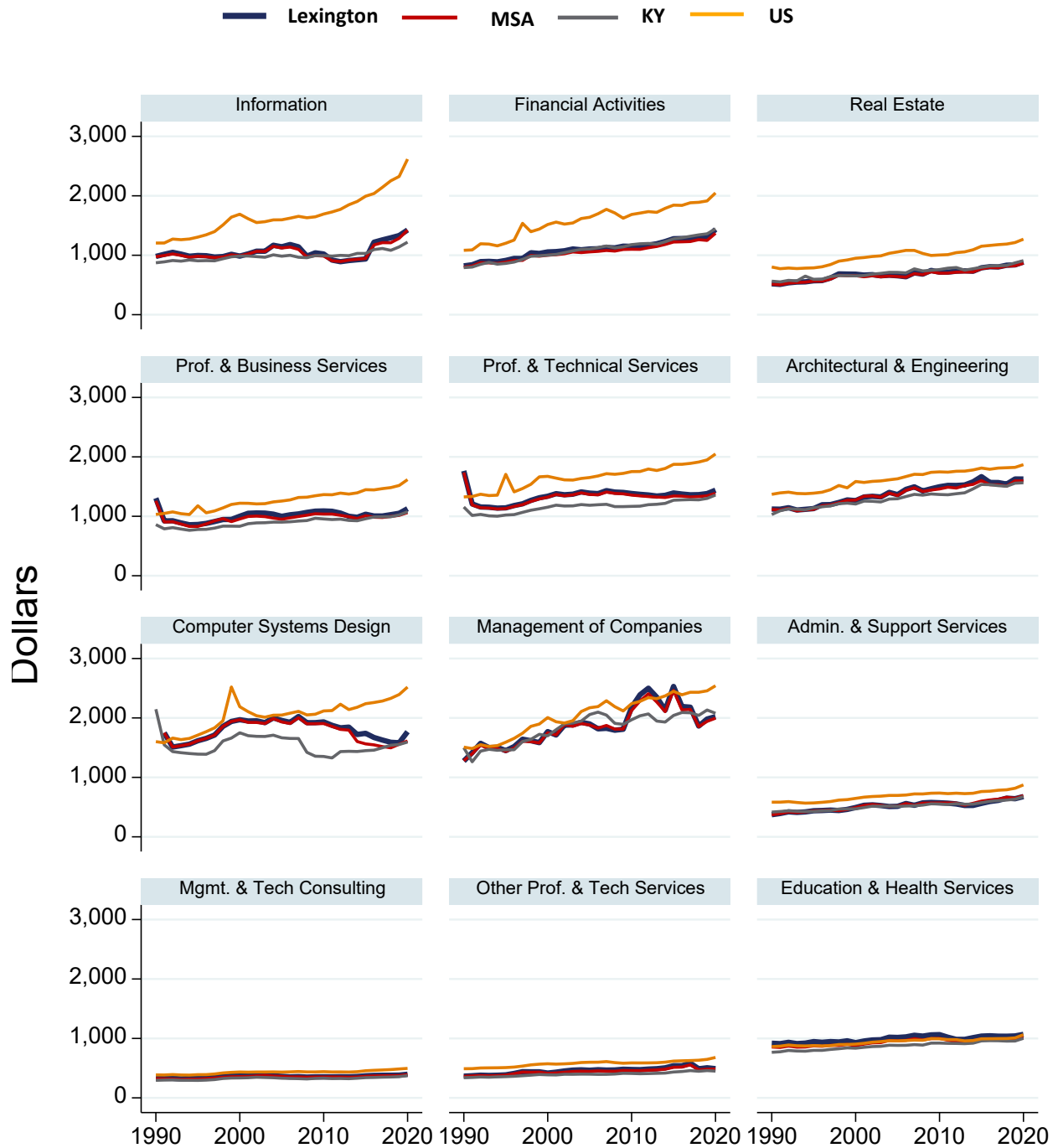
Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Average Weekly Wages



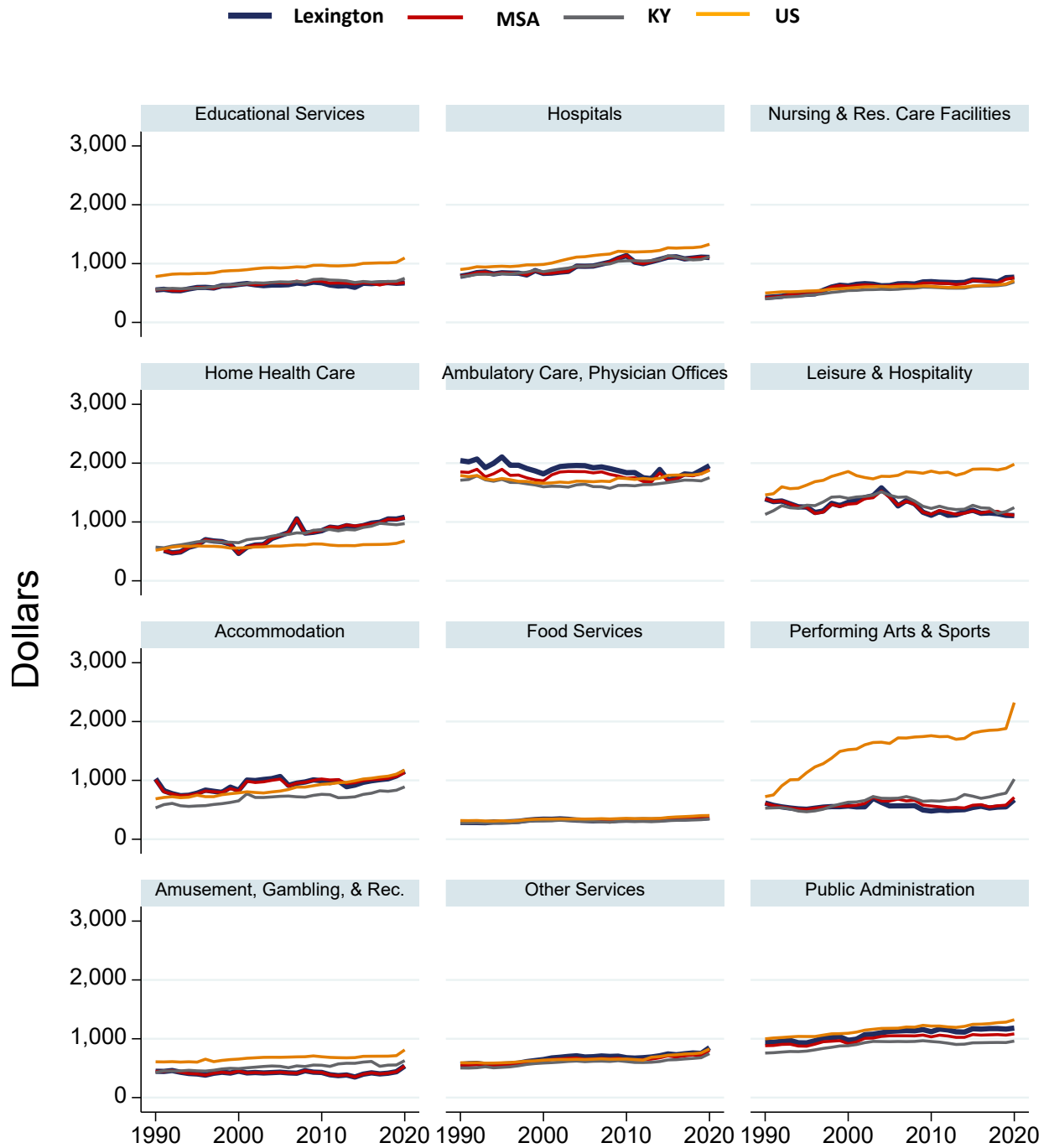
Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Average Weekly Wages (continued)



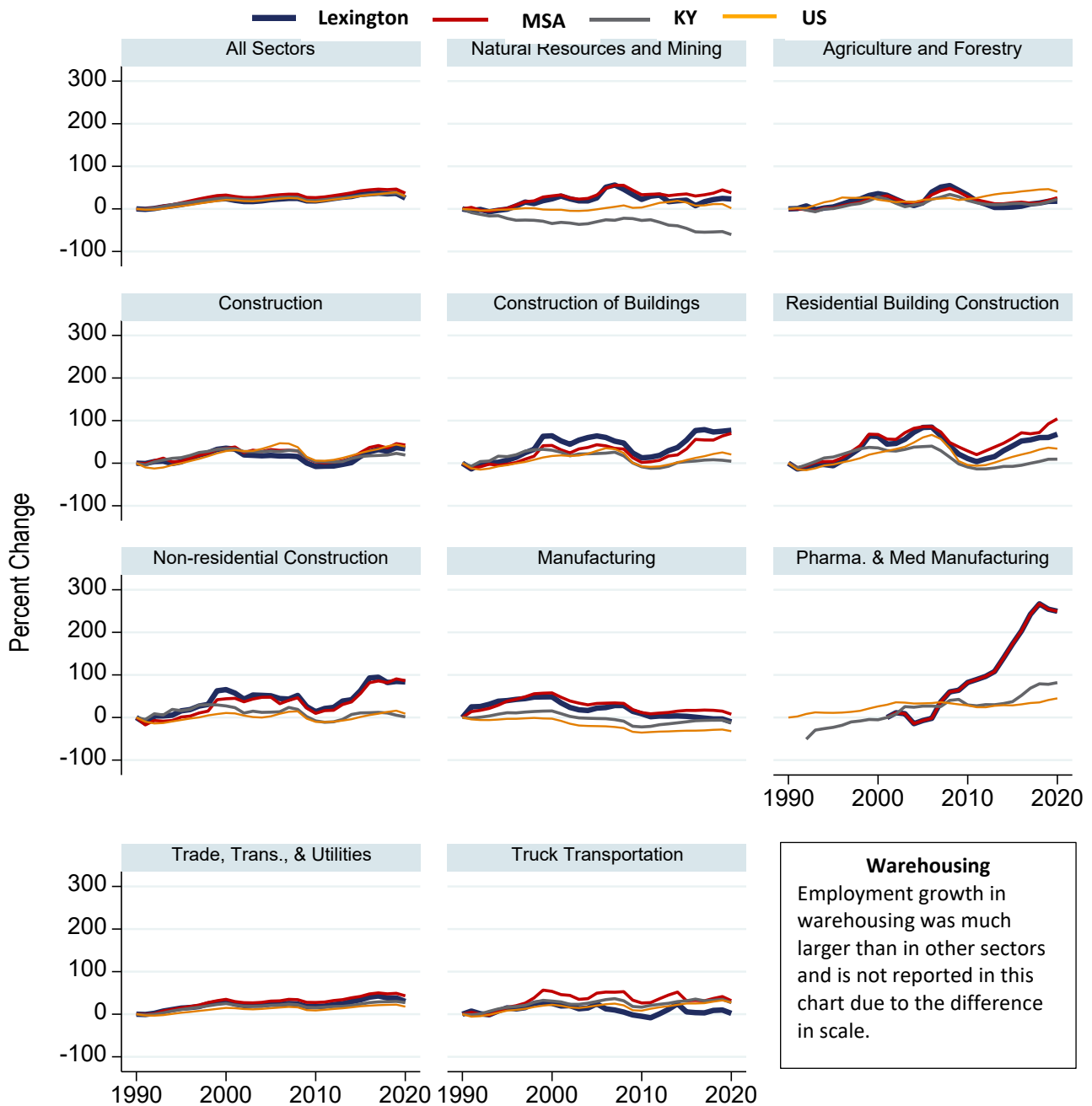
Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Average Weekly Wages (continued)



Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

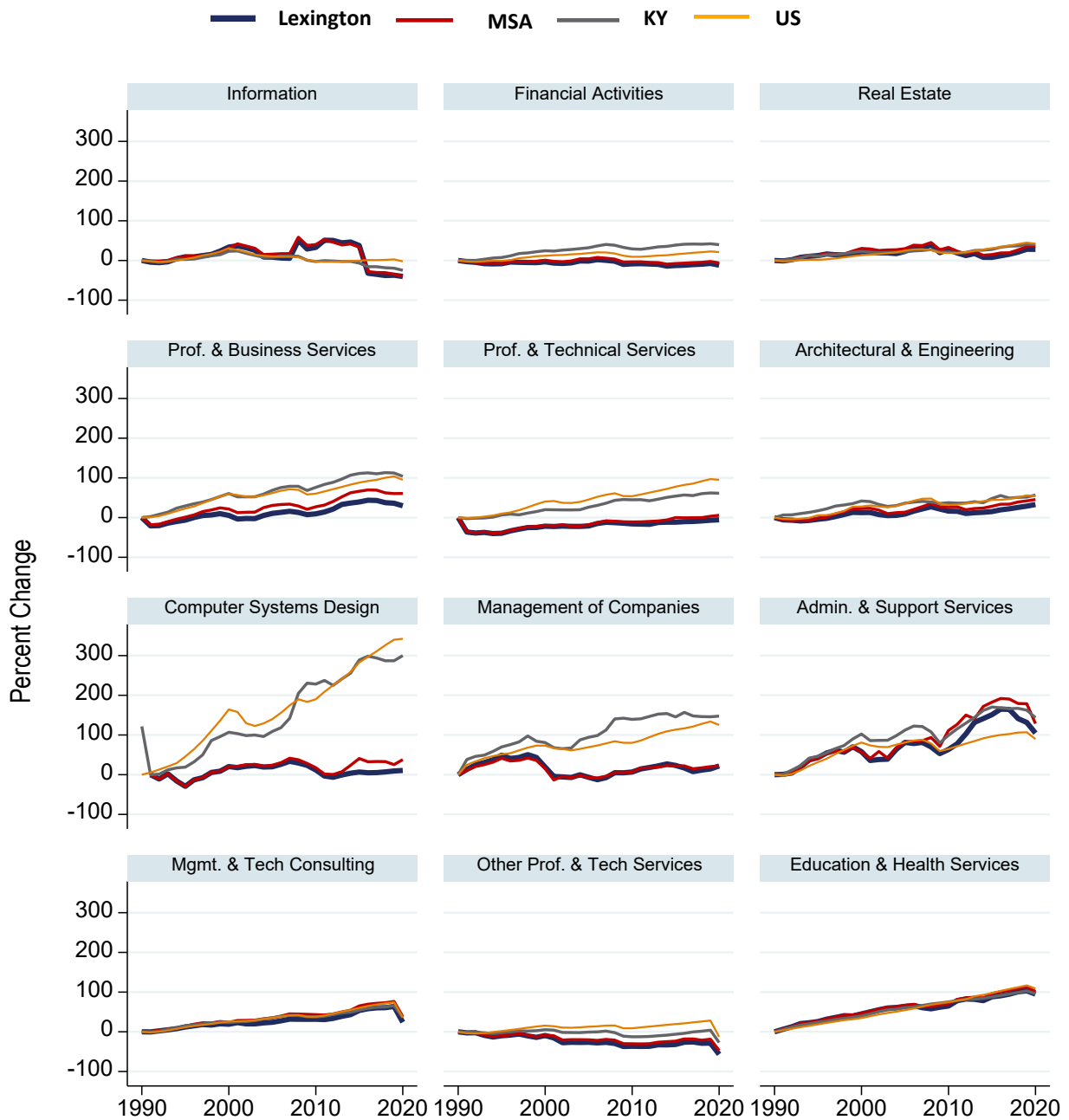
Employment Percent Change Since 1990



Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Employment (continued)

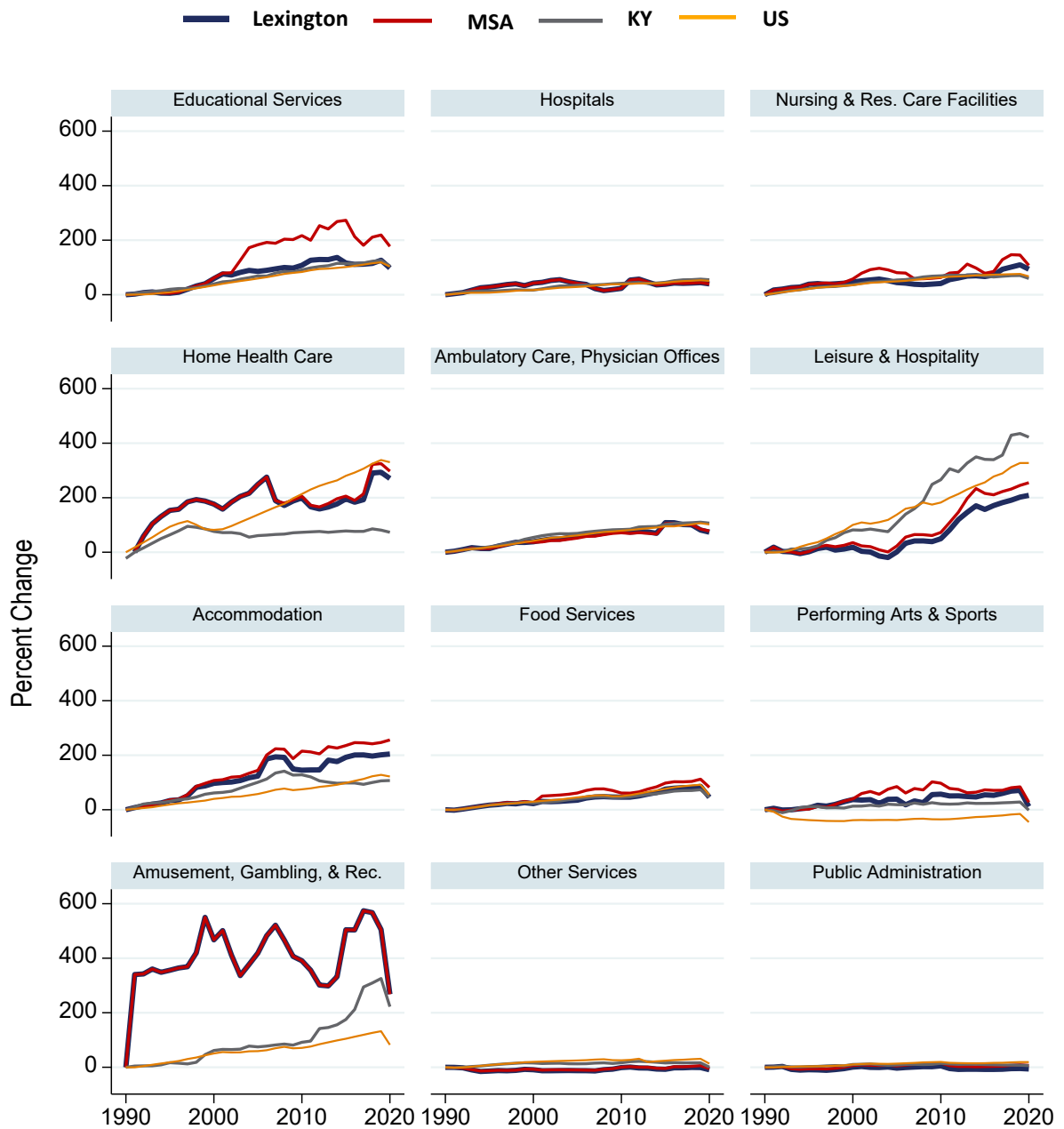
Percent Change Since 1990



Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Employment (continued)

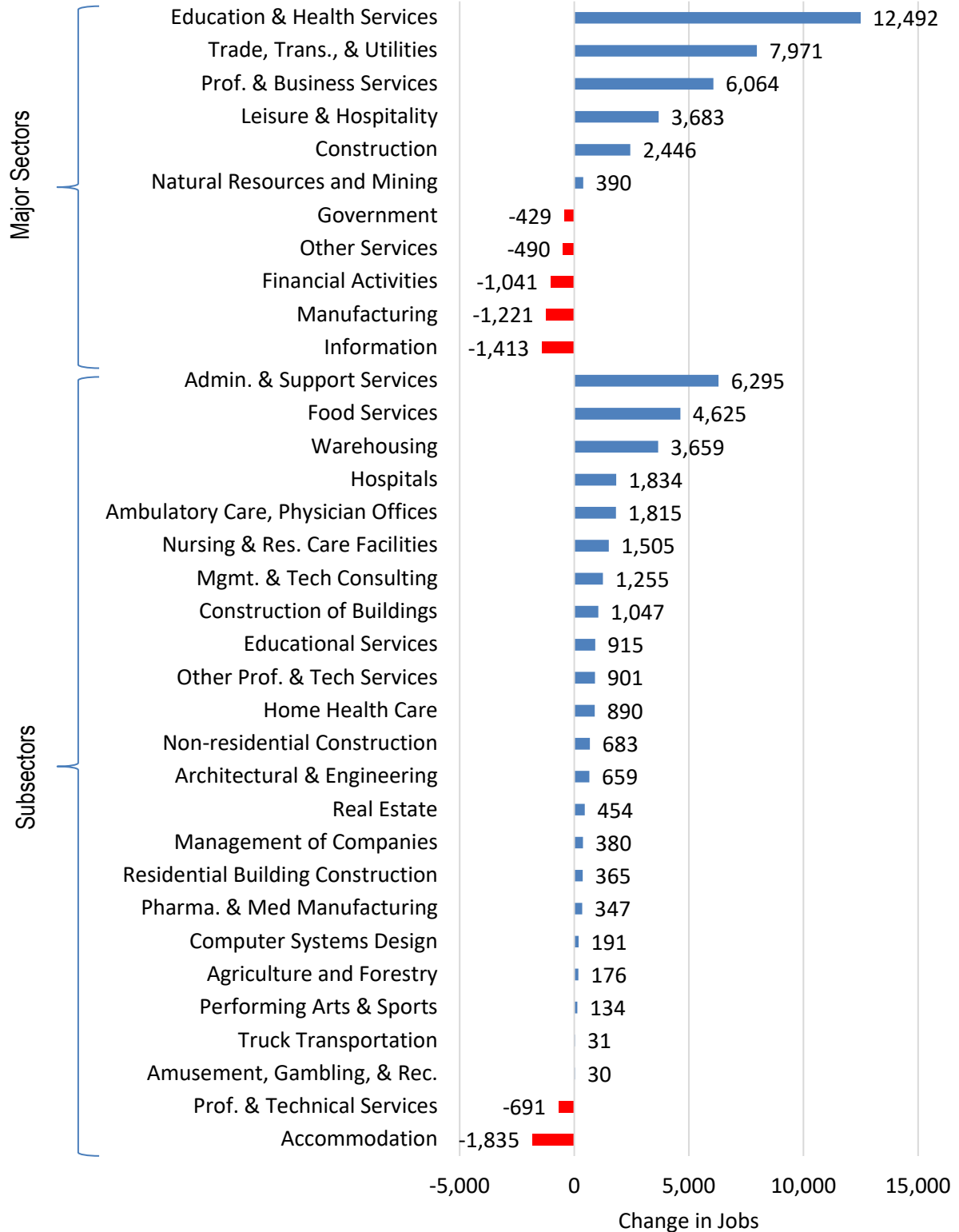
Percent Change Since 1990



Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Change in Employment from 1990 to 2020

Lexington



Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Distribution of Employment Across Sectors 2019

Sector (Rank of Major Sectors Lexington)	Lexington	MSA	KY	US
Natural Resources and Mining	1.1%	1.9%	1.0%	1.3%
Agriculture and Forestry	0.6%	1.0%	0.2%	0.3%
Construction	5.3%	5.1%	4.2%	5.1%
Construction of Buildings	1.3%	1.2%	0.9%	1.1%
Residential Building Construction	0.5%	0.4%	0.3%	0.6%
Non-residential Construction	0.8%	0.7%	0.5%	0.6%
Manufacturing (5)	6.1%	11.8%	13.3%	8.7%
Pharmaceutical & Medical Manufacturing	0.3%	0.2%	0.1%	0.2%
Trade, Transportation, & Utilities (2)	20.0%	20.3%	22.0%	19.5%
Truck Transportation	0.9%	1.1%	1.3%	1.0%
Warehousing	1.9%	1.4%	1.6%	0.9%
Information	1.3%	1.1%	1.3%	2.0%
Financial Activities	4.5%	4.0%	5.0%	5.7%
Real Estate	1.1%	0.9%	0.7%	1.1%
Professional & Business Services (3)	14.8%	14.0%	11.5%	14.4%
Professional & Technical Services	6.2%	5.2%	4.1%	6.5%
Architectural & Engineering	1.4%	1.2%	0.7%	1.1%
Computer Systems Design	1.0%	0.9%	0.8%	1.5%
Management & Technical Consulting	1.0%	0.8%	0.7%	1.0%
Management of Companies	1.1%	1.0%	1.1%	1.6%
Administrative & Support Services	7.4%	6.7%	6.0%	6.0%
Other Professional & Technical Services	0.7%	0.7%	0.4%	0.5%
Education & Health Services (1)	27.1%	22.9%	23.6%	23.7%
Educational Services	1.1%	1.2%	8.6%	8.6%
Hospitals	4.7%	3.4%	4.8%	4.4%
Nursing & Residential Care Facilities	1.8%	1.5%	2.4%	2.4%
Home Health Care	0.7%	0.5%	0.5%	1.0%
Ambulatory Care, Physician Offices	2.4%	2.1%	2.0%	1.8%
Leisure & Hospitality (4)	13.4%	12.6%	10.8%	11.5%
Accommodation	1.2%	1.1%	0.9%	1.4%
Food Services	10.0%	8.9%	8.5%	8.1%
Performing Arts & Sports	1.0%	0.9%	0.3%	0.3%
Amusement, Gambling, & Recreation	0.0%	0.0%	0.2%	0.2%
Other Services	2.9%	2.7%	2.5%	3.1%
Public Administration	3.5%	3.6%	4.7%	4.9%
All Sectors	100.0%	100.0%	100.0%	100.0%

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

Distribution of Total Wages Across Sectors 2019

Sector (Rank of Major Sectors Lexington)	Lexington	MSA	KY	US
Natural Resources and Mining	1.0%	1.7%	1.2%	1.4%
Agriculture and Forestry	0.6%	0.9%	0.2%	0.2%
Construction (5)	6.1%	5.7%	4.9%	5.6%
Construction of Buildings	1.6%	1.4%	1.0%	1.3%
Residential Building Construction	0.4%	0.4%	0.3%	0.6%
Non-residential Construction	1.1%	1.0%	0.7%	0.8%
Manufacturing (4)	8.4%	16.1%	17.1%	10.3%
Pharmaceutical & Medical Manufacturing	0.4%	0.3%	0.2%	0.4%
Trade, Transportation, & Utilities (2)	15.5%	16.1%	20.6%	16.6%
Truck Transportation	0.9%	1.2%	1.4%	1.0%
Warehousing	1.5%	1.2%	1.5%	0.6%
Information	1.6%	1.3%	1.5%	4.0%
Financial Activities	5.8%	4.9%	7.3%	9.4%
Real Estate	0.9%	0.7%	0.6%	1.2%
Professional & Business Services (3)	15.2%	14.0%	12.6%	19.1%
Professional & Technical Services	8.4%	6.9%	5.8%	11.0%
Architectural & Engineering	2.2%	1.8%	1.2%	1.7%
Computer Systems Design	1.6%	1.3%	1.3%	3.1%
Management & Technical Consulting	1.1%	0.9%	0.9%	1.7%
Management of Companies	2.0%	1.9%	2.4%	3.5%
Administrative & Support Services	4.7%	4.2%	4.1%	4.3%
Other Professional & Technical Services	0.7%	0.8%	0.4%	0.5%
Education & Health Services (1)	31.4%	25.5%	23.9%	21.1%
Educational Services	0.7%	0.8%	8.0%	7.7%
Hospitals	5.6%	4.1%	5.6%	5.0%
Nursing & Residential Care Facilities	1.3%	1.1%	1.6%	1.4%
Home Health Care	0.7%	0.6%	0.5%	0.6%
Ambulatory Care, Physician Offices	4.4%	3.8%	3.7%	2.9%
Leisure & Hospitality	5.0%	4.7%	4.2%	4.9%
Accommodation	0.6%	0.5%	0.4%	0.8%
Food Services	3.5%	3.1%	3.0%	2.8%
Performing Arts & Sports	0.6%	0.5%	0.3%	0.6%
Amusement, Gambling, & Recreation	0.0%	0.0%	0.1%	0.1%
Other Services	2.1%	1.9%	1.8%	2.0%
Public Administration	4.0%	3.7%	4.8%	5.5%
All Sectors	100.0%	100.0%	100.0%	100.0%

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.

