Transportation and Warehousing Trends, Opportunities, and Issues

Collaborative Working Group, April 5, 2024

Outline:

1. What is the growth outlook for Logistics, including automation impacts?

2. Is Logistics growth creating quality jobs?

3. How important is Logistics to middle-wage job growth potential?

4. Is Logistics a major traded sector?

5. Do urban logistic-hub locations like in Portland make long-term sense?

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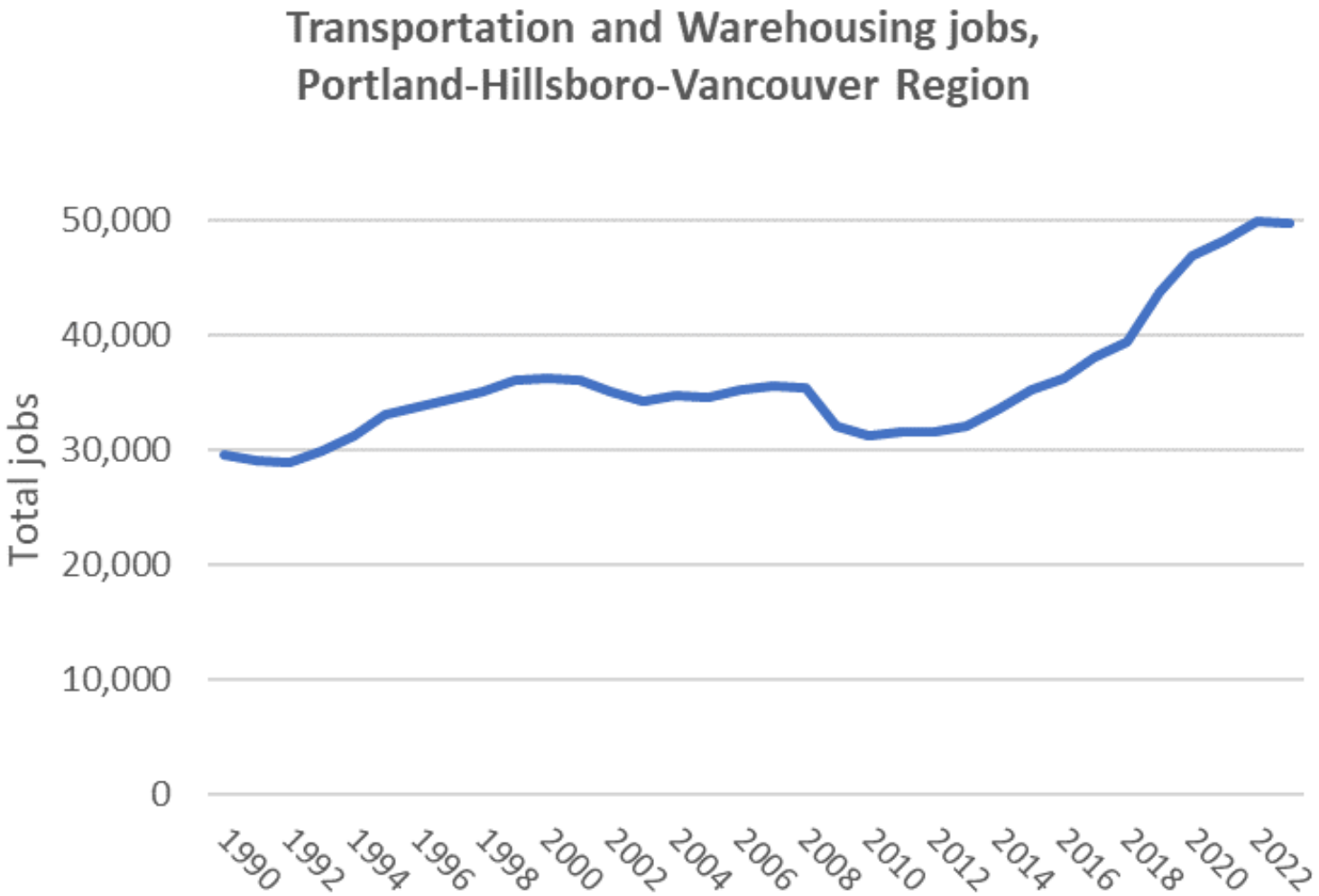
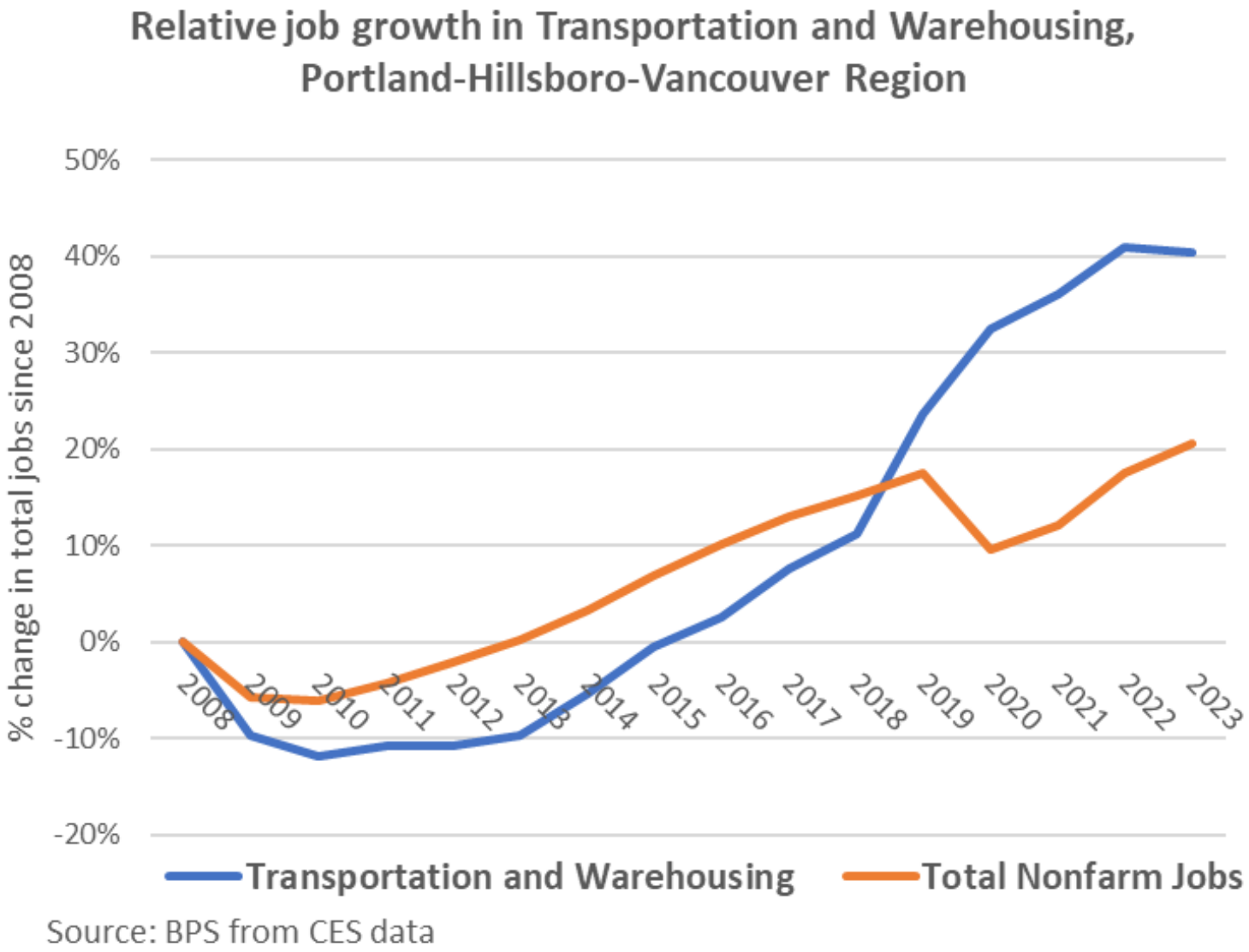
Accelerated job growth in the Logistics (Transportation & Warehousing) sector since 2015



