

The Gender Wage Gap

How education affects difference in men's and women's wages

By **KARINNE WIEBOLD**

While women represent nearly half of Alaska's workers and hold more of the positions requiring higher education, they earn 72 percent of what men make, on average.

A number of factors influence the gender gap in wages, and many studies have tried to measure and explain them, but that type of analysis is outside this article's scope.

We've visited this issue a handful of times over the decades, most recently in March 2017 ("The gender gap: Women earn an average of 68 percent of what men make in Alaska"). Another article, in May 2016, looked at whether traditionally male and female occupations were becoming more integrated ("Gender and nontraditional work: Are men and women branching out, and is it paying off?").

This time, we're examining the levels of education Alaska's occupations typically require and how they affect what men and women earn.

Men earn more at every level of education occupations require

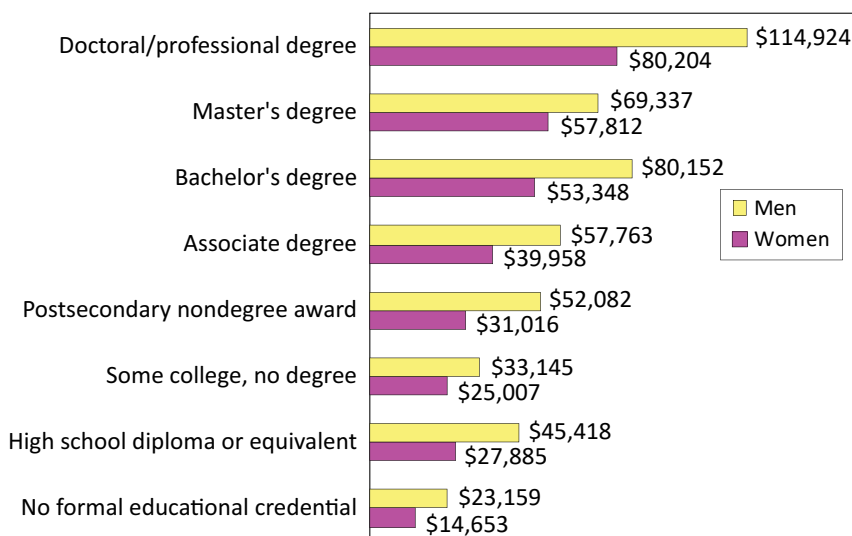
Women make up a larger percentage of workers in occupations requiring additional education, especially in those that require any type of college degree. Thirty-nine percent of women who worked in 2017 held positions that required more than a high school diploma, but just 28 percent of men did.

In general, jobs requiring more education pay more, but the data clearly show that when men and women work in occupations that require a similar level of education, the gender wage gap does not disappear.

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Men Earn More At Every Level

BY EDUCATION REQUIREMENT OF OCCUPATION, ALASKA, 2017



Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Men earn more than women at every educational level and in the vast majority of occupations, including some dominated by women. Women outnumber men nine to one as registered nurses, for example, but men make about 14 percent more. Still, the gender wage gap narrows as education increases, although not consistently.

Men are also disproportionately represented in certain occupations that pay well in Alaska despite not requiring much formal education. For example, men are much more likely than women to work in oil, mining, and construction, where workers often make higher-than-average salaries and don't need more than a high school education. (See the sidebar on page 6, on occupations' education requirements versus training requirements.)

Average wages for women ranged from nearly \$15,000 in 2017 for positions with no formal education requirements to just over \$80,000 when a doctoral or professional degree was required. Average wages for men followed the same pattern, but ranged

from \$23,000 to \$115,000.

Education isn't the only factor in wages

How much workers are paid varies on an individual basis as well as by occupation, and a number of factors besides education determine average pay.

While we expect a job requiring a master's degree to pay more than one that doesn't require a high school diploma, the type of work also affects the typical wage. Jobs with inherent risk, remote work sites, and challenging conditions, schedules, or shifts can drive up the average wage, even among similar jobs. For example, underwater welding pays more than standard welding. Likewise, a garbage collector might make more than a fast food worker, even though neither position requires graduating high school, because it's dirty and physically demanding work.