NAICS Codes Assigned to Major Industries

Sector	NAICS Code
Natural Resources and Mining	11-21
Agriculture and Forestry	
Construction	23
Construction of Buildings	
Residential Building Construction	
Non-residential Construction	
Manufacturing	31-33
Pharmaceutical and Medical Manufacturing	
Trade, Trans., & Utilities	42-49,22
Truck Transportation	
Warehousing	
Information	51
Financial Activities	52-53
Real Estate	
Prof. & Business Services	54-56
Professional and Technical Services	
Architectural and Engineering Services	
Computer System Design	
Management of Companies	
Management and Technical Consulting	
Administrative and Support Services	
Other Professional and Technical Services	
Education & Health Services	61-62
Education Services	
Hospitals	
Nursing and Residential Care Facilities	
Home Health Care Services	
Ambulatory Care, Offices of Physicians	
Leisure & Hospitality	71-72
Accommodations	
Food Services	
Performing Arts and Spectator Sports	
Amusement, Gambling, and Recreation	
Other Services	81
Public Administration	92

Source: United States. Bureau of Labor Statistics. Quarterly Census of Employment and Wages.
<https://www.bls.gov/cew/classifications/industry/industry-supersectors.htm>.

Chapter 2 Lexington-Fayette County's Workforce

The employment trends described in Chapter 1 demonstrate that Lexington has a strong, diverse, and growing economy that has helped create job opportunities for many of the area's residents. While employment growth is an important measure of an area's economic health, employment alone does not provide a complete picture of the economy. Labor force participation and unemployment rates provide additional insights on economic performance. Labor force participation rates describe the percentage of an area's residents who are employed or seeking work. Unemployment rates describe the percentage of those in the labor force who are without work and looking for a job. Together they provide an indication of how widespread the employment is within an area. High labor force participation rates and low unemployment rates are signals of a strong and healthy economy that benefits large portions of the area's residents. Low labor force participation or high unemployment indicate that the economic benefits associated with employment could be missing large portions of the area's residents.

For many, being out of the labor force is a personal decision and not necessarily a concern. For example, some might not be in the labor force because they are in school. These individuals are investing in their education in ways that will improve their future well-being. Some individuals are not in the labor force because they value spending time caring for family members more than what they might earn from working. Others have retired after having worked and saved for years. While many choose to not be in the labor force, some individuals are not in the labor force due to barriers or challenges they face finding suitable employment. These barriers might include disabilities, discrimination, lack of childcare, or low educational attainment.

This chapter briefly describes the Lexington-Fayette County population and how labor force participation and unemployment rates differ across demographic groups. Comparing labor force participation and unemployment rates across demographic groups, regions, and time can help identify which groups of the Lexington-Fayette County population are more likely to face challenges finding employment.

Key Points:

- Fayette County generally has higher labor force participation (LFP) rates than Kentucky and the nation. This likely reflects the area's strong and diverse economy and its residents' high level of education.
- Women living in Fayette County have higher labor force participation rates than women living in Kentucky or the nation. This was true for women without children, women with young children, and women with school aged children.
- In most years, women with young children in Fayette County, Kentucky, and the U.S. had higher unemployment rates than those without children or those with school aged children. This suggests that, even in Fayette County, childcare needs pose a challenge for women with young children who are trying to find work.
- Generally, the Hispanic population tends to have both higher LFP rates and unemployment rates than the white population. However, unemployment rates for the Hispanic and White population

were similar in Lexington. The Black or African American population has similar LFP rates to Whites, but they are more likely to be unemployed. LFP and unemployment rates for the Black or African American population are generally better for those who live in Fayette County.

- Fayette County has a higher LFP rate among those with a self-reported disability than Kentucky and the U.S., but also has a slightly higher unemployment rate. Urban areas might offer those with a disability better employment prospects, which could lead to greater labor force participation.
- Automation can displace some tasks, leading to reduced demand and wages for some workers, particularly lower-skilled workers. However, automation also creates opportunities for new jobs that often require more skills and pay higher wages.

Fayette County Population Demographics

This section describes the demographics of Fayette County's population. Specifically, the section compares the age, sex, educational attainment, race, and disability of the populations in Fayette County, the Lexington-Fayette MSA, Kentucky, and the United States.¹

Throughout this chapter, we provide estimates using different age groups. There are two main reasons for this. First, the age groups distinguish between different phases of a typical education and career cycle that affect labor force participation. Ages 16 to 25 cover years during which many individuals are investing in education and training. While many in these age groups are in the labor force, labor force participation rates tend to be lower for this group. Ages 25 to 55 are prime working years for many individuals. Employment and labor force participation tend to be high among individuals in this age group. After age 55, many workers begin leaving the labor force. Focusing on the demographics of those in these different age groups and career phases will help local policy makers better understand the factors that affect employment and labor force participation.

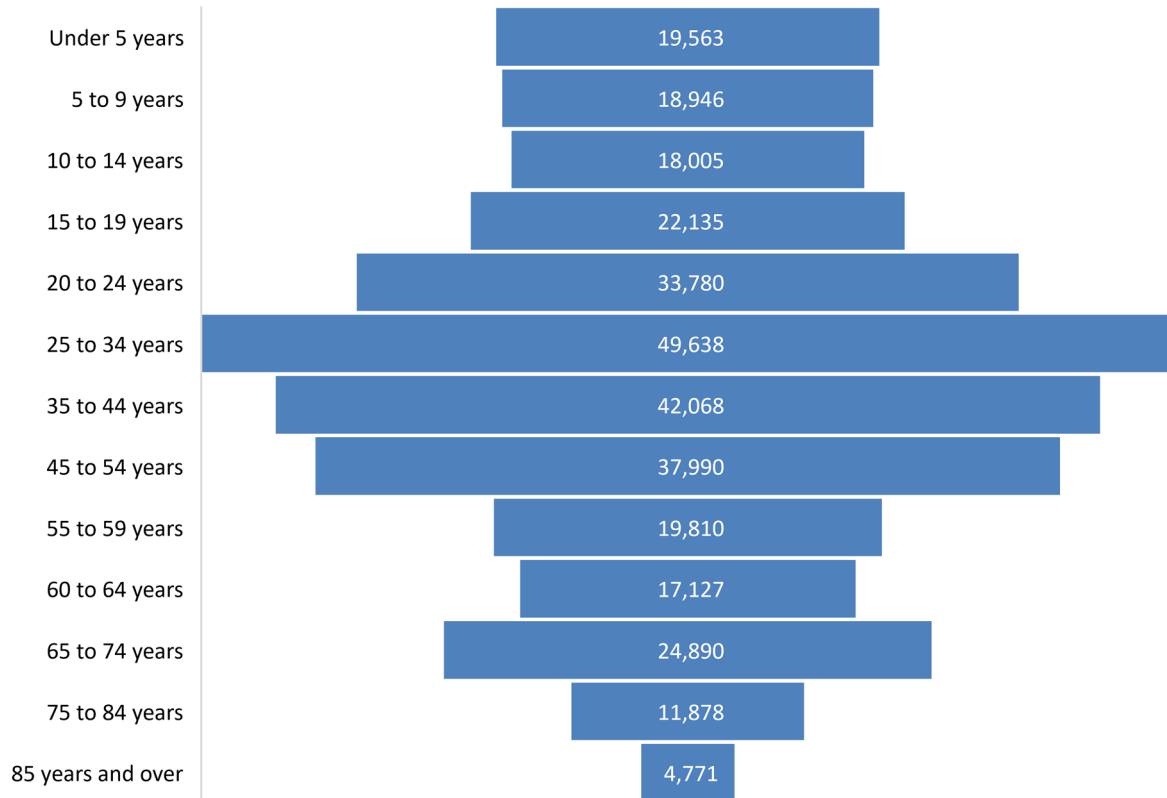
The second reason for presenting estimates using specific age groups is more practical. The data for most of this chapter comes from the U.S. Census Bureau's American Community Survey (ACS). The Census conducts this survey annually and reports demographic and labor force estimates. Typically, the Census reports estimates for specific age groups. For some data presented in the section, the age groups shown are determined by what is reported by the Census Bureau. After briefly describing Fayette County's age distribution, the remaining discussion focuses on the working age population, which is typically those aged 18 to 64.

Age. Figure 2-A displays the distribution of the 2019 population across all ages in Fayette County. The Census estimated that Fayette County had a population of 320,601 people in 2019.² Fifty-two percent of Fayette County's population were aged 25 to 64, with 35% of the population falling below the age of 25, and 13% of the population above 64 years.

¹ Lexington-Fayette MSA includes Bourbon, Clark, Fayette, Jessamine, Scott, and Woodford Counties. Approximately 516,811 individuals were estimated to reside in this MSA in the 2020 Census.

² U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table DP05)

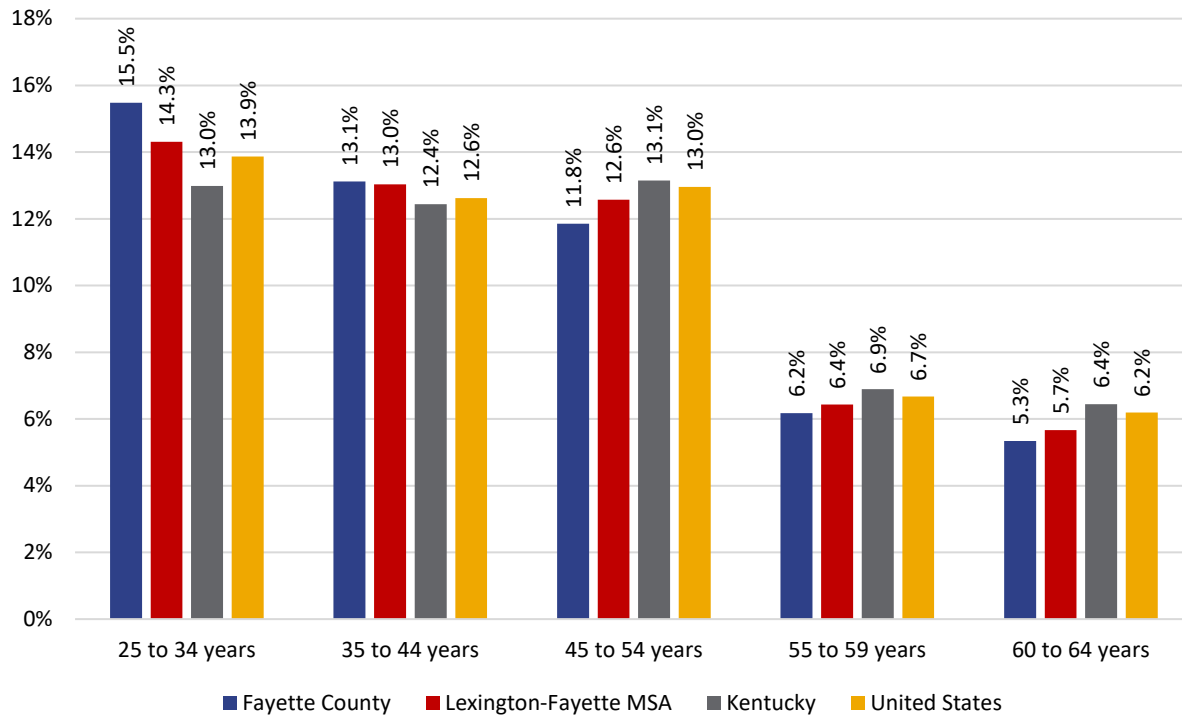
Figure 2-A Fayette County Age Distribution (2019)



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table DP05)

Fayette County's age distribution is somewhat similar to the age distributions of the Lexington-Fayette MSA, Kentucky, and the United States (Figure 2-B). However, Fayette County's population is somewhat younger, with a higher percentage of its population aged 25 to 34 (15.5%). One possible reason Fayette County has a younger population is that the higher education institutions in the area attract young students seeking a college education, many of whom then choose to remain in the area.

Figure 2-B Individuals Aged 25 to 64 as a Percentage of the Total Population (2019)



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table DP05)

Sex. Not surprisingly, Fayette County's population is evenly split between females and males (Table 2-1). However, females account for a slightly larger share of those aged 45 to 64. In Fayette County, females account for 51.7% of those aged 45 to 64. The distribution is similar across the other geographic areas.

Table 2-1 Male/Female Population Composition by Age Cohorts (2019)

Age	Sex	Fayette County	Lexington-Fayette MSA	Kentucky	United States
25 to 34 years	Male	51.0%	50.3%	50.5%	50.7%
	Female	49.0%	49.7%	49.5%	49.3%
35 to 44 years	Male	50.5%	49.8%	49.9%	49.8%
	Female	49.5%	50.2%	50.1%	50.2%
45 to 64 years	Male	48.3%	48.4%	48.8%	48.8%
	Female	51.7%	51.6%	51.2%	51.2%
Total (25 and over)	Male	48.3%	48.0%	48.2%	48.3%
	Female	51.7%	52.0%	51.8%	51.7%

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S1501)

Race. In terms of racial composition, Fayette County more closely resembles the United States than Kentucky or its surrounding counties. Table 2-2 displays the percentage of individuals who denoted either

Hispanic or Latino (of any race), White alone, Black or African American alone, Asian alone, and Other.³ While Fayette County's population is still majority White (71%), 14.5% of the population is Black or African American, 7.2% is of Hispanic or Latino origins, and 3.7% are Asian. The main difference between Fayette County and the United States is the proportion of Hispanic or Latino (of any race), with 7.2% of Fayette County and 18% of the United States falling into this racial category.

Table 2-2 Racial Composition by Geography (2019)

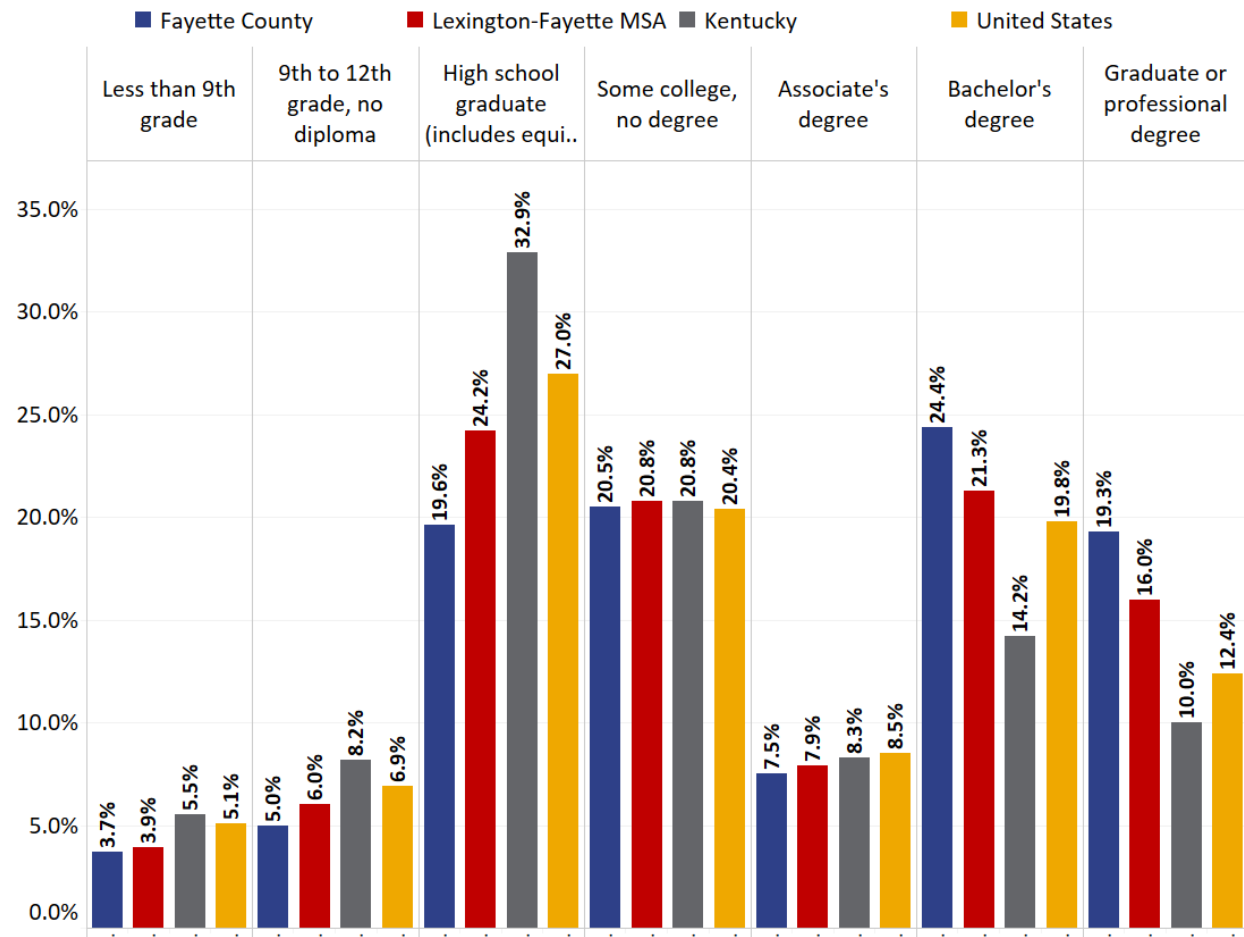
Race	Fayette County	Lexington-Fayette MSA	Kentucky	United States
Hispanic or Latino (of any race)	7.2%	6.2%	3.7%	18.0%
White alone	71.0%	77.2%	84.6%	60.7%
Black or African American alone	14.5%	10.9%	8.0%	12.3%
Asian alone	3.7%	2.7%	1.5%	5.5%
Other	3.6%	3.0%	2.4%	3.5%

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table DP05)

Educational Attainment. Fayette County's population is well educated compared to the MSA, Kentucky, and the nation. Figure 2-C displays the percentage of individuals 25 and over who fall within specific levels of educational attainment by geography. The level of educational attainment ranges between "less than 9th grade" to "Graduate or professional degree." Approximately 44% of individuals ages 25 years and over in Fayette County have at least a bachelor's degree. This is higher than the 24.2% in Kentucky and 32.2% in the United States. The MSA falls in between the Fayette County and Kentucky numbers but tracks closest to Fayette County with 37.3% earning a bachelor's degree or higher.

³ "Other" races include American Indian or Alaska Native, Native Hawaiian and Other Pacific Islander, Some other race, and Two or more races.

**Figure 2-C Educational Attainment by Geography
Aged 25 and Over (2019)**



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S1501)

Table 2-3 provides the percentage of individuals 25 years and over with a bachelor's degree or higher by race. For example, 19.2% of Hispanic or Latino Origin individuals have a bachelor's degree or higher in Fayette County. Conversely, 80.8% do not. Fayette County's high education levels occurs across most racial groups. The exception is "Black alone." While the percentage of Black or African American individuals with at least a bachelor's degree in Fayette County is higher than the MSA and Kentucky, it is slightly lower than the nation. Asian alone has the highest percentage with a bachelor's degree or higher across all geographies.

Table 2-3 Percentage with a Bachelor's Degree or Higher by Race (25 Years and Over)

Race	Fayette County	Lexington-Fayette MSA	Kentucky	United States
White alone, not Hispanic or Latino	48.7%	39.8%	24.5%	35.8%
Black alone	19.5%	19.0%	17.1%	21.6%
Hispanic or Latino Origin	19.2%	16.9%	18.9%	16.4%
Asian alone	68.5%	64.5%	52.4%	54.3%
Some other race alone	15.2%	12.3%	12.1%	12.0%
Two or more races	40.8%	38.2%	25.9%	31.9%

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S1501)

Disability. The U.S. Census Bureau's American Community Surveys collect data on disabilities by asking respondents whether they have difficulty with various activities such as hearing, seeing, and living independently. Respondents may indicate that they have difficulty with more than one activity. Table 2-4 displays the number and percentage of people reporting each type of disability for Fayette County, Kentucky, and the United States. In Fayette County, 20.2% of the population between the ages of 18 and 64 reported having a type of disability, compared to 30.7% for Kentucky and 19.1% for the United States. Fayette County's disability rates closely resemble the United States. The most frequently occurring disabilities among Fayette County's working age population were ambulatory difficulties (4.5%) and cognitive difficulties (5.4%). Ambulatory disabilities include limitations with basic physical activities such as walking, climbing stairs, reaching, or lifting.⁴ Cognitive disability refers to difficulty learning, remembering, concentrating, or making decisions.

Table 2-4 Number of Disabled Individuals (Civilian Noninstitutionalized Population Aged 18 to 64) by Disability Type and Location

Type of Difficulty	Fayette County		Kentucky		United States	
	With a disability	% With a disability	With a disability	% With a disability	With a disability	% With a disability
Total	21,646	20.2%	439,607	30.7%	20,274,025	19.1%
Hearing difficulty	3,446	1.7%	88,102	3.3%	3,866,792	2.0%
Vision	3,994	1.9%	93,690	3.5%	3,755,672	1.9%
Cognitive	11,355	5.4%	197,051	7.4%	9,085,439	4.6%
Ambulatory	9,289	4.5%	217,947	8.2%	9,246,129	4.7%
Self-care	3,250	1.6%	74,119	2.8%	3,463,855	1.8%
Independent living	7,893	3.8%	159,167	6.0%	7,399,130	3.7%

Source: U.S. Census Bureau, 2019 American Community Survey 1-Year Estimates (Table S1810).

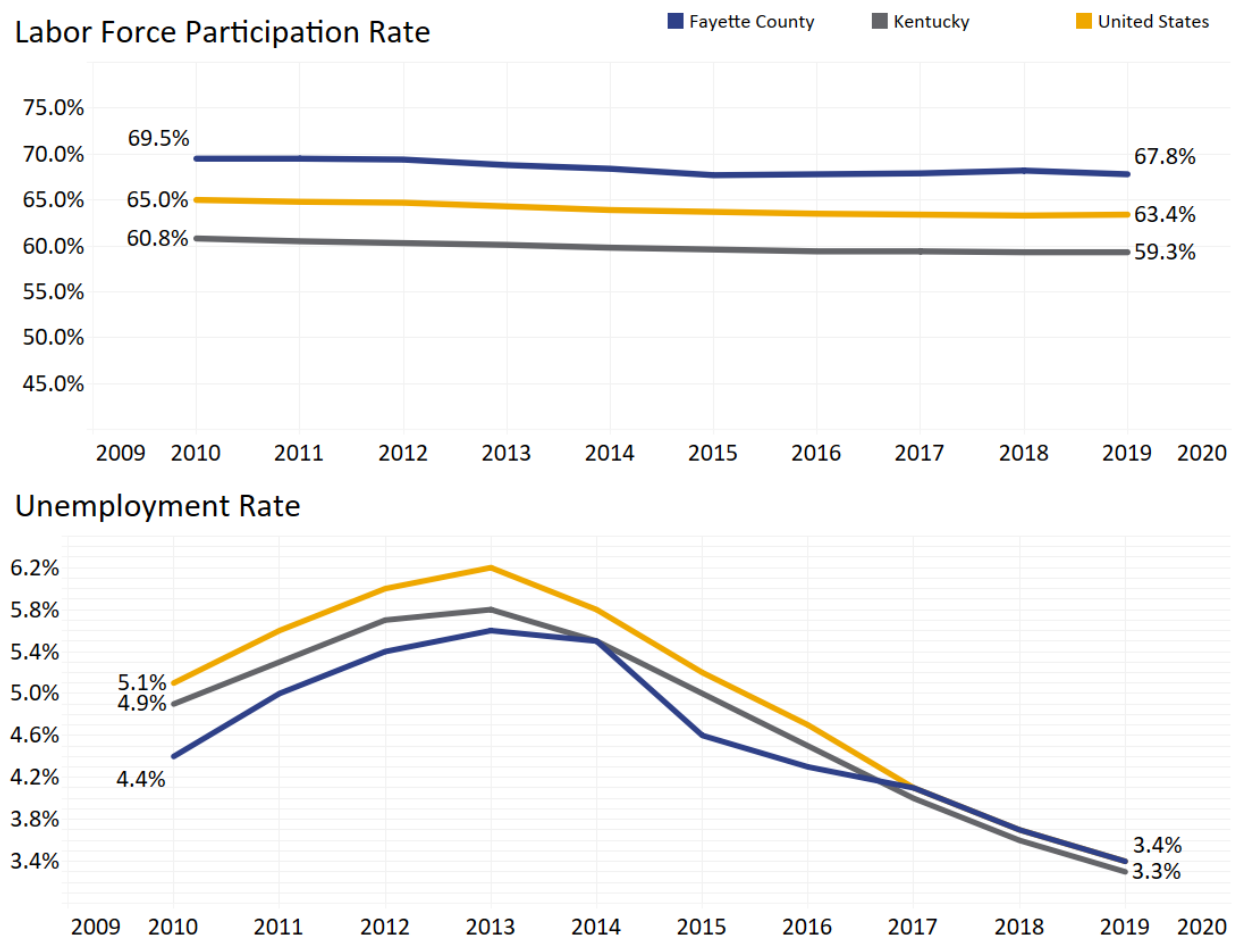
⁴ Steven Ruggles, Sarah Flood, Ronald Goeken, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 12.0 [dataset]. Minneapolis, MN: IPUMS, 2022. <https://doi.org/10.18128/D010.V12.0>.

Labor Force Participation and Unemployment

The labor force consists of individuals who are either employed or searching for work and is typically measured as the labor force participation rate. This rate indicates the percentage of an area's civilian noninstitutional population aged 16 or older who are in the labor force. Individuals who are actively serving in the military, living in mental facilities or nursing homes, or are currently incarcerated are not counted in the labor force participation rate.

The labor force participation rate is an important indicator of an area's economic health. Generally, a higher labor force is associated with a stronger economy, higher earnings, lower reliance on public assistance, and a higher quality of living. According to the U.S. Census Bureau's American Community Survey, 68% of Fayette County's population aged 16 and over were in the labor force in 2019. Fayette County's rate compares well relative to the U.S. rate of 63.4% (Figure 2-D).

**Figure 2-D Unemployment Rate and Labor Force Participation Rate
(Civilian Workforce Population 16 years and over)**



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table DP03).

