# Metros, Money, Manpower: Exploring the Gender Earnings Gap Across U.S. Labor Markets and Occupations

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## Introduction

## Defining the Labor Market Typology

## Descriptive Analysis of the Sample

## Examples by Occupation

Legend: Labor Market Type

—Information, financial services, professional and

business services

Education, health services, public administration

—Leisure and hospitality, other services, retail trade

——Agriculture, mining, construction

—No strong industry concentration

The labor market context makes a signifi-

cant difference only at the upper end

Earnings percentile

Production, Planning, Expediting Clerks

While the labor market context makes a **signifi** 

cant and large contribution to variation in

the gender gap across the distribution, the

effect **decreases** at higher percentiles.

Earnings percentile

**Education Administrators** 

Earnings percentile

## Conclusions

## Introduction

- In 2009, median earnings of full-time, yearround workers were \$40,409 with women's earnings typically 78% that of men's earnings (Getz,
- Local labor markets are an economic factor due to variation in the occupational and industrial mix, labor supply, and institutional context (Sassen, 1991). As a result median earnings differ, as does the relationship between women's and men's earn-
- Earnings differentials may be greater at the 75th percentile and above. Researchers attribute this disparity to differences in occupational choice, educational attainment, attachment to the labor force, and other reasons (Day and Downs, 2007).
- We explore to what extent the economic and demographic context of a labor market determines the gender earnings gap.

### **Research Objectives**

- How does the women's-to-men's earnings gap differ across labor market contexts for each occu-
- Does the earnings gap differ in labor market areas with one primary industry compared to those with no dominant industry?
- How does industry type affect the earnings gap at the lower and upper end of the earnings distri-

- American Community Survey (ACS) 5-year file for 2005-2009
- A nationally representative survey of 3 million household addresses each year Collects social, demographic, and economic
- Universe
- People 16 years and older at the time of the Reported working year-round, full-time for the
- previous 12 months with earnings Living in metro areas
- Limited to those detailed occupations which meet the threshold of at least 100 unweighted sample cases for both men and for women for each industry type,
- Results in 71 detailed occupations
- Represents about 44 million (55 percent) fulltime, year-round workers in metro areas

### **Data Issues**

- The 5-year ACS refers to the collection period 2005 through 2009, not a single reference day or
- Questions on work status and earnings refer to the 12 month period preceding the interview date. All earnings are CPI-adjusted to reflect the most recent year (2009).
- The 2005-2009 survey period covers the end of the housing/financial sector bubble (with 2005 near the peak) and the credit crisis/recession (covering 2007-2009).

## **Definitions and Concepts**

 $LQ_i = (e_i / e) / (E_i / E)$ 

= total employment in the metro area = employment in industry *i* in the

### **Industry Groups and Included Industry Sec**

Industry Groups	NAI
Manufacturing	
Agriculture, mining, construction Agriculture, forestry, fishing and hunting Mining, quarrying, and oil and gas extraction Construction	
Wholesale, transportation, utilities Wholesale trade Transportation and warehousing Utilities	
Information, financial activities, professional and business services Information Finance and insurance Real estate and rental and leasing Professional, scientific, and technical services Management of companies and enterprises Administrative and support and waste management services	
Education, health services, public administration Educational services Health care and social assistance Public administration	
Leisure and hospitality, other services, retail trade Arts, entertainment, and recreation	

Other services, except public administration

## **Labor Market Typology**

—Using ACS labor force data for 2005-2009, and the 2007 NAICS industry classification system, we combine the two-digit industry sectors into six conceptually similar industry groups, guided by a princi-

—We classified each metro area into one of six labor market types represented by the most concentrated industry group of at least 1.25 location quotient value, indicating at least a moderate concentration for that industry (Blakely and Green Leigh, 2010).