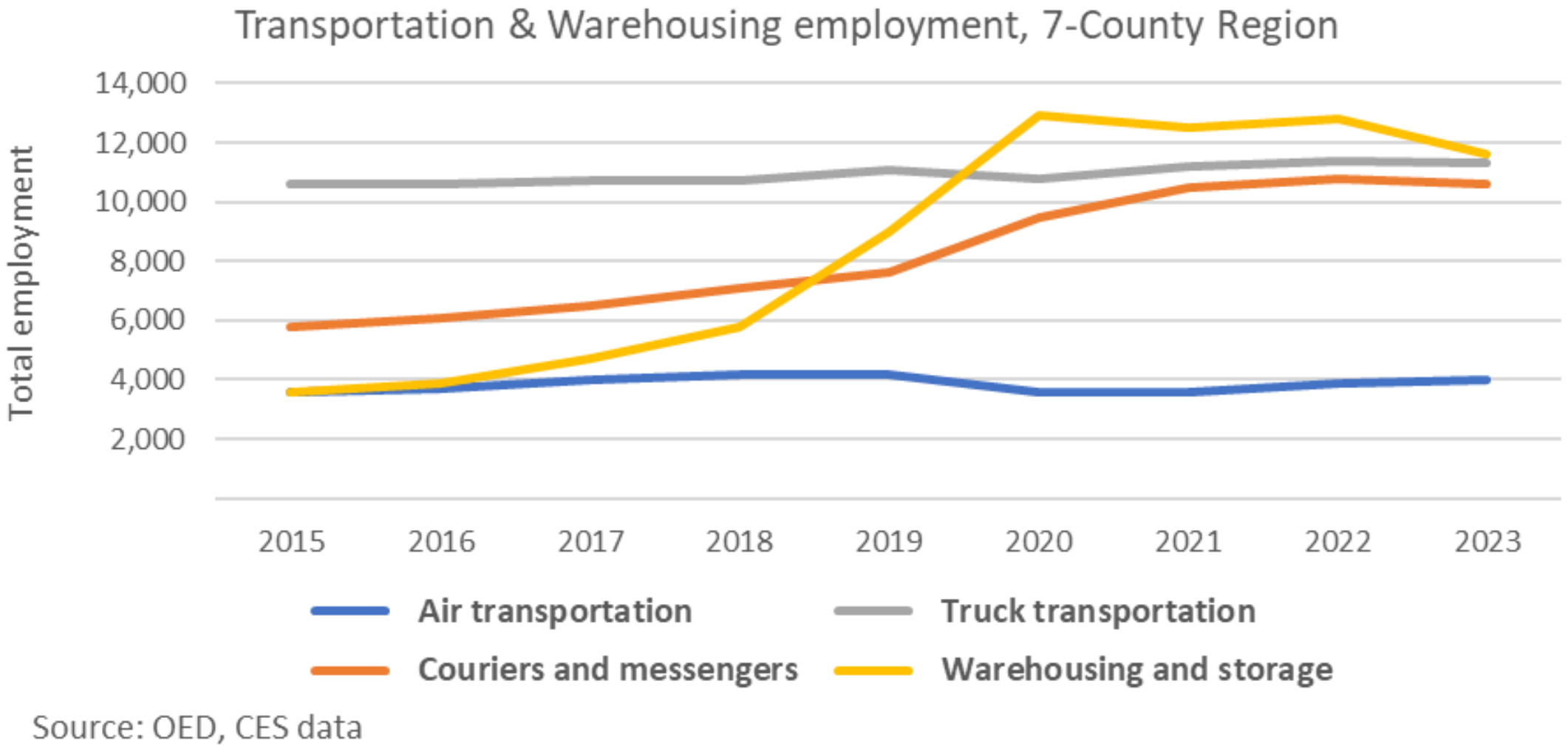
Source: BPS from CES data

Logistics job growth continued through pandemic



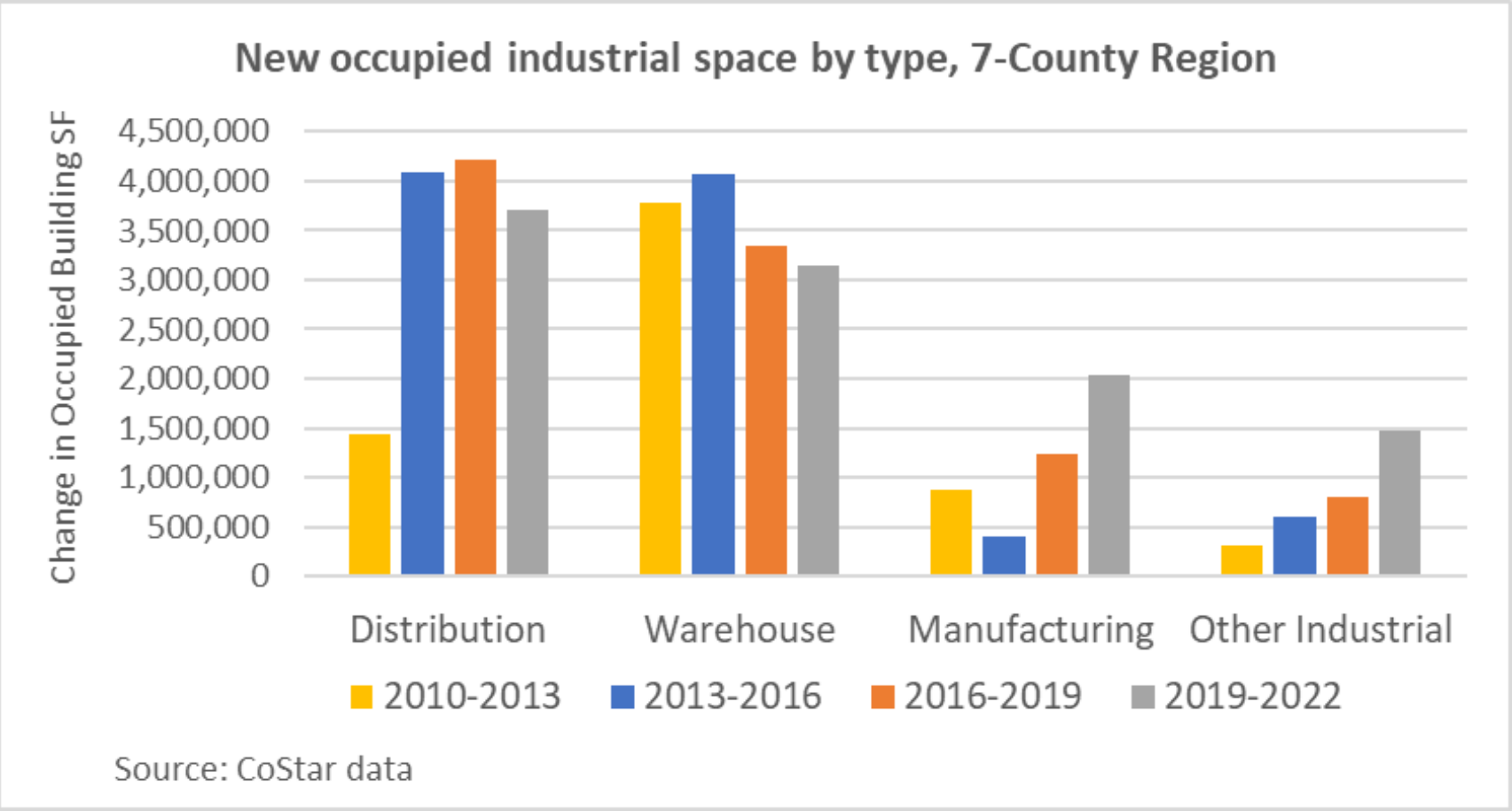
Source: BPS from CES data

Most of recent Logistics job growth has been in Warehousing and Courier subsectors



Source: OED, CES data

Industrial construction focused on distribution and warehouse buildings; diversifying since 2016



National and regional growth projections, 2022-2032

Logistics and Manufacturing growth outlook, 2022-2032, nation and region			
	Average annual rate of change, 2022-2032		
	U.S. Total, Bureau of Labor Statistics		Portland Tri-County, OED
	Output	Jobs	Jobs
Total Nonfarm Payroll Jobs	1.8%	0.3%	1.2%
Transportation and warehousing	2.2%	0.8%	1.2%
Couriers	2.4%	1.7%	1.5%
Warehousing	2.7%	1.2%	1.4%
Manufacturing	0.9%	-0.1%	0.8%
Semiconductor & components	1.9%	0.8%	0.9%
Transportation equipment	2.1%	-0.5%	0.9%

2. Is logistics growth creating quality jobs?

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City job growth and average wages in Logistics sector – City has 73% of Tri-County Logistics jobs in 2019

Portland's average annual jobs and wages in Transportation and Warehousing						
		Total Jobs		Change,	Avg. Annual Pay	
NAICS	Subsector	2019	2022	2019-2022	2019	2022
48/49	**Transp & Warehousing**	**27,673**	**30,033**	2,360	**$55,893**	**$66,034**
481	Air transportation	3,814	3,534	-280	$70,740	$85,526
484	Trucking	4,992	5,315	323	$59,361	$69,994
485	Transit & Taxis	2,840	2,499	-341	$55,540	$65,552
488	Support Activities	4,783	5,228	445	$62,199	$67,389
492	Couriers	4,437	6,332	1,895	$43,041	$56,261
493	Warehousing	4,077	4,557	480	$40,541	$53,323
Source: BPS from QCEW data						

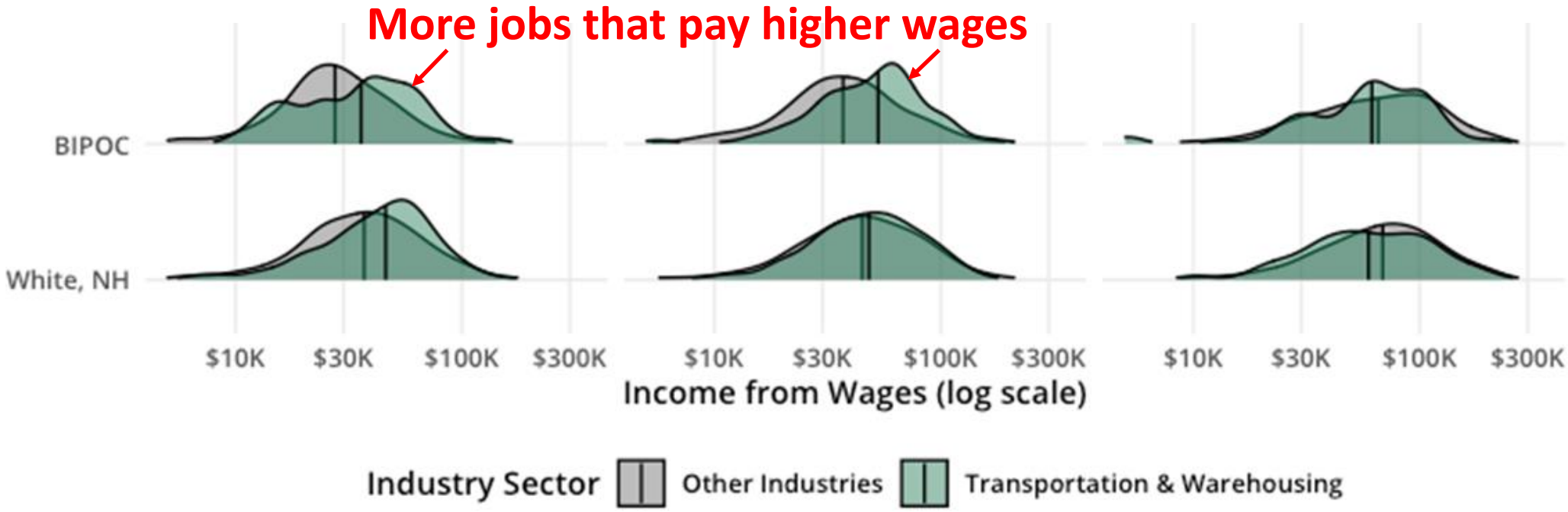
Regional wage distribution of middle- and low-wage jobs, 2022

Growth outlook and wages in selected middle-wage occupations					
	Tri-County jobs		Competitive	2022 MSA wage	
Occupation	2022	2022-2032	Education	Median	75% Quartile
Transportation & Material Moving	89,512	10,663		$40,630	$51,590
Heavy Truck Drivers	11,952	1,147	Training	$58,010	$63,680
Light Truck Drivers	8,437	1,425	HS diploma	$43,300	$49,690
Laborers and Freight Movers	13,963	1,766	HS diploma	$39,050	$46,820
Stockers and Order Fillers*	25,887	2,809	HS diploma	$37,300	$40,580
Production (Manufacturing)	56,639	3,912		$44,880	$56,370
Assemblers and Fabricators	5,200	104	HS diploma	$38,980	$45,660
Semiconductor Technicians	4,629	360	Associates	$49,690	$62,290
Office and Administrative Support	127,453	1,549		$46,180	$55,920
Customer Service	14,857	-138	HS diploma	$40,990	$49,450
Healthcare Support	34,749	7,697		$38,760	$48,120

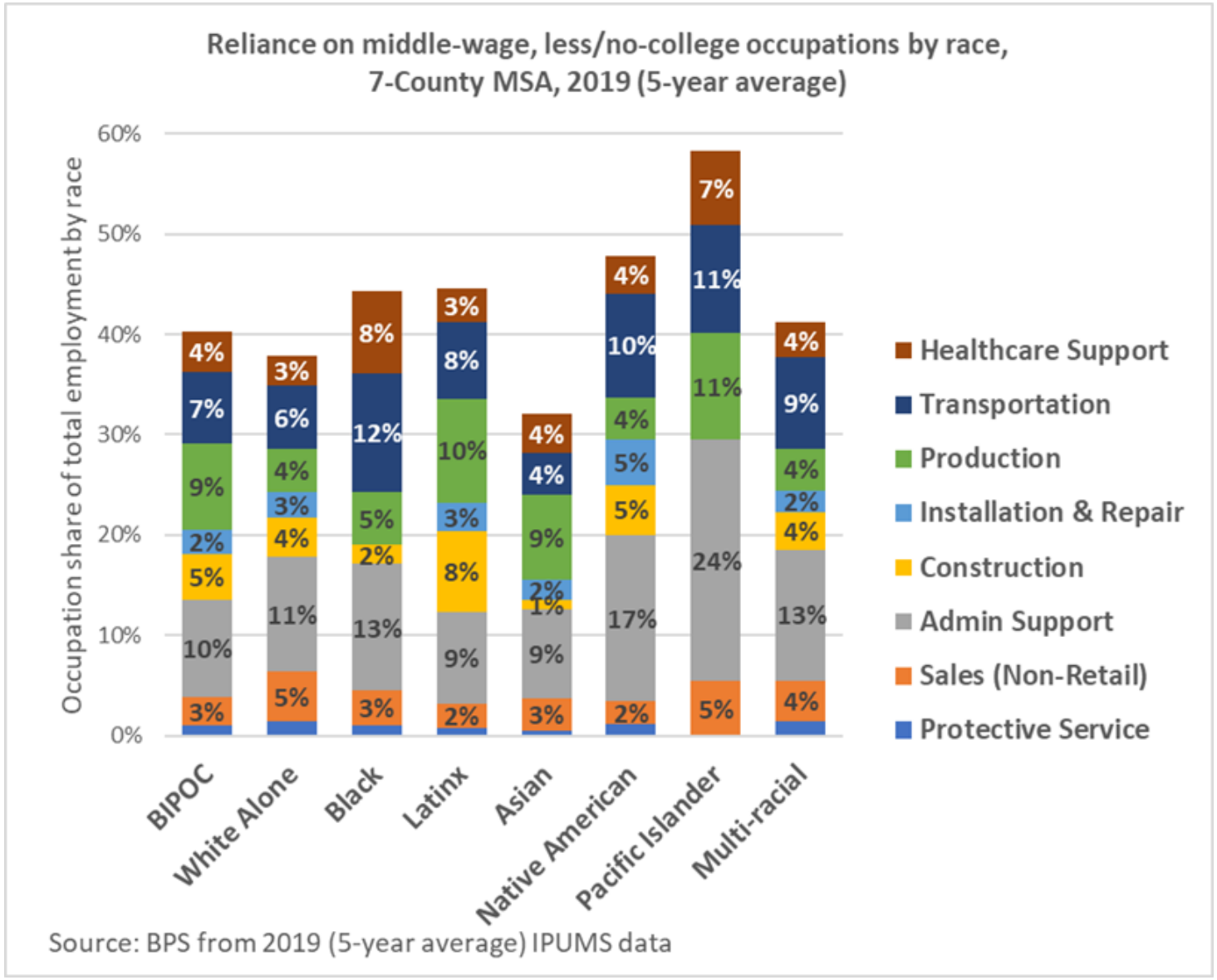
* 47% of stockers & order fillers in Oregon are in Retail Trade, 25% in Transportation & Warehousing (2021).

