

Industry Employment Brief: Employment Patterns in the Oil & Gas Industries

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There are three industries central to the production and distribution of oil and gas in the United States. Oil and Gas Extraction is a mining industry. Petroleum and Coal Manufacturers convert both energy sources to usable fuels. Gas pipelines is a transportation industry delivering oil and natural gas from production sites to consumption. The latter is not exhaustive as some transportation is also done by rail and truck, although these cannot be identified separately.

In this report we use information from EEO-1 reports and from the American Community Survey to assess the degree of employment equity in these three oil and gas related industries. The EEO-1 reports describe workplace level employment composition and are submitted to the U.S. Equal Employment Opportunity Commission by private sector employers with 100 or more employees, 50 or more if government contractors. The American Community Survey is collected by the U.S. Bureau of the Census and is used to describe the U.S. population.

1. Employment patterns in Oil and Gas related industries (2012)				Percent of Total Employment			
	Total Employment	Establishments	Mean Earnings	Women	African American	Hispanic	White Men
National	49,530,090	252161	22.0	48.0%	13.9%	13.4%	34.3%
Oil and Gas Extraction	126,188	619	37.5	24.8%	5.2%	14.0%	57.5%
Petroleum and Coal Products Manufacturing	106,450	358	36.8	18.5%	9.1%	10.7%	61.8%
Pipeline Transportation	26,074	146	33.8	26.4%	7.1%	13.7%	54.7%

Oil and Gas extraction includes 619 reporting workplaces with 126,188 employees. Petroleum and Coal refining had fewer facilities (358) and employees (106,450). Pipeline employment was smaller still. All three are high wage industries with mean hourly earnings, considerably higher than the national average. In all three white men are substantially overrepresented relative to the national EEO-1 private sector workforce. Women and African Americans are under-represented in all three industries. Hispanic employees are slightly underrepresented relative to national population sizes, but only in Petroleum and Coal Manufacturing.

Industries vary greatly in their occupational mix and geographic location making simple comparisons to national labor forces potentially misleading. We developed baseline comparisons to two occupation specific labor pools. The first compares state level race and gender specific occupational employment to employment in the same occupations in the three oil and gas industries. The second refines the comparison to the broad sectors of mining, manufacturing and

transportation respectively. The baselines represent reasonable estimates of the labor force available for the three oil and gas industries to hire from.

We also calculate earnings gaps relative to men for women and to whites for African Americans and Hispanics. In these estimates we statistically control for education, experience, hours of work, race (for women) and gender (for racial comparisons) and local labor market wage levels.

Tables 2-4 report the estimates of representation for the three industries for total employment and managerial employment based on these available labor pools. They report the deficit or surplus employment relative to an average of those two baselines, as well as the percent of workplaces with a statistically significant deficit relative to both labor availability baselines. In addition these tables report estimates of the wage gap relative to men (for women) and whites (for African Americans and Hispanics).

Summary. All three industries show substantial under-representation of women in total employment and in managerial jobs, as well as very large pay disparities. African Americans overall and managerial employment deficits are particularly high in oil and gas extraction and pipeline transportation. In oil and coal manufacture African American employment is actually slightly higher than the available labor pool estimates, although underrepresentation in management and large pay gaps are visible. Adjusted for local labor supply Hispanics are under-represented in all three industries, particularly in managerial jobs. Overall, these three industries are among the worst in terms of employment and earnings equity for women, African American and Hispanic populations.

Employment Policy Implications. There is ample room for improvement in terms of employment equity in the oil and gas industry. Employment levels for women, African Americans and Hispanics are generally well below labor market availability. Managerial employment representation is even worse. Pay disparities are high.

Firm level examination of current human resource practices in terms of recruitment, hiring, retention, and pay are appropriate responses. The Equal Employment Opportunity Commission, the Office of Federal Contract Compliance and others concerned with employment equity should pay particular attention to employment discrimination complaints against firms in these linked industries.

Oil and Gas Extraction display substantial underrepresentation of women, African Americans and Hispanic employees. The vast majority of workplaces display statistically significant deficits in the employment of all three groups relative to comparable occupations in the same state. Compared to other mining industries the exclusion of women is not as widespread, but still 40.7%, 45.2% and 60.2% of workplaces display significant underrepresentation of women, African Americans, and Hispanics respectively.

All three groups are unlikely to be found in managerial jobs in the oil and gas industry than in the comparison labor pools.

Both women and African Americans show some of the largest pay gaps across all industries in the private sector. Women earn almost thirty percent less than men in the oil and gas industry, even after adjusting for observed skills. African Americans earn 23% less than comparable whites in this industry. The Hispanic pay gap is much lower at 7%, but is also statistically unreliable because of small sample sizes.