-Those metro areas with no industry concentration of at least 1.25 were grouped into a seventh category of metro areas with no strong

	Cleveland, IN
	Kokomo, IN
	Mansfield, OH
	Racine, WI
4	Columbus, IN
<u>ctors</u>	Dalton, GA
	Hickory-Lenoir-Morgan
IAICS Sector	
31-33	Agriculture, mining,
31-33	Greeley, CO
	Kennewick-Pasco-Richl
11	Naples-Marco Island, F
21	Yuma, AZ
23	Houma-Bayou Cane-Th
	Merced, CA
42	Bakersfield, CA
48-49	Midland, TX
22	
	Wholesale, transpor
	Savannah, GA
	Amarillo TY

Kankakee-Bradley, IL Memphis, TN-MS-AR

San Francisco-Oakland-Fremont, CA Washington-Arlington-Alexandria, DC-VA-

### Labor Market Typology—Example Metro Areas Education, health services, public Detroit-Warren-Livonia, MI Durham-Chapel Hill, NC Champaign-Urbana, IL Ann Arbor, MI

DUS, IIN	Alli Alboi, Mi
, GA	State College, PA
y-Lenoir-Morganton, NC	Gainesville, FL
,	Ithaca, NY
ılture, mining, construction	
y, CO	Leisure and hospitality, other services,
wick-Pasco-Richland, WA	retail trade
-Marco Island, FL	Ocean City, NJ
AZ	Orlando-Kissimmee, FL
a-Bayou Cane-Thibodaux, LA	Lake Havasu City-Kingman, AZ
•	. 3

Myrtle Beach-North Myrtle Beach-Conway, SC Las Vegas-Paradise, NV Atlantic City-Hammonton, NJ No primary industry concentration Portland-South Portland-Biddeford, ME Sacramento--Arden-Arcade--Roseville, CA Philadelphia-Camden-Wilmington, PA-NJ-DE-

Chicago-Naperville-Ioliet, IL-IN-WI Los Angeles-Long Beach-Santa Ana. CA Seattle-Tacoma-Bellevue, WA New York-Northern New Jersey-Long Island, Dallas-Fort Worth-Arlington, TX

Portland-Vancouver-Beaverton, OR-WA Palm Bay-Melbourne-Titusville, FL Salt Lake City, UT

n percent)	Labor Market Type							
Characteristic	Total	Manufacturing	Agriculture, mining, construction	Wholesale, transportation, utilities	Information, financial activities, professional and business services	Education, health services, public administration	Leisure and hospitality, other services, retail trade	No strong industry concentration
6 and older civilian population		-		7 + 3		22 0, 10		
 ABOR FORCE STATUS								
Employed	61.2	59.9	58.1	61.2	62.5	60.4	61.5	61.8
Full-time, year-round workers	40.9	39.2	38.2	42.5	42.8	38.8	41.9	41.3
Unemployed	4.7	5.2	4.9	5.1	4.4	4.3	4.8	4.7
Not in labor force	34.1	34.9	37.0	33.7	33.1	35.3	33.7	33.6
TOUGHTION (OF COME)								
DUCATION (25 and older)								
High school diploma or more	85.1	85.8	80.1	84.3	86.5	87.0	85.5	85.2
Bachelors degree or more	29.6	24.9	23.1	28.9	38.0	30.7	24.4	29.5
Bachelors degree or more, men	30.6	25.9	23.9	29.8	39.2	31.3	25.2	30.5
Bachelors degree or more, women	28.7	24.1	22.4	28.1	37.0	30.2	23.7	28.5
AGE								
16-34 years old	33.9	32.0	34.4	33.1	32.6	36.6	33.6	34.7
35-54 years old	37.0	37.0	35.6	38.1	38.2	34.9	36.2	37.0
55 years old or more	29.1	30.9	30.0	28.8	29.3	28.5	30.2	28.2
oo years old or more	25.1	30.5	30.0	20.0	23.0	20.0	56.2	20.2
SEX								
Male	48.4	48.3	49.4	48.1	48.1	47.9	49.3	48.5
Female	51.6	51.7	50.6	51.9	51.9	52.1	50.7	51.5
RACE, HISPANIC ORIGIN								
White, not Hispanic	66.3	79.8	60.0	54.3	60.3	74.1	65.8	65.6
Black, not Hispanic	12.5	11.3	8.5	22.9	14.0	14.4	9.9	11.7
	5.3	3.1	3.9	2.8	9.0	3.2		5.6
Asian, not Hispanic	1.2						4.8	
Other, not Hispanic		0.8	1.5	0.7	1.0	1.0	2.0	1.3
Hispanic	14.8	5.0	26.1	19.4	15.7	7.2	17.4	15.8
IATIVITY								
Foreign born	17.0	7.7	19.6	23.3	26.6	8.9	17.7	16.3
Citizen	90.6	95.9	87.4	87.2	86.8	95.0	89.8	90.7
civilian employed								
ABOR FORCE STATUS								
Full-time, year-round workers	66.9	65.4	65.7	69.4	68.5	64.4	68.1	66.8
Government worker	14.3	11.9		12.8	15.3	21.9	12.3	
Government worker	14.3	11.9	14.5	12.8	15.3	21.9	12.3	14.0
ARNINGS								
Median earnings (2009 dollars)	\$30,109	\$28,112	\$26,559	\$29,390	\$36,591	\$27,499	\$28,723	\$30,037
ull-time, year-round workers								
• •								
SEX	[ 50.0	-0	00.0	<b>57.0</b>	F7.0	50.0	50.0	FO 4
Male	58.2	58.5	60.2	57.0	57.6	56.3	58.0	58.4
Female	41.8	41.5	39.8	43.0	42.4	43.7	42.0	41.6
ARNINGS								
	\$42,305	\$40,478	\$38,443	\$39,663	\$50,129	\$41,876	\$38,096	\$41,930