Logistics jobs raise BIPOC incomes relative to other sectors

Distribution of full-time wages by race and educational attainment, Transportation and Warehousing, Portland MSA, 2014-2018



Reliance on middle-wage occupations by race



3. How important is Logistics to middle-wage job growth potential?

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Projected middle-wage regional job growth is concentrated in six core sectors (highlighted)

Portland Tri-County Area jobs in 'middle-wage occupations with competitive education less than a Bachelor's degree' (MWLB)		
Sectors	MWLB % **2019**	MWLB % **2019-2030**
Total payroll employment	**39%**	**29%**
Construction	83%	80%
Manufacturing	59%	36%
Wholesale	53%	45%
Retail	33%	25%
Transportation & Warehousing	89%	89%
Information	22%	-2%
Finance	36%	-31%
Real Estate	39%	25%
Professional Services	20%	8%
Management	19%	11%
Administrative Support	53%	42%
Education	21%	14%
Hospitals	26%	8%
Other Health & Social Assistance	35%	33%
Arts & Recreation	25%	18%
Accommodation & Food Services	7%	3%
Other Services	39%	24%
Government	45%	33%
Source: OED calculations		

Logistics accounts for nearly half of projected middle-wage job growth in the City of Portland

Projected middle-wage job growth by core sectors, Portland, 2019-2045				
	Middle-wage jobs that require less than a bachelor's degree (MWLB), Baseline Scenario			
		MWLB %	Sector %	City %
	MWLB	of sector	of MWLB	of Total
Employment sectors	change	growth	growth	Tri-County Jobs, 2019
All Sectors	**39,400**	**36%**	**100%**	**46%**
Core MWLB Sectors	**34,800**	**57%**	**89%**	**37%**
Transp. & Warehousing	19,000	89%	48%	73%
Healthcare, exc Hospitals	8,900	33%	23%	51%
Construction	3,200	80%	8%	39%
Admin Support	1,800	42%	5%	40%
Wholesale	1,400	45%	4%	44%
Manufacturing	500	36%	1%	27%
All other sectors	4,500	9%	11%	49%

4. Is Logistics a major traded sector that brings jobs and income into the region?

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‘Logistics Cluster’ concepts, emerging literature

- **Like other traded-sector specializations** – agglomeration; inter-firm competition and networking, innovation

- **Gateway nodes on global trade routes** – reliance on transportation efficiency and frequency; growth through value-added services and technology

- **Bridging production and consumption** (a partly traded sector) – Logistics clusters rely on freight yards and other infrastructure to provide platforms for competition and cooperation among logistics, manufacturing, trade, finance, and other business (Han, 2019)

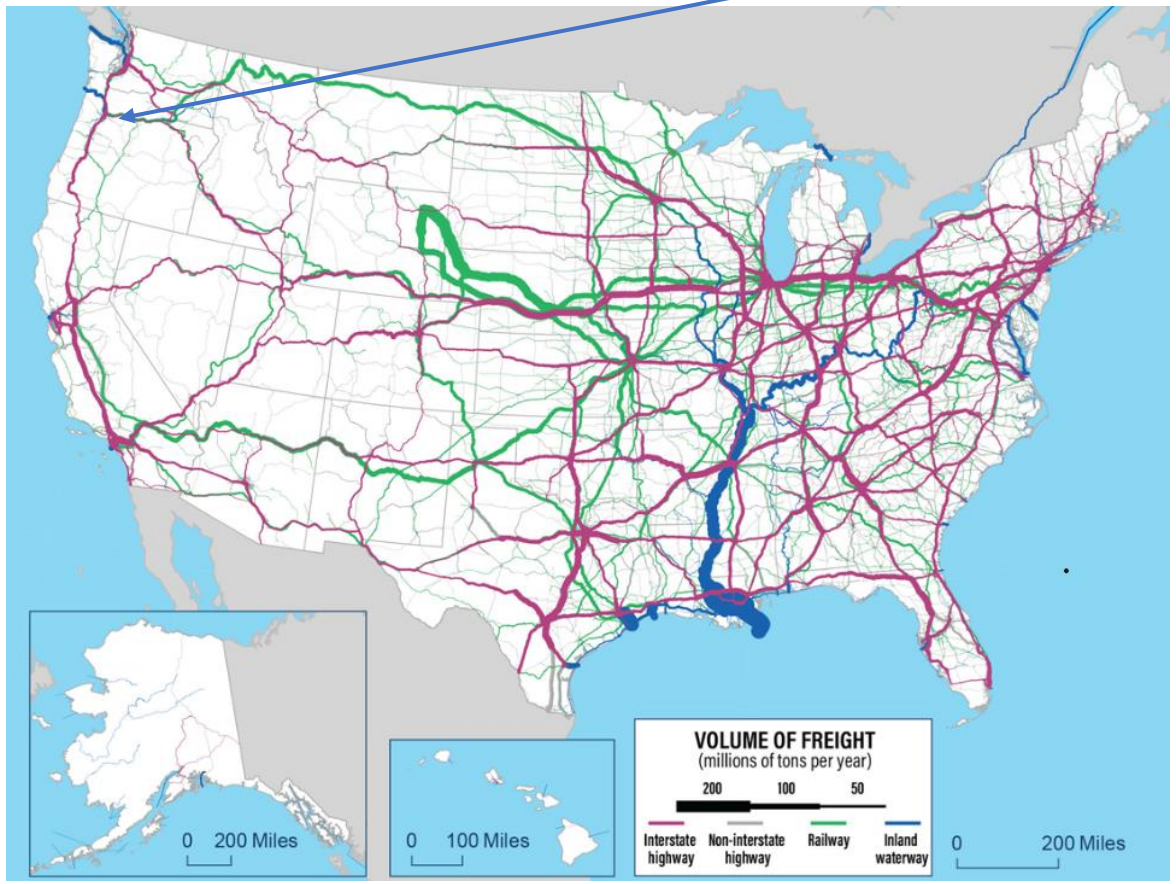
- **Middle-wage job growth** – The logistics industry recruits people with relatively low levels of education and gives them the opportunity to progress in the labor market. Logistics jobs pay, on average, salaries commensurate with manufacturing. (Sheffi and Rivera, MIT, 2014)

Logistics Cluster in Multnomah County

Transportation, warehousing & wholesale specializations in Multnomah County, 2022					
	Location quotient, employment	Firms	Employment, 2022	Tri-County jobs outlook, 2022-2032 change	Tri-County jobs outlook, Annual Avg. Growth
NAICS 48-49 Transportation & warehousing	1.53	883	32,689	13%	1.24%
NAICS 493 Warehousing and storage	1.45	104	9,200	15%	1.39%
NAICS 492 Couriers and messengers	2.11	101	7,704	16%	1.45%
NAICS 484 Truck transportation	1.16	353	6,035	4%	0.43%
NAICS 481 Air transportation	2.08	23	3,531		
NAICS 42 Wholesale trade	1.13	2,162	22,469	10%	0.93%
NAICS 42311 Motor vehicles	2.07	34	909		
NAICS 42312 Motor vehicle parts	1.67	70	991		
NAICS 4235 Metals and minerals	1.61	46	688		
NAICS 42331 Lumber & plywood	1.44	30	546		
Total Transportation, warehousing & wholesale		3,045	55,158	11%	1.08%