An individual's decision to work is fundamentally a decision of how to allocate their time to maximize their wellbeing. Individuals might allocate a portion of their time to working a job and earning money, household production such as caring for a home or children, or leisure activities. While working allows an individual to increase income, it also requires the person to give up time spent on other activities. As a result, people tend to work when the benefits to working exceed the value they place on these other activities. Higher wages tend to increase the likelihood that an individual enters the labor force. Low wages or low probability of finding work discourages labor force participation.

Ultimately, workers might not participate in the labor force for various reasons. For example, students often do not work while in school. In these cases, working now might provide less value than the value of studying. Likewise, labor force participation tends to be lower for older individuals as they retire. Others do not participate in the labor force because they are focused on raising children or caring for elderly parents. They might value the time spent caring for family greater than the income they give up by not working. For these individuals, the cost of working might be too high. Some individuals face barriers such as a lack of childcare options, disabilities, substance abuse, and past incarcerations that make it harder to find work and reduce labor force participation.

The unemployment rate is another important indicator of an area's economic health. The unemployment rate measures the percentage of workers in the labor force who do not have a job but are looking for work. A high unemployment rate indicates workers are available to work but are struggling to find a job. This section examines how Fayette County's labor force participation and unemployment rates vary by different population groups. Comparing these rates helps identify how some factors such as race, education, or disabilities present barriers to finding employment. If a group faces persistently low labor force participation or high unemployment rates, it indicates that group might face more significant barriers to working.

Age. Figure 2-E shows how labor force participation and unemployment rates vary by four age cohorts. Labor force participation was highest for those aged 25 to 54. In 2019, 84.6% of Fayette County residents aged 25 to 54 were in the labor force. LFP among those aged 20 to 24 was lower, which likely reflects higher rates of school enrollment. After age 54, LFP starts to decline as workers leave the labor force for retirement. While many workers leave the labor force as they age, some continue working. In 2019, more than one-fifth of those over the age of 64 were still in the labor force.

Labor force participation in Fayette County was generally higher than in the rest of Kentucky and the U.S. This was true across all four age groups, except for those aged 20 to 24. For this group, Fayette County had a similar LFP rate to the state and nation.

Labor force participation within age groups was steady from 2010 to 2019. However, as the population ages and more workers move into their retirement years, overall participation trends downward. The general aging of the population has been one of the main trends affecting labor force participation across the nation. As baby boomers, who account for a large share of the population, retire and people are generally living longer, a smaller share of the population participates in the labor force.

Unemployment rates tended to be higher among younger workers. In Fayette County, individuals aged 20 to 24 had unemployment rates of 10% in 2010 and 7.2% in 2019. Fayette County saw lower unemployment rates than Kentucky and the United States for individuals between 20 to 24 years and 25 to 54 years of

age. For those individuals between 55 to 64 years, Fayette County had a slightly higher unemployment rate than Kentucky and the United States in recent years. For those aged 65 and over, Fayette County had a slightly lower rate than the nation.

Sex. Figure 2-F shows unemployment and labor force participation rates by sex. As with age, unemployment rates in Fayette County, Kentucky, and the United States follow in kind. Overall, both males and females residing in Fayette County had lower unemployment rates than those in Kentucky and across the United States. However, Fayette County's advantage has declined over the years. In Fayette County, the unemployment rate for females was 5.5% in 2010 and 4.2% in 2019, with the highest rate of 7.1% occurring in 2013. Males in Fayette County showed a similar trend, with an unemployment rate 6% in 2010 and 4.8% in 2019. The highest rate for males in Fayette County was 7.9% in 2013.

In terms of the LFP rate, Fayette County, again, had a higher LFP rate than Kentucky or the United States. Regardless of geography, males had a higher LFP rate than females. Comparing the rates between the three locations, LFP for females was highest in Fayette County, followed by the United States, and then Kentucky. Males residing in Fayette County had a slightly higher LFP rate than the United States overall in 2010 (83.2% in Fayette County versus 83.1% in the U.S.) but slightly lower than the United States in 2019 (82.3% in Fayette County versus 82.4% in the U.S.). Across all geographies, LFP rates for males decreased slightly between 2010 and 2019 and increased slightly for females.

One potential reason fewer females participate in the workforce is the presence of children in the household. Figure 2-G displays the unemployment and labor force participation rates for female workers aged 20 to 64 by the presence of children in the household. The figure shows rates for four groups of females between the ages of 20 and 64: all females aged 20 to 64 regardless of whether they have children, those with only children under 6 years of age, those with children only aged 6 to 17 years, and those with children under 6 years of age and children between the aged 6 to 17 years.

LFP among females differed somewhat based on whether they had children and the ages of the children. Women with only school aged children (ages 6 to 17 years) were somewhat more likely to participate in the labor force (84.2% in Fayette County) than women with only younger children (79.8% in Fayette County). LFP was even lower for women with children in both age groups (72.9% in Fayette County), compared to households without children or children in each age cohort.

In Kentucky and the U.S., the unemployment rate for females with children under the age of 6 was higher than for females with school aged children. This might reflect childcare needs for women with young children who have yet to start school. The need for childcare for young children likely means that these women face more challenges finding employment that can accommodate their needs. These needs might include on-site or childcare nearby, flexible schedules, or other community support. In recent years, the unemployment rate among females with young children in Fayette County was considerably lower than Kentucky. This does not mean childcare is not a challenge for women in Fayette County, but that it might be a larger barrier to finding work in the rest of the state.

A 2019 report by the Brookings Institute's Hamilton Project identified access to affordable childcare as one of the most significant barriers to labor force participation for women.⁵ The reported found that 34.9% of

⁵ Nunn, Ryan, Jana Parsons, and Jay Shambaugh. *Labor Force Nonparticipation: Trends, Causes, and Policy Solutions*. The Hamilton Project. Brookings Institute. Oct 2019.

women surveyed nationally who were not in the labor force cited family responsibilities as the reason why they were not searching for work. This was considerably higher than the 13.3% of men who listed family responsibilities as the reason they did not search for employment.

Cascio (2017) notes while public schools provide childcare for school aged children, the high cost of childcare can be unaffordable for mothers of younger children.⁶ This appears consistent with the lower LFP rates among females with young children in Fayette County. Researchers have also found that, in states with lower childcare costs and longer school days, mothers were significantly more likely to be employed.⁷

Race and Ethnicity. As with age and sex, employment trends vary across race and ethnicity. Figure 2-H displays unemployment and labor force participation rates for four main racial and ethnic groups: Black or African American, Hispanic or Latino origin (of any race), White alone (not Hispanic or Latino), and Asian. All four racial/ethnic groups had higher LFP rates in Fayette County than in Kentucky and the nation. Those of Hispanic or Latino origin had the highest LFP rates, ranging between 76.1% in 2010 to 77.2% in 2019. In terms of unemployment, the Black or African American group had the highest unemployment rates. However, unemployment rates among Fayette County's Black or African American population were approximately three percentage points lower than those of Kentucky or the United States, regardless of year.

Past incarceration can be a significant barrier to participating in the labor force. While this issue is not unique to minority groups, it does disproportionately affect minorities. An analysis from the Pew Research Center showed that Blacks make up 12% of the U.S. adult population but 33% of the U.S. prison population. Hispanics account for 16% of the adult population and 23% of the prison population. Past incarceration has been shown to substantially reduce employment among young Black men.⁸ Incarceration can negatively affect labor force participation and employment in several ways. Some employers might be reluctant to interview or hire applicants with a criminal background. The lower probability of finding work can discourage those who have previously been incarcerated from seeking work. Research has shown that incarceration can also disrupt employment networks that young Black men use to find jobs.⁹

Educational Attainment. Figure 2-I displays the unemployment and labor force participation rates for four groups of educational attainment: less than high school graduate, high school graduate or equivalent, some college or associate degree, and bachelor's degree or higher. It also compares Fayette County to Kentucky and the United States. Unemployment rates were lower and labor force participation rates were higher for those with more education. Regardless of area, the figure shows a distinct difference between individuals with some college versus no college in both the unemployment rate of those groups and the LFP rate.

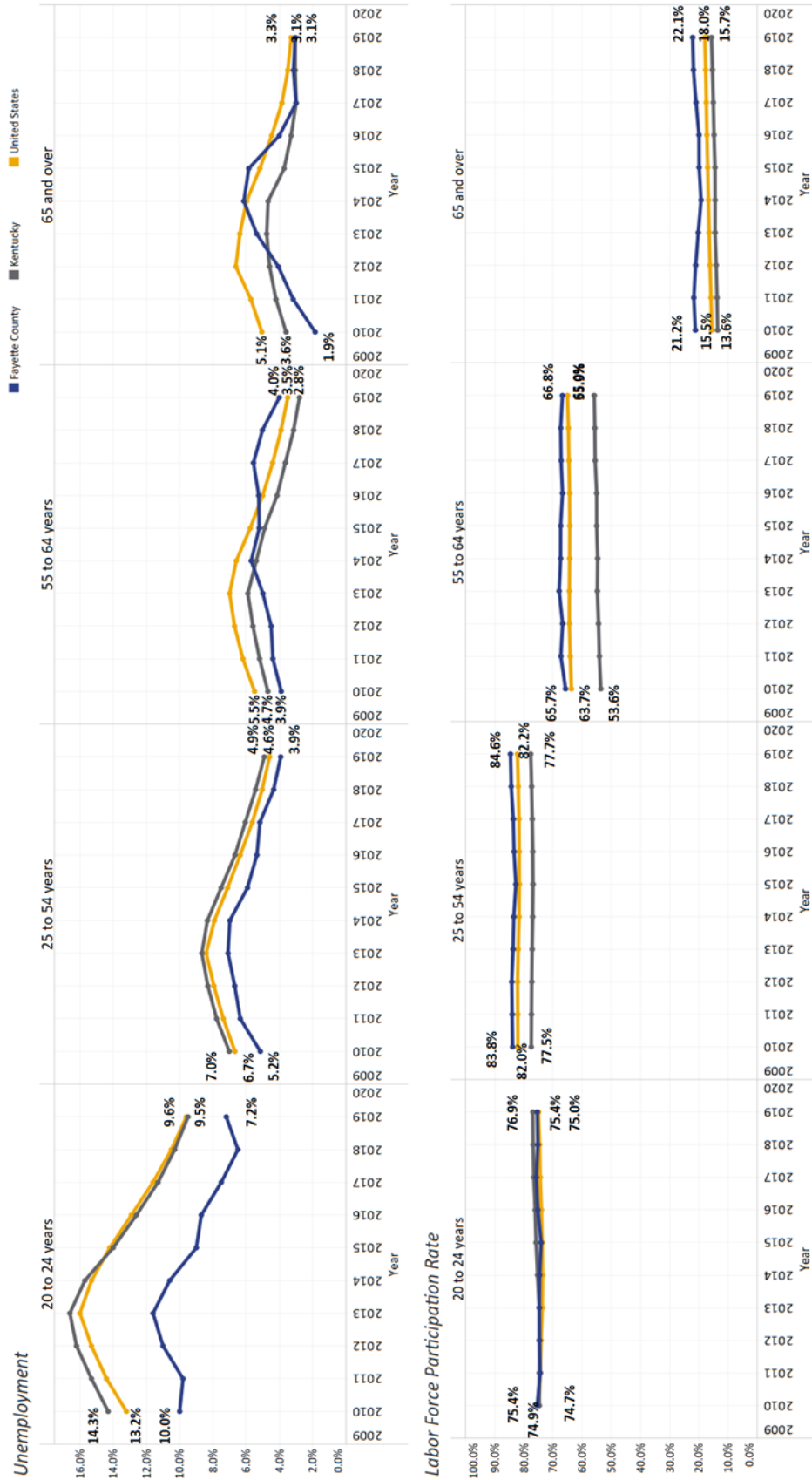
⁶ Cascio, Elizabeth U., Public Investments in Child Care. The Hamilton Project. Brookings Institute. Oct 2017.

⁷ Ruppanner, Leah, Stephanie Moller, and Liana Sayer. "Expensive Childcare and Short School Days = Lower Maternal Employment and More Time in Childcare? Evidence from the American Time Use Survey." *Socius: Sociological Research for a Dynamic World* 5: 1–14 2019.

⁸ Holzer, Harry J., Paul Offner, and Elaine Sorensen. "Declining employment among young Black less-educated men: The role of incarceration and child support." *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management* 24.2 (2005): 329-350.

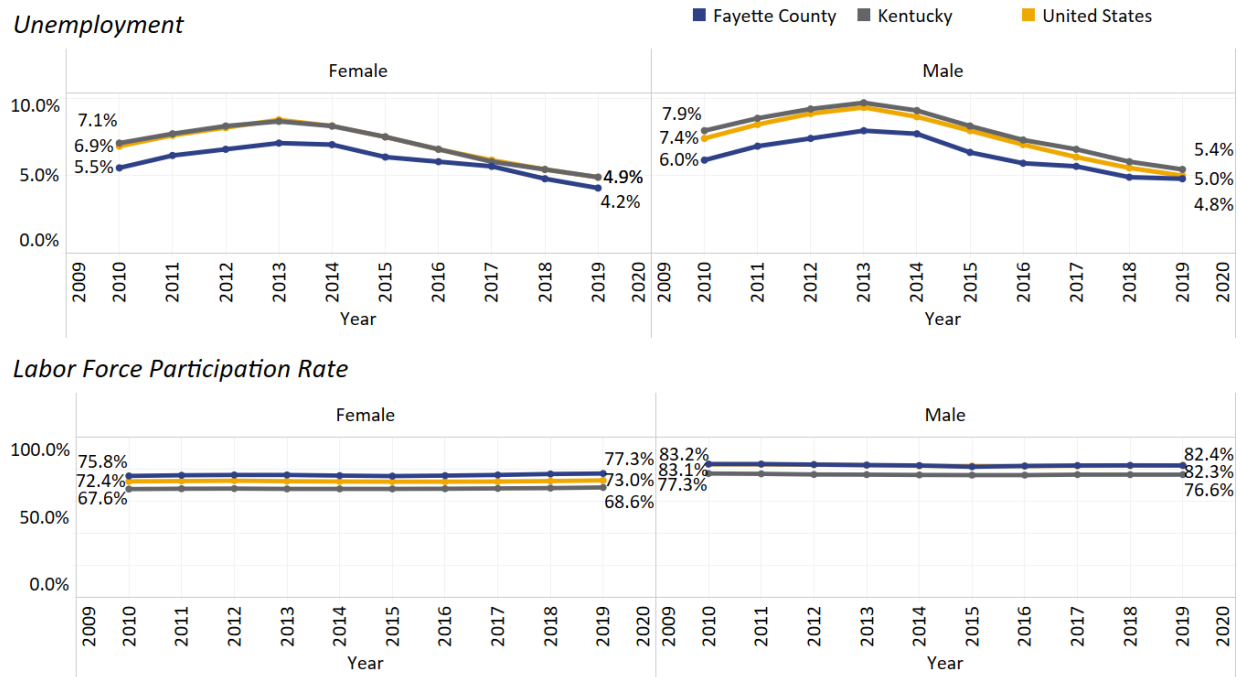
⁹ Travis, Jeremy, Amy L. Solomon, and Michelle Waul. "From prison to home: The dimensions and consequences of prisoner reentry." (2001).

Figure 2-E Unemployment Rate and Labor Force Participation Rate by Age



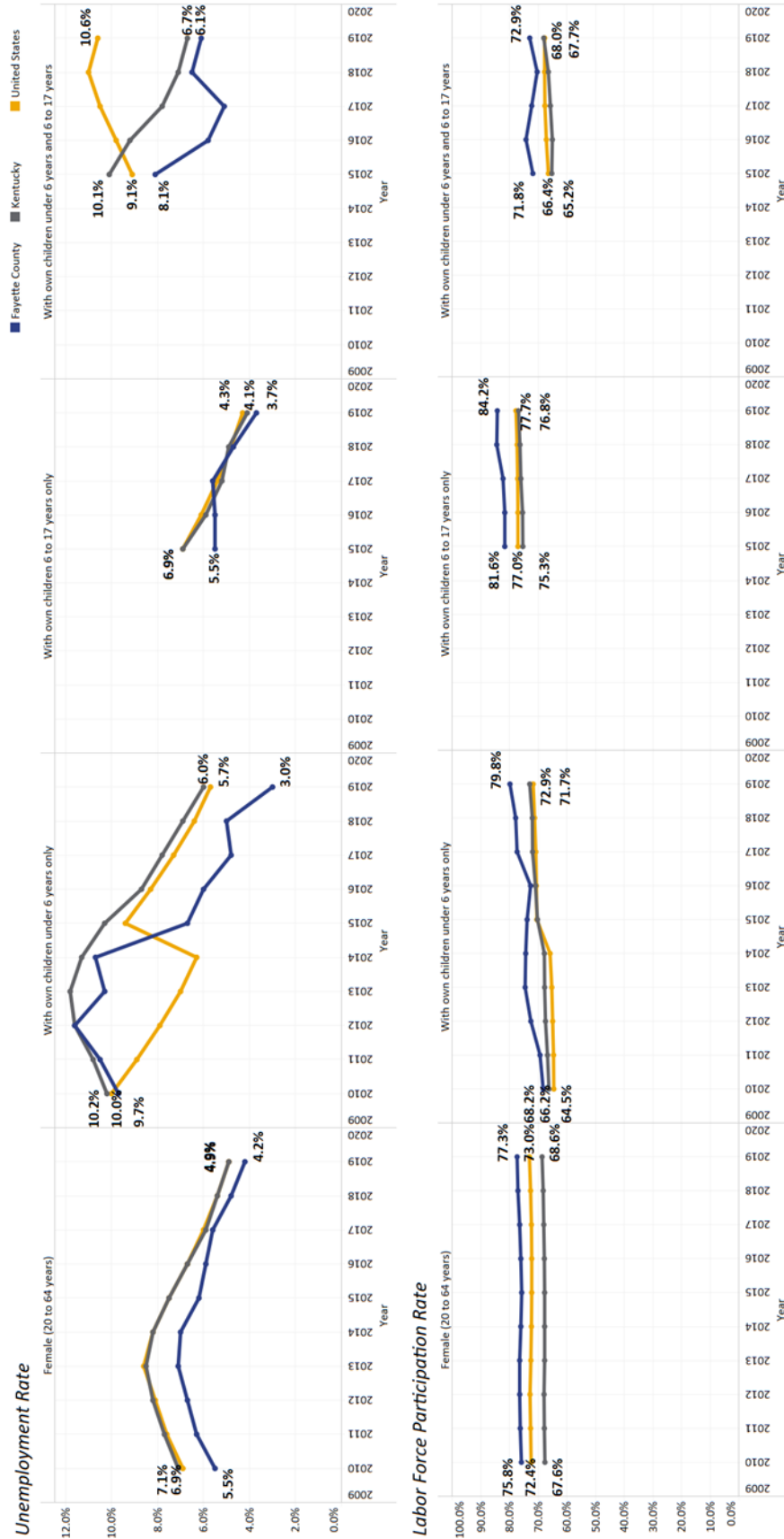
Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S2301)
 Rates for the Lexington-Fayette MSA are not shown as they were virtually identical to those in Fayette County.

Figure 2-F Unemployment Rate and Labor Force Participation Rate by Sex (16 Years and Over)



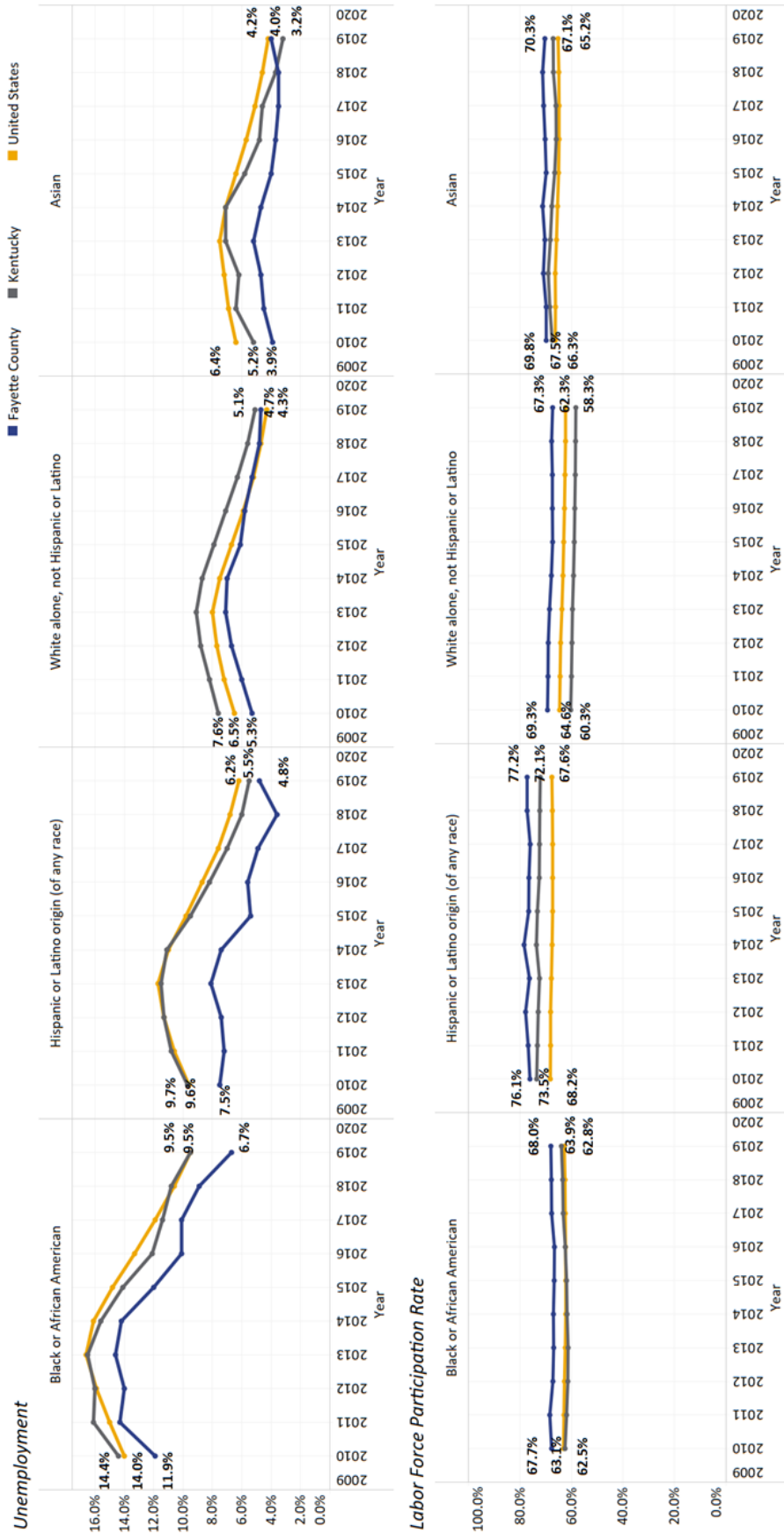
Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S2301)

Figure 2-G Female Workers (20 to 64 years) by Presence of Children in Household



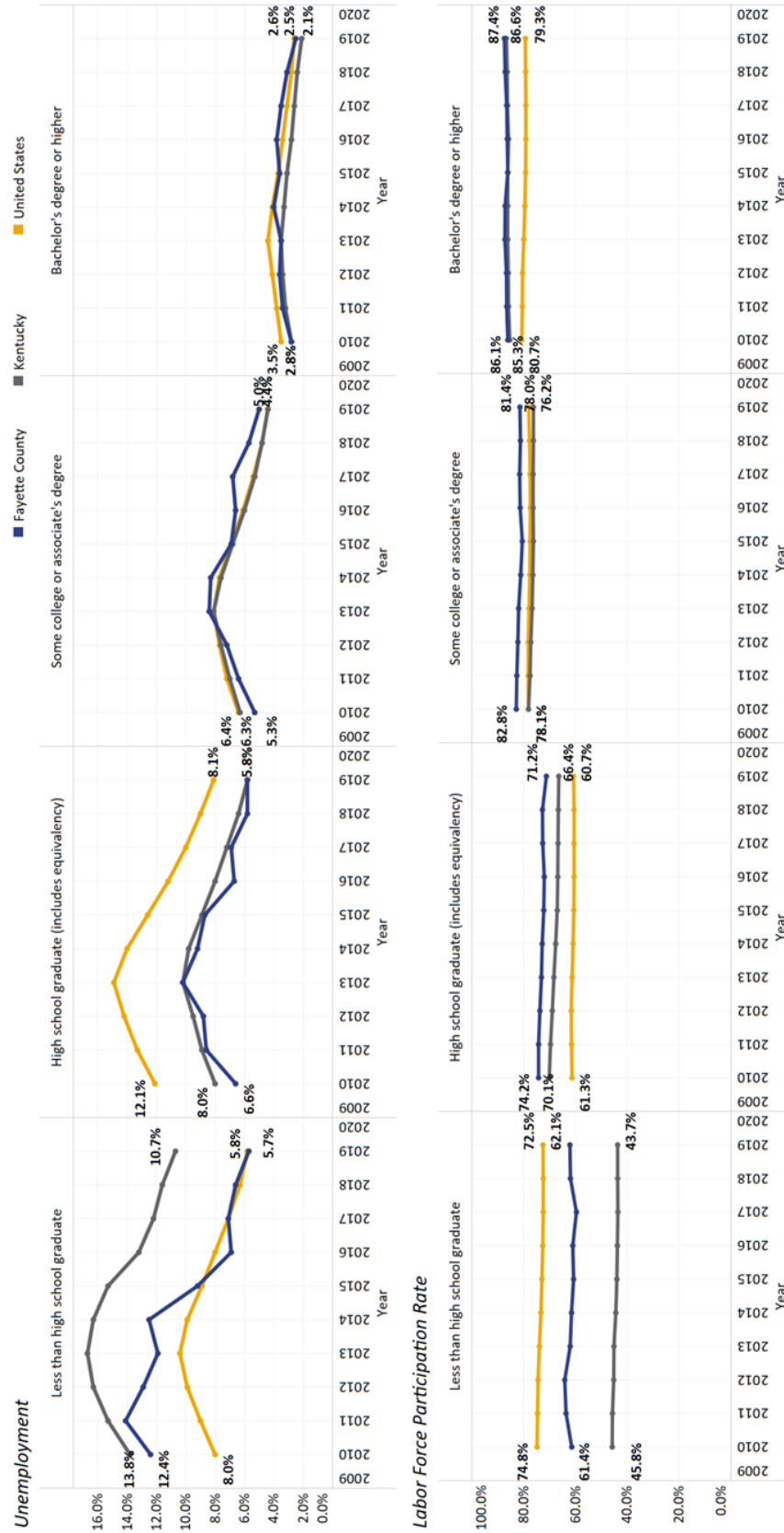
Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S2301)

Figure 2-H Unemployment Rate and Labor Force Participation Rate by Race/Ethnicity (16 years and over)



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S2301)

Figure 2-I Unemployment Rate and Labor Force Participation Rate by Educational Attainment and Geography (2010-2019)



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates (Table S2301)

Disabilities and Health Issues. For many individuals, disabilities and health issues can present significant challenges to entering the labor force and finding employment. These challenges can include chronic health issues such as COPD and diabetes, while also including mental health challenges such as opioid addiction. A 2019 report found that labor force participation among Kentucky residents with diabetes was significantly lower for both men and women in their prime working years.¹⁰ The effect of rising substance abuse rates on labor force participation has also been a particular concern over the past two decades. Krueger estimated that the increase in opioid prescribing from 1999 through 2015 reduced labor force participation for both men and women.¹¹ Others have found similar effects of opioids.^{12,13} In Kentucky, growth in opioid abuse was estimated to reduce labor force participation by 1.3 to 3.1 percentage points.¹⁴

Those who reported suffering from a disability were much less likely to participate in the labor force. In 2019, the LFP rate for this group in Fayette County was 46.7% (Figure 2-J). While this was better than the rates for those with disabilities in Kentucky and the U.S., it was much lower than the general population. Unemployment rates for those with a disability were somewhat higher in Fayette County than in the rest of the state and the nation. This might reflect Fayette County's higher LFP rate. Individuals with a disability may face unique barriers to finding employment. This individual might be less likely to even attempt to find work if they lived in a rural area with fewer job opportunities and have fewer resources to provide an accommodation. Conversely, urban areas might offer more job opportunities and more resources that could accommodate a disabled worker. As a result, the individual might be more likely to participate in the labor force if they live in an urban area. However, the disability might still present an overwhelming obstacle to finding work that causes the individual to be more likely to be unemployed.