	Metropoli	tan areas	Full-time, y work		Largest location quotient	Smallest location quotient
Most dominant industry	Number	Percent distribution	Number (000's)	Percent distribution		
Manufacturing	110	30.1	12,005	15.0	3.48	1.26
Agriculture, mining, construction	64	17.5	6,533	8.2	2.53	1.26
Wholesale, transportation, utilities	12	3.3	4,965	6.2	2.14	1.25
Information, financial activities, professional and business services	12	3.3	14,079	17.6	1.56	1.25
Education, health services, public administration	50	13.7	4,276	5.3	1.93	1.25
Leisure and hospitality, other services, retail trade	12	3.3	1,956	2.4	1.71	1.26
No strong industry concentration	106	29.0	36,185	45.2	1.25	1.06

Labor Market Typology Based on Industry Types for Metropolitan areas

	Women's-			
	to-men's	full-time, year		
	median	_	round	
Occupation	earnings	Percent	workers in	
(Based on the 2000 Standard Occupational Classification)	ratio	women	metro areas	
Securities, commodities, and financial services sales agents	0.61 0.61	29.5 29.6	291,210 559,690	
Physicians and surgeons Insurance sales agents	0.62	29.6 43.7	357,950	
Financial managers	0.63	51.0	837,420	
First-line supervisors/managers of housekeeping and janitorial	0.66	33.6	173,490	
workers			,	
Marketing and sales managers	0.66	40.4	651,110	
Retail salespersons	0.66	39.1	1,444,700	
Inspectors, testers, sorters, samplers, and weighers	0.67	36.7	468,670	
Property, real estate, and community association managers	0.69	49.6	352,150	
First-line supervisors/managers of production and operating	0.71	18.3	672,430	
workers	0.74	<b>500</b>	4 450 070	
Accountants and auditors First-line supervisors/managers of retail sales workers	0.71 0.72	56.2 40.1	1,452,670	
Loan counselors and officers	0.72	50.3	2,092,450 278,120	
Production, planning, and expediting clerks	0.72	50.3 54.7	276, 120 194,450	
First-line supervisors/managers of personal service workers	0.73	57.8	109,480	
Laundry and dry-cleaning workers	0.73	54.8	102,870	
Driver/sales workers and truck drivers	0.74	3.9	1,833,560	
Other teachers and instructors	0.74	53.0	282,030	
Education administrators	0.74	62.1	524,960	
Janitors and building cleaners	0.75	24.2	1,162,360	
Managers, all other	0.75	33.0	2,261,500	
Bus drivers	0.75	37.9	222,350	
Real estate brokers and sales agents	0.76	48.7	513,860	
Chief executives	0.76	19.8	877,160	
First-line supervisors/managers of food preparation and serving	0.76	52.0	313,600	
workers	0.77	07.7	704.040	
General and operations managers Sales and related workers, all other	0.77 0.77	27.7 53.1	724,310 174,410	
Food service managers	0.77	41.0	589,040	
Medical and health services managers	0.78	68.1	370,820	
Lawyers	0.78	30.5	746,320	
Management analysts	0.78	39.2	432,240	
Sales representatives, services, all other	0.78	30.8	447,750	
Postsecondary teachers	0.79	42.2	591,450	
Maids and housekeeping cleaners	0.79	84.1	553,890	
Designers	0.79	46.5	477,300	
Miscellaneous assemblers and fabricators	0.79	37.0	562,310	
Cashiers	0.80	69.9	815,450	
Sales representatives, wholesale and manufacturing	0.81	24.4	1,125,650	
Waiters and waitresses	0.81	64.0	535,040	
First-line supervisors/managers of office and administrative	0.81	64.0	1,163,070	
support workers	0.81	<b>5</b> 7.0	121 800	
Recreation and fitness workers  Human resources, training, and labor relations specialists	0.81 0.81	57.9 68.7	121,800 604,370	
Lodging managers	0.81	47.2	82,340	
Bartenders	0.81	47.2 47.9	150,920	
Laborers and freight, stock, and material movers, hand	0.81	15.5	865,990	
Office and administrative support workers, all other	0.83	73.5	369,160	
First-line supervisors/managers of non-retail sales workers	0.83	28.0	950,080	
Dispatchers	0.84	53.3	185,310	
Advertising sales agents	0.84	50.1	157,120	
Purchasing agents, except wholesale, retail, and farm products	0.84	52.4	194,780	
Human resources managers	0.85	59.0	281,760	
Cooks	0.86	33.8	801,980 661,450	
Computer software engineers Customer service representatives	0.87 0.87	20.2 66.5	661,450 1,247,810	
Customer service representatives Nursing, psychiatric, and home health aides	0.87 0.88	85.6	912,880	
Bookkeeping, accounting, and auditing clerks	0.88	87.4	912,880 841,010	
Shipping, receiving, and traffic clerks	0.88	28.0	369,150	
Office clerks, general	0.88	82.0	612,040	
Police and sheriff's patrol officers	0.88	15.0	491,960	
Computer scientists and systems analysts	0.89	29.9	587,020	
Food preparation workers	0.90	51.4	201,410	
Elementary and middle school teachers	0.91	76.6	1,370,570	
Registered nurses	0.91	89.0	1,443,830	
Secondary school teachers	0.91	55.3	344,870	
Stock clerks and order fillers	0.92	35.3	671,710	
Pharmacists	0.92	46.5	144,990	
Postal service mail carriers	0.93	31.9	233,050	
Computer support specialists	0.93	28.8	330,340	

an workers aurity guards and gaming surveillance officers

# Effects of Labor Market Type on the Median Earnings Gap

Median earnings are higher in Information, financial activities, professional and business services labor markets. This earnings boost occurs across almost all shown occupations.

The median **earnings ratios** vary by occupation, as do the differ**ences** across labor market types within occupations.

Median Earnings in 7 Labor Market Types by Occupation

Occupation (sorted by total median earnings

Women's-to-Men's Earnings Ratio for Total and Range Across Labor Market Types by Occupation