Pacific Rim gateway, freight corridors, agglomeration at the hub

Portland



Rail and Truck freight flows (tons), USDOT, 2020

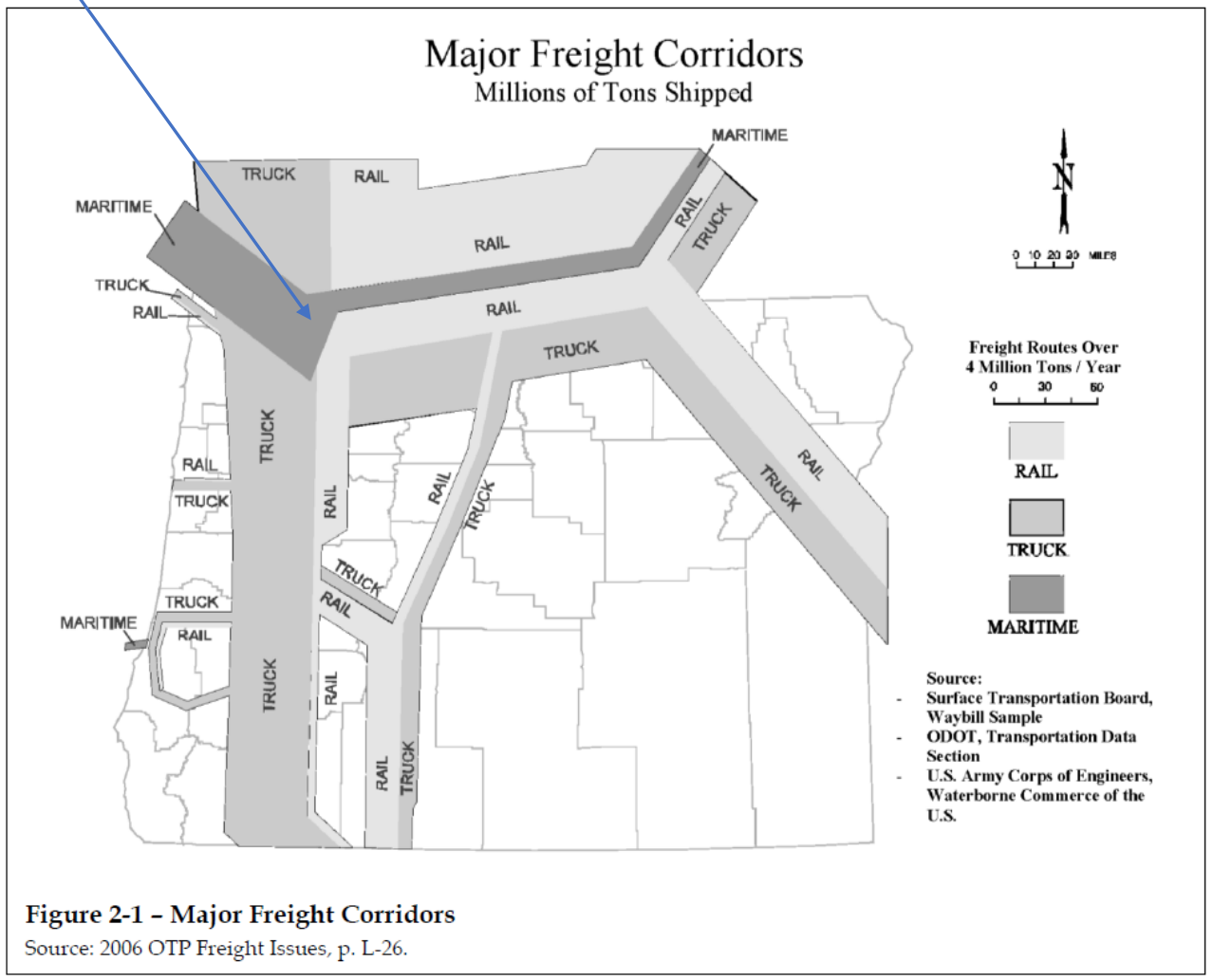
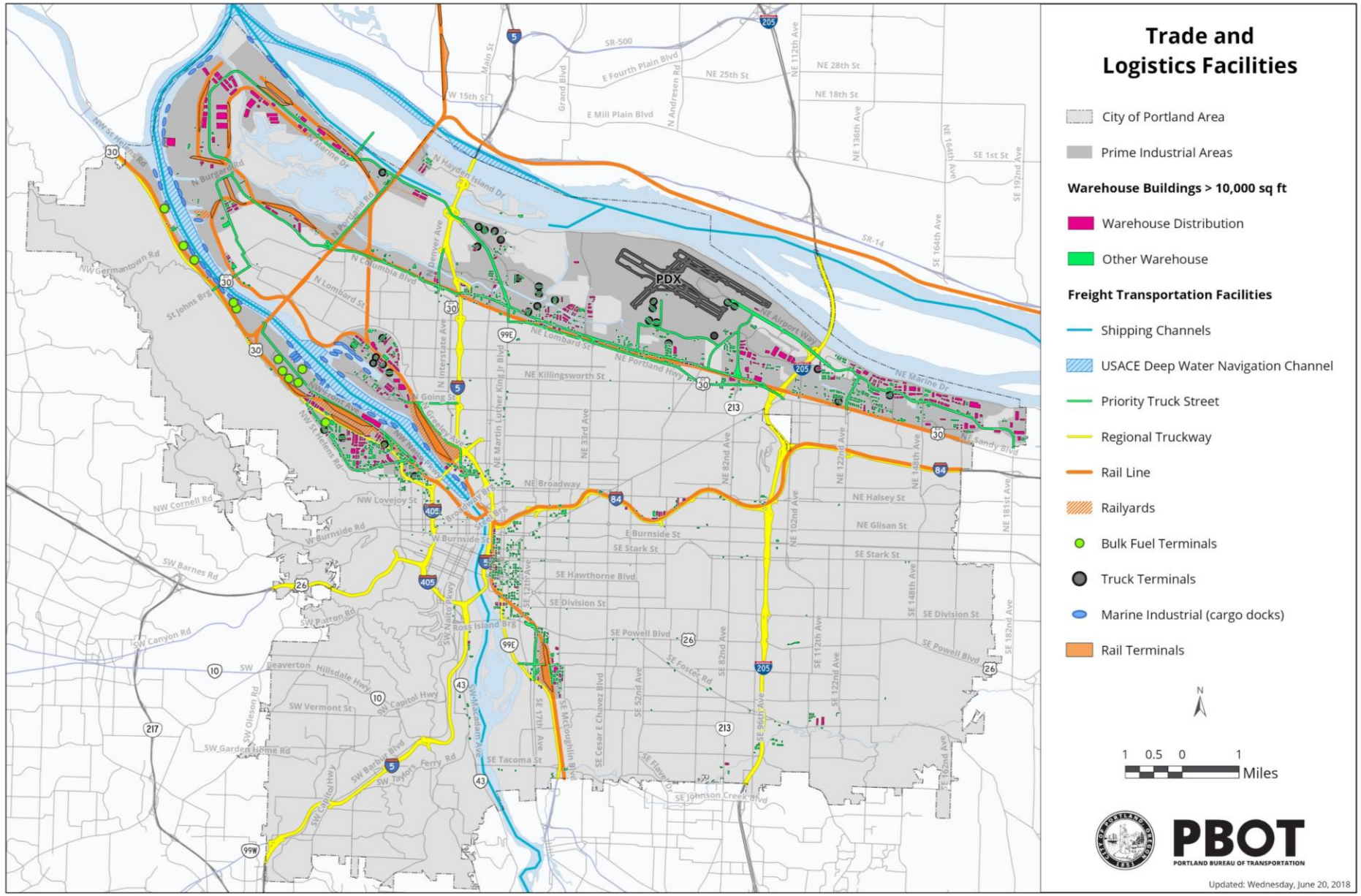
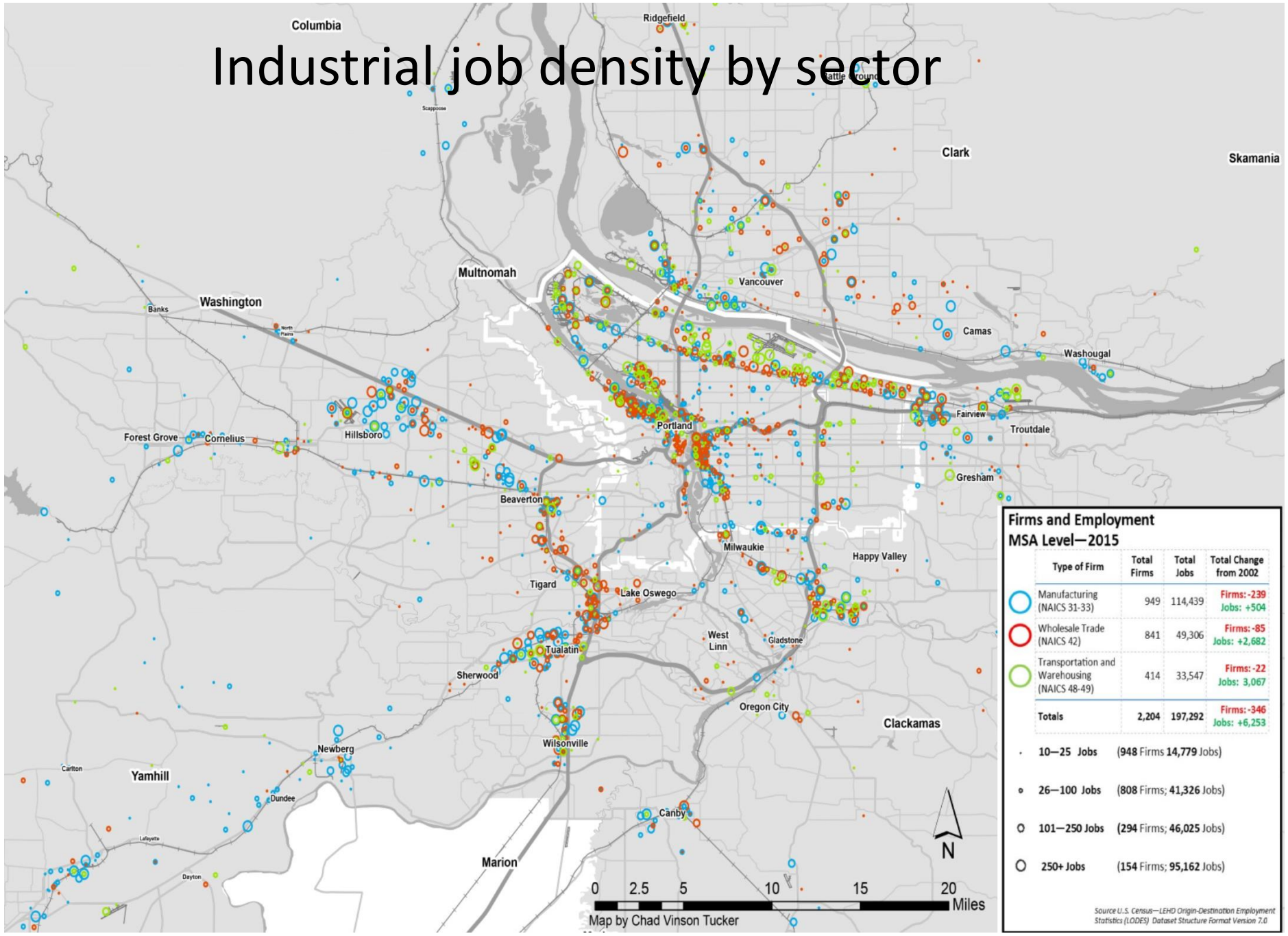


Figure 2-1 – Major Freight Corridors
Source: 2006 OTP Freight Issues, p. L-26.

Oregon’s freight-hub infrastructure



Industrial job density by sector



Firms and Employment
MSA Level—2015

Type of Firm	Total Firms	Total Jobs	Total Change from 2002
Manufacturing (NAICS 31-33)	949	114,439	Firms: -239 Jobs: +504
Wholesale Trade (NAICS 42)	841	49,306	Firms: -85 Jobs: +2,682
Transportation and Warehousing (NAICS 48-49)	414	33,547	Firms: -22 Jobs: 3,067
Totals	**2,204**	**197,292**	Firms: -346 Jobs: +6,253

- **10—25 Jobs** (**948** Firms **14,779** Jobs)
- **26—100 Jobs** (**808** Firms; **41,326** Jobs)
- **101—250 Jobs** (**294** Firms; **46,025** Jobs)
- **250+ Jobs** (**154** Firms; **95,162** Jobs)

Source U.S. Census—LEHD Origin-Destination Employment Statistics (LODES) Dataset Structure Format Version 7.0

5. Do urban logistic-hub locations like in Portland make long-term sense?

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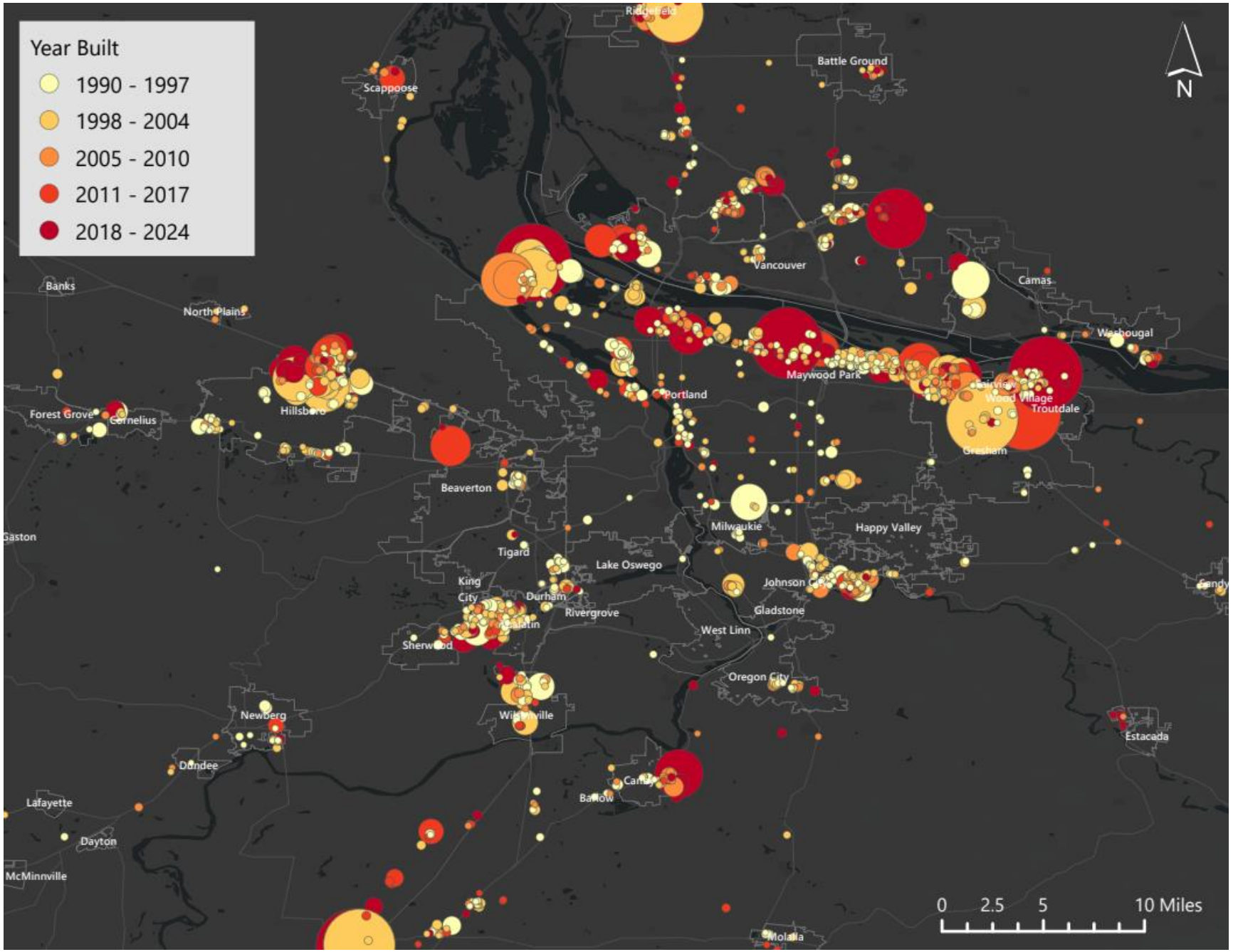
Increasing warehouse job density now approximates other low-density urban uses

City of Portland Permit Trend Results, 2008-2019			
Land Use Type	**Bldg SF/Job**	**Avg FAR**	**Jobs/Acre**
Warehouse and Freight Movement	937	0.21	9.7
Manufacturing and Production	831	0.28	14.4
Industrial Service	788	0.29	16.2
Total Industrial	876	0.25	12.2
Colleges	1,165	0.37	13.9
Retail Sales & Service	767	0.52	29.4
Office	339	2.14	275