A number of high-paying jobs in Alaska with low educational requirements have these characteristics, such as remote work on the North Slope oil fields that requires unusual schedules such as two weeks on and two weeks off.

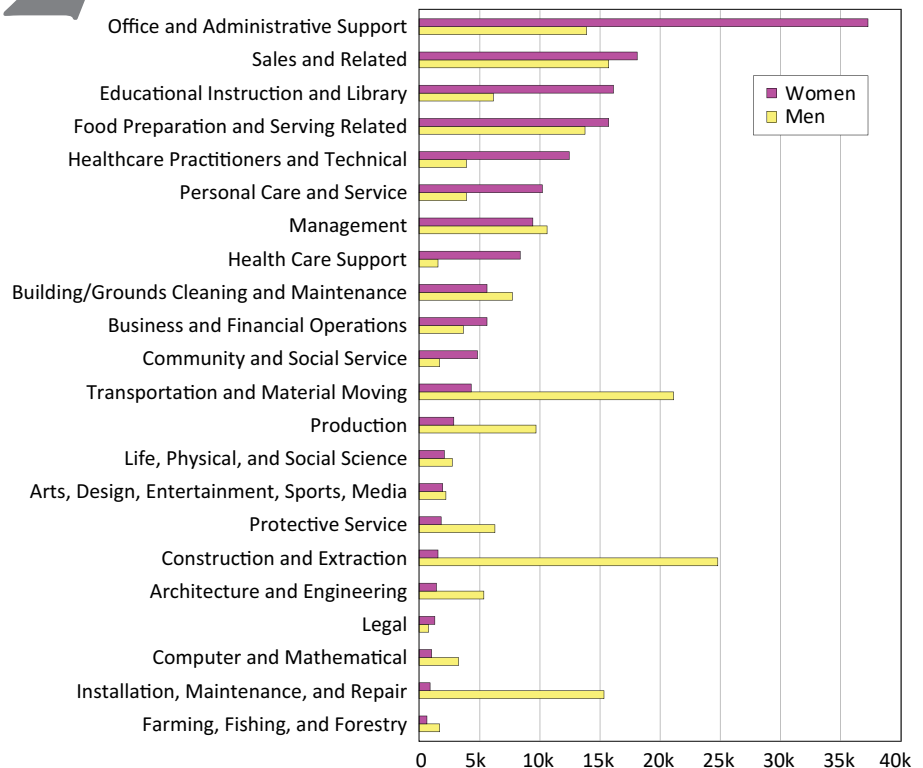
On an individual basis, a worker's job history, competence, hours worked, and negotiated starting pay also

affect wages — and some studies have shown men are more likely to negotiate when accepting an employment offer.

From here, we'll look closer at each level of educational requirements to see how women and men are repre-

2 Men and Women Choose Different Jobs

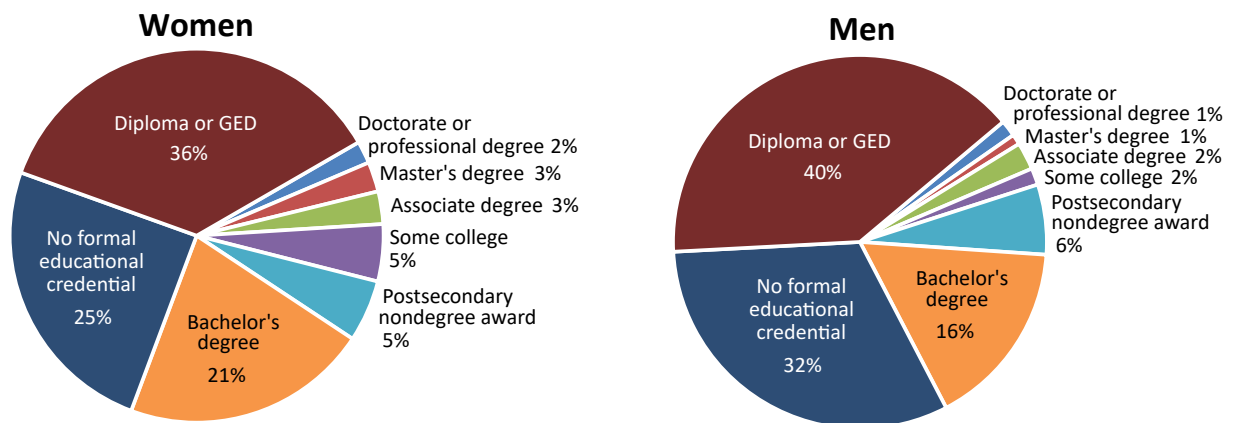
ALASKA OCCUPATIONS AND NUMBERS OF WORKERS, 2017



Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

3 Women Hold Jobs With Higher Education Requirements

ALASKA, TYPICAL EDUCATIONAL REQUIREMENTS OF OCCUPATIONS WORKED, 2017



Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

sented in these occupations and how they fare for wages.

We refer to women's average wages divided by men's as the earnings ratio. For example, the average wage for a retail salesman in 2017 was \$22,100 and the average wage for a woman in the same job was \$16,626, resulting in an earnings ratio of 75.2 percent.

It's important to note that this article determines education by what the occupation typically requires rather than the credentials workers actually have. For example, although retail sales positions don't typically require formal education, some of these workers have college degrees or other certifications.

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Training requirements are also important, but not included here

State and federal data sets classify every occupation by the level of education it requires and, independently, by its level of training. Each occupation is assigned the level of formal education typically required for hire at the entry level, ranging from "no formal education credential" to "doctoral or professional degree." Each occupation's training classification ranges from none to "long-term on-the-job training" and, for doctors, "internship/residency."

The separate categorization of education and training requirements can lead to misunderstandings, at the occupation level and also in interpreting education and training needs for the state. For example, electricians and plumbers require only a high school diploma, but both also require successful completion of an apprenticeship program.

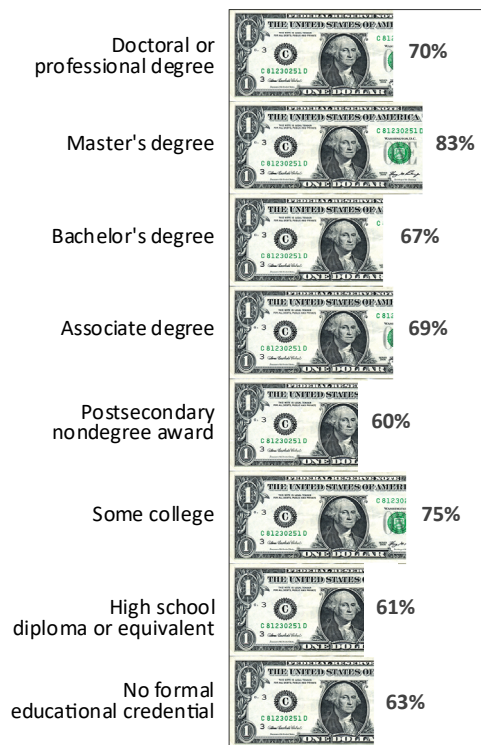
The distinction between education and training can also seem arbitrary or artificial for some occupations; for example, firefighters require an associate degree plus long-term on-the-job training while police officers require only a high school diploma and moderate on-the-job training.

Data showing Alaska has a large number of occupations that don't require formal education beyond high school doesn't mean those occupations don't require postsecondary training such as an apprenticeship, a certain number of training hours, or other specific training programs. The data shown here also shouldn't be interpreted to mean Alaska doesn't need more people with college degrees or that high school graduates are prepared for the workforce as soon as they graduate. The bulk of the occupations that don't require formal education beyond high school do require some type of postsecondary training.