Occupation (sorted by total median earnings

Highest median earnings

Agriculture, mining, construction

Wholesale, transportion, utilities

Information, financial activities,

professional and

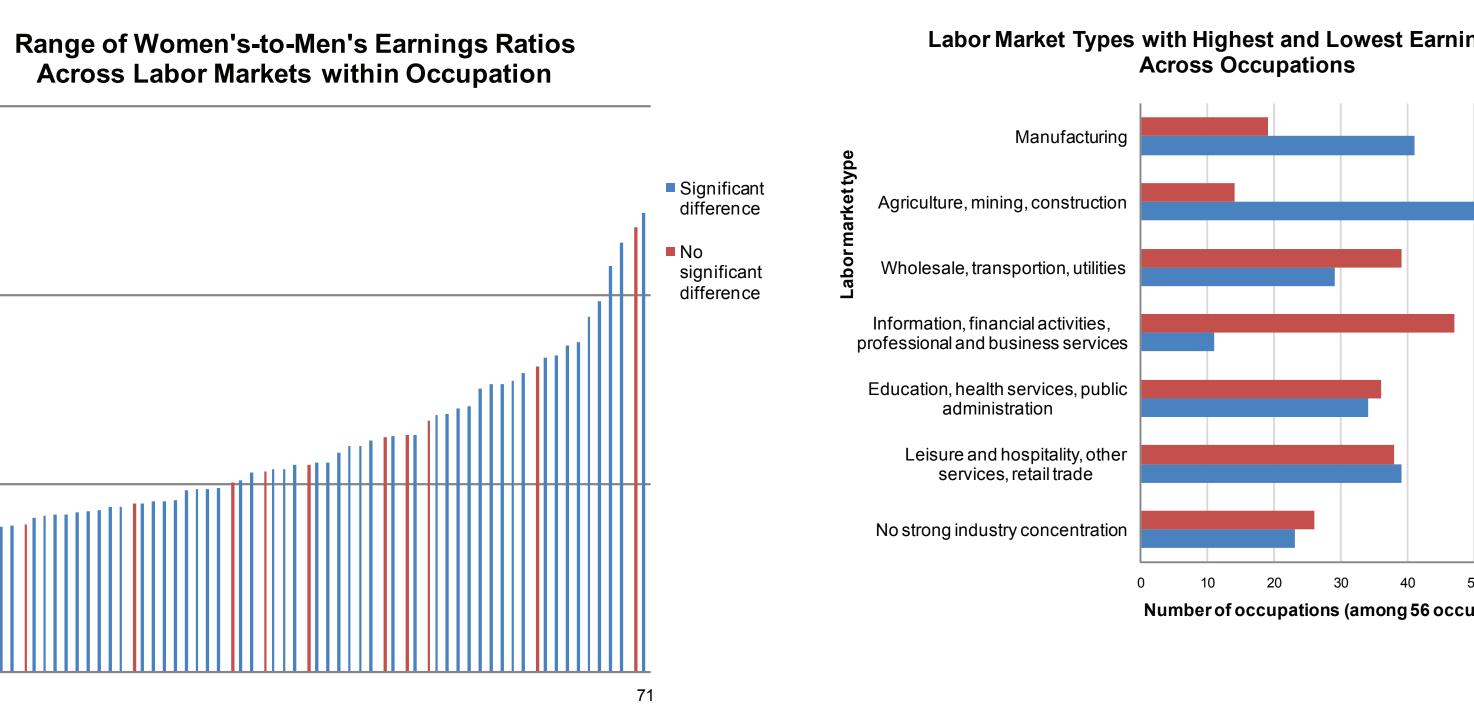
Leisure and hospitality, other services, retail trade

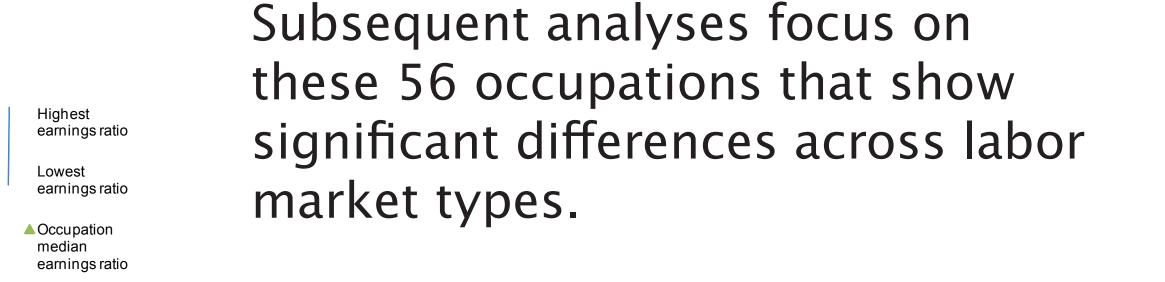
The range in median **earnings** ratios across labor market types varies by occupation.