Site-size distribution of industrial land demand

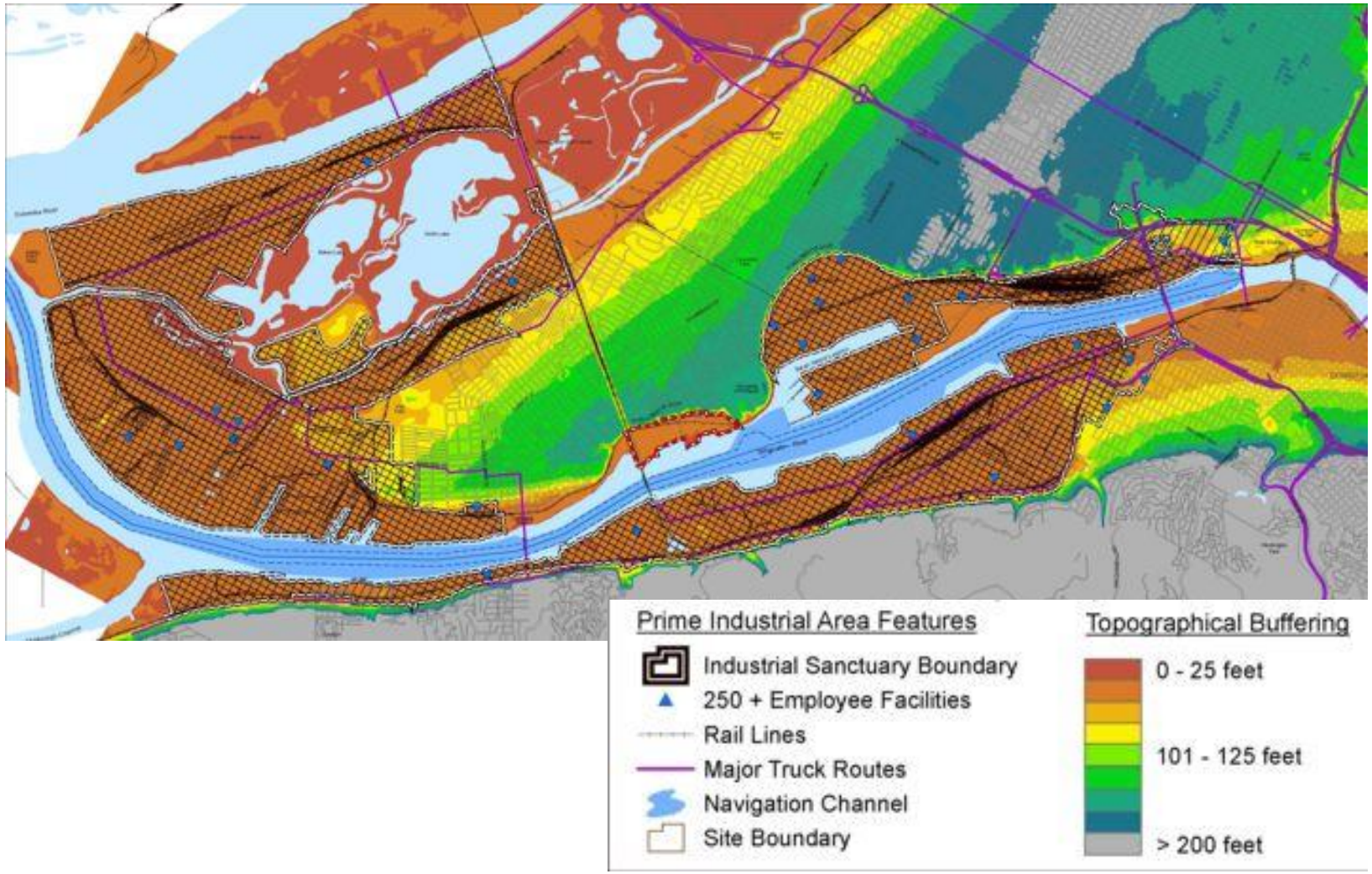
Trend-based projections of land demand for industrial building types by site size, Portland, 2019-2045							
	Site size in acres of new building construction						
Building types	**<1 ac**	**1-3 ac**	**3-5 ac**	**5-10 ac**	**10-20 ac**	**20-50 ac**	**>50 ac**
Combined Industrial geographies	4%	11%	6%	13%	23%	40%	3%
Warehouse and distribution	1%	8%	4%	11%	24%	47%	5%
Manufacturing	14%	41%	8%	5%	17%	14%	0%
Other General Industrial	8%	44%	9%	5%	18%	15%	0%

Regional industrial construction since 1990



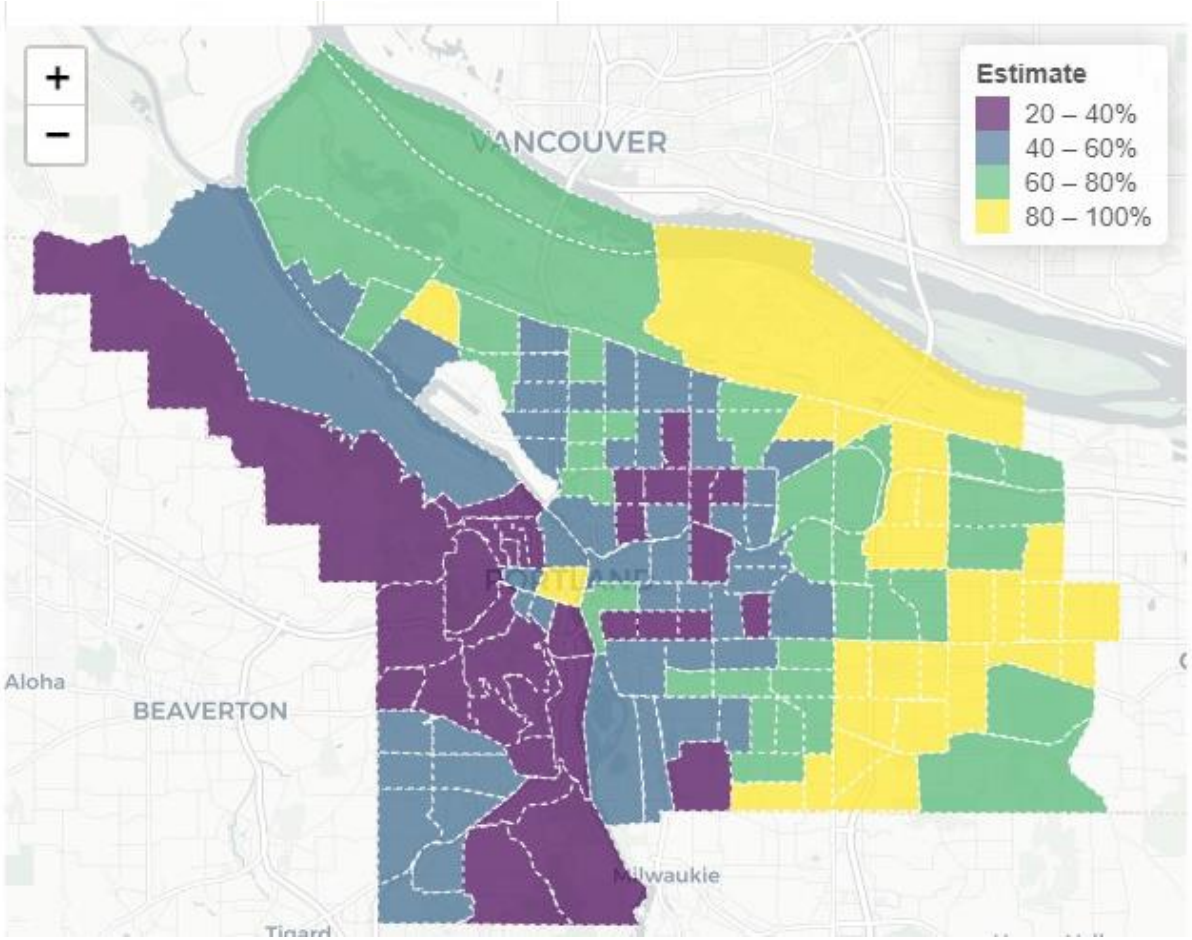
Source: BPS from CoStar data, industrial building deliveries by size and year

How to improve industrial/residential buffers?