4

Women's Average Wages As A Percent of Men's

RATIO BY EDUCATION REQUIREMENT, 2017



Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

About the data

To produce the data in this article, we combined information from the quarterly reports nearly all Alaska employers are required to file under state unemployment insurance law with data from Permanent Fund Dividend applications. Matching the two allowed us to determine the gender and age of Alaska resident workers (using the PFD criteria for residency) as well as their earnings and occupations.

It isn't possible to determine whether workers are full-time or part-time, a major limitation in this article. The data also exclude most nonresidents, who are about 20 percent of the state's annual workforce, as well as the self-employed, federal civilian and military workers, and PFD applicants who didn't specify a gender.

We considered only the occupation in which a worker made the most money during the year. A school teacher, for example, who made \$50,000 teaching and \$10,000 during the summer working as a construction laborer would be counted as a school teacher with wages of \$50,000.

Occupations With No Formal Education Requirements

Average wage: \$19,579

Women make about 63¢ on the dollar

63.3%

\$23,159

\$14,653

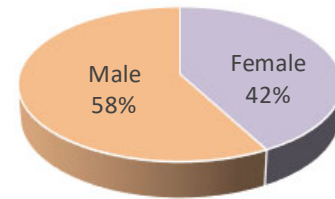


Occupations that don't require a high school diploma or GED make up the second-largest category in Alaska. This category encompasses a wide range of wages, from low-paying food service and retail jobs to high-paying oil and gas extraction jobs such as service unit operators, derrick operators, and rotary drill operators.

The types of jobs men and women choose heavily influence the earnings ratio in this category. In its nine highest-earning, male-dominated occupations, men earned \$165.7 million a year in 2017 but women, who worked in only six, earned just \$6.1 million.

These highest-paying occupations employed more than 2,100 workers, but less than 100 were women. While women in these jobs earned a higher average wage than the average for the category overall and had a high earnings ratio, they represented just 0.2 percent of all women working in jobs without any education requirements in 2017.

Total workers: 96,242



Total occupations 103

| | |
|--------------------------------|----------|
| High-wage occupations (\$50k+) | 9 |
| Number of high-wage women | 85 |
| Number of high-wage men | 2,058 |
| High-wage women's average | \$71,564 |
| High-wage men's average | \$80,497 |

The largest part of this category by far is the 62 occupations that pay less than \$20,000, representing nearly 74,000 workers. Half of these lowest-paid workers were women, and 91 percent of all women in this education category worked in the lowest-paid occupations in 2017, compared to 66 percent of all the men.

10 Largest Occupations for Women With No Formal Education Requirements, 2017

| Occupation | Total Wages in Millions | Total Workers | Women | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|-------------------------|---------------|-------|---------------|------------------|----------------|----------------|-----------------|---------------|
| Retail salespeople | \$282.6 | 14,785 | 8,074 | 55% | \$16,626 | \$22,100 | 75% | 35 | 34 |
| Cashiers | \$120.9 | 8,052 | 5,210 | 65% | \$13,824 | \$17,193 | 80% | 35 | 33 |
| Waiters and waitresses | \$72.9 | 4,386 | 3,132 | 71% | \$16,332 | \$17,306 | 94% | 33 | 33 |
| Combined food prep/serving, incl fast food | \$58.0 | 5,050 | 2,842 | 56% | \$11,215 | \$11,840 | 95% | 29 | 28 |
| Maids and housekeeping cleaners | \$56.5 | 3,482 | 2,677 | 77% | \$15,233 | \$19,551 | 78% | 39 | 41 |
| Food preparation workers | \$59.2 | 4,965 | 2,554 | 51% | \$11,776 | \$12,085 | 97% | 30 | 28 |
| Janitors/cleaners, exc maids/housekeepers | \$105.1 | 5,608 | 1,992 | 36% | \$16,023 | \$20,232 | 79% | 43 | 43 |
| Counter attend, cafeteria/concession/coffee | \$22.5 | 2,196 | 1,745 | 79% | \$10,158 | \$10,483 | 97% | 25 | 26 |
| Meat, poultry, and fish cutters and trimmers | \$69.2 | 4,378 | 1,467 | 34% | \$15,304 | \$16,061 | 95% | 44 | 43 |
| Bartenders | \$22.8 | 1,465 | 1,017 | 69% | \$14,563 | \$17,803 | 82% | 40 | 39 |