2. Oil and Gas Extraction		Percent Workplaces with Significant Deficit Relative to Available Employment Estimate		Percentile Rank among 92 Industries ³
		Surplus or Deficit in Percent ¹	State-Occupation ²	
WOMEN				
Overall Employment	-5.7	95.7	40.7	30.4
Managerial Employment	-17.7	95.6	43.7	25.0
Earnings Gap	-29.6	--	--	2.2
AFRICAN AMERICANS				
Overall Employment	-1.4	83.3	45.2	13.0
Managerial Employment	-3.6	83.7	64.9	19.6
Earnings Gap	-23.3	--	--	5.4
HISPANIC				
Overall Employment	-3.9	83.5	60.2	14.1
Managerial Employment	-7.5	79.1	67.1	2.1
Earnings Gap	-7.1 ⁴	--	--	--

Notes:

1. Deficit relative to averaged state-occupation and state- industry-occupation baselines. Industry comparisons are to all mining industries.
2. Based on test in differences in proportion to baseline availability.
3. High scores indicate more representation for reference group.
4. Small sample size, not statistically significant

SOURCE: Donald Tomaskovic-Devey, Karen Brummond, Joo-Hee Han, Skylar Davidson. [Private Sector Industry Disparities: A Report on Evidence of Systemic Disparities for Women, African Americans, Hispanics, Asians and Native Americans](#), Prepared for the EEOC. Published on-line June 2016.

Petroleum and Coal Manufacture. Women and Hispanics are strongly under-represented in the manufacturing arm of the oil and gas industry. All three groups are rare in managerial positions. For all three groups a majority of workplaces display statistically significant shortfalls in overall and managerial employment compared to state and industry-state labor pools. All comparisons are among the lower third, often the lower 20% of industries. The one exception is African Americans managerial employment whose 1.8% employment deficit puts petroleum and coal manufacturing industry at about the national median. Wage gaps for both women and African Americans are very high at 25.3% and 21.5% respectively. These are among the largest in the U.S. private sector. Hispanic pay gaps are still substantial at 9.8% lower wages than comparable whites, but this ranks in the 40th percentile, closer to the median industry.

3. Petroleum and Coal Manufacture		Percent Workplaces with Significant Deficit Relative to Available Employment Estimate		Percentile Rank among 92 Industries ³
	Deficit in Percent ¹	State-Occupation ²	State-Occupation-Industry ²	
WOMEN				
Overall Employment	-11.3	97.7	77.7	13.0
Managerial Employment	-22.7	97.3	81.0	9.8
Earnings Gap	-25.3	--	--	5.4
AFRICAN AMERICANS				
Overall Employment	+ 0.3	62.6	52.4	33.7
Managerial Employment	-1.8	64.3	43.6	50.0
Earnings Gap	-21.5	--	--	12.0
HISPANIC				
Overall Employment	-6.0	82.9	79.1	5.4
Managerial Employment	-5.3	74.5	69.0	10.9
Earnings Gap	-9.8	--	--	39.1
Notes:				
1. Deficit relative to averaged state-occupation and state- industry-occupation baselines. Industry comparisons are to all manufacturing industries.				
2. Based on test in differences in proportion to baseline availability.				
3. High scores indicate more representation for reference group.				
SOURCE: Donald Tomaskovic-Devey, Karen Brummond, Joo-Hee Han, Skylar Davidson. Private Sector Industry Disparities: A Report on Evidence of Systemic Disparities for Women, African Americans, Hispanics, Asians and Native Americans , Prepared for the EEOC. Published on-line June 2016.				

Pipeline Transportation. The majority of workplaces display statistically significant deficits in employment of women, African Americans and Hispanics relative to state occupation specific labor force availability. Compared to other transportation industries the representation of African Americans and Hispanics is particularly low. Wage disparities for women and African Americans are among the highest in the economy, in the third percentile of industries. We do not find a statistically significant wage disparity for Hispanics in pipeline transportation. Sample size is very small so it is difficult to say if treatment is more equitable

Pipeline Transportation		Percent Workplaces with Significant Deficit Relative to Available Employment Estimate		Percentile Rank among 92 Industries ³
	Deficit in Percent ¹	State-Occupation ²	State-Occupation-Industry ²	
WOMEN				
Overall Employment	-4.8	97.7	39.9	38.0
Managerial Employment	-19.1	95.7	55.5	22.8
Earnings Gap	-26.7	--	--	3.3
AFRICAN AMERICANS				
Overall Employment	-1.6	57.9	62.4	11.9
Managerial Employment	-3.8	82.6	82.8	15.2
Earnings Gap	-25.0	--	--	3.3
HISPANIC				
Overall Employment	-2.0	71.4	63.3	35.9
Managerial Employment	-8.2	79.7	78.4	0
Earnings Gap	-1.3 ⁴	--	--	--
Notes:				
1. Deficit relative to averaged state-occupation and state- industry-occupation baselines. Industry comparisons are to all transportation industries.				
2. Based on test in differences in proportion to baseline availability.				
3. High scores indicate more representation for reference group.				
4. Too small sample size, not statistically significant				
SOURCE: Donald Tomaskovic-Devey, Karen Brummond, Joo-Hee Han, Skylar Davidson. Private Sector Industry Disparities: A Report on Evidence of Systemic Disparities for Women, African Americans, Hispanics, Asians and Native Americans , Prepared for the EEOC. Published on-line June 2016.				