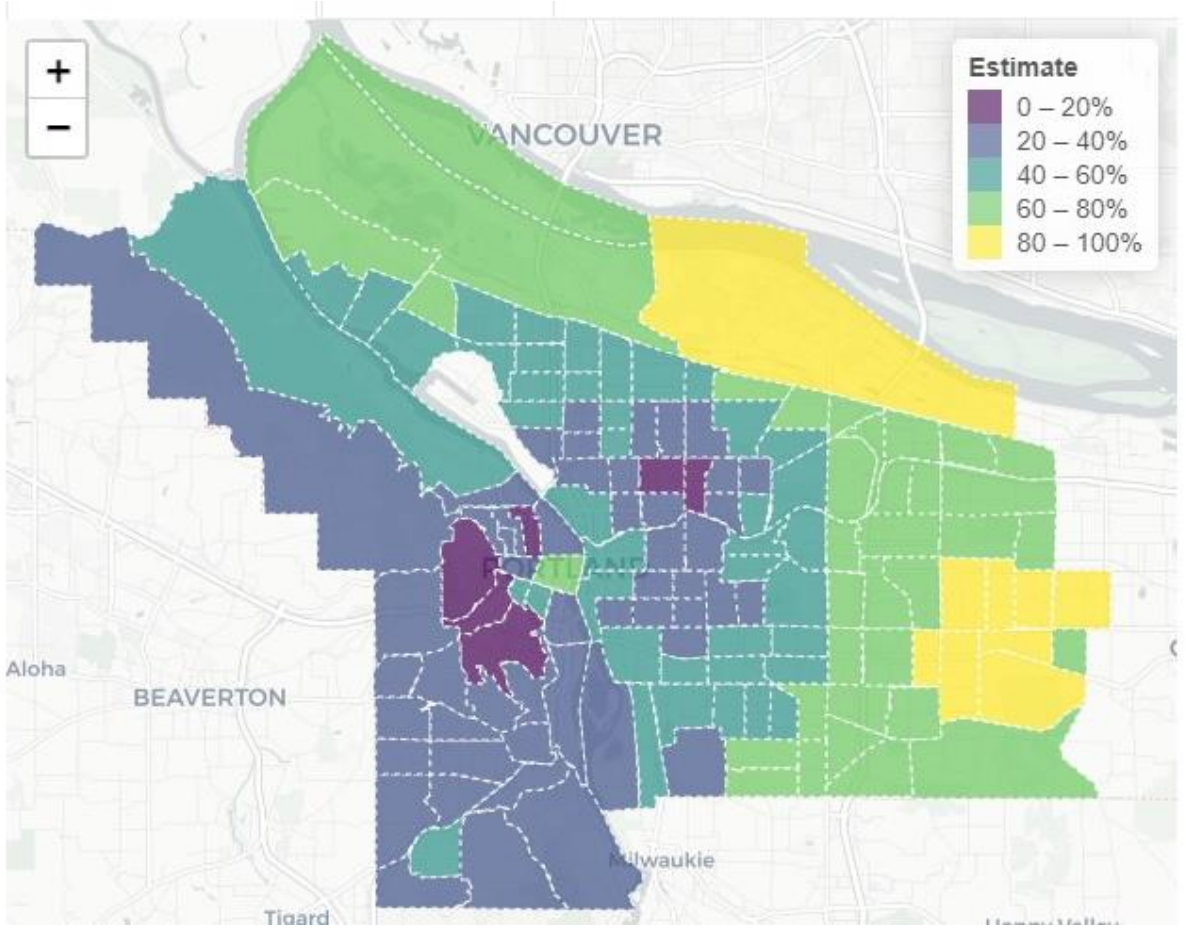


East Portland is majority working class, relies on middle-wage jobs

Percent of adults with no four-year degree, 2010



Percent of adults with no four-year degree, 2019



Environmental costs of logistics sprawl by increasing VMT

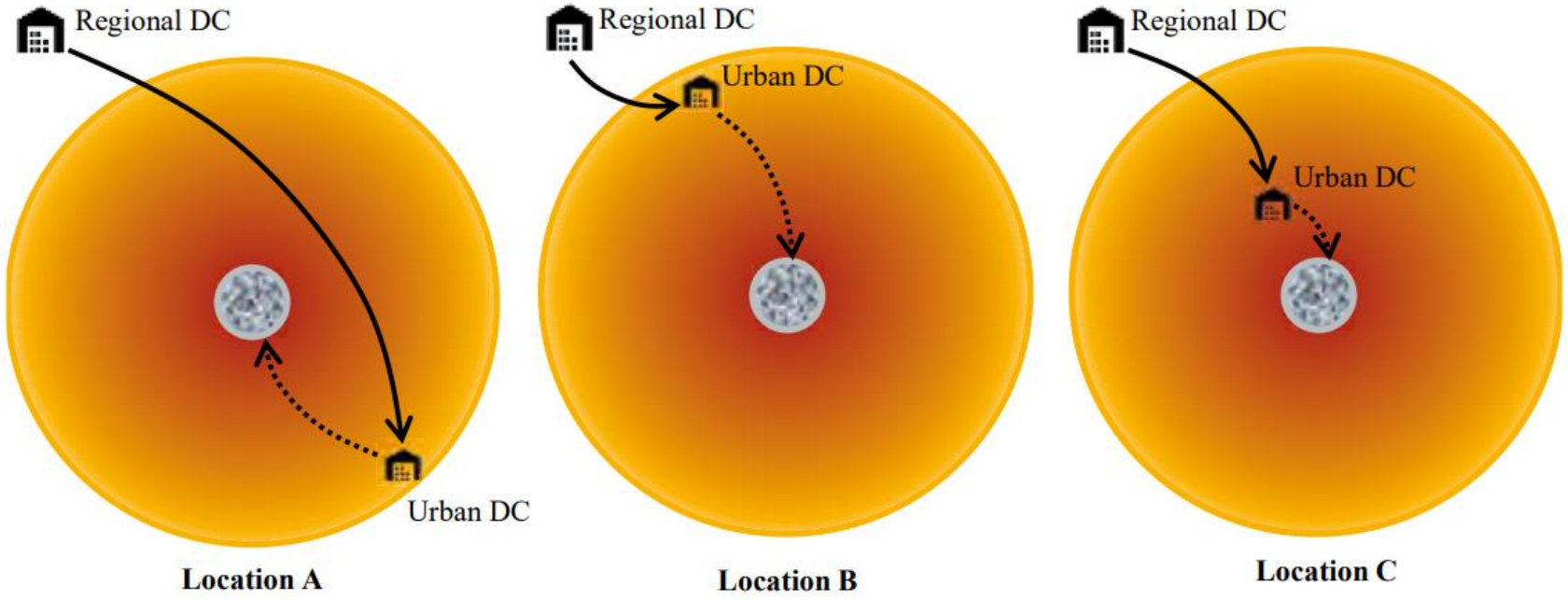
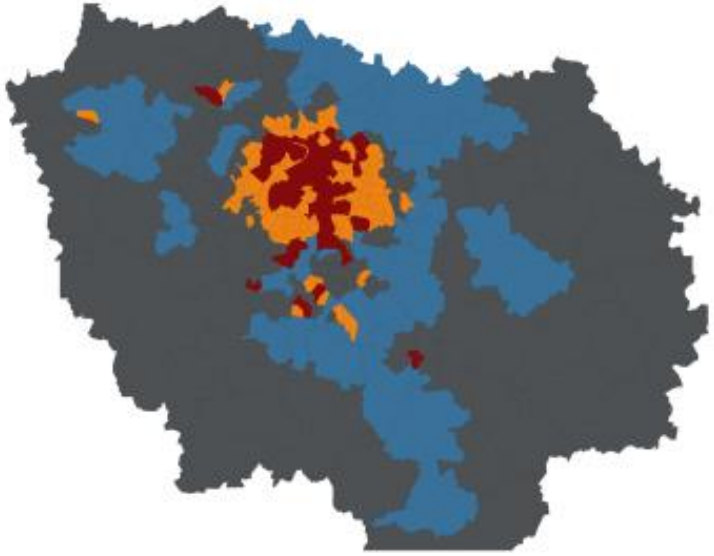


Figure 1. Effects of the location of an urban distribution center (DC).

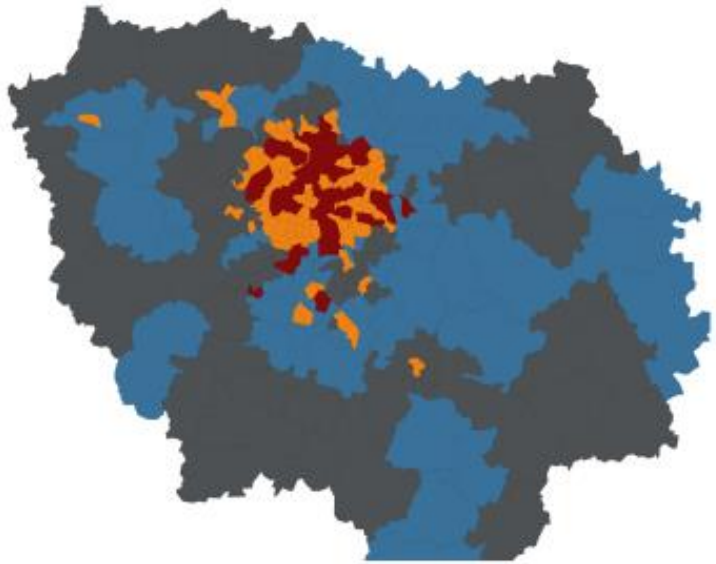
- "Location A dramatically increases externalities, because of the increased VMT (vehicle miles traveled).
- Location B is better, though creating long trips by small trucks to make deliveries, thus increasing VMT.
- Location C is likely the best, reducing the VMT of the outbound delivery vans, though increasing the journey of large trucks that supply the urban distribution center."

Source: Lawson, et al., Planning Freight-Efficient Land Uses (2022)

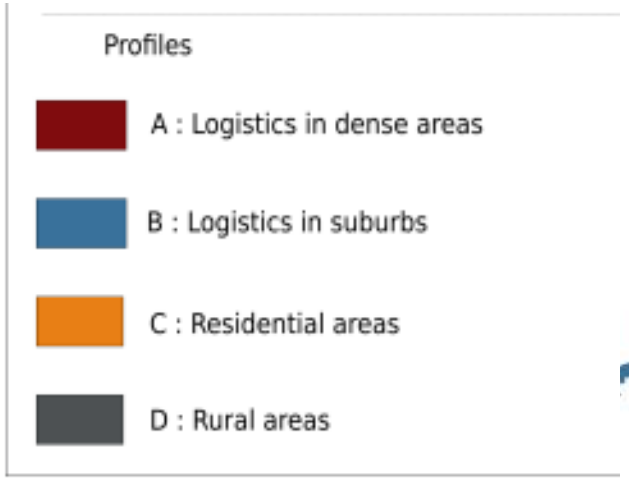
Regional planning models of logistics development: Paris and Randstad

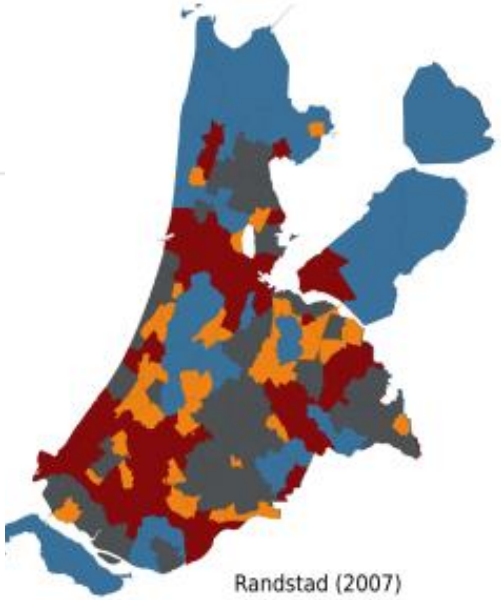


Ile-de-France (2004)

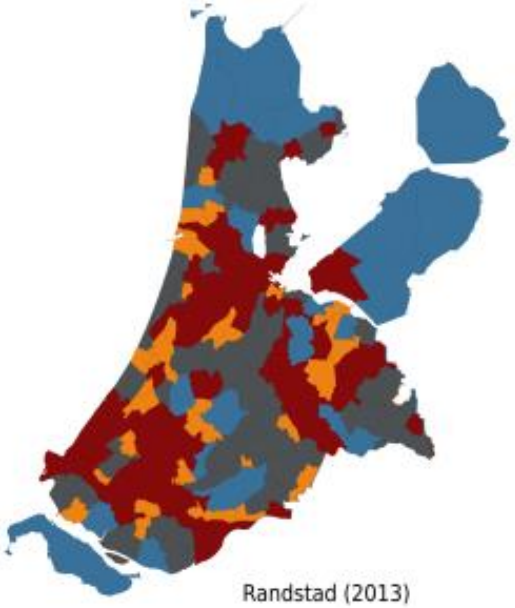


Ile-de-France (2012)





Randstad (2007)



Randstad (2013)

Source: A. Heitz, L. Dablanc, L. A. Tavasszy, 2017

Questions

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Job-impact projections of automation

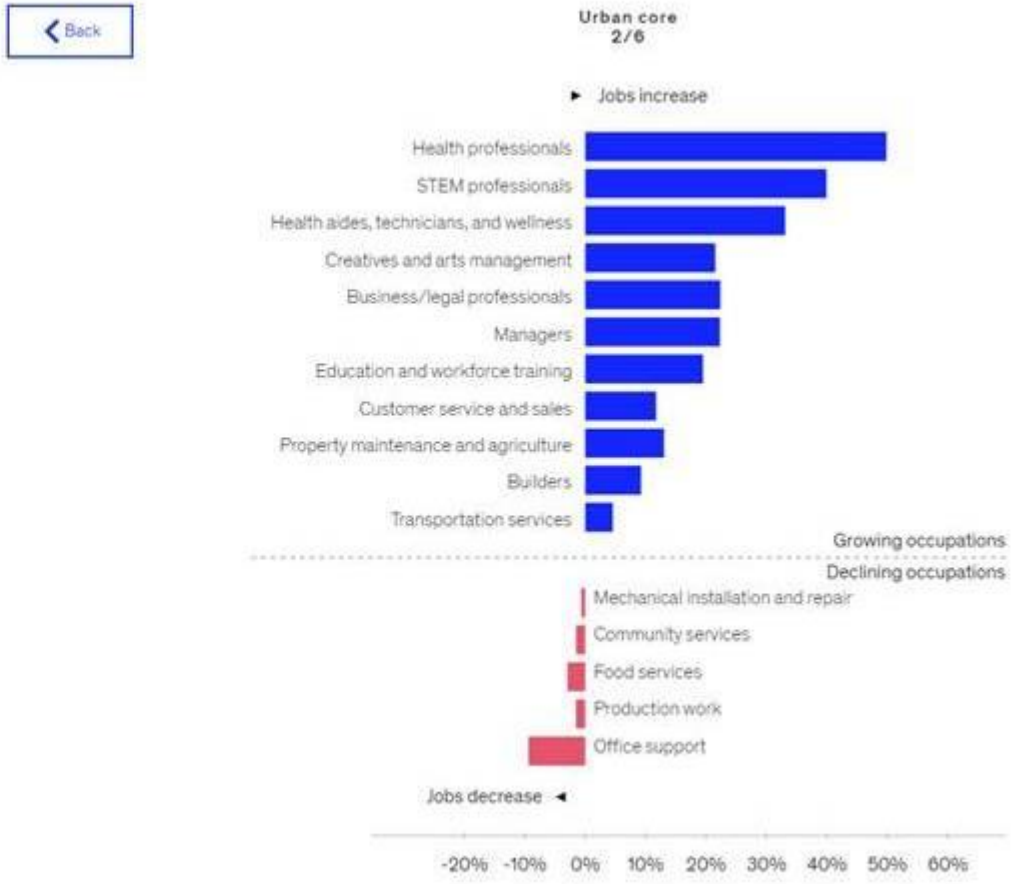
The impact on occupations

The occupational mix in each place affects its growth prospects

Automation will affect some of the largest occupational categories in the US economy, **phasing out** jobs in office support, food service, production work, and customer service and retail sales. At the same time, healthcare, STEM occupations, creatives and arts management, and business services could **add jobs.**

These nationwide trends are likely to play out with variations across local economies.