¹⁰ Clark, Michael W., Jenny Minier, Charles Courtemanche, Bethany Paris, Michael Childress. The Economic Impact of Diabetes in Kentucky. University of Kentucky. Center for Business and Economic Research. 2019.

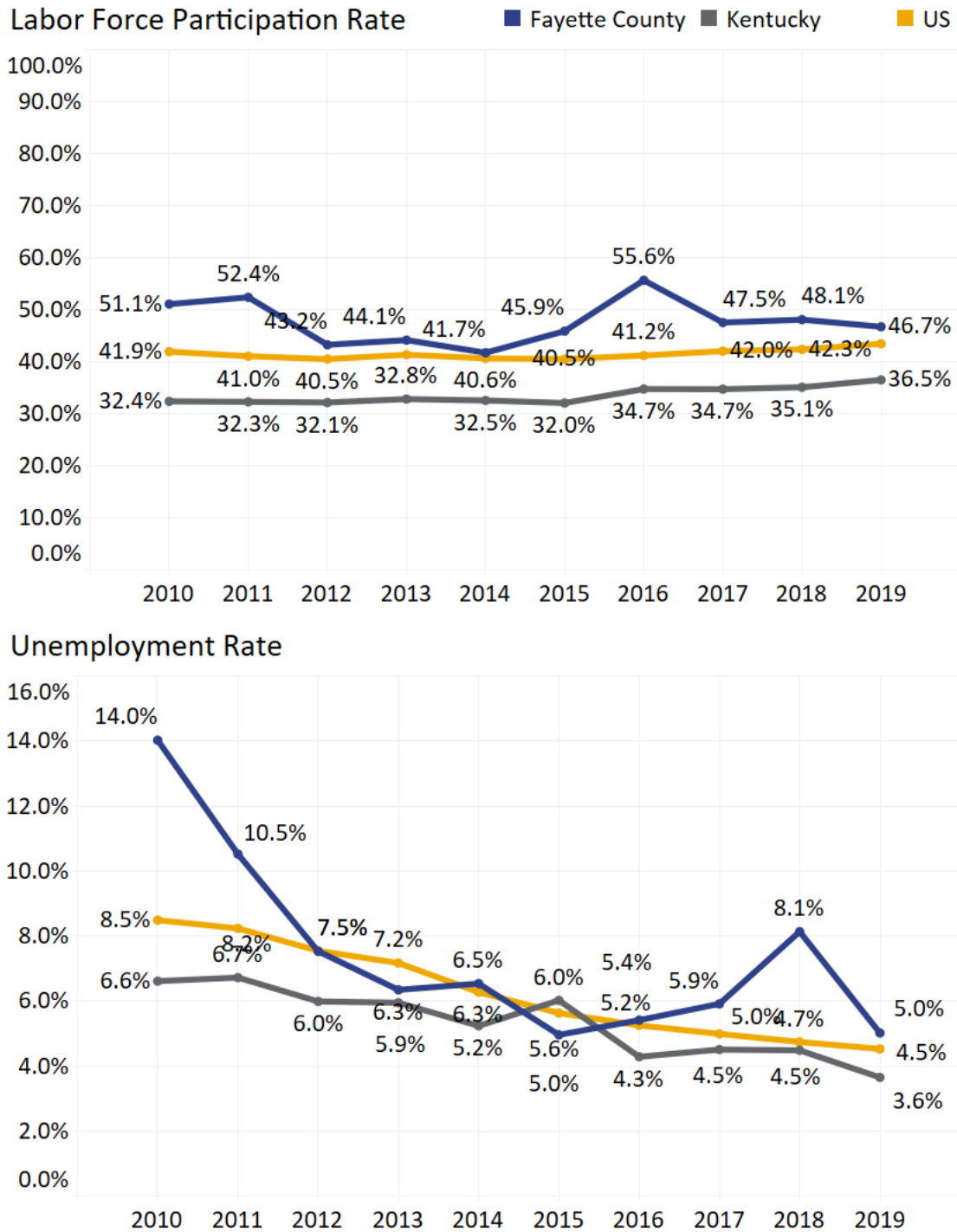
¹¹ Krueger, A. B. (2017). Where Have All the Workers Gone? An Inquiry into the Decline of the US Labor Force Participation Rate. Brookings papers on economic activity, 2017(2), 1-87.

¹² Aliprantis, D., & Schweitzer, M. E. (2018). Opioids and the Labor Market. Federal Reserve Bank of Cleveland. Working Paper 18-07.

¹³ Harris, Matthew C., et al. "Prescription Opioids and Labor Market Pains The Effect of Schedule II Opioids on Labor Force Participation and Unemployment." *Journal of Human Resources* 55.4 (2020): 1319-1364.

¹⁴ Clark, Michael W., Jenny Minier, Charles Courtemanche, Bethany Paris, Michael Childress. The Economic Impact of Opioids on Kentucky's Workforce. University of Kentucky. Center for Business and Economic Research. 2019.

**Figure 2-J Unemployment Rate and Labor Force Participation Rate
Among Those Reporting a Disability
(Civilian noninstitutionalized population 18 to 64 years, 2010-2019)**



Source: U.S. Census Bureau, 2010-2019 American Community Survey 5-Year Estimates (Table S1810).

Table 2-5 shows estimates of number of people in Fayette County with each type of disability by employment status. Note that an individual may have more than one disability. Of nearly 22,000 Fayette County residents who reported a disability, 53% were not in the labor market. There were 6,622 individuals not participating in the labor force who reported suffering from a cognitive limitation. There were also nearly 6,600 who reported ambulatory limitations that were not in the labor force.

Table 2-5 Employment Status by Disability Type Fayette County (2019)

Disability Type	Employed	Unemployed	Not in Labor Force
With a disability	9,026	1,085	11,535
<i>With a cognitive difficulty</i>	3,756	977	6,622
<i>With a hearing difficulty</i>	1,907	42	1,497
<i>With a self-care difficulty</i>	695	-	2,555
<i>With a vision difficulty</i>	1,624	116	2,254
<i>With an ambulatory difficulty</i>	2,691	31	6,567
<i>With an independent living difficulty</i>	1,636	91	6,166

Source: U.S. Census Bureau, 2019 American Community Survey 1-Year Estimates (Table S18120).

Recent Trends in the U.S. Labor Force

The discussion above focuses on estimates from data collected through the U.S. Census Bureau's American Community Survey (ACS). A major advantage of the ACS is that it surveys a large number of households making it possible to estimate unemployment and labor force participation rates for specific groups of the population in relatively small areas, such as counties. However, the Census Bureau only conducts the ACS annually and the results are typically not available for some time. As a result, estimates from the ACS do not reflect recent trends—including the impacts of the pandemic.

To provide a better understanding of how the labor market has changed since the pandemic began, this section examines labor market trends from other data sources. The data comes from the Current Population Survey (CPS), which is managed by the U.S. Bureau of Labor Statistics (BLS) and administered by the U.S. Census Bureau. The BLS conducts this survey monthly and the data is available the following month, which allows for analysis of recent trends. The CPS does provide estimates of the unemployment rates and labor force participation rates for the nation and individual states. In addition, the BLS estimates unemployment rates for counties that are based partially on the CPS. However, the CPS does not provide estimates by demographic groups at the state or county levels. Therefore, the discussion below focuses mainly on national trends.

Figure 2-K shows the monthly unemployment rate for Fayette County, Kentucky, and the nation and labor force participation (LFP) rate for Kentucky and the nation roughly six months before the global outbreak until March of 2022. When restrictions were put in place to reduce the spread of COVID, many workers lost their jobs. Unemployment rates across the nation jumped and then began to decrease as businesses reopened. As of March 2022, Kentucky's unemployment rate had fallen below its pre-pandemic levels. After jumping to 14.1% in April of 2020, Fayette County's unemployment rate fell to 3.1% in March 2022.¹⁵ While Fayette County experienced the same trends as Kentucky and the nation, it did not see quite the same level of unemployment as Kentucky, which peaked at 16.5% in April 2020, or the U.S. (14.7% in April 2020) during the beginning months of the pandemic.

Labor force participation rates fell nationally and in Kentucky during the pandemic. While the BLS does not publish labor force participation rates for counties, it reported that Fayette County did see a substantial drop in the number of people in the labor force.¹⁶ Labor force participation has since improved. Estimates for the US and Kentucky were slightly lower in March 2022 than pre-pandemic levels but were within one percentage point of pre-pandemic levels.

Figures 2-L through 2-O show the monthly unemployment and labor force participation rates for the United States across several demographic groups. As discussed earlier in the chapter, Fayette County closely mirrors the national trends, and, while the monthly estimates are not available at the county level for most of these demographic groups, the national estimates likely provide a good indication of the general trends occurring in Fayette County.

Much of the pandemic related jobs losses occurred in service jobs that require personal contact, such as restaurants and entertainment venues. These jobs are disproportionately filled by workers who are young,

¹⁵ While the U.S. and Kentucky rates are seasonally adjusted, Fayette County's rates are not seasonally adjusted.

¹⁶ United States. Bureau of Labor Statistics. Local Area Unemployment Statistics.

Black, Hispanic, female, and who have lower education levels. As a result, these workers experienced more significant changes in LFP and unemployment during the pandemic.

Age. Nationally, labor force participation declined among all age groups when the pandemic began, but those aged 20 to 24 saw the largest declines (Figure 2-L). The LFP rate for this group fell by nearly nine percentage points during the first months. Labor force participation has since recovered most of these losses. As of March 2022, participation rates among those aged 55 to 64 were above pre-pandemic levels. Rates for those aged 25 to 54 were only one-tenth of a percent below June 2019.

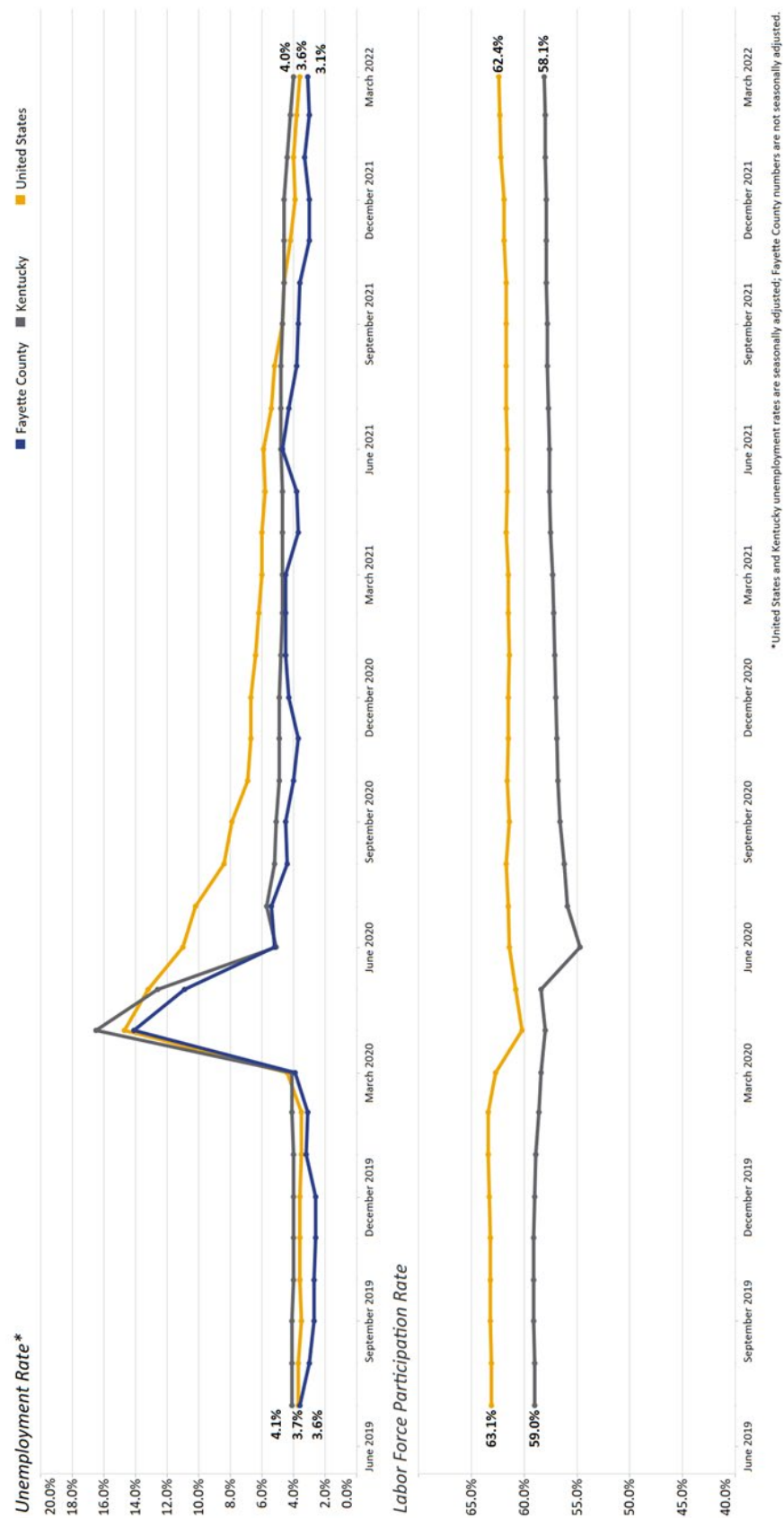
The jump in unemployment was highest among the youngest cohort. As of March 2022, the unemployment rate was 7.5% for those aged 20 to 24, which was still up from 6% in June 2019. The March 2022 unemployment rate for the older two cohorts was below that of pre-pandemic rates. For those aged 25 to 54 the rate had returned to 3%.

Race. The unemployment rate spiked and LFP dipped across all racial cohorts when the pandemic began (Figure 2-M). The Hispanic or Latino population saw the highest level of unemployment during the initial phases of the pandemic, reaching 18.8% in April 2020. As of March 2022, that rate had dropped back to pre-pandemic levels (4.2%). The Black or African American cohort had the highest level of unemployment overall (hitting 16.6% in May 2020 and recovering to 6.3% in March 2022) and the lowest labor force participation rate (falling to 58% in April 2020 and recovering to 61.7% in March 2022).

Sex. Both males and females experienced a spike in unemployment and a drop in labor force participation with the pandemic (Figure 2-N). Both began with an unemployment rate of 3.6% in June 2019, but the percentage of unemployed women was higher than their male counterparts with unemployment surging to 16.1% for women and 13.5% for men in April 2020. As of March 2022, 56.8% of women and 68.3% of men were in the labor force. The labor force participation rate among women was down 0.4 percentage points from June 2019 to March 2022 and 0.8 percentage points for men.

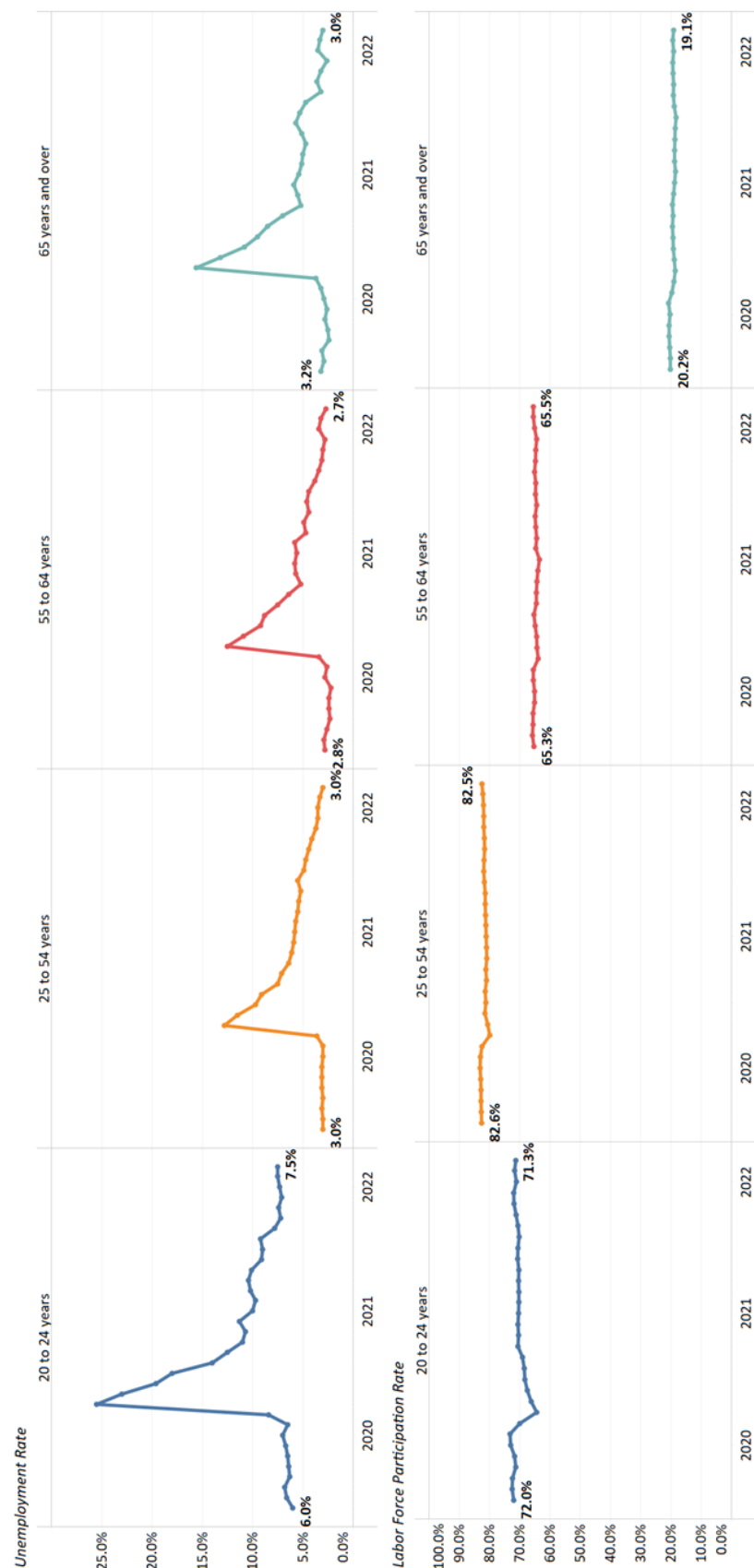
Educational Attainment. As discussed, those with higher levels of educational attainment are more likely to participate in the labor force and be employed. During the pandemic closures, individuals with less than a high school diploma experienced staggering unemployment, topping out at 21.1% (Figure 2-O). Those with a high school diploma or equivalent and those with some college or an associate degree also experienced a dramatic spike with unemployment rising to 17.6% and 15.3%, respectively. While those with a bachelor's degree or higher also experienced higher unemployment, it was not to the same degree as those with less education, only climbing to 8.4%.

Figure 2-K Monthly Labor Force Statistics by Geography (June 2019 through March 2022)



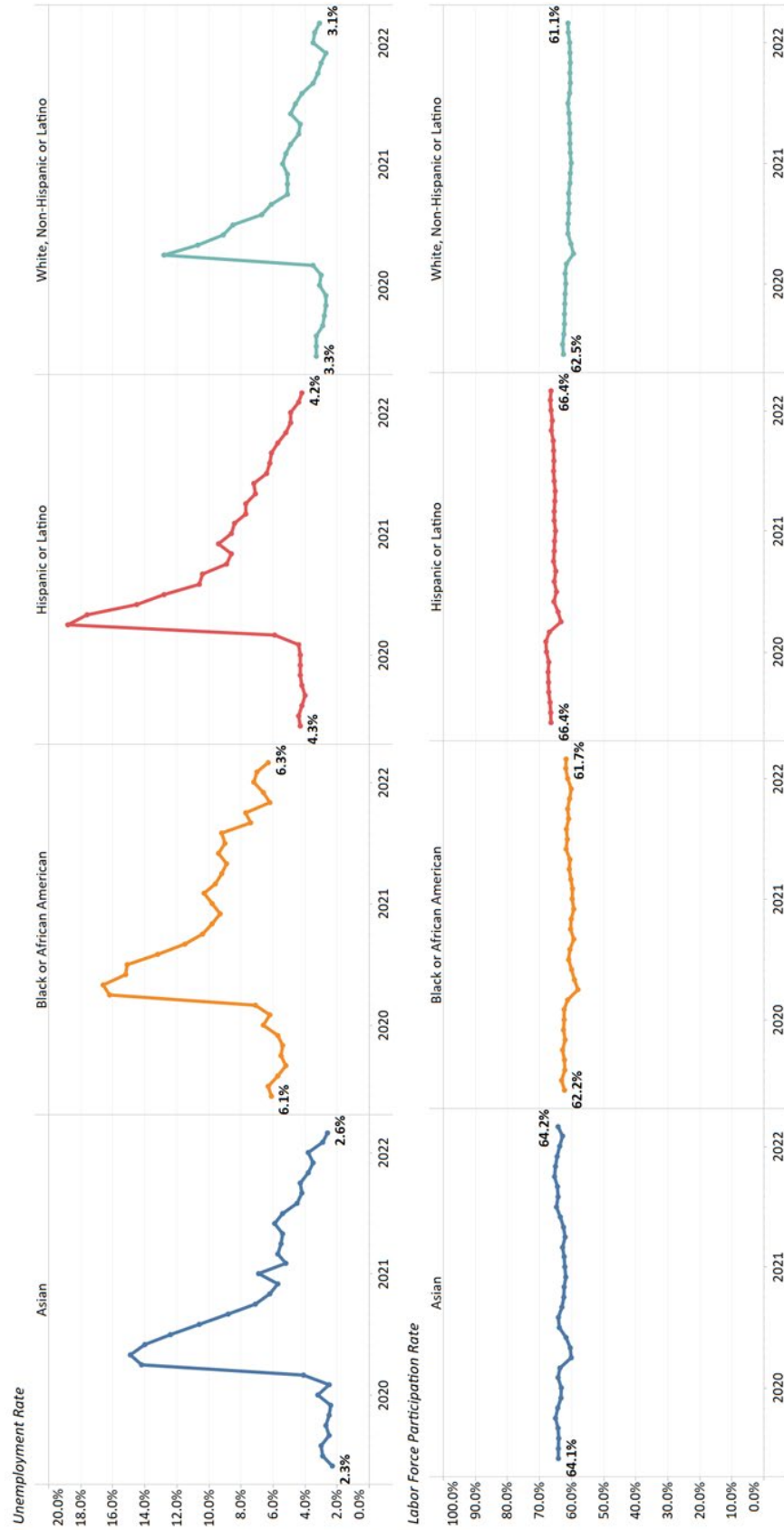
Labor Force Participation & Unemployment Rate (US & KY): U.S. Bureau of Labor Statistics. (2022, May 4). Employment situation summary. Retrieved May 4, 2022, from <https://www.bls.gov/news.release/emp/sit.nr0.htm>.
Unemployment Rate (Fayette County): U.S. Bureau of Labor Statistics, Unemployment Rate in Fayette County, KY [KYFAYE5URN], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/KYFAYE5URN>, May 4, 2022

Figure 2-L U.S. Monthly Labor Force Statistics by Age Group (June 2019 through March 2022)



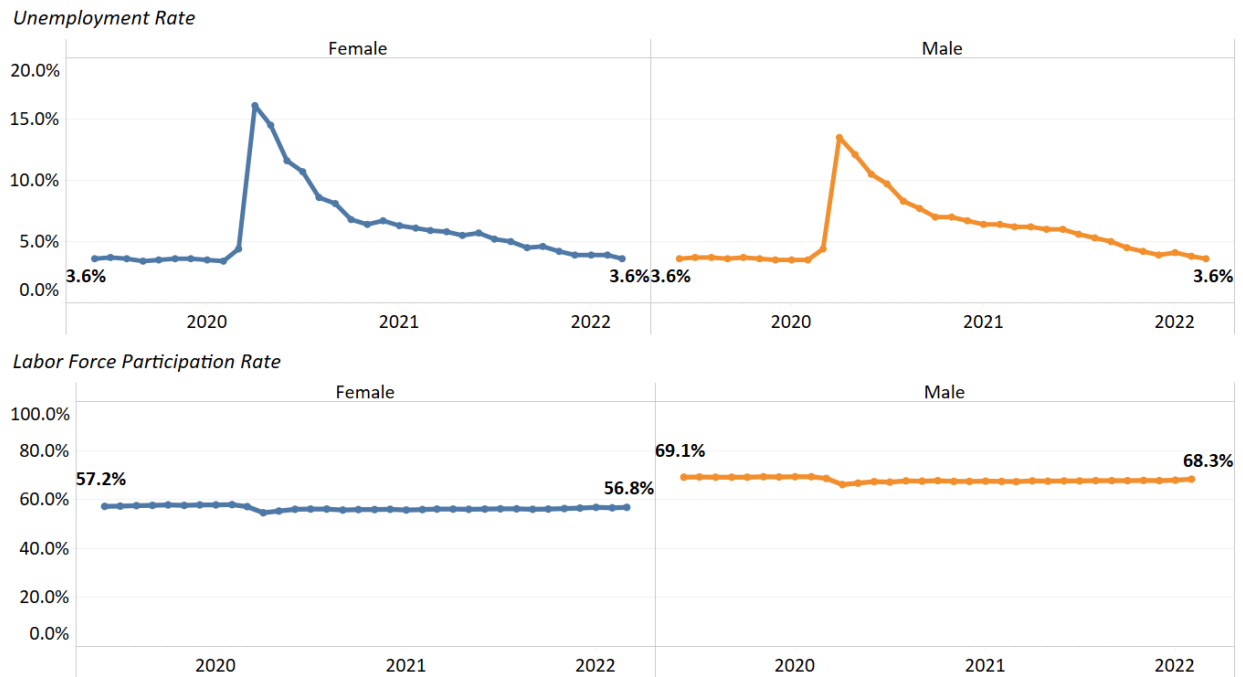
Bureau of Labor Statistics. (2022, May 4). Labor Force Statistics from the Current Population Survey [Data set]. Occupational Employment Statistics. U. S. Department of Labor.