10 Largest Occupations for Men With No Formal Education Requirements, 2017

| Occupation | Total Wages in Millions | Total Workers | Men | Percent Men | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|---|-------------------------|---------------|-------|-------------|------------------|----------------|----------------|-----------------|---------------|
| Retail salespeople | \$282.6 | 14,785 | 6,711 | 45% | \$16,626 | \$22,100 | 75% | 35 | 34 |
| Construction laborers | \$154.3 | 5,431 | 4,891 | 90% | \$22,460 | \$29,071 | 77% | 35 | 36 |
| Janitors/cleaners, exc maids/housekeepers | \$105.1 | 5,608 | 3,616 | 64% | \$16,023 | \$20,232 | 79% | 43 | 43 |
| Laborers and freight, stock, mat movers, hand | \$92.4 | 4,148 | 3,613 | 87% | \$15,731 | \$23,239 | 68% | 34 | 36 |
| Meat, poultry, and fish cutters and trimmers | \$69.2 | 4,378 | 2,911 | 66% | \$15,304 | \$16,061 | 95% | 44 | 43 |
| Cashiers | \$120.9 | 8,052 | 2,842 | 35% | \$13,824 | \$17,193 | 80% | 35 | 33 |
| Food preparation workers | \$59.2 | 4,965 | 2,411 | 49% | \$11,776 | \$12,085 | 97% | 30 | 28 |
| Combined food prep/serving, incl fast food | \$58.0 | 5,050 | 2,208 | 44% | \$11,215 | \$11,840 | 95% | 29 | 28 |
| Cooks, restaurant | \$41.8 | 2,499 | 1,976 | 79% | \$14,729 | \$17,272 | 85% | 35 | 36 |
| Material moving workers, all other | \$60.8 | 1,623 | 1,492 | 92% | \$27,903 | \$38,314 | 73% | 37 | 40 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Occupations That Require a High School Diploma or GED

Average wage: \$37,368

*Women make about
61¢ on the dollar*

61.4%



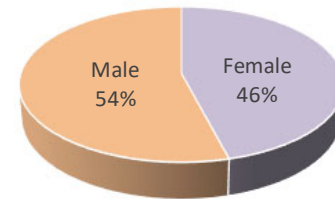
About 300 occupations in Alaska require a high school diploma or an equivalent, such as the GED, making this the largest educational requirement category. Common occupations include social and human service assistants, carpenters, and pharmacy technicians.

Nearly 129,000 Alaskans held these jobs in 2017, and nearly half were women.

As with the category requiring no formal education, this category includes a number of high-paying occupations, such as petroleum pump systems operators, production workers, and first-line supervisors of construction trades and extraction workers. Women represented a similarly tiny percentage in these three occupations, at 10 percent or less, and made less than the men.

Women working in jobs requiring a high school education are concentrated in office support jobs such as office

Total workers: 128,723



Total occupations 314

| | |
|--------------------------------|----------|
| High-wage occupations (\$50k+) | 83 |
| Number of high-wage women | 3,099 |
| Number of high-wage men | 24,035 |
| High-wage women's average | \$49,397 |
| High-wage men's average | \$69,173 |

and administrative support workers, office clerks, secretaries and administrative assistants, and receptionists and information clerks. Seventy-nine percent of these workers were women, and they earned slightly more than their male counterparts, at an average of \$29,100 compared to \$27,000.