Potential **job growth**, 2017 to 2030

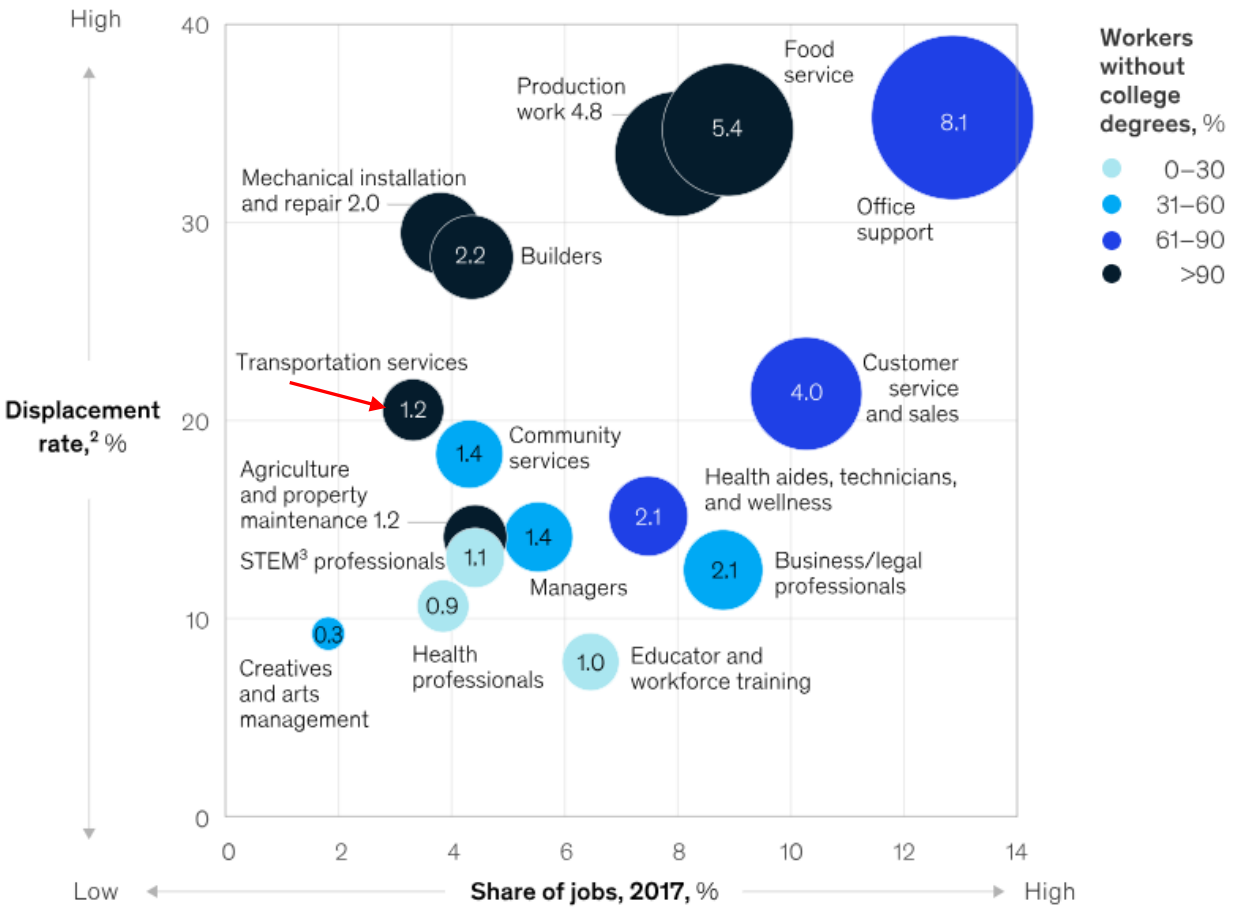


Source: McKinsey & Company, Future of Work in America, 2019

Job-impact projections of automation

The largest occupational categories in the US economy have the highest potential displacement rates.

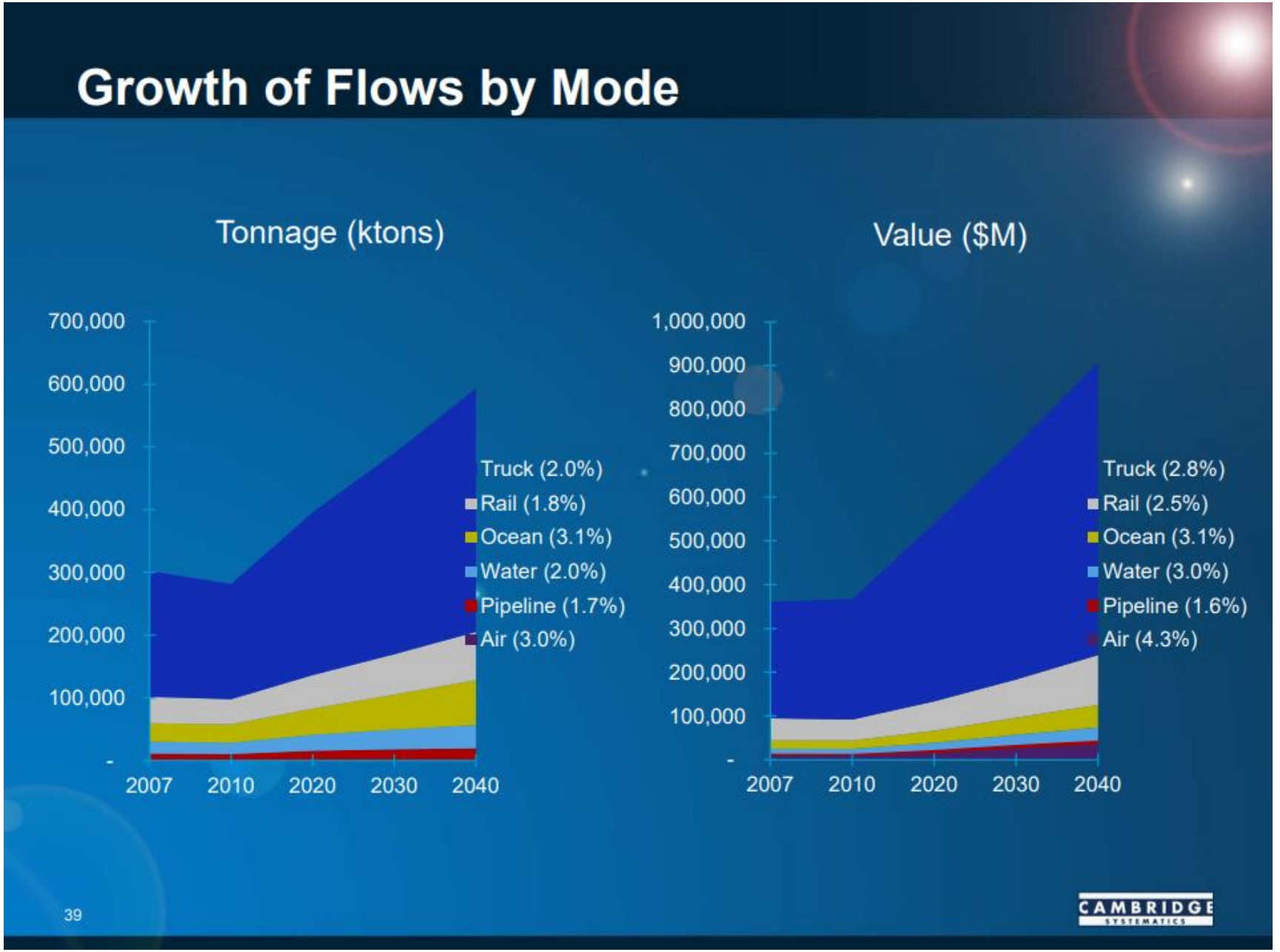
US jobs displaced in midpoint adoption scenario[1] by 2030, millions of full-time equivalents



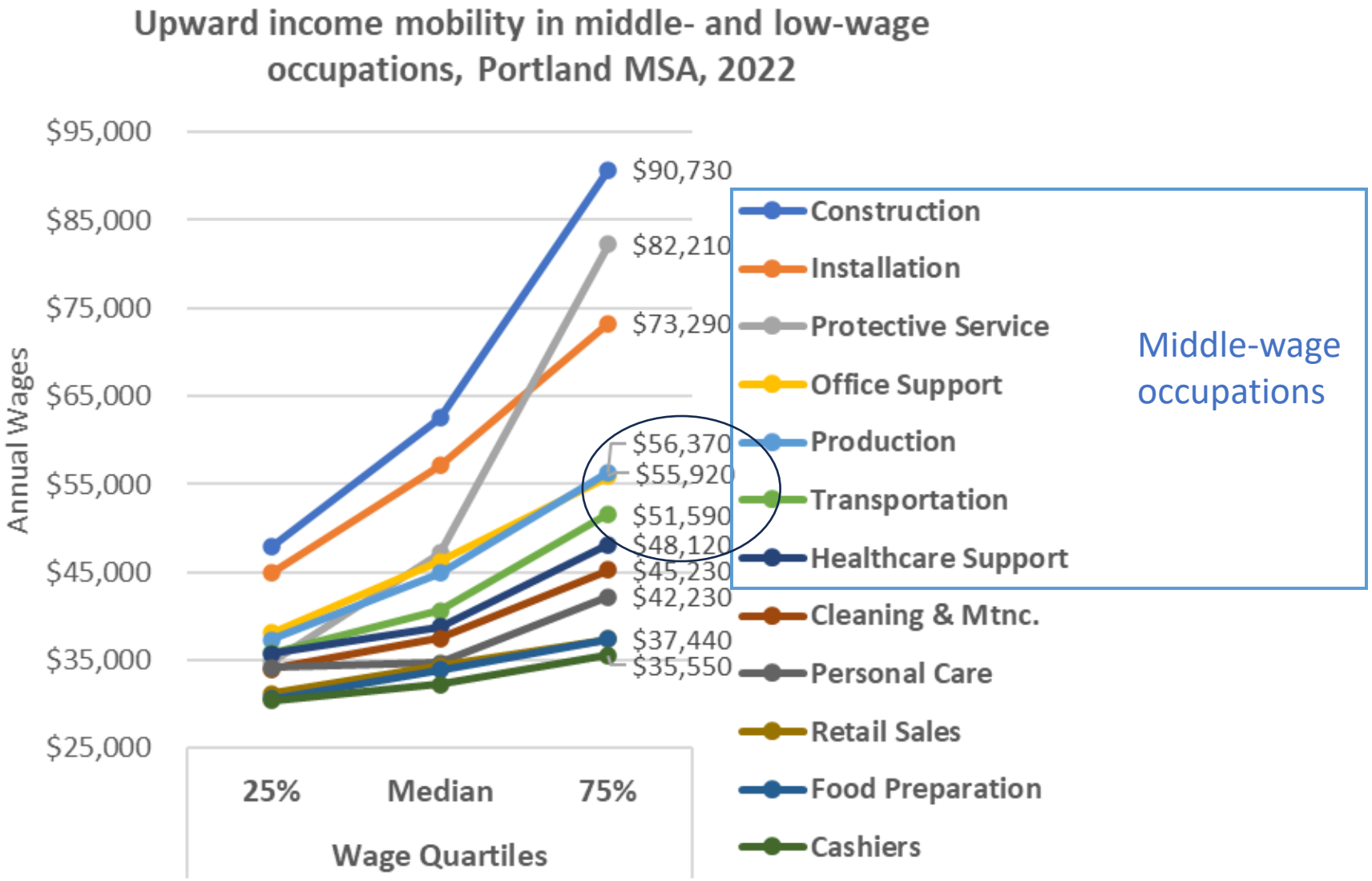
[1]Based on share of automatable activities for occupations within each category.
[2]Full-time equivalents displaced in midpoint automation scenario by 2030. In office support, for example, technology could handle activities that account for more than 35% of all hours worked, or equivalent of 8.1 million full-time workers.
[3]Science, technology, engineering, and mathematics.
Source: US Bureau of Labor Statistics; McKinsey Global Institute analysis