Figure 2-M Monthly Labor Force Statistics by Race (June 2019 through March 2022)



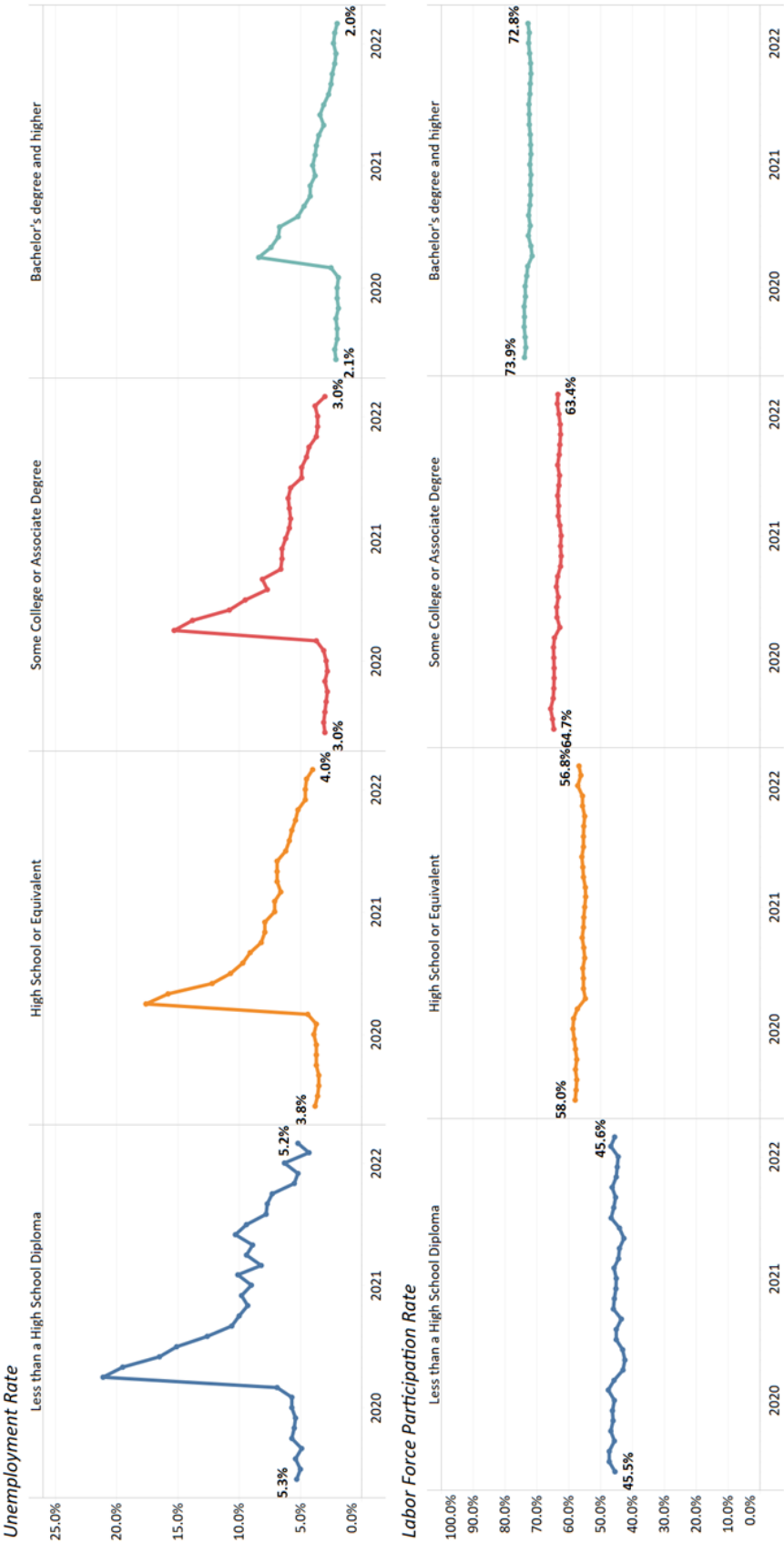
Bureau of Labor Statistics. (2022, May 4). Labor Force Statistics from the Current Population Survey [Data set]. Occupational Employment Statistics. U. S. Department of Labor.
 NOTE: Rates for Hispanic or Latino Seasonally Adjusted; White, Black & Asian not-seasonally adjusted

Figure 2-N Monthly Labor Force Statistics by Sex (June 2019 through March 2022)



Bureau of Labor Statistics. (2022, May 4). Labor Force Statistics from the Current Population Survey [Data set]. Occupational Employment Statistics. U. S. Department of Labor

Figure 2-O Monthly Labor Force Statistics by Educational Attainment (June 2019 through March 2022)



Bureau of Labor Statistics. (2022, May 4). Labor Force Statistics from the Current Population Survey [Data set]. Occupational Employment Statistics. U. S. Department of Labor

Occupational Skills and Educational Requirements

The Kentucky Center for Statistics (KYStats) projects that from 2019 to 2029, the Bluegrass Local Workforce Area will see 441,000 total jobs openings across various occupations.¹⁷ These job openings will be spread out over the 10-year period suggesting an average of roughly 44,100 job openings per year and will cover more than 500 different occupations. Table 2-6 shows the projected openings by major occupation group in the Bluegrass Local Workforce Area. Food preparations, office support and sales related occupations account for the largest share of projected opening. Transportation, production, and healthcare occupations also account for a sizable share of projected openings.

The projections of job openings reflect three main trends across occupations. First, as firms grow and new firms develop, they will create job openings. Firms will also face job openings that are created by workers who leave the labor force. Finally, firms will face opening as workers transfer to other types of occupations.¹⁸ Regardless of the cause, firms will seek new workers who possess the skills and education to fill these openings. This section briefly examines the skill and educational requirements of occupations that are likely to be important to employers in the Bluegrass region.

The O*NET Resource Center, which is sponsored by the U.S. Department of Labor, provides detailed information about the skills and education levels valued by employers for various occupations across the United States. O*NET collects this information by surveying employers about the skills and education they require for various occupations. The survey presents employers with wide range of skills such as active learning, complex problem solving, critical thinking, equipment maintenance, mathematics, programming, reading comprehension, speaking, writing. Employers rank the importance of all skills listed in the survey on a scale from one (not important) to five (very important). Appendix A provides a full list of the skills and detailed definitions.

The overall importance of individual skills to the Bluegrass area's workforce is likely affected by two main factors: the importance of the skill to employers and the number of job openings among occupations that require the skill. A skill might be very important for a specific occupation. However, if there are few openings for occupations that use this skill, the skill might be less important for the workforce in the Bluegrass area. If a skill is important and there are many openings for occupations that require the skill, developing the skill among the area's workforce would be important for filling these openings.

To better understand the importance of these skills to the Bluegrass area, CBER staff calculated the average importance of each skill using the number of projected annual openings as a weight. This essentially gives more importance to skills that are both important to employers and for which there are projected to be many openings.

Table A-1 in Appendix A shows the weighted average importance for each skill across each major occupation group. Table 2-7 shows the same information but for the four skills that ranked high across all occupational groups: active listening, critical thinking, speaking, and reading comprehension. As Table 2-7 shows, these four skills were consistently ranked high among occupations. These skills tend to be general skills that employers rank as important across most occupations.

¹⁷ The Bluegrass Local Workforce Area consists of Anderson, Bourbon, Boyle, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jessamine, Lincoln, Madison, Mercer, Nicholas, Powell, Scott, and Woodford Counties.

¹⁸ Because KYStats projections of job opening are focused on occupations, they do not reflect opening created by workers who change employers but remain in the same occupation.

Table 2-6
Annual Projected Openings in the Bluegrass Local Workforce Area

Occupation Group	Annual Openings	Percentage
Food Preparation and Serving Related Occupations	6,638	15.1%
Office and Administrative Support Occupations	5,549	12.6%
Sales and Related Occupations	4,417	10.0%
Transportation and Material Moving Occupations	4,010	9.1%
Production Occupations	3,809	8.6%
Management Occupations	1,983	4.5%
Healthcare Support Occupations	1,939	4.4%
Healthcare Practitioners and Technical Occupations	1,813	4.1%
Educational Instruction and Library Occupations	1,770	4.0%
Personal Care and Service Occupations	1,733	3.9%
Business and Financial Operations Occupations	1,614	3.7%
Building and Grounds Cleaning and Maintenance Occupations	1,638	3.7%
Installation, Maintenance, and Repair Occupations	1,502	3.4%
Construction and Extraction Occupations	1,463	3.3%
Protective Service Occupations	844	1.9%
Community and Social Service Occupations	622	1.4%
Computer and Mathematical Occupations	584	1.3%
Architecture and Engineering Occupations	577	1.3%
Arts, Design, Entertainment, Sports, and Media Occupations	581	1.3%
Farming, Fishing, and Forestry Occupations	518	1.2%
Life, Physical, and Social Science Occupations	294	0.7%
Legal Occupations	201	0.5%
TOTAL	44,099	100.0%

Source: Kentucky Center for Statistics. Future Demand.

While the skills shown in Table 2-7 were generally important, other specific skills tended to be important for certain occupation groups. Table 2-8 shows the top skills by occupational groups. For example, employers also considered mathematics and complex problem solving an important skill for architecture and engineering occupations. Individuals going into computer and mathematical jobs will be expected to have complex problem solving and programming skills in addition to general skills, such as the ability to actively listen, think critically, and speak well.

O*NET also provides data on the minimum level of education that employers typically require for each occupation. Table 2-9 show the number of openings in the Bluegrass area by occupation group and the educational level typically required. More than 70% of the openings projected for the Bluegrass area will not require more than a high school education. Openings that typically have no formal education requirements are in food preparations, transportation, and sales jobs. Projected openings that are likely to require a high school education include office and administrative support, production, and healthcare support occupations.

**Table 2-7 Skills Ranked as Important by Employers
Across All Occupational Groups**

Occupation Group	Active Listening	Critical Thinking	Speaking	Reading Comprehension
Architecture and Engineering Occupations	3.8	3.8	3.6	3.8
Arts, Design, Entertainment, Sports, and Media Occupations	3.9	3.7	3.9	3.7
Building and Grounds Cleaning and Maintenance Occupations	2.9	2.8	2.8	2.5
Business and Financial Operations Occupations	3.9	3.9	3.9	3.9
Community and Social Service Occupations	4.4	3.9	4.2	3.9
Computer and Mathematical Occupations	3.8	3.9	3.6	3.7
Construction and Extraction Occupations	3.2	3.1	3.2	3
Educational Instruction and Library Occupations	3.8	3.5	3.8	3.9
Farming, Fishing, and Forestry Occupations	3.2	3.4	3.1	3
Food Preparation and Serving Related Occupations	3.4	2.9	3.2	2.8
Healthcare Practitioners and Technical Occupations	4	3.8	3.9	3.8
Healthcare Support Occupations	3.7	3.2	3.3	3.2
Installation, Maintenance, and Repair Occupations	3.2	3.4	--	--
Legal Occupations	4.3	3.9	4.3	4.2
Life, Physical, and Social Science Occupations	4.1	4	3.9	4
Management Occupations	3.9	3.9	4	3.9
Office and Administrative Support Occupations	3.7	3.2	3.7	3.5
Personal Care and Service Occupations	3.3	3.1	3.3	3
Production Occupations	3.1	3	3	3
Protective Service Occupations	3.7	3.4	3.5	3.3
Sales and Related Occupations	3.6	3.1	3.6	3.1
Transportation and Material Moving Occupations	3.1	3	3.1	2.9

Source: CBER analysis of O*NET skills data and Kentucky Center for Statistics Future Demand.

Table 2-8 Top Skills Among Occupational Groups

Architecture & Engineering Complex Problem Solving Mathematics Writing Judgment and Decision Making Monitoring Active Learning	Construction & Extraction Coordination Monitoring Operation and Control Operations Monitoring Judgment and Decision Making Time Management	Installation, Maintenance, & Repair Repairing Troubleshooting Equipment Maintenance Operations Monitoring Quality Control Analysis Operation and Control Monitoring Judgment and Decision Making	Personal Care & Service Service Orientation Monitoring Social Perceptiveness Coordination Judgment and Decision Making Time Management
Arts, Design, Entertainment, Sports, & Media Writing Social Perceptiveness Monitoring Time Management Judgment and Decision Making Coordination	Educational Instruction & Library Instructing Learning Strategies Writing Monitoring Social Perceptiveness Active Learning	Legal Writing Complex Problem Solving Judgment and Decision Making Active Learning Time Management Persuasion	Production Monitoring Quality Control Analysis Operations Monitoring Time Management Coordination Social Perceptiveness
Building & Grounds Cleaning & Maintenance Coordination Time Management Social Perceptiveness Service Orientation Monitoring Active Learning	Farming, Fishing, & Forestry Monitoring Judgment and Decision Making Operations Monitoring Operation and Control Coordination Complex Problem Solving	Life, Physical, & Social Science Writing Complex Problem Solving Active Learning Judgment and Decision Making Science	Protective Service Monitoring Social Perceptiveness Coordination Active Learning Judgment and Decision Making Writing
Business & Financial Operations Writing Judgment and Decision Making Complex Problem Solving Monitoring Social Perceptiveness Active Learning	Food Preparation & Serving Related Service Orientation Social Perceptiveness Coordination Monitoring Judgment and Decision Making Time Management	Management Coordination Monitoring Social Perceptiveness Time Management Judgment and Decision Making Management of Personnel Resources	Sales & Related Service Orientation Social Perceptiveness Persuasion Negotiation Coordination Monitoring
Community & Social Service Social Perceptiveness Service Orientation Writing Monitoring Judgment and Decision Making Coordination	Healthcare Practitioners & Technical Social Perceptiveness Service Orientation Monitoring Judgment and Decision Making Coordination Writing	Office & Administrative Support Service Orientation Writing Time Management Social Perceptiveness Monitoring Coordination	Transportation & Material Moving Coordination Monitoring Time Management Operation and Control Social Perceptiveness Judgment and Decision Making
Computer & Mathematical Complex Problem Solving Programming Writing Judgment and Decision Making Systems Analysis Active Learning	Healthcare Support Service Orientation Social Perceptiveness Monitoring Coordination Writing Time Management		

Table 2-9 Education Requirements for Projected Openings in Bluegrass Local

Occupation Group	Annual Openings	None	High School	Postsecondary nondegree	Some College	Associate's Bachelor's	Masters	Doctoral / Professional
Architecture and Engineering Occupations	577	-	28	-	-	186	363	-
Arts, Design, Entertainment, Sports, and Media Occupations	581	33	83	20	-	7	438	-
Building and Grounds Cleaning and Maintenance Occupations	1,638	1,507	131	-	-	-	-	-
Business and Financial Operations Occupations	1,614	-	38	-	-	-	1,576	-
Community and Social Service Occupations	622	-	159	-	-	-	350	113
Computer and Mathematical Occupations	584	-	-	-	88	19	477	-
Construction and Extraction Occupations	1,463	421	1,042	-	-	-	-	-
Educational Instruction and Library Occupations	1,770	-	36	28	633	62	677	143
Farming, Fishing, and Forestry Occupations	518	462	49	-	-	-	7	-
Food Preparation and Serving Related Occupations	6,638	6,194	444	-	-	-	-	-
Healthcare Practitioners and Technical Occupations	1,813	-	120	440	-	157	632	161
Healthcare Support Occupations	1,939	-	1,028	879	-	32	-	-
Installation, Maintenance, and Repair Occupations	1,502	-	1,133	309	37	23	-	-
Legal Occupations	201	-	-	-	-	80	-	121
Life, Physical, and Social Science Occupations	294	-	3	-	-	45	157	12
Management Occupations	1,983	-	329	-	-	5	1,602	47
Office and Administrative Support Occupations	5,549	-	5,030	-	495	22	3	-
Personal Care and Service Occupations	1,733	211	1,341	171	-	9	-	-
Production Occupations	3,809	96	3,688	26	-	-	-	-
Protective Service Occupations	844	14	738	92	-	-	-	-
Sales and Related Occupations	4,417	3,183	1,149	-	-	-	85	-
Transportation and Material Moving Occupations	4,010	2,057	1,499	453	-	-	1	-
Total Annual Openings	44,099	14,179	18,068	2,417	1,252	647	6,366	695
Percent	100.0%	32.2%	41.0%	5.5%	2.8%	1.5%	14.4%	1.6%

Source: CBER analysis of O*NET skills data and Kentucky Center for Statistics Future Demand.

Automation's Effects on the Workforce

Policy makers are understandably concerned about the impact that automation could have on local workforces. Automation often results in some jobs and skills becoming obsolete. Workers in these jobs might have difficulty transitioning to new work and see their earnings decline. While automation can present significant challenges for some workers, it also creates opportunities for new jobs that often require more skills and pay higher wages. Given advancements in technology such as artificial intelligence and machine learning, automation will continue to affect the workforce. As a result, it is important to understand the competing impacts of automation and which jobs and workers are most vulnerable to automation.

In a series of reports on automation published in 2017, McKinsey Global Institute argued that, using only currently demonstrated technology, over 60% of work hours in three common job activities can now be automated: data collection, data processing, and predictable physical labor. Together, these types of work produce over half of all U.S. wages. While few occupations could be fully replaced by automation, a majority could have at least 30% of their tasks automated, and McKinsey's scenarios suggest that half of current work activities may be obsolete by 2055.

Despite these alarming numbers, economists are divided over how harmful the automation trend will be to individual workers and to overall economic growth. Technology optimists point out that concerns over automation are nothing new. In the late 1500s, inventor William Lee was twice refused a patent on his stocking-framework knitting machine by Queen Elizabeth I, who feared that his invention would threaten the livelihoods of hand knitters. John Maynard Keynes likewise predicted in 1930 that mass unemployment would result as technology replaced workers faster than we could find new uses for their labor.

Both cases illustrate the optimists' argument: whenever technological advances have made some types of labor obsolete, new jobs have appeared in complementary sectors, and the overall economic effects have been positive. Knitting machines caused unemployment for hand knitters, but the cost of stockings dropped dramatically, creating new demand for workers who could build, maintain, and operate knitting machines, along with transportation and shops to distribute goods to consumers.

On the pessimistic side, researchers such as MIT's Daron Acemoglu argue that automation in the computer age has been a contributing factor in growing inequality. Previous technological advances tended to increase the value of lower-skilled labor, with new machines allowing workers to perform complex or time-consuming tasks more easily. Since 1987, jobs that have been lost to automation have generally been replaced by more skill-intensive jobs. As a result, demand for workers who lack special training or education has fallen, driving down wages for manual labor relative to high-skill occupations.

Regardless of whether the overall effect of automation is helpful or harmful, some individual workers will be at risk. Frictions in the labor market can make it difficult for displaced workers to match with jobs in new industries. They may need additional training or to find a new home in a different region. Cities face risks as well. Local economies that depend on industries vulnerable to automation may not be the same cities that attract industries that emerge from new technologies.

McKinsey's analysis offers some insight on how vulnerable Lexington is to automation. The most automatable jobs are found in accommodation, food services, and manufacturing, where a substantial share of labor is dedicated to predictable physical tasks. Transportation, warehousing, agriculture, retail, and mining occupations involve extensive collection of data.

Analysts with the Brookings Institute estimated the automation potential of jobs across metropolitan areas in the U.S. They developed their estimates by applying the McKinsey Global Institute's estimates of the

automation potential of occupations to the number of people employed in occupations for each MSA. Table 2-10 shows their estimates of automation risk for the Lexington-Fayette MSA and several other MSAs in the region. They estimate that approximately 47% of the employment weighted job tasks performed in Lexington could potentially be automated. This is similar to automation potential in other MSAs in the region and slightly lower than the rest of Kentucky's MSAs.

The Brookings Institute's analysis also classified jobs based on the share of tasks that could be automated. Jobs for which 70% or more of tasks could be automated were classified as high risk of automation. Jobs for which 30% to 70% of tasks could be automated were classified as medium risk. Jobs for which less than 30% of tasks could be automated were classified as low risk.

Their analysis suggests that 25.6% of the jobs in the Lexington-Fayette MSA were at a high risk of automation. Lexington's share of jobs that are at high risk of automation is similar to other MSAs in the region. It is important to note that these estimates represent the **potential** for automation rather than a prediction of jobs that will be automated.

Table 2-10 Automation Potential by Metropolitan Statistical Areas

Metropolitan area	Average Automation Potential	Low Risk	Medium Risk	High Risk
Durham-Chapel Hill, NC	42.4%	46.9%	33.8%	19.3%
Columbus, OH	44.7%	41.9%	33.3%	24.8%
Charlotte-Concord-Gastonia, NC-SC	45.7%	39.3%	35.0%	25.7%
St. Louis, MO-IL	45.7%	39.2%	36.4%	24.4%
Indianapolis-Carmel-Anderson, IN	45.9%	39.1%	34.8%	26.1%
Nashville-Davidson--Murfreesboro--Franklin, TN	46.5%	37.4%	36.8%	25.8%
Columbia, MO	46.5%	39.4%	36.6%	24.0%
Greenville, NC	46.7%	38.7%	37.8%	23.5%
Cincinnati, OH-KY-IN	46.8%	38.3%	34.3%	27.3%
Knoxville, TN	46.8%	36.6%	37.6%	25.8%
Lexington-Fayette, KY	47.2%	36.5%	38.0%	25.6%
Chattanooga, TN-GA	47.5%	36.4%	36.9%	26.7%
Louisville/Jefferson County, KY-IN	47.9%	36.6%	34.8%	28.6%

Source: Muro, et al., *Automation and Artificial Intelligence: How Machines are Affecting People and Places*, Metropolitan Policy Program, Brookings Institution, Jan 2019.

A 2016 report from the National League of Cities highlights potential policy strategies that can help cities adapt to technological change. First, developing workforce skills is a point of emphasis. Improved access to education can help displaced workers find jobs in new industries and can make cities more attractive to innovating industries. Providing access to community colleges and technical schools that are convenient and affordable – or free – and ensuring their curriculums keep pace with employer needs will be vital to cultivating an adaptable workforce.

Second, infrastructure investment can provide critical support for new types of businesses and jobs. Internet access is increasingly a requirement for participation in the workforce. Lexington's efforts to install a city-wide fiber-optic network will give residents access to more job opportunities and allow more businesses to start up in non-traditional locations. Younger workers have shown a persistent preference for

living in urban areas and access to public transit or the ability to bike to work can make neighborhoods more attractive for residents and for the companies that want to hire them. The COVID-19 pandemic has also greatly accelerated a pre-existing trend away from large, physical office space and increased teleworking. In addition to telework, shared or temporary offices have become more common. Finally, some displaced workers will not be able to adapt to new industries or will be so close to retirement age that they and prospective employers are unwilling to invest in their training. Policies that encourage or supplement retirement savings, either administered by the government or through community-based groups, can give near-retirement workers additional flexibility.

Chapter 3 Commuting Patterns, Remote Work, and Migration

Fayette County's economy and workforce are strongly tied to its surrounding counties and the rest of the state. These ties are reflected in the commuting and migration patterns of workers in the region. Workers often live in one city while working in another. This occurs because people might prefer to live in one area due to the local amenities, schools, or housing markets but work in another due to the availability of jobs and higher pay. Some individuals and families migrate between these communities, seeking to live in areas that offer access to jobs and the amenities they value. Because many workers commute and migrate between Fayette and its surrounding counties, the region can be thought of as an interconnected economy and labor market despite county and city boundaries. This chapter examines the degree to which Fayette County's residents and workers commute; how commuting has changed; the potential implications that remote work could have for Lexington-Fayette Urban County Government's local occupational license taxes; and migration into and out of Fayette County.

Key Points:

- There is a high degree of commuting to and from Fayette County. Estimates suggest that 30% of individuals who work in Fayette County commute from other communities. Other estimates suggest that approximately half of the jobs located in Fayette County are filled by workers from other communities.
- While many workers shifted to remote work during the pandemic, the share of people working remotely has decrease significantly.
- Widespread adoption of remote work could potentially reduce Fayette County's occupational license tax by 6% to 12%. However, these estimates should be viewed as upper bounds on the fiscal impact that could occur if all workers who could perform their jobs remotely did so.
- The number of people moving to Fayette County exceeds the number moving from Fayette County for most demographic and occupational groups.

Commuting

Two sources of data provide estimates on the degree to which commuting occurs in Fayette County. The first data source is the U.S. Census Bureau's American Community Survey, which asks respondents about where they work and live. The second is the U.S. Census Bureau's Longitudinal Employer-Household Dynamics Program (LEHD), which uses administrative data on jobs to determine where the workers who fill these jobs work and live.

Each data source provides important insights into commuting patterns. Both suggest that a significant share of the people who work in Fayette County commute from areas outside the county. However, the data sources do provide very different indications of the degree to which workers commute. The main reason for the difference is that the American Community Survey counts workers, while the Longitudinal Employer-Household Dynamics Program counts jobs. As individuals often work multiple jobs, commuting counts will differ. Both are described below.

Table 3-1 shows estimates from the 2019 5-year American Community Survey. The table shows commuting from two perspectives. First, it shows people who work in Fayette County and if they reside within or outside the county. The data indicate that there were approximately 197,000 people who worked in Fayette County in 2019. Of those, just over 58,000, or 30%, lived outside the county and commuted to a Fayette County job. Second, Table 3-1 shows people who live in Fayette County and where they work. There were approximately 169,000 workers who lived in Fayette County in 2019. Of these workers, 18% commuted to jobs located outside Fayette County.

Table 3-1 Commuting Patterns of Fayette County's Workforce

Employment/Residence Locations	Number of Workers	Percent
Work in Fayette County		
Live Outside Fayette County	58,113	30%
Live In Fayette County	138,813	70%
Total	196,926	100%
Live in Fayette County		
Work In Fayette County	138,813	82%
Work Outside Fayette County	29,756	18%
Total	168,569	100%

Source: CBER analysis of 2019 5-year American Community Survey.