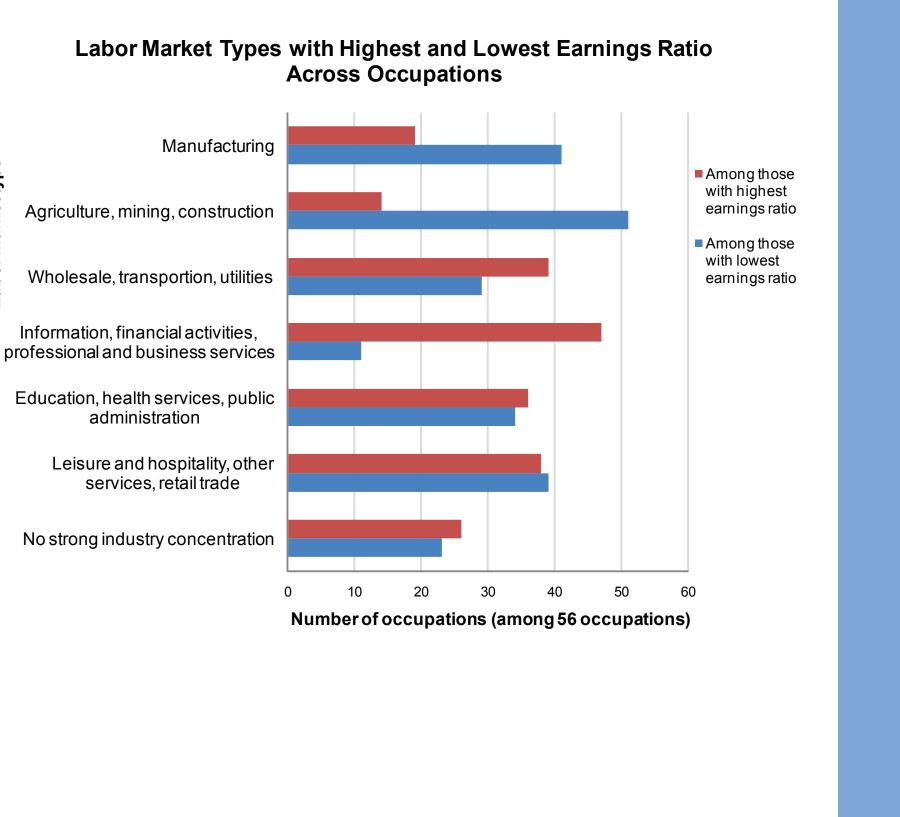
Of the 71 selected occupations, **56** show a significant difference across labor market types.

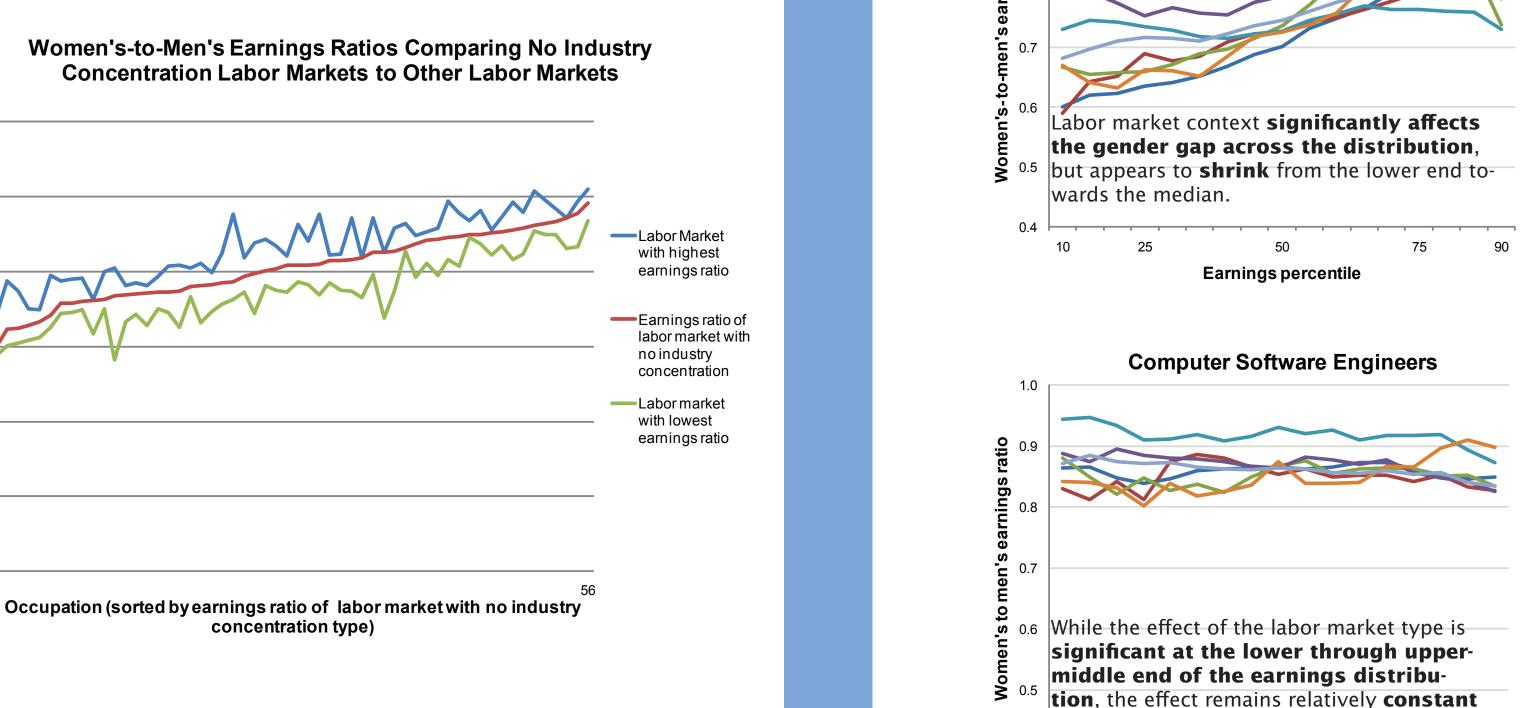
Across all occupations, the earnings gap is most often lower in the Information, financial activities, professional and business services labor market type, and **higher** in Agriculture, mining, construction and Manufacturing types.