McKinsey & Company

2040 Commodity Flow Forecast, Portland Region

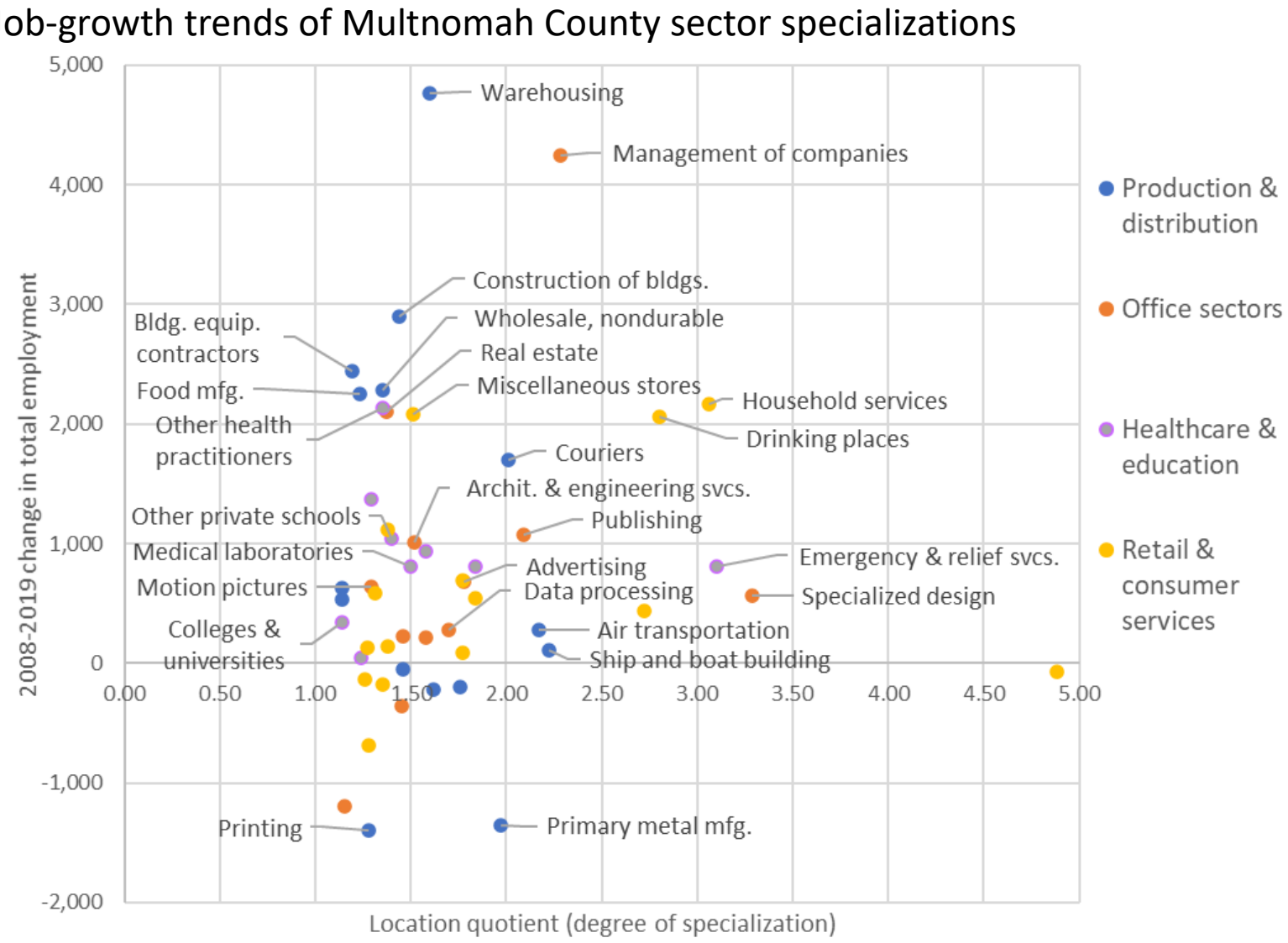


Regional wage distribution of low- and middle-wage jobs, 2022



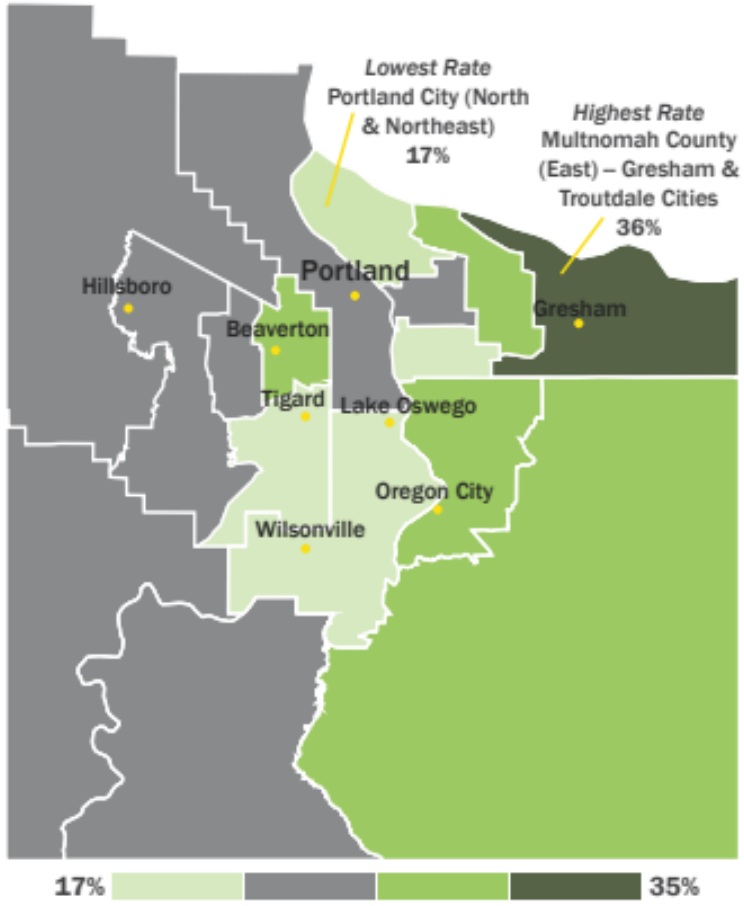
Source: BPS from OEWS data

Warehousing and industrial sectors lead job-growth list of Multnomah County sector specializations



Higher reliance on middle-wage jobs for income self-sufficiency in East Multnomah County

Figure B. Income Inadequacy Rate by Public Use Microdata Area (PUMA): *Portland Metropolitan Area, OR 2019*

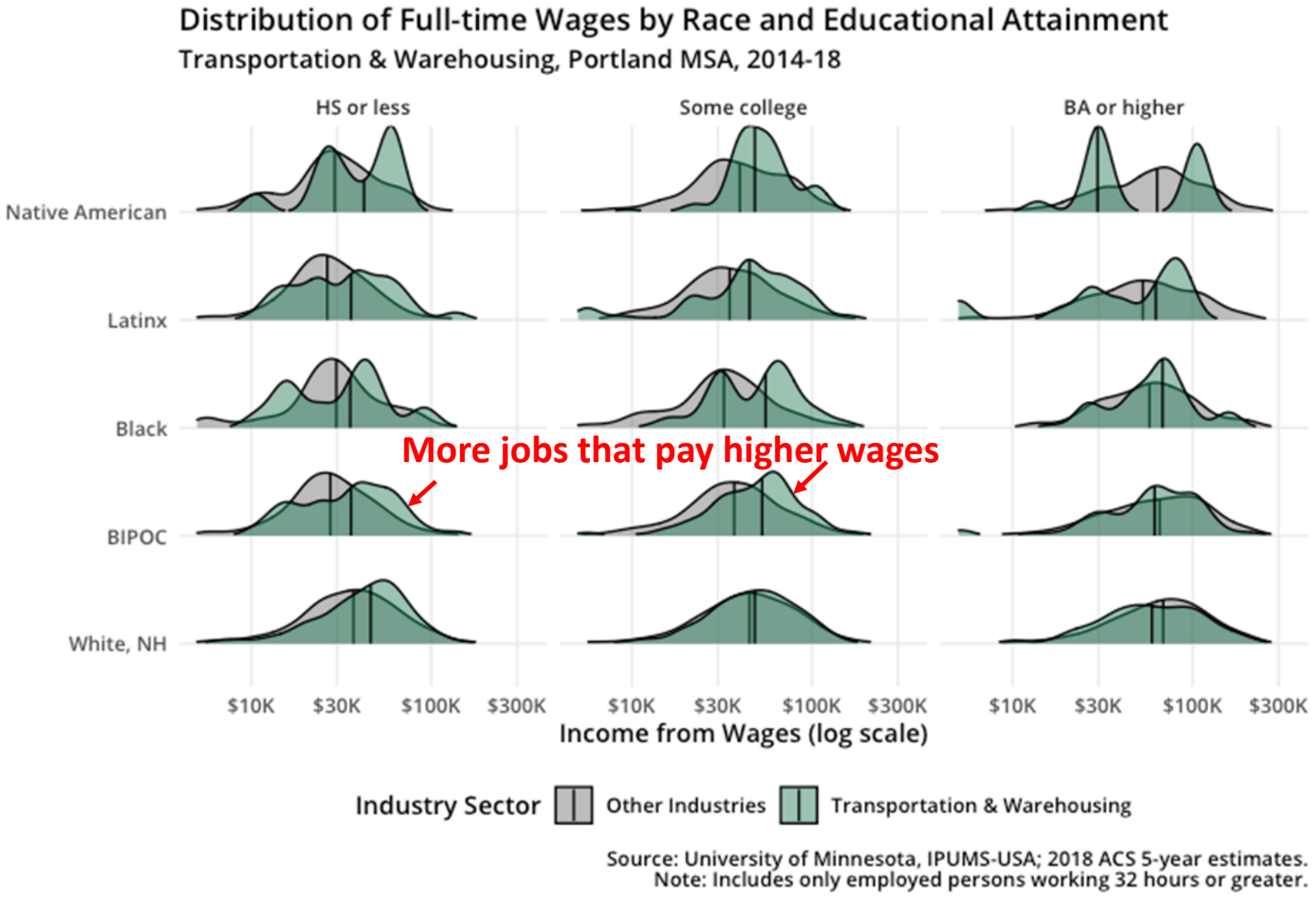


Source: U.S. Census Bureau, 2019 ACS 1-Year Public Use Microdata Sample.

PUMA*	Households Below the Standard	Rate Below Standard
Lowest Income Inadequacy Rates		
Portland City (North & Northeast)	7,212	17%
Portland City (Southeast)	6,505	18%
Clackamas County (Northwest)--Lake Oswego, West Linn, Wilsonville & Canby Cities	6,303	20%
Washington County (Southeast)--Tigard, Tualatin & Sherwood Cities	6,640	20%
Portland City (Northwest & Southwest)	12,304	22%
Highest Income Inadequacy Rates		
Clackamas County (Northwest)--Oregon City, Milwaukie & Happy Valley Cities	13,212	26%
Washington County (Northeast)--Beaverton City (East & Central) & Cedar Mill	9,564	28%
Clackamas County (South & East)--Damascus City PUMA	6,972	29%
Portland City (East)	9,280	29%
Multnomah County (East)--Gresham & Troutdale Cities	15,545	36%

Source: U.S. Census Bureau, 2019 ACS 1-Year Public Use Microdata Sample.
* Public Use Microdata Areas (PUMAs) are geographical statistical areas that contain at least 100,000 people.

Freight & warehousing jobs raise BIPOC incomes relative to other sectors



Industrial sectors account for half of projected middle-wage job growth in the Portland Tri-County Area

Portland Tri-County Area jobs in 'middle-wage occupations with competitive education less than a Bachelor's degree' (MWLB)				
	Employment Change, 2019-2030			
			MWLB %	Sector %
	Total	MWLB	of Sector	of MWLB
Land use sector groups	Jobs	Jobs	Group	Total
Total employment	101,900	33,200	**33%**	100%
Industrial sectors	23,600	16,700	71%	**50%**
Transportation & warehousing	10,900	9,700	89%	**29%**
Office sectors	35,100	6,400	18%	**19%**
Institutional sectors	25,000	6,300	25%	**19%**
Retail & Consumer Svcs	11,800	1,200	10%	**4%**
Self Employment	6,400	2,600	41%	**8%**
Source: BPS from Oregon Employment Department projections, 2022				