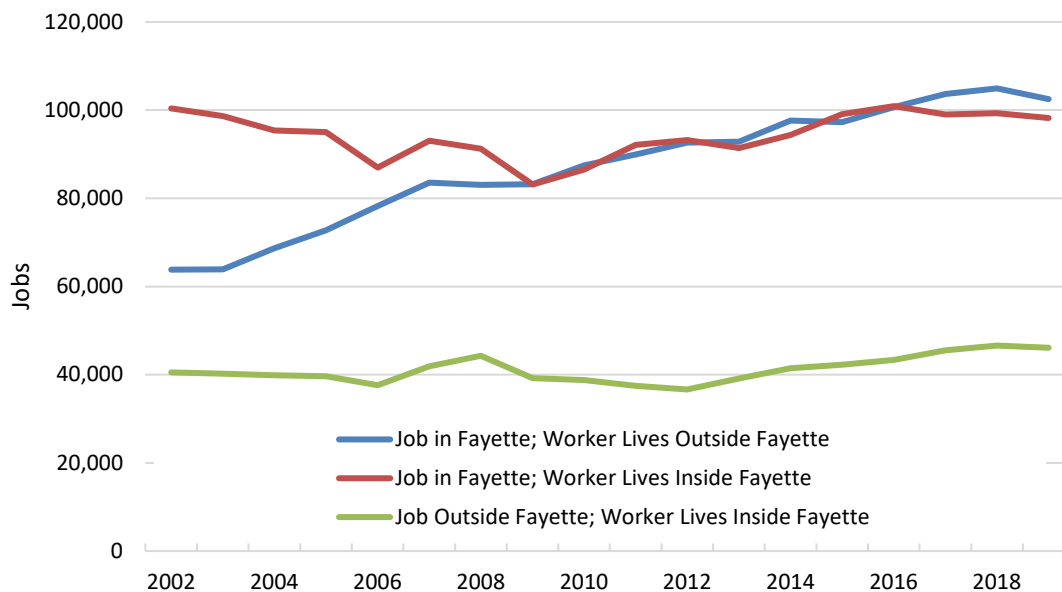
Table 3-2 summarizes commuting data from the LEHD data. The data indicate that there are approximately 144,000 jobs filled by workers who live in Fayette County. Sixty-eight percent of these jobs were located in Fayette County while the remaining 32% were located outside of Fayette County. Nearly half of the jobs located in Fayette County were filled by workers who live in other counties. The LEHD data also show that the number of jobs located in Fayette County that were filled by workers from outside the county has grown (Figure 3-A). From 2002 to 2019, in-commuting grew at an annual rate of 2.8%. The number of jobs located in Fayette that were filled by Fayette residents declined slightly—at an annual rate of 0.1%. The number of jobs outside Fayette that were filled by Fayette residents increased by 0.8% per year.

Table 3-2 Number of Workers by County of Worker Residence and County of Job Location (2019)

Employment/Residence Locations	Number of Jobs	Percent
Jobs in Fayette County		
Worker Lives Outside Fayette County	102,476	51%
Worker Lives In Fayette County	98,239	49%
Total	200,715	100%
Workers Who Live in Fayette County		
Job In Fayette County	98,239	68%
Job Outside Fayette County	46,111	32%
Total	144,350	100%

Source: U.S. Census Bureau. (2022). LEHD Origin-Destination Employment Statistics Data (2002-2019). Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program, accessed on 19 January 2022 at <https://lehd.ces.census.gov/data/#lodes>. LODES 7.5.

Figure 3-A Trends in Commuting



Source: U.S. Census Bureau. (2022). LEHD Origin-Destination Employment Statistics Data (2002-2019). Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program, accessed on 19 January 2022 at <https://lehd.ces.census.gov/data/#odes>. LODS 7.5.

Figure 3-B describes where workers commute from for jobs located in Fayette County. Most workers who commute from outside Fayette County reside in contiguous counties and Jefferson County. Specifically, 10,025 Fayette County jobs were filled by residents from Jessamine County, 9,316 from Madison County, 8,298 from Scott County, 8,207 from Jefferson County, and 5,431 from Clark County. While most jobs are filled by workers who live in the region, some are filled by workers travelling as far as Fulton County. While the data show commuting in terms of where the workers who fill jobs live, it does not describe the nature of the commute. While most workers may commute to their Fayette County jobs on a daily basis, others, particularly those who live far away, may have a different commuting arrangement.

Commuting also differs across industries. While over half of Fayette County jobs are filled by workers who live out of the county, 31% of the county's goods producing jobs and 31% of the trade, transportation, and utilities jobs are filled by workers who commute from other counties (Table 3-3).

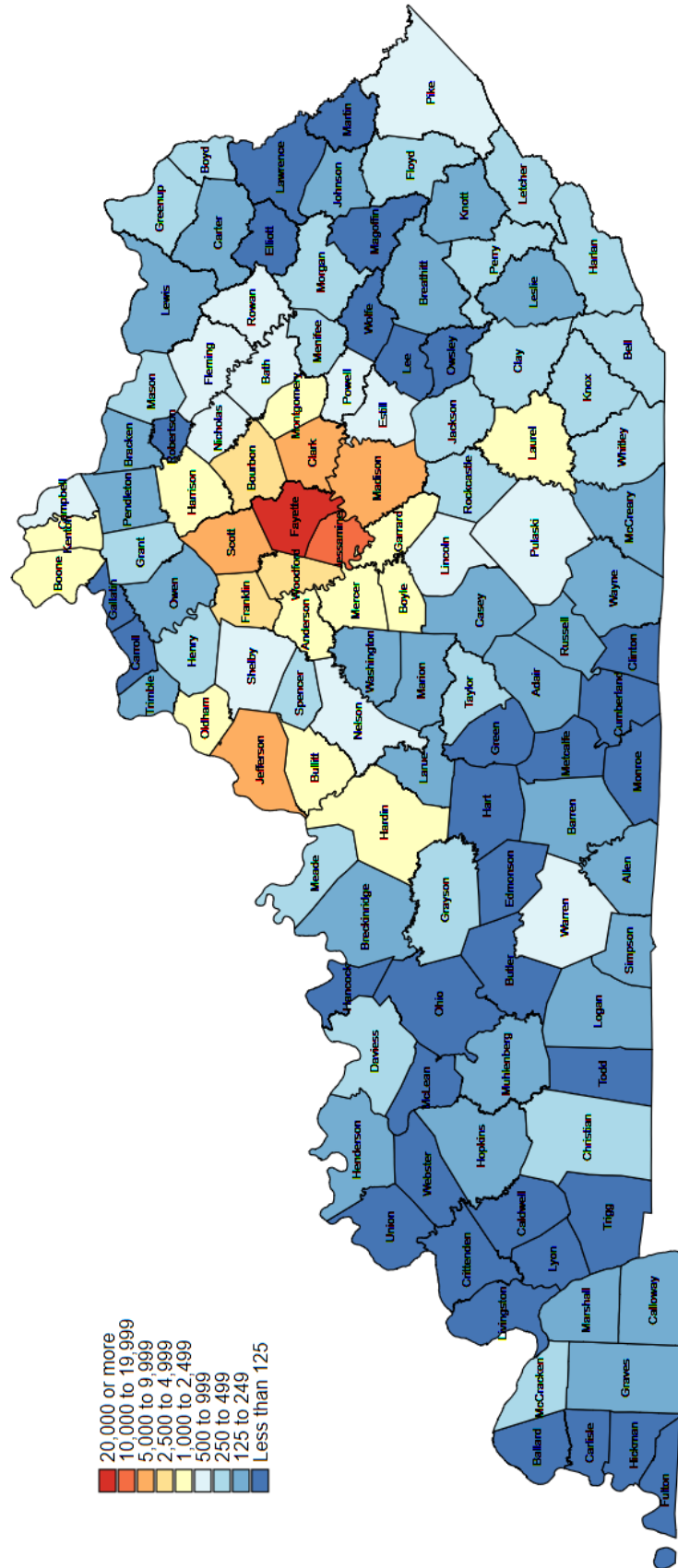
Figure 3-C displays where Fayette County residents commute to for work. Specifically, it shows the number of jobs for each county that are filled by workers who reside in Fayette County. Most of these jobs are located in nearby counties and Jefferson County.

Table 3-3 Commuting to Fayette County Jobs by Industry Class

Industry Class	Percent of Workers Who Live	
	In Fayette County	Out of Fayette County
Goods Producing	59%	31%
Trade, Transportation, and Utilities	59%	31%
All Other Services	47%	53%
Total	51%	49%

Source: U.S. Census Bureau. (2022). LEHD Origin-Destination Employment Statistics Data (2002-2019). Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program, accessed on 19 January 2022 at <https://lehd.ces.census.gov/data/#lodes>. LODES 7.5.

Figure 3-B Jobs Filled by Workers Commuting Into and Within Fayette County (2019)



Source: U.S. Census Bureau. (2022). LEHD Origin-Destination Employment Statistics Data (2002-2019). Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program, accessed on 19 January 2022 at <https://lehd.ces.census.gov/data/#odes>. LODES 7.5.

5,000 to 9,999
2,500 to 4,999
1,000 to 2,499
500 to 999
250 to 499
125 to 249
Less than 125
No data

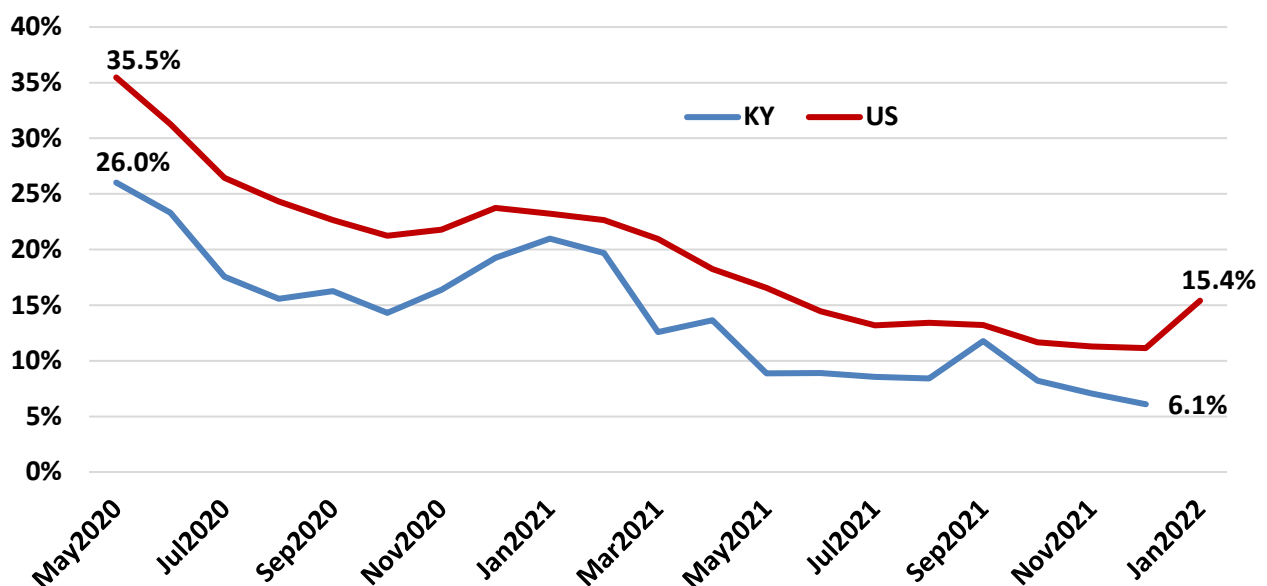
Center for Business and Economic Research
University of Kentucky

Remote Work Trends

While many employers allowed their employees to work remotely prior to the pandemic, the coronavirus substantially accelerated the adoption of remote work. In May 2020, the U.S. Bureau of Labor Statistics (BLS) began collecting data about whether individuals were working remotely due to COVID. During the first month the BLS collected this information, 35.5% of workers across the U.S. worked remotely because of COVID (Figure 3-D). COVID related remote work has mostly declined since the early days of the pandemic. By December 2021, only 11.1% of workers across the U.S. indicated that they worked remotely because of COVID. However, workers shifted back to remote work again when new COVID cases picked up in late 2020 and in January 2022. This suggests that some businesses have maintained a degree of flexibility on remote work. Unfortunately, the BLS did not collect data on the number of workers who worked remotely for any reason. Therefore, the overall trend in remote work could differ from what is shown in Figure 3-D.

The remote work trend in Kentucky generally followed the national trend. However, remote work because of COVID was less prevalent in Kentucky. COVID related remote work decreased from 26% in May 2020 to 6.1% in December 2021 in the Commonwealth.

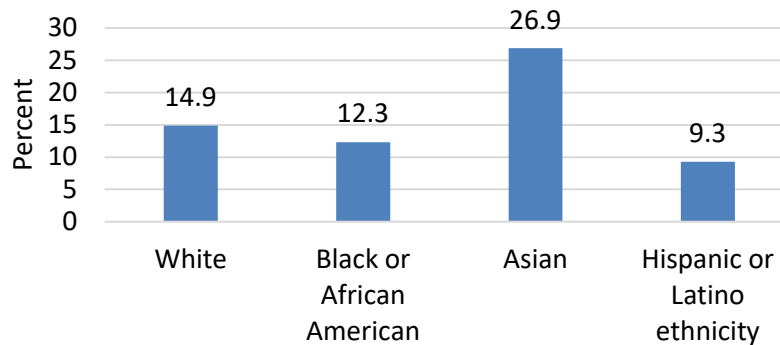
Figure 3-D Percent of Workers Who Teleworked or Worked Remotely



Source: U.S. Bureau of Labor Statistics. Current Population Survey.

The prevalence of remote work varies considerable across different demographic groups. Figures 3-E through 3-G summarize the rates of remote work due to the pandemic across race, education, and age. The rates reflect data collected from workers across the nation during January 2022. Nearly, 15% of White workers reported working remotely due to the pandemic. This was higher than the rates among Black workers (12.3%) and Hispanic or Latino workers (9.3%). Nearly 27% of Asian workers reported working remotely due to the pandemic.

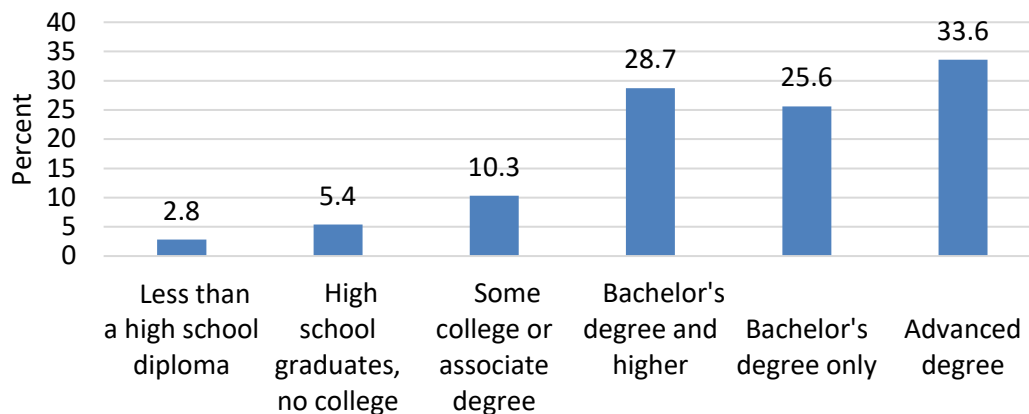
Figure 3-E
Percent of Workers Who Teleworked or Worked Remotely
Because of COVID by Race and Ethnicity, U.S.



Source: U.S. Bureau of Labor Statistics. Labor Force Statistics from the Current Population Survey. January 2022.

Workers with more education were much more likely to work remotely. Nearly 29% of workers with a bachelor's degree or higher reported working remotely. Only 5.4% of workers with a high school diploma but no college worked remotely. Remote work was even less common for workers without a high school diploma. These differences likely reflect the type of work available for workers with different levels of education. Those with less education are more likely to perform manual tasks that require workers to be at the workplace.

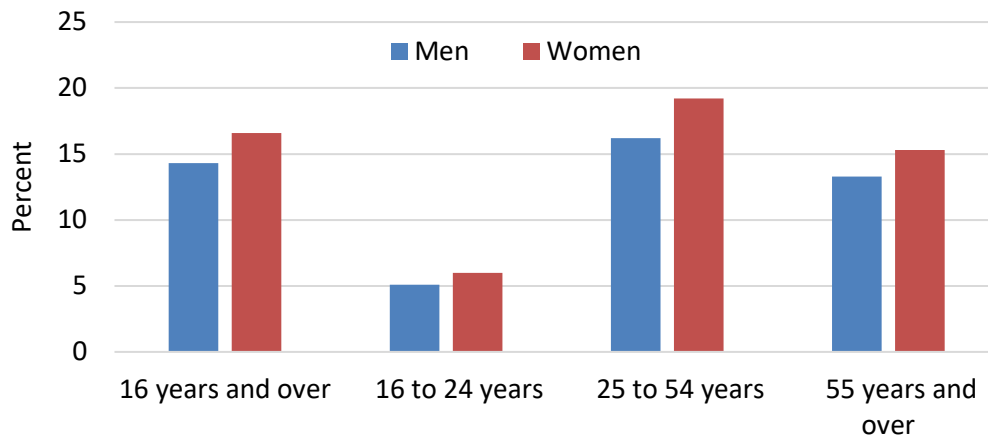
Figure 3-F Percent of Workers Who Teleworked or Worked Remotely
Because of COVID by Educational Attainment, U.S.



Source: U.S. Bureau of Labor Statistics. Labor Force Statistics from the Current Population Survey. January 2022.

Figure 3-G shows the percentage of people who worked remotely due to COVID by age and gender. Young workers—aged 16 to 24—were less likely to work remotely. Again, this likely reflects the types of jobs held by young workers. These jobs are often in service industries, such as restaurants and retailers and cannot be performed remotely. Female workers were more likely to work remotely than males. This was true for all age groups, but the difference was largest for those aged 25 to 54. Care should be taken when interpreting this difference. While women were more likely to work remotely due to the pandemic, they were also more likely to have left the labor force during the pandemic.

Figure 3-G Percent of Workers Who Teleworked or Worked Remotely Because of COVID by Age and Gender, U.S.

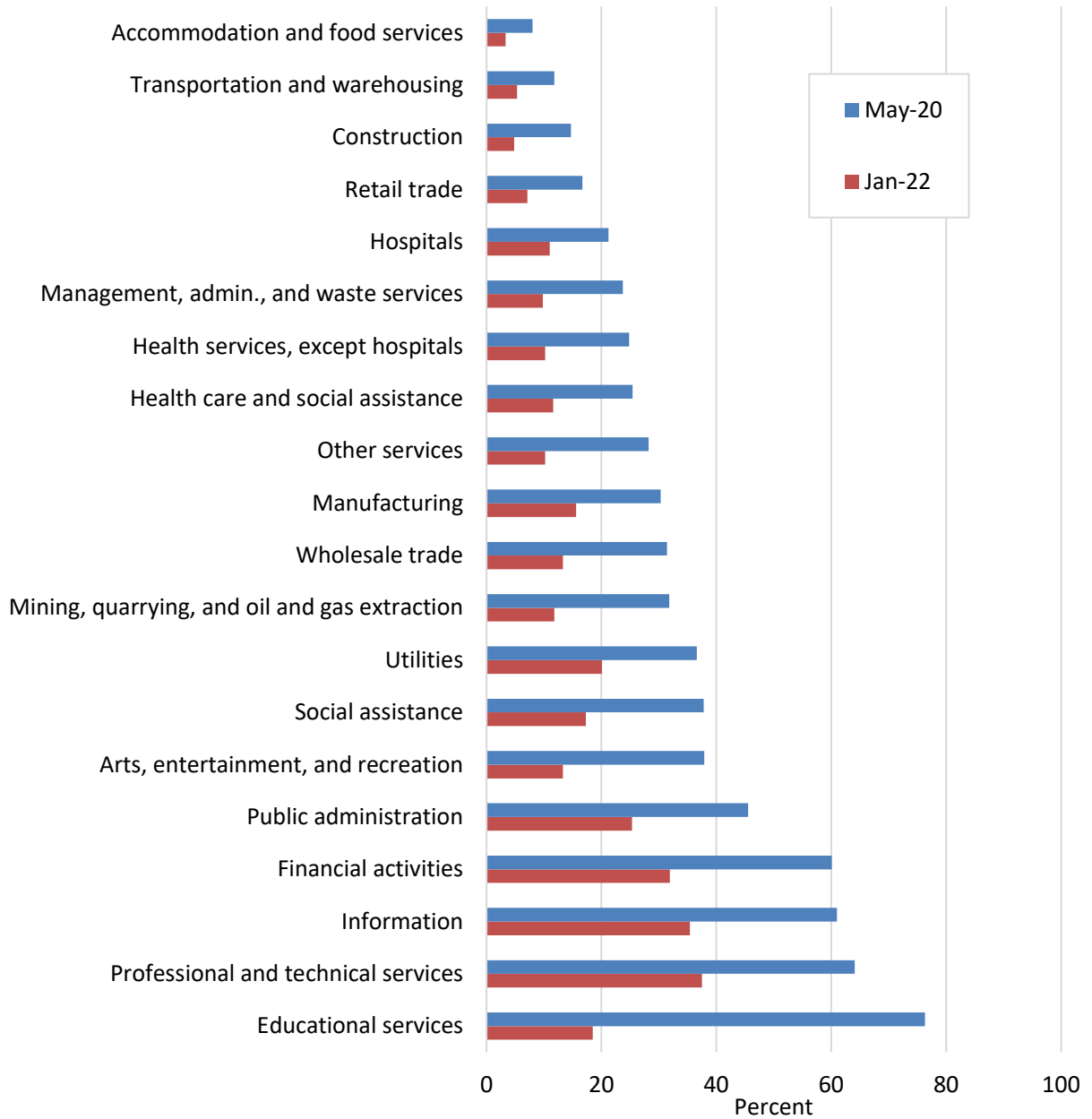


Source: U.S. Bureau of Labor Statistics. Labor Force Statistics from the Current Population Survey. January 2022.

The ability to work remotely varies considerably across sectors. This is reflected in Figure 3-H, which shows the percentage of people who worked remotely because of the pandemic by industrial sector. Percentages are shown for May 2020 and January 2022. When the pandemic first hit, many workers shifted to working from home. Workers who provide educational services, such as teachers and counselors, saw the highest rates of working remotely. More than three quarters of the education workers nationally worked remotely due to the pandemic. The rate of remote work was lowest among the accommodation and food service; transportation and warehousing; and construction sectors, which are more likely to consist of jobs that cannot be performed remotely.

For all the major sectors, the rate of remote work due to the pandemic declined from May 2020 to January 2022. The decline was largest in education services, which likely reflects the reopening of schools. Employers in four sectors—public administration, financial activities, information, and professional and technical services—still had more than a quarter of their employees working remotely as of January 2022. These are sectors that may be able to accommodate remote work long-term.

Figure 3-H Percent of Workers Who Teleworked or Worked Remotely Because of COVID by Industry, U.S.



Source: U.S. Bureau of Labor Statistics. Labor Force Statistics from the Current Population Survey. May 2020 and January 2022.

Potential Impact of Remote Work on Local Occupational Fee Revenue

The increase in remote work can have significant implications for local governments in Kentucky. Many local governments, including the city of Fayette County, levy an occupational license fee or payroll tax. The payroll tax is based on wages and salaries earned for work performed within the local governments' jurisdictions. Fayette County levies a fee of 2.25% on the wages and salaries for work performed within Fayette County. Since remote work shifts where individuals perform their work, it can affect which local government may levy the fee on their earnings. Workers who commute to jobs in Fayette County from other areas might have to pay fees to other local governments rather than Fayette County if they work from home. Likewise, workers who reside in Fayette County and commute to jobs in other areas might have to pay Fayette County's occupational license fees if they work from home. To better understand the potential impact that remote work could have on Fayette County's occupational license fee revenue, this section uses data from several sources to describe the commuting patterns for people who work or live in Fayette County and whether their jobs can be performed remotely.

The main source of data for this analysis comes from the U.S. Census Bureau's American Community Survey (ACS). The ACS is an annual survey of households across the United States. The survey collects detailed data on individuals' demographics, employment, earnings, occupation, and commuting patterns. Because the number of Fayette County households surveyed each year is relatively small, this analysis uses the 2019 5-year ACS, which includes data collected from 2015 through 2019. Because of this, the data reflects commuting and employment prior to the pandemic.

As previously shown in Table 3-1, there were approximately 196,900 people who worked in Fayette County. The data suggest that 58,113, or 30%, of the people who work at jobs located in Fayette County commuted from other areas. The rest of the people who work in Fayette County also resided in Fayette County. The ACS data also indicate that approximately 29,800 workers who reside in Fayette County commute to jobs located outside of the city.

When workers who work in one county and live in another choose to work remotely, it could potentially affect where the payroll tax should be paid. However, while some jobs can be performed remotely not all can. During the early months of the pandemic, Dingel and Neiman from the University of Chicago examined which jobs could potentially be performed remotely. They examined the types of activities associated with 968 occupations defined by the 5-digit standard occupational classification codes. Occupations that involve significant amounts of handling and moving objects; operating vehicles, mechanized devices, or equipment; working directly with the public; repairing and maintaining mechanical equipment; and other tasks that require a physical presence in the workplace are less likely to be performed remotely or from home. The researchers found that 37 percent of jobs in the nation could be performed remotely.

Applying the findings of which jobs can be performed remotely to the occupations of workers who commute to and from Fayette County provides an indication of how many jobs could be at risk of being performed remotely. Based on the ACS data, there were 58,113 individuals who commute from outside Fayette County to jobs in the county. Approximately 19,800, or 34%, of these workers are in occupations that could be performed remotely or at home (Table 3-4). The remaining 66% are in jobs that include activities that would make remote work unlikely. If those in jobs that could be done remotely worked from home, their earnings would not be subject to Fayette County's occupational license fees but could be subject to similar fees in their home county or city. This represents a loss of tax base for Fayette County.

Analysis of the ACS data also suggest that there were 29,800 people who live in Fayette County but commute to jobs located in other areas. Of these, approximately 11,800, or 40%, are employed in occupations that could be performed at home or remotely. If these individuals worked from home, they would be subject to Fayette County's occupational license fees. This represents an increase in Fayette County's tax base.

Table 3-4 Number of Commuting Workers Who Could Potentially Work Remotely

Employment/Residence Locations	Job Can Be Performed Remotely		
	Yes	No	Total
Work in Fayette County; Live Outside Fayette County	19,754	38,359	58,113
	34%	66%	100%
Work Outside Fayette County; Live In Fayette County	11,849	17,907	29,756
	40%	60%	100%

Source: CBER analysis of the 2019 5-year American Community Survey.

Table 3-5 summarizes the earnings for workers who commute based on whether their jobs can be performed remotely. Generally, occupations that can be performed remotely have higher earnings. On average, individuals who work in Fayette County, live outside Fayette County, and are employed in occupations that can be performed remotely earned \$64,291 per year.

Table 3-5 Potential Effects of Remote Work on Fayette County Occupational License Tax Revenues

Employment/Residence Locations	Job Can Be Performed Remotely	
	Yes	No
Work in Fayette County; Live Outside Fayette County	19,754	38,359
Average Annual Earnings	\$64,291	\$46,925
Total Earnings (\$billions)	\$1.27	\$1.8
Work Outside Fayette County; Live In Fayette County	11,849	17,907
Average Annual Earnings	\$58,148	\$43,056
Total Earnings (billions)	\$0.69	\$0.77

Source: CBER analysis of the 2019 5-year American Community Survey.

Table 3-6 summarizes the potential impact that remote work could have on Fayette County's employment, earnings, and tax revenue. Because many workers commute to Fayette County from other areas, widespread adoption of remote work could reduce Fayette County employment and tax revenues. However, some of these losses would be offset as some of Fayette County's residents who commute to jobs in other areas work from their Fayette County homes. Based on data from the ACS, widespread adoption of remote work could reduce Fayette County's employment by 4%. As occupations that can be performed remotely generally pay higher wages, the effects of total earnings and Fayette County's tax

revenues would be higher. Widespread adoption of remote work could reduce earnings and payroll tax revenues by 6.1% annually.