10 Largest Occupations for Women That Require a High School Education, 2017

| Occupation | Total Wages in Millions | Total Workers | Women | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|----------------------------|------------------|-------|------------------|---------------------|-------------------|-------------------|--------------------|------------------|
| Office and administrative support workers | \$219.3 | 7,885 | 5,633 | 71% | \$28,050 | \$27,235 | 103% | 37 | 33 |
| Office clerks, general | \$152.4 | 5,579 | 4,246 | 76% | \$27,714 | \$26,028 | 106% | 40 | 36 |
| Personal care aides | \$100.4 | 5,460 | 4,233 | 78% | \$17,683 | \$20,801 | 85% | 42 | 41 |
| Secretaries/admin assts, exc legal/med/exec | \$97.6 | 3,404 | 2,996 | 88% | \$29,036 | \$26,017 | 112% | 42 | 36 |
| Executive secretaries/exec admin assistants | \$115.6 | 3,120 | 2,696 | 86% | \$37,554 | \$33,937 | 111% | 44 | 39 |
| Receptionists and information clerks | \$69.1 | 2,837 | 2,525 | 89% | \$24,793 | \$20,685 | 120% | 36 | 33 |
| Customer service representatives | \$78.2 | 2,703 | 1,781 | 66% | \$28,548 | \$29,633 | 96% | 36 | 34 |
| Child Care workers | \$23.2 | 1,901 | 1,689 | 89% | \$12,217 | \$12,080 | 101% | 33 | 29 |
| 1st-line supervisors of office/admin supt wkrs | \$94.3 | 2,070 | 1,489 | 72% | \$44,446 | \$48,405 | 92% | 43 | 43 |
| Health Care support workers, all other | \$63.8 | 1,868 | 1,468 | 79% | \$31,938 | \$42,352 | 75% | 40 | 40 |

10 Largest Occupations for Men That Require a High School Education, 2017

| Occupation | Total Wages in Millions | Total Workers | Men | Percent Men | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|---|----------------------------|------------------|-------|----------------|---------------------|-------------------|-------------------|--------------------|------------------|
| Operating engrs/other const equip operators | \$204.0 | 3,560 | 3,368 | 95% | \$40,834 | \$58,233 | 70% | 39 | 45 |
| Maintenance and repair workers, general | \$134.0 | 3,283 | 3,080 | 94% | \$24,994 | \$41,847 | 60% | 41 | 44 |
| Carpenters | \$108.8 | 2,900 | 2,843 | 98% | \$18,797 | \$37,907 | 50% | 36 | 41 |
| Office and admin support workers, all other | \$219.3 | 7,885 | 2,252 | 29% | \$28,050 | \$27,235 | 103% | 37 | 33 |
| Stock clerks and order fillers | \$58.6 | 2,801 | 2,032 | 73% | \$17,594 | \$22,204 | 79% | 36 | 35 |
| Security guards | \$68.1 | 2,349 | 1,876 | 80% | \$20,847 | \$31,071 | 67% | 38 | 41 |
| Transportation workers, all other | \$112.1 | 2,537 | 1,856 | 73% | \$29,004 | \$49,764 | 58% | 40 | 40 |
| Electricians | \$117.7 | 1,879 | 1,811 | 96% | \$37,094 | \$63,610 | 58% | 37 | 41 |
| Light truck or delivery services drivers | \$54.5 | 1,570 | 1,422 | 91% | \$24,890 | \$35,758 | 70% | 37 | 39 |
| Sales and related workers, all other | \$57.9 | 2,255 | 1,347 | 60% | \$20,426 | \$29,186 | 70% | 37 | 36 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

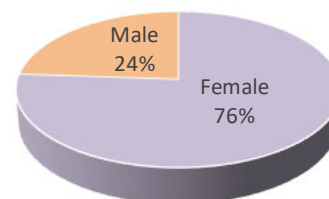
Occupations That Require Some College (But No Degree)

Average wage: \$26,955

Women make about 75¢ on the dollar

Jobs that require a high school education plus some sort of postsecondary course or study (but no formal certification or award) is a small category of just five occupations, but it represents more than 10,000 workers in Alaska. Teacher assistants and accounting clerks are the most common examples.