Women's earnings, compared to men's, do not benefit or suffer in labor markets with no primary industry concentration.









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■ For the selected occupations in this study, the women's-to-men's median earnings ratio for full-time, year-round workers varies across occupations, from .61 (for securities, commodities and financial services sales agents) to .97 (for

and computer software engineers with small ranges (about 8 percentage points)

types. 15 are not significantly different between the highest and lowest median earnings ratio, either because the size of the occupation is too small to detect th difference (variance too large) or no real difference in median earnings ratio

• The Information, financial activities, professional and business services labor market is more frequently among the labor markets with the highest earnings ratios across all occupations; Agriculture, mining, construction and Manufacturing more often are among labor markets with the lowest earnings ratio. Possible contributing factors to these effects are that the Information, financial activities earnings and most highly educated populace, while the areas dominated by Agriculture, mining, and construction have the lowest median earnings and least Labor markets with no industry concentration tend to fall between the highest

range across labor markets of each occupation. It appears that women's earnings, compared to men's, do not benefit or suffer in labor markets with no primary industry concentration compared with those labor markets with a strong For most of the 71 occupations, the labor market type makes a difference in the earnings gap not only at the median, but also for a majority of earnings

ratios measured at the lower, lower-middle, upper-middle and upper end of the

and lowest earnings ratio for each occupation, more often closer to the highest

• For many occupations, the effect of labor market type is not different for earnings ratios at difference percentile points on the earnings distribution.

 This labor market typology offers a useful benchmark for future research on industry and occupation.

### References:

Blakely, E. J., and N. Green Leigh. 2010. Planning Local Economic Development Theory and Practice (4th ed.). Thousand Oaks: Sage. Day, Jennifer, and Jeffrey Rosenthal. 2009. "Detailed Occupations and Median

Earnings: 2008." U.S. Census Bureau, http://www.census.gov/hhes/www/ioin dex/reports.html. Day, Jennifer, and Barbara Downs. 2007. "Examining the Gender Earning Gap: Oc-

cupational Differences and the Life Course." U.S. Census Bureau, http://www.census.gov/hhes/www/ioindex/reports.html. Getz, David M. 2010. "Men's and Women's Earnings for States and Metropolitan

Sassen, Saskia, 1991. The Global City: New York, London, Tokyo, Princeton: Princ-

Statistical Areas: 2009." U.S. Census Bureau, ACSBT/09-3, http://www.census gov/hhes/www/income/income.html.

Stimson, R. J., R. Stough and B.H. Roberts. 2006. Regional Economic Development: Analysis and Planning Strategy (2nd ed.). Berlin, Heidelberg: Springer-Ver-

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The estimates in this poster (which may be shown in text, figures, and tables) are based on responses from a sample of the population and may differ from actual values because of sampling variability or other factors. As a result, apparent differences between the estimates for two or more groups may not be statistically significant. All comparative statements have undergone statistical testing and are significant at the 90-percent confidence level unless otherwise noted

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