**Table 3-6 Potential Effects of Remote Work on Fayette County
Occupational License Tax Revenues**

	Employment	Wages & Salaries (\$billions)	Tax Revenue* (\$millions)
Baseline (2019)	196,926	9.520	214.2
Potential Loss from in-commuters	-19,754	-1.270	-28.6
Potential Gain from out-commuters	11,849	0.689	15.5
Net Change	-7,905	-0.581	-13.1
Percent Change	-4.0%	-6.1%	-6.1%

Source: CBER analysis of the 2019 5-year American Community Survey.

*Tax revenue is estimated by multiplying 2.25% to the earnings reported in the American Community Survey. Actual revenues were \$201 million in FY 2019 and \$206 million in FY 2020.

The estimates reported in Table 3-6 are based on data from the American Community Survey, which indicates that 30% of Fayette County's workforce commutes from outside of Fayette County. However, data from the Census Bureau's Longitudinal Employer-Household Dynamics program suggest that as much as 51% of those who work in Fayette County live outside the city. This data also suggests there are considerably more individuals who live in Fayette County and commute to jobs outside Fayette County. Overall, this data indicates a considerably larger amount of commuting than what the American Community Survey indicated. Adjusting the analysis summarized in Table 3-6 for this higher rate of commuting indicates that the potential effect of remote work could be as much as a 12.3% reduction in payroll tax revenues.

The analysis is based on whether occupations can be performed remotely. However, despite the potential to work remotely many employers and many workers may elect to forgo the remote option. Therefore, the estimates should be viewed at the potential effect of remote work rather than the actual effect of remote work. The trends shown in Figures 3-D and 3-H suggest that remote work peaked during the early months of the pandemic and has since declined significantly. The decline in remote work since May 2020 shows that despite the ability to work remotely many workers have returned to the workplace. This was particularly evident with jobs in the educational services sector.

Migration into and out of Fayette County

With a high-quality educational system, growing economy, and numerous amenities, Fayette County has long attracted new residents to the area. These new residents have helped the city to grow and thrive. This section provides a brief comparison of those who move into and out of Fayette County. Data from the ACS indicate that more than 29,000 people moved into Fayette County in 2019 (Table 3-7). These individuals account for approximately 9.2% of the total population. Nearly 23,000 people moved out of the county. These movements yielded a net increase of approximately 6,500 people.

Table 3-7 Migration Into and Out of Fayette County (2019)

	Total	Percent of Total
Total Population	320,665	100.0%
Did not move	291,285	90.8%
Moved into Fayette County	29,370	9.2%
Moved Out of Fayette County	22,849	7.1%
Net Migration	6,521	2.0%

Steven Ruggles, Sarah Flood, Ronald Goeken, Megan Schouweiler and Matthew Sobek.

IPUMS USA: Version 12.0 [dataset]. Minneapolis, MN: IPUMS, 2022.

<https://doi.org/10.18128/D010.V12.0>

Tables 3-8 through 3-11 describe migration across education, race and ethnicity, age, and occupations. Each table shows the net migration within each group. For example, estimates from the ACS, indicate that 3,996 people aged 25 or older with a bachelor's degree moved out of Fayette County during 2019 and 3,611 moved into Fayette County. The net change was an estimated increase of 385 people aged 25 and older with a bachelor's degree. The tables also show the distribution across each demographic for those who did not move, those who moved out, and those who moved in. This information shows whether those who moved had different characteristics than the general population.

Table 3-8 describes net migration into Fayette County for people who were aged 25 or older. The estimates describe the migration in 2019. The county saw the largest net gains among those with a high school education and those with a bachelor's degree. The largest net losses were among those with a graduate or professional degree, which might occur as individuals who move into the county to attend graduate school leave upon completing their education.

**Table 3-8 Annual Migration Into and Out of Fayette County
by Education, Aged 25 and Over
(2019)**

Education Level	Net Change (# of People)	Did Not Move	Moved In	Moved Out
No schooling	-130	0.8%	0.9%	1.9%
Less than High School	155	7.9%	9.0%	8.4%
High School or Equivalent	644	20.1%	19.4%	15.8%
Some College or Associates Degree	-102	27.7%	24.4%	26.3%
Bachelor's Degree	385	24.8%	26.8%	25.5%
Graduate or Professional Degree	-251	18.7%	19.4%	22.1%
Total	701	100.0%	100.0%	100.0%

Source: Steven Ruggles, Sarah Flood, Ronald Goeken, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 12.0 [dataset].

Minneapolis, MN: IPUMS, 2022. <https://doi.org/10.18128/D010.V12.0>

Table 3-9 shows that for each racial and ethnic group, the number of people moving in exceeded the number of people moving out. Blacks accounted for a larger share of those moving into Fayette County than of those moving out. Whites and Hispanics accounted for a larger share of those moving out than moving in.

**Table 3-9 Annual Migration Into and Out of Fayette County
by Race/Ethnicity**

Race/Ethnicity	Net Change (# of People)	Did Not Move	Moved In	Moved Out
White	3,285	71.3%	67.6%	72.5%
Black or African American	2,432	14.5%	15.5%	9.3%
Asian	499	3.6%	6.5%	6.2%
Other Race	213	3.3%	4.1%	4.3%
Hispanic	92	7.3%	6.3%	7.7%
Total	6,521	100.0%	100.0%	100.0%

Source: Steven Ruggles, Sarah Flood, Ronald Goeken, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 12.0 [dataset].
Minneapolis, MN: IPUMS, 2022. <https://doi.org/10.18128/D010.V12.0>

Nearly one-third of those who moved into Fayette County were aged 18 to 24 (Table 3-10). This might reflect those who move to Fayette County to attend college. Those aged 25 to 34 were the only group where the number of people moving out exceeded the number moving into the county. This could be due to people completing their college education and settling in other areas afterwards.

Older age cohorts move out of Fayette County at a slightly increased rate when compared to younger age cohorts. The population aged 45 and older accounted for 20% of those moving out and 18.5% of those moving into Fayette County. This does not mean older residents were leaving the county in large numbers. Of those aged 45 and older, fewer than 5% moved out of Fayette County. As noted, even among the older age groups, Fayette County saw more people relocating to the county than leaving the county.

**Table 3-10 Annual Migration Into and Out of Fayette County
by Age**

Age	Net Change (# of People)	Did Not Move	Moved In	Moved Out
Less than 18 years	904	21.3%	16.7%	17.5%
18 to 24 years	4,916	12.3%	32.7%	20.5%
25 to 34 years	-383	14.9%	21.1%	28.8%
35 to 44 years	189	13.4%	11.0%	13.3%
45 to 54 years	332	12.3%	7.2%	7.8%
55 to 64 years	464	12.1%	7.4%	7.5%
65 years and over	99	13.7%	3.9%	4.6%
Total	6,521	100.0%	100.0%	100.0%

Source: Steven Ruggles, Sarah Flood, Ronald Goeken, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 12.0 [dataset].
Minneapolis, MN: IPUMS, 2022. <https://doi.org/10.18128/D010.V12.0>

Table 3-11 shows migration by type of occupation. Fayette County saw a net increase in people who worked in services; sales and office; and production, transportation, and material moving occupations. The county, however, saw a net decrease in people who worked in management, business, science, and arts occupations. The number of people in natural resources, construction, and maintenance occupations who moved into Fayette County was similar to the number who moved out resulting in very little net change.

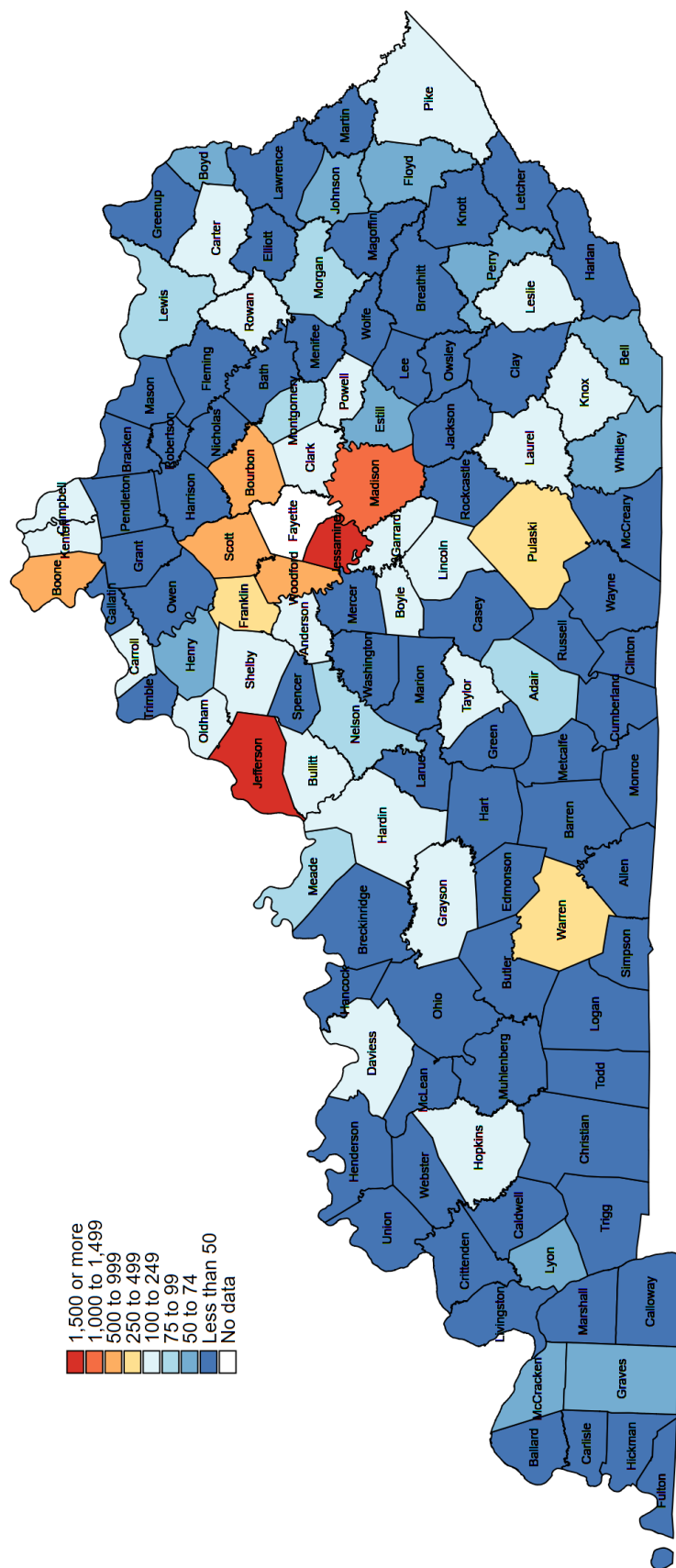
**Table 3-11 Annual Migration Into and Out of Fayette County
by Occupation Type**

Occupation	Net Change (# of People)	Did Not Move	Moved In	Moved Out
Management, Business, Science, and Arts	-193	41.2%	34.6%	45.1%
Service	2,198	18.5%	23.9%	17.1%
Sales and Office	1,879	22.4%	23.3%	18.3%
Natural Resources, Construction, and Maintenance	-18	5.9%	5.1%	6.6%
Production, Transportation, and Material Moving	650	12.0%	13.2%	12.9%
Total	4,516	100.0%	100.0%	100.0%

Source: Steven Ruggles, Sarah Flood, Ronald Goeken, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 12.0 [dataset].
Minneapolis, MN: IPUMS, 2022. <https://doi.org/10.18128/D010.V12.0>

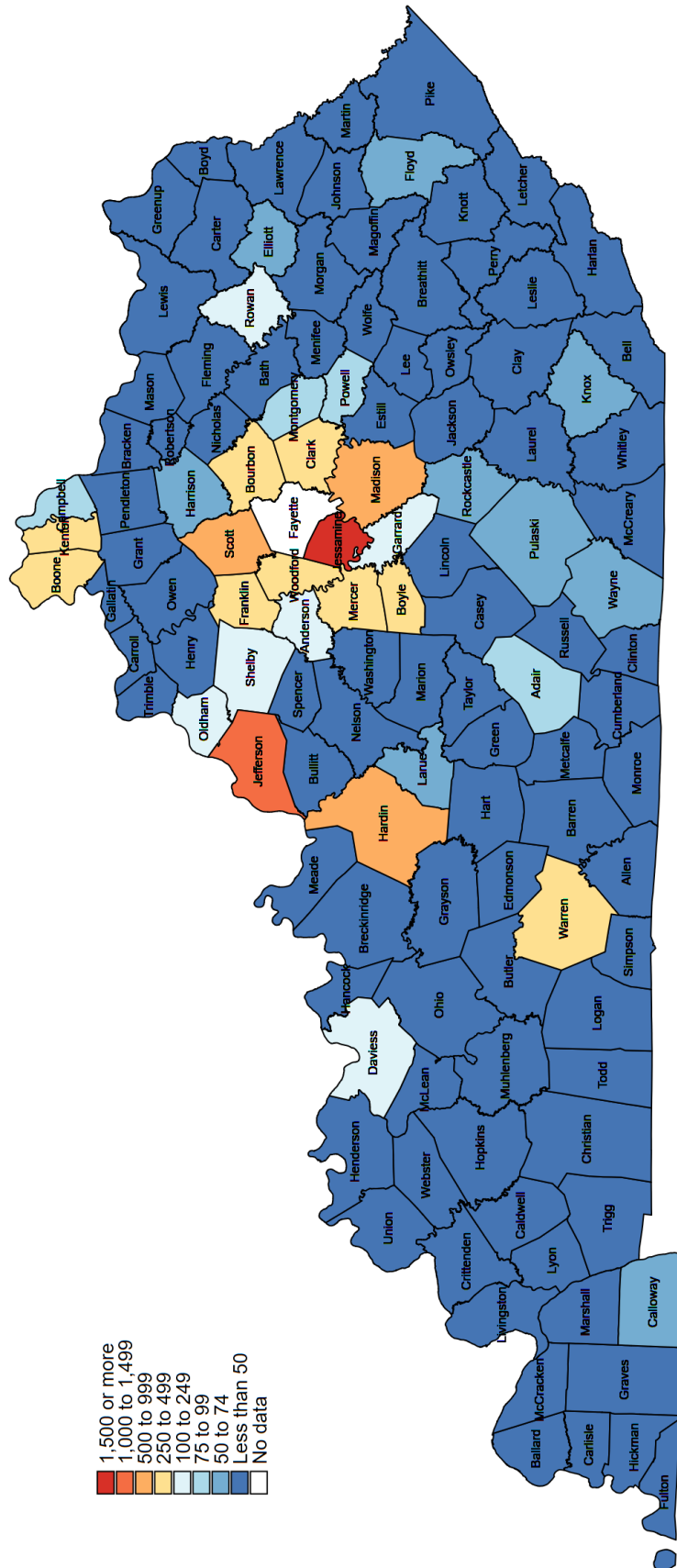
Not surprisingly, most who moved to Fayette County came from within Kentucky or nearby states. Those who moved to Fayette County from another Kentucky county in 2019 accounted for 4.1% of Fayette County's population. Those who moved from another state in 2019 accounted for 3.7% of the county's population. Those who moved from abroad accounted for less than one percent. Figures 3-I through 3-L show where people moved from when they came to Fayette County and where they move to when they relocated from the county. Overall, individuals were primarily relocating from contiguous counties and more populous areas, such as Jefferson, Boone, Kenton, and Warren Counties.

Figure 3-1 Migration Into Fayette County from Other Kentucky Counties (2019)



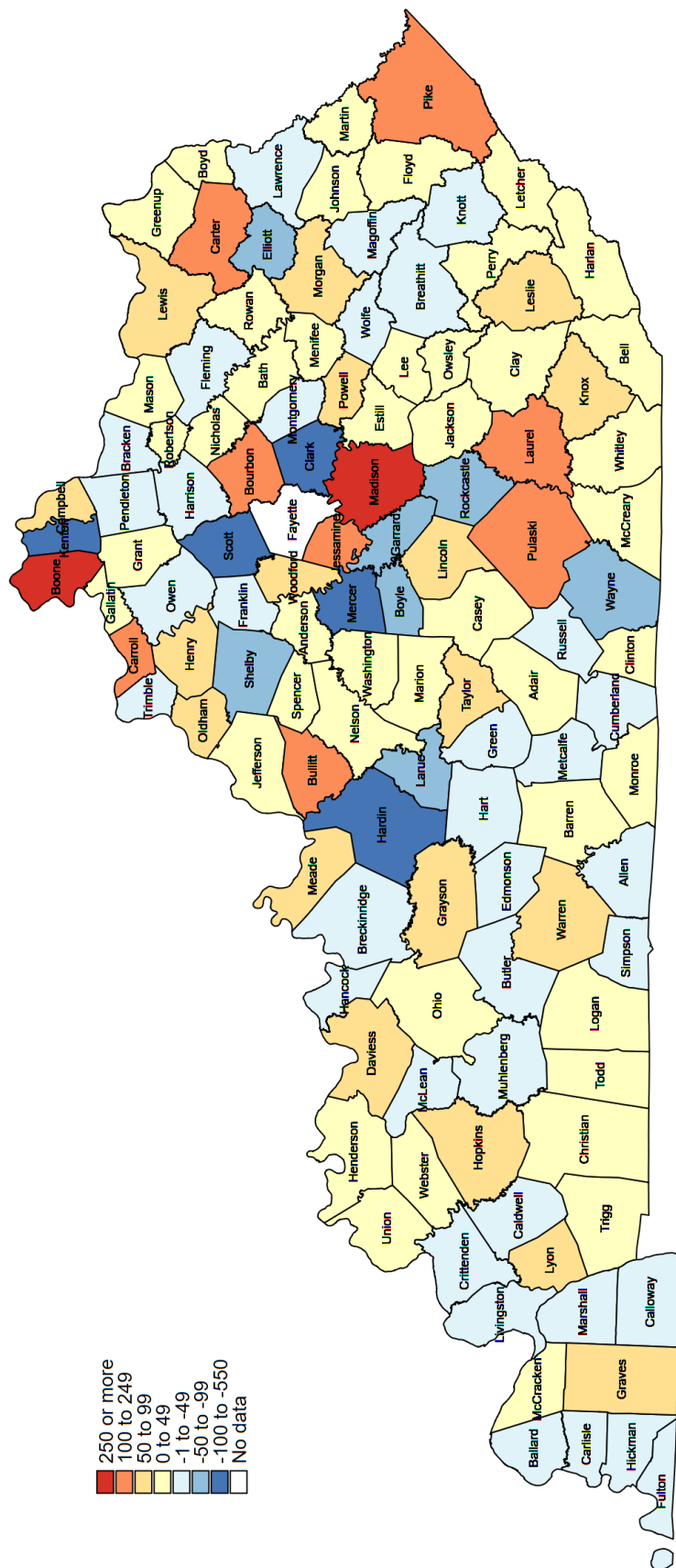
Source: U.S. Census Bureau, County-to-County Migration Flows, 2015-2019 ACS

Figure 3-J Migration Out of Fayette County to Other Kentucky Counties (2019)



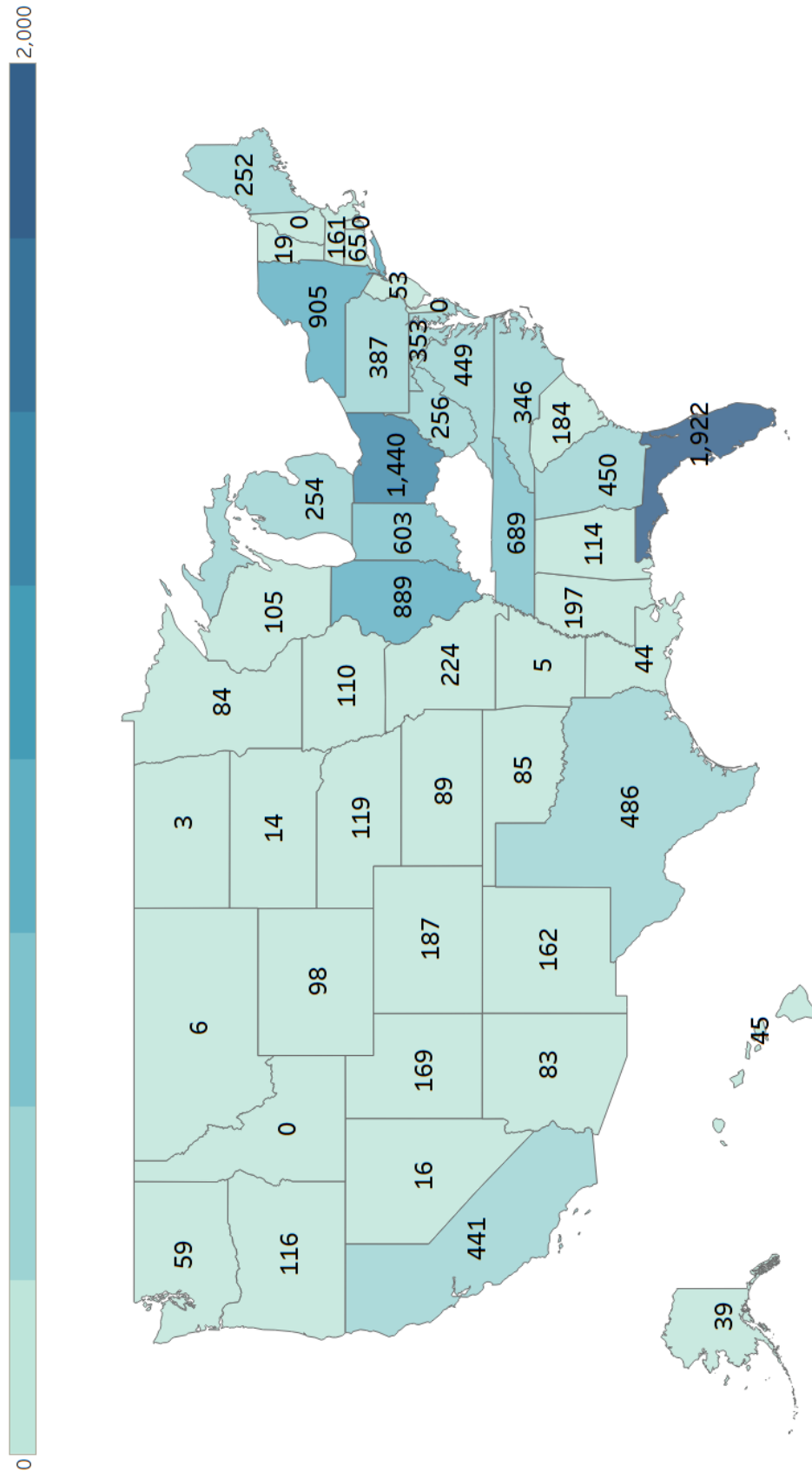
Source: U.S. Census Bureau, County-to-County Migration Flows, 2015-2019 ACS

Figure 3-K Net Migration to/from Fayette County (2019)



Source: U.S. Census Bureau, County-to-County Migration Flows, 2015-2019 ACS

Figure 3-L Number of Individuals Relocating to Fayette County from Other U.S. States



Source: U.S. Census Bureau, County-to-County Migration Flows: 2015-2019 AC

Chapter 4 Economic Impact Scenarios

When a new business considers opening an establishment or facility in a city, local policy makers naturally want to understand how it could affect the local economy. The most visible signs of the establishment's economic effects are the workers it will employ. However, the establishment can also affect other areas of the local economy. As the establishment purchases inputs from other businesses in the area and its workers spend money in the local economy, the establishment's activities help to support employment in other local businesses. These effects are often referred to as ripple or multiplier effects.

Economic impact analysis attempts to measure how an initial shock to an area's economy, such as a new establishment or facility, could affect employment, compensation, and output in the area. While economic impact analysis can provide useful information to policy makers, the analysis can also provide overly optimistic estimates of the economic potential. This clearly occurs if the analysis overestimates the initial size of the shock. It can also occur if the analysis does not consider important factors, such as how the new business might displace existing businesses or spending in the area. So, while this type of analysis can be helpful, policy makers should interpret the results with care.

This chapter briefly describes how economic impact analysis is conducted, factors that should be considered when conducting an analysis, and caveats that policy makers should consider when using economic impact analysis. The chapter also presents a simple analysis of several hypothetical scenarios. Each scenario considers how a new establishment in different industrial sectors might help support other areas of the local economy. While these scenarios provide a general idea of what might happen, they should be used early in the planning stages or as a benchmark to evaluate formal economic impact analysis rather than a substitute for a complete analysis of proposed projects.

Key Points:

- Economic impact analysis can help local officials better understand how a change to the economy such as a new establishment can affect the rest of the local economy. This type of analysis estimates how a new establishment could potentially help support employment and income in other local businesses.
- Economic multipliers for employment, which is the ratio of total employment supported divided by the direct employment at a new establishment, vary considerably across industries. The sectors analyzed for this report show that the multipliers for Lexington range from a low of 1.16 for full-service restaurants to 2.78 for pharmaceutical preparation manufacturing. The differences reflect the degree to which industries purchase inputs and services from other local businesses.
- Economic impact analysis can substantially overstate the effects of a new establishment by not addressing the degree to which the new establishment displaces economic activity in other local businesses. Displacement can occur if customers simply shift their spending from an old establishment to a new establishment. Displacement can also occur if a new establishment uses land or other local resources that would have been used for some other economic activity. Results from an analysis that does not credibly address displacement would not likely reflect the net increase in economic activity attributable to the new establishment.

Overview of Economic Impact Analysis

Economic impact analysis typically begins by describing the initial change to the economy. The description should include the industrial sector where the initial change would occur. Industrial sectors have very different spending patterns that will influence the degree to which they affect the local economy. Establishments in sectors that make more of their purchases locally will tend to support more local employment. When establishments purchase inputs from suppliers outside the area, the spending goes to help support economic activity in other areas.

Information is also needed on the size of the initial change. Size can be measured as the number of workers the new establishment would employ, the wages or compensation it would pay, or the dollar amount of output it would produce. Those involved in developing the project typically provide analysts with information on the project's projected size. However, project size can often change from initial planning to what is actually built. In addition, output projections can be too optimistic. For example, projections of visitors to entertainment venues can be too high or the number of visitors might decline more quickly after the initial opening than expected. While some differences in projections and actual impacts are typical and should be expected, policy makers should recognize that there is an inherent level of uncertainty associated these types of projections.

Economic impact analysis typically relies on econometric models of the local economy to estimate how the initial shock could affect the rest of the area's economy. These models show how the initial project would purchase inputs, supplies, and services from businesses in other sectors and the degree to which these purchases would be made locally or from outside the area. The purchases from other sectors are then translated to jobs and worker compensation that would be needed to produce these inputs. All the relationships between sectors are estimated using historic data. IMPLAN and REMI are two commonly used commercial economic impact models. Both allow an analyst to model effects in local economies such as Lexington.

Analysts often group the impacts, whether they are looking at employment, income, or output, into three categories: direct, indirect, and induced impacts. The direct impact refers to the employment and wages associated with the project. For a new establishment, this would be the employment, income, or output that typically occurs at the establishment. For a construction project, this could include construction activity at the site and potentially professional business services such as engineering and equipment testing.

The indirect impact refers to employment, income, and output that occur at the businesses that provide inputs to support the facility's construction and operations. For example, a restaurant might purchase food, kitchen equipment, linens, and tax and legal services. For the construction project, this would typically include equipment, materials, and supplies that the construction crews need to complete their work. The businesses that provide these inputs employ and pay additional workers.

The induced impact refers to employment and wages related to the provision of goods and services purchased by the workers employed directly and indirectly by the project. As these workers are paid, they will spend a portion of their incomes at local businesses such as restaurants, retail establishments, and health care providers. These impacts can occur across a wide range of sectors.

Typically, the new business will purchase only a portion of its inputs from local suppliers. Its purchases from non-local suppliers are often referred to as leakage. The idea is that only a portion of its purchases remain in the local economy while the rest leak out of the area and are unlikely to support local employment. The local suppliers might also purchase supplies from other local businesses, which also helps support local employment. However, with each iteration of input purchases, more of the spending leaks out of the area.

It is important to note that the estimated impacts reflect the spending patterns of existing businesses in the same sector as the one being analyzed. For example, estimates for a new restaurant would reflect the types of purchases that existing restaurants make. The estimates would also reflect the degree to which these inputs are purchased locally. The actual spending of an individual business might differ somewhat from the historic spending patterns of similar businesses. As a result, its actual economic impact might also differ.

Economic Impact Scenarios

The following analysis examines the potential economic impacts that could occur given 17 different hypothetical scenarios. Most scenarios involve a new establishment within a specified industry locating in Lexington. For example, one scenario looks at a new plant that manufactures biological products. Another considers a new full-service restaurant. For each scenario, the analysis estimates the employment and wages that are associated with the establishment. One scenario examines the construction of a new hospital, and another examines the construction of a new manufacturing facility. In these cases, the analysis considers the employment and income that are associated with the construction phase rather than the operation phase.

The analysis was conducted using an IMPLAN economic model of Fayette County and its surrounding counties. IMPLAN is designed around 546 detailed sectors such as grain farming, construction of residential structures, aircraft manufacturing, and clothing and clothing accessories stores derived from NAICS classifications. CBER staff worked with LFUCG officials to select 17 sectors that are commonly considered in economic development discussions around Lexington. Table 4-1 lists the selected sectors.

Because the scenarios do not represent actual planned projects, it was necessary to make assumptions about the size of the new establishment in each sector. For this, CBER used data from the U.S. Census Bureau's 2020 County Business Patterns (CBP).¹⁹ The CBP reports the average employment and average annual payroll for establishments by NAICS. CBER matched the IMPLAN sectors selected to the corresponding sector in the CBP for Fayette County to determine the average employment and payroll. For example, according to the CBP, full-service restaurants located in Fayette County have an average employment of 33 workers and an annual payroll of \$473,911. The results of the analysis are described in Tables 4-2 through 4-5.

¹⁹ U.S. Census Bureau. (2020). Geography Area Series: County Business Patterns. [table]. 2020 Business Patterns. U.S. Census Bureau website <https://www.census.gov/programs-surveys/cbp.html>.

Table 4-1 Description of Scenarios and Assumptions

IMPLAN Description	Corresponding NAICS	Average Employment	Average Annual Payroll
Biological product (except diagnostic) manufacturing	32541	58	\$3,828,167
Pharmaceutical preparation manufacturing	325412	59	\$4,270,400
Other motor vehicle parts manufacturing	3363	205	\$8,886,500
Truck Transportation	484	27	\$1,389,612
Warehousing and Storage	493	181	\$7,307,435
Legal Services	5411	7	\$510,833
Accounting, tax preparation, bookkeeping, and payroll services	5412	11	\$501,922
Architectural, engineering, and related services	5413	18	\$1,520,866
Custom computer programming services	541511	5	\$369,031
Computer systems design services	541512	10	\$1,023,410
Other computer related services, including facilities management	541513	170	\$13,850,000
Medical and diagnostic laboratories	621511	22	\$1,293,480
Hospitals	622110	2,350	\$154,715,667
Hotels and motels, including casino hotels	721110	27	\$414,027
Full-service restaurants	722511	33	\$473,911
Construction of Hospital (per \$1 million in costs)	NA	NA	NA
Construction of Manufacturing (per \$1 million in costs)	NA	NA	NA

Sources: IMPLAN and U.S. Census Bureau, County Business Patterns 2019.

Table 4-2 describes the employment that could be supported by the new hypothetical establishments. Direct employment refers to the jobs located at the establishment. Total employment supported refers to the jobs located in Fayette County and the counties that border Fayette that could be supported by all economic activity occurring at the new establishment and supported by the new establishment. The activities of the new establishment would likely also support other jobs located in Kentucky or other states. Estimates of these jobs are not shown. The jobs estimates include the direct, indirect, and the induced jobs that could be supported by the new establishment. The table also shows the multipliers for Fayette County and the Fayette County area, which includes Fayette and its surrounding counties.

For all scenarios, most of the area jobs that might be supported by the activities of the new establishment would be located within Fayette County. The percentages are high partially because all the direct jobs are assumed to be located within the county. Also, Fayette County accounts for a large share of the Fayette County area's economy, so jobs that help provide goods and services to the new establishment and its workers are more likely to be located within Fayette County.

The multipliers show the ratio of total jobs in the area to the direct jobs at the new establishment. The multipliers vary considerably across sectors. Full-service restaurants have the lowest multipliers at 1.16 for Fayette County and 1.18 in the Fayette County area. This low multiplier indicates that restaurants generally do not support much local employment beyond the restaurant. This occurs because restaurants typically

purchase much of their inputs, such as equipment and food, from suppliers outside the area. Hotels and motels also have low local multipliers for the same reason. Pharmaceutical preparation manufacturing has a higher multiplier because establishments in this sector tend to purchase a considerable amount of goods and services provided by other local businesses, including wholesale druggists, employment services, transportation services, and legal services.

Table 4-3 describes the potential income that could be associated with the new establishments. Direct income refers to the wages and earnings specifically at the establishment. Total income includes the direct, indirect, and induced income effects. As with employment, most of the income would be expected to occur in Fayette County, but the new establishments would also support income in other surrounding counties. The income multipliers show the ratio of total income in the area to the direct income at the new establishment.

Table 4-4 shows the average annual income per job associated with the establishments. Jobs in hotels and restaurants tend to pay the lowest incomes among the scenarios considered. In both sectors, average incomes for jobs directly tied to the new establishment were lower than the average for all jobs that could be supported by the establishments. The highest incomes were in the professional and technology related sectors, such as legal, architectural, computer programming, and computer systems design services.

Table 4-5 shows estimates of the local occupational license tax for Fayette County that could be associated with the new establishments. Lexington/Fayette County Urban Government levies an occupational license tax of 2.25% on wages and salaries earned in the county. Revenue estimates are shown for both the direct employment at the establishment and the total employment. For example, a new legal services firm with seven direct employees would be expected to generate approximately \$13,600 in occupational license tax revenues for its employees and a total of \$20,300 when its indirect and induced effects are included.

Table 4-2 Potential Employment Supported by a New Establishment

IMPLAN Sector Description	Employment			Multipliers		
	Direct	Total (Fayette)	Total (Fayette County Area)	Percent of Area Employment Occurring in Fayette County	Fayette	Fayette County Area
Biological Product (except Diagnostic) Manufacturing	58	92.3	98.2	94.0%	1.59	1.69
Pharmaceutical Preparation Manufacturing	59	163.9	177.8	92.2%	2.78	3.01
Other Motor Vehicle Parts Manufacturing	205	357.1	382.5	93.4%	1.74	1.87
Truck Transportation	27	48.8	51.4	94.9%	1.81	1.90
Warehousing and Storage	181	263.1	274.0	96.0%	1.45	1.51
Legal Services	7	13.3	14.0	94.6%	1.89	2.00
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	10.6	16.0	16.7	95.8%	1.51	1.57
Architectural, Engineering, and Related Services	18	37.4	39.8	94.1%	2.07	2.21
Custom Computer Programming Services	5	9.3	9.8	94.9%	1.85	1.95
Computer Systems Design Services	10	18.1	19.4	93.4%	1.81	1.94
Other Computer Related Services, including Facilities Management	170	457.3	485.0	94.3%	2.69	2.85
Medical and Diagnostic Laboratories	22	34.9	36.7	95.1%	1.59	1.67
Hospitals	2,350	4,441.6	4,689.2	94.7%	1.89	2.00
Hotels and Motels, including Casino Hotels	27	33.1	33.8	97.9%	1.23	1.25
Full-service Restaurants	33	38.3	39.1	98.1%	1.16	1.18
Construction of Hospital (per \$1 million in costs)	7	10.5	11.1	94.7%	1.47	1.56
Construction of Manufacturing (per \$1 million in costs)	7	11.0	11.6	95.0%	1.51	1.59

Note: Estimates represent the employment that could be supported by a new establishment in each sector. The estimates do not represent the net impact on Lexington's employment as they do not address whether the new establishments displace economic activity that would occur elsewhere in the area. Fayette County area consists of Fayette, Bourbon, Clark, Jessamine, Madison, Scott, and Woodford Counties.

Table 4-3 Potential Income Supported by New Establishments

IMPLAN Sector Description	Direct Labor Income, Adjusted	Total Labor Income, Adjusted (Fayette)	Total Labor Income, Adjusted (Fayette County Area)	Fayette County Multiplier	Fayette County Area Multiplier
Biological product (except Diagnostic) Manufacturing	\$4,008,783	\$5,970,033	\$6,236,650	1.49	1.56
Pharmaceutical Preparation Manufacturing	\$4,595,392	\$10,621,704	\$11,299,193	2.31	2.46
Other Motor Vehicle Parts Manufacturing	\$8,886,500	\$17,238,093	\$18,479,966	1.94	2.08
Truck Transportation	\$1,498,187	\$2,592,903	\$2,702,459	1.73	1.80
Warehousing and Storage	\$7,315,053	\$11,245,103	\$11,715,752	1.54	1.60
Legal Services	\$606,149	\$902,035	\$933,239	1.49	1.54
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	\$612,268	\$874,046	\$903,364	1.43	1.48
Architectural, Engineering, and Related Services	\$1,867,038	\$2,834,439	\$2,933,756	1.52	1.57
Custom Computer Programming Services	\$411,520	\$611,399	\$631,703	1.49	1.54
Computer Systems Design Services	\$1,246,091	\$1,648,223	\$1,699,585	1.32	1.36
Other Computer Related Services, including Facilities Management	\$16,684,741	\$30,661,862	\$31,823,570	1.84	1.91
Medical and Diagnostic Laboratories	\$1,473,647	\$2,132,475	\$2,208,164	1.45	1.50
Hospitals	\$162,118,057	\$266,156,158	\$276,601,114	1.64	1.71
Hotels and Motels, including Casino Hotels	\$490,595	\$772,475	\$803,205	1.57	1.71
Full-service Restaurants	\$542,481	\$801,292	\$833,102	1.48	1.54
Construction of Hospital (per \$1 million in costs)	\$459,358	\$607,144	\$628,271	1.32	1.37
Construction of Manufacturing (per \$1 million in costs)	\$471,235	\$637,346	\$658,507	1.35	1.40

Note: Estimates represent the income and tax revenue that could be supported by a new establishment in each sector. The estimates do not represent the net impact on Lexington's income and tax revenue as they do not address whether the new establishments displace economic activity that would occur elsewhere in the area. Fayette County area consists of Fayette, Bourbon, Clark, Jessamine, Madison, Scott, and Woodford Counties.

Table 4-4 Average Annual Income Per Job

IMPLAN Description	Direct Jobs	Total Fayette Jobs	Total Fayette County Area Jobs
Biological Product (except Diagnostic) Manufacturing	\$69,100	\$64,700	\$63,500
Pharmaceutical Preparation Manufacturing	\$77,900	\$64,800	\$63,600
Other motor vehicle parts manufacturing	\$43,500	\$48,300	\$48,300
Truck Transportation	\$54,800	\$53,100	\$52,600
Warehousing and Storage	\$40,400	\$42,700	\$42,800
Legal Services	\$86,600	\$67,800	\$66,700
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	\$57,700	\$54,600	\$54,100
Architectural, Engineering, and Related Services	\$102,100	\$75,800	\$73,700
Custom Computer Programming Services	\$76,100	\$65,700	\$64,500
Computer Systems Design Services	\$119,300	\$91,100	\$87,600
Other Computer Related Services, including Facilities Management	\$98,300	\$67,000	\$65,600
Medical and Diagnostic Laboratories	\$65,700	\$61,100	\$60,200
Hospitals	\$69,000	\$59,900	\$59,000
Hotels and Motels, including Casino Hotels	\$17,800	\$23,300	\$23,800
Full-service Restaurants	\$16,700	\$20,900	\$21,300
Construction of Hospital (per \$1 million in costs)	\$64,400	\$57,800	\$56,600
Construction of Manufacturing (per \$1 million in costs)	\$64,600	\$57,900	\$56,800

Note: Fayette County area consists of Fayette, Bourbon, Clark, Jessamine, Madison, Scott, and Woodford Counties.

Table 4-5 Potential Fayette County Occupational License Tax Revenue Supported by New Establishments

IMPLAN Sector Description	Tax Revenue, Direct (Fayette)	Tax Revenue, Total Labor (Fayette)
Biological product (except Diagnostic) Manufacturing	\$90,198	\$134,326
Pharmaceutical Preparation Manufacturing	\$103,396	\$238,988
Other Motor Vehicle Parts Manufacturing	\$199,946	\$387,857
Truck Transportation	\$33,709	\$58,340
Warehousing and Storage	\$164,589	\$253,015
Legal Services	\$13,638	\$20,296
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	\$13,776	\$19,666
Architectural, Engineering, and Related Services	\$42,008	\$63,775
Custom Computer Programming Services	\$9,259	\$13,756
Computer Systems Design Services	\$28,037	\$37,085
Other Computer Related Services, including Facilities Management	\$375,407	\$689,892
Medical and Diagnostic Laboratories	\$33,157	\$47,981
Hospitals	\$3,647,656	\$5,988,514
Hotels and Motels, including Casino Hotels	\$11,038	\$17,381
Full-service Restaurants	\$12,206	\$18,029
Construction of Hospital (per \$1 million in costs)	\$10,336	\$13,661
Construction of Manufacturing (per \$1 million in costs)	\$10,603	\$14,340

Note: Estimates represent the income and tax revenue that could be supported by a new establishment in each sector. The estimates do not represent the net impact on Lexington's income and tax revenue as they do not address whether the new establishments displace economic activity that would occur elsewhere in the area.

Jobs Supported Versus Net Increase in Jobs

Tables 4-2 and 4-3 show the local employment and wages that could be supported by new establishments located in Fayette County. The figures in these tables **should not** be interpreted as the increase in employment that would occur due to the establishment. New businesses might simply displace economic activity from other local businesses rather than add to the economic activity. When this occurs, the new business simply shifts where economic activity occurs.

Consider how a new restaurant might affect the economic activity in Lexington. The new restaurant would attract customers who spend money at the restaurant. This spending allows the restaurant to employ and pay its workers. It also allows the restaurant to purchase inputs from other business, some of which could be other local businesses. So, there is certainly economic activity associated with the new restaurant and this economic activity supports local employment. However, understanding whether the new restaurant could be increasing Lexington's employment requires an understanding of how its customers would have spent their money without the new restaurant.

If the new restaurant's customers would have simply eaten at a different local restaurant, the economic activity is simply shifting from an existing restaurant to the new restaurant. In this case, economic activity and employment increase at one restaurant, but these gains might be completely offset by reduced economic activity and employment at an existing restaurant. As a result, there may be little or no net increase in local employment. In fact, the net effect could even be somewhat negative depending on factors such as where the two restaurants purchase their inputs.

Ideally, an economic impact analysis would address this issue by examining whether the new establishment is attracting new spending to the area. A portion of the spending at a new entertainment venue might come from out-of-town customers who would not have made those expenditures without the new venue. This type of spending would be new to the area and would contribute to net increases in employment. Analysts often survey customers to determine how much of their spending is new to the area rather than spending that would have been made in other local businesses.

In addition, many new establishments enter a market simply in response to population growth. As Lexington's population grows, there is greater demand for services from a broad range of establishments, such as restaurants, legal services, hospitals, and diagnostic laboratories. As a result, the new establishments and their associated employment can be attributed to population growth, rather than being the economic driver for growth.

Economic impact analysis can provide valuable insights regarding how an economic project could affect the local economy. It is particularly useful at showing how an individual business is connected to other local businesses. Policy makers should be aware of the inherent uncertainty associated with the analysis and whether the analysis simply shows the jobs supported or measures the potential net effect on the local economy. Both types of analysis can be useful depending on the policy question being considered.

Appendix A

Definition of Skills

Skills	Element	Definition
Basic Skills	Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
	Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
	Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
	Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
	Mathematics	Using mathematics to solve problems.
	Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
	Reading Comprehension	Understanding written sentences and paragraphs in work-related documents.
	Science	Using scientific rules and methods to solve problems.
	Speaking	Talking to others to convey information effectively.
	Writing	Communicating effectively in writing as appropriate for the needs of the audience.
Complex Problem Solving Skills	Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
Resource Management Skills	Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.
	Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
	Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.
	Time Management	Managing one's own time and the time of others.
Social Skills	Coordination	Adjusting actions in relation to others' actions.
	Instructing	Teaching others how to do something.
	Negotiation	Bringing others together and trying to reconcile differences.
	Persuasion	Persuading others to change their minds or behavior.
	Service Orientation	Actively looking for ways to help people.
	Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.

Skills	Element	Definition
Systems Skills	Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
	Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
	Systems Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
Technical Skills	Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
	Equipment Selection	Determining the kind of tools and equipment needed to do a job.
	Installation	Installing equipment, machines, wiring, or programs to meet specifications.
	Operation and Control	Controlling operations of equipment or systems.
	Operations Analysis	Analyzing needs and product requirements to create a design.
	Operations Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.
	Programming	Writing computer programs for various purposes.
	Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
	Repairing	Repairing machines or systems using the needed tools.
	Technology Design	Generating or adapting equipment and technology to serve user needs.
	Troubleshooting	Determining causes of operating errors and deciding what to do about it.

Source: National Center for O*NET Development. O*NET OnLine. Retrieved March 14, 2022, from <https://www.onetonline.org>.

Table A-1
Weighted Average Importance of Skills Across Occupation Groups

Skills	Major Occupation Groups														Major Occupation Groups										
	Management	Business & Financial	Operations	Computer & Mathematical	Architecture & Engineering	Life, Physical, & Social Science	Community & Social Service	Legal	Educational & Library	Arts, Design, Entertainment, Sports, & Media	Healthcare Practitioners & Technical	Healthcare Support	Protective Service	Food Preparation & Serving Related	Building & Grounds	Cleaning & Maintenance	Personal Care & Service	Sales & Related	Office & Administrative Support	Farming, Fishing, & Forestry	Construction & Extraction	Installation, Maintenance, & Repair	Production	Transportation & Material Moving	
Active Learning	3.5	3.4	3.4	3.3	3.3	3.6	3.5	3.6	3.4	3.3	3.5	2.9	3.1	2.7	2.4	2.9	2.8	2.9	2.9	2.9	2.9	2.7	3.0	2.4	2.5
Active Listening	3.9	3.9	3.8	3.8	3.8	4.1	4.4	4.3	3.8	3.9	4.0	3.7	3.7	3.4	2.9	3.3	3.6	3.7	3.2	3.2	3.2	3.2	3.2	3.1	3.1
Complex Problem Solving	3.6	3.5	3.6	3.6	3.7	3.6	3.7	3.6	3.7	3.3	3.4	3.5	2.8	2.9	2.5	2.2	2.9	2.7	2.9	3.0	2.9	3.1	2.9	2.7	
Coordination	3.8	3.3	3.0	3.0	3.0	3.2	3.7	3.2	3.3	3.3	3.6	3.1	3.3	3.1	2.9	3.2	3.0	3.1	3.1	3.1	3.1	3.0	3.0	2.9	
Critical Thinking	3.9	3.9	3.9	3.9	3.9	4.0	3.9	3.9	3.5	3.7	3.8	3.2	3.4	2.9	2.8	3.1	3.1	3.2	3.4	3.4	3.1	3.4	3.0	3.0	
Equipment Maintenance	1.2	1.0	1.5	1.5	1.4	1.0	1.0	1.1	1.1	1.2	1.3	1.2	1.3	1.0	1.8	1.2	1.0	1.0	2.7	2.5	3.6	2.3	1.9		
Equipment Selection	1.3	1.0	1.8	1.8	1.5	1.0	1.0	1.2	1.2	1.5	1.7	1.2	1.3	1.1	1.8	1.3	1.1	1.0	2.8	2.5	3.0	2.1	1.6		
Installation	1.0	1.0	1.8	1.8	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.8	2.7	1.1	1.2		
Instructing	3.2	3.0	2.8	2.8	3.1	3.2	2.7	3.8	3.3	3.3	3.2	2.9	2.7	2.6	2.1	2.8	2.8	2.5	2.5	2.6	2.5	2.8	2.2		
Judgment and Decision Making	3.7	3.6	3.4	3.4	3.6	3.7	3.7	3.3	3.3	3.5	3.6	3.0	3.1	2.9	2.3	3.0	3.0	2.9	3.2	3.0	3.1	2.8	2.8		
Learning Strategies	3.2	3.0	2.7	2.7	3.1	3.2	2.7	3.7	3.7	3.1	3.2	2.7	2.7	2.4	2.1	2.7	2.4	2.5	2.2	2.5	2.5	2.4	2.1		
Management of Financial Resources	3.1	2.4	1.8	1.8	1.8	1.7	1.7	1.5	1.5	1.9	1.8	1.6	1.4	1.9	1.3	1.4	1.9	1.6	1.8	1.8	2.0	1.8	1.6		
Management of Material Resources	3.0	2.3	1.9	1.9	1.9	1.7	1.6	1.8	1.8	2.1	2.0	1.8	1.6	2.0	1.6	1.7	1.9	1.6	2.1	1.9	2.1	1.9	1.9		
Management of Personnel Resources	3.6	2.9	2.6	2.6	2.8	2.8	2.5	2.6	3.0	3.0	2.8	2.1	2.4	2.4	2.2	2.4	2.4	2.4	2.6	2.6	2.6	2.6	2.2		
Mathematics	2.7	3.1	2.8	2.8	3.1	2.0	2.0	2.5	2.5	2.1	2.8	2.2	1.9	2.4	1.4	2.1	2.8	2.4	2.2	2.5	2.4	2.1	2.2		
Monitoring	3.8	3.4	3.2	3.2	3.5	3.7	3.4	3.5	3.5	3.5	3.6	3.2	3.5	3.0	2.6	3.3	3.0	3.1	3.3	3.0	3.2	3.1	2.9		
Negotiation	3.5	3.1	2.4	2.4	2.8	3.3	3.4	2.7	3.0	2.7	2.3	2.9	2.4	2.4	2.0	2.6	3.2	2.7	2.2	2.3	2.3	2.2	2.3		
Operation and Control	1.9	1.2	1.9	1.9	2.0	1.7	1.2	1.2	1.6	1.6	2.2	1.7	2.4	1.7	2.2	1.5	1.9	1.2	3.1	3.0	3.3	2.8	2.8		
Operations Analysis	2.7	2.5	3.0	3.0	2.5	2.2	2.2	2.0	2.5	2.1	1.2	1.7	1.2	1.2	1.3	1.5	1.5	1.6	1.5	1.9	2.0	1.6	1.5		
Operations Monitoring	2.5	1.9	2.7	2.7	2.4	2.0	1.7	1.9	2.0	2.7	2.2	2.6	2.1	2.1	2.3	2.0	1.9	1.9	3.1	3.0	3.4	3.1	2.7		
Persuasion	3.4	3.2	2.6	2.6	3.0	3.6	3.5	2.7	3.3	2.9	2.5	3.0	2.7	2.7	2.1	2.8	3.3	2.8	2.6	2.4	2.4	2.3	2.3		
Programming	1.6	1.7	3.5	3.5	1.8	1.6	1.5	1.6	1.4	1.6	1.1	1.2	1.1	1.1	1.0	1.2	1.3	1.6	1.0	1.1	1.6	1.6	1.1		
Quality Control Analysis	2.4	1.9	3.0	3.0	2.4	1.7	1.2	1.9	2.2	2.2	2.6	2.1	2.0	2.2	2.1	2.0	1.8	1.8	2.9	2.7	3.3	3.1	2.1		
Reading Comprehension	3.9	3.9	3.7	3.7	4.0	3.9	4.2	3.9	3.7	3.8	3.2	3.3	2.8	2.8	2.5	3.0	3.1	3.5	3.0	3.0	3.0	3.1	3.0	2.9	
Repairing	1.2	1.0	1.5	1.5	1.3	1.0	1.0	1.1	1.1	1.1	1.3	1.1	1.3	1.0	1.8	1.1	1.0	1.0	2.7	2.5	3.7	2.1	1.8		
Science	2.0	1.6	2.4	2.4	3.5	2.1	1.6	2.0	1.4	3.0	1.9	1.6	1.0	1.0	1.1	1.3	1.0	1.0	1.9	1.6	1.8	1.2	1.1		
Service Orientation	3.3	3.1	2.6	2.6	3.1	3.9	3.1	3.9	3.1	3.3	3.7	3.7	3.0	3.2	2.7	3.4	3.5	3.4	2.4	2.6	2.6	2.3	2.7		
Social Perceptiveness	3.8	3.4	3.0	3.0	3.4	4.2	3.4	3.4	3.4	3.5	3.7	3.6	3.4	3.1	2.8	3.3	3.3	3.1	2.7	2.8	2.8	3.0	2.8		
Speaking	4.0	3.9	3.6	3.6	3.9	4.2	4.3	3.8	3.8	3.9	3.9	3.3	3.5	3.2	2.8	3.3	3.6	3.7	3.1	3.2	3.1	3.0	3.1		
Systems Analysis	3.1	3.1	3.4	3.4	3.1	3.1	3.1	3.0	2.7	3.0	2.9	2.1	2.3	2.1	1.9	2.4	2.2	2.3	2.3	2.4	2.7	2.3	2.0		
Systems Evaluation	3.2	3.0	3.2	3.2	3.1	3.0	2.6	2.7	2.8	2.8	2.1	2.3	2.1	2.1	1.8	2.4	2.2	2.2	2.3	2.4	2.6	2.2	2.0		
Technology Design	1.8	1.7	2.5	2.5	1.8	1.6	1.8	1.7	1.8	1.8	1.5	1.4	1.2	1.2	1.2	1.7	1.5	1.4	1.4	1.7	1.9	1.6	1.3		
Time Management	3.7	3.2	3.1	3.1	3.1	3.3	3.5	3.3	3.3	3.5	3.2	3.0	2.8	2.8	2.8	2.9	3.0	3.2	2.9	3.0	3.1	3.0	2.9		
Troubleshooting	1.8	1.1	2.6	2.6	1.9	1.2	1.0	1.5	1.5	1.6	2.0	1.8	1.9	1.8	2.0	1.8	1.5	1.3	2.9	2.6	3.7	2.3	2.1		
Writing	3.5	3.6	3.5	3.5	3.8	3.8	3.9	3.5	3.5	3.5	3.6	3.0	3.1	2.3	2.0	2.9	2.8	3.2	2.7	2.4	2.8	2.7	2.6		

Note: Top ten skills for each occupation group are highlighted. Skills that appeared in the top ten for more than half of the 22 occupational groups are bold and in red.