Total workers: 10,611



75.4%



More than three-quarters of these workers were female in 2017, and their earnings ratio was higher than in any other educational category except master's degrees. Again, when women dominate an occupation, their average wages tend to be closer to equal, but men still almost always make more.

Teacher assistants were the largest occupation, at 5,156 workers in 2017, of whom 83 percent were women. They earned slightly more than their male counterparts, at 101 percent, although wages were very low for both (\$16,872 and \$16,643, respectively).

Total occupations

5

| | |
|--------------------------------|-----|
| High-wage occupations (\$50k+) | 0 |
| Number of high-wage women | 0 |
| Number of high-wage men | 0 |
| High-wage women's average | \$0 |
| High-wage men's average | \$0 |

Bookkeeping, accounting, and auditing clerks were the next largest group, at 4,218 workers in 2017, 85 percent of whom were women. Men outearned those women, but at an earnings ratio of 95 percent, which is far more equal than for most occupations.

All Occupations That Require Some College Course(s) But No Degree, 2017

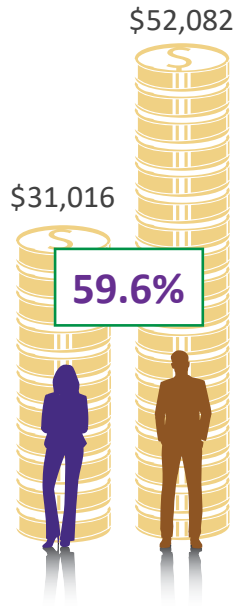
| Occupation | Total Wages in Millions | Total Workers | Women | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|-------------------------|---------------|-------|---------------|------------------|----------------|----------------|-----------------|---------------|
| Teacher assistants | \$86.8 | 5,156 | 4,268 | 83% | \$16,872 | \$16,643 | 101% | 44 | 40 |
| Bookkeeping, accounting, and auditing clerks | \$144.4 | 4,218 | 3,566 | 85% | \$33,937 | \$35,817 | 95% | 44 | 40 |
| Computer user support specialists | \$47.1 | 1,015 | 205 | 20% | \$39,757 | \$48,047 | 83% | 39 | 38 |
| Computer, automated teller, and office machine repairers | \$7.0 | 156 | 9 | 6% | \$31,255 | \$45,704 | 68% | 42 | 43 |
| Actors | \$0.8 | 66 | 23 | 35% | \$16,185 | \$9,765 | 166% | 33 | 42 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Occupations That Require a Postsecondary Award (Nondegree)

Average wage: \$42,567

Women make about 60¢ on the dollar

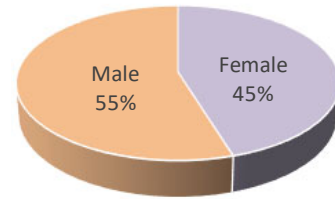


This category requires some type of certification or award beyond high school at a formal educational institution, but not a college degree. Some of these programs last just a few weeks and others last a year or two. It doesn't include certification by another type of certifying body or professional organization.

This is another broad category, with nearly 20,000 workers employed in 44 diverse occupations from paramedics to hairstylists. It included 14 occupations that averaged at least \$50,000 in 2017, and just 10 percent of these higher-paid workers were women. They also made an average of \$25,000 less than the men in these high-wage jobs.

Women in this educational category tend to be nursing assistants (2,084 workers in 2017, 88 percent women), medical assistants (1,808 workers, 89 percent women), or dental assistants (1,228 workers, 93 percent women). Again, the earnings ratios

Total workers: 19,379



Total occupations 44

| | |
|--------------------------------|----------|
| High-wage occupations (\$50k+) | 14 |
| Number of high-wage women | 468 |
| Number of high-wage men | 4,072 |
| High-wage women's average | \$41,736 |
| High-wage men's average | \$66,576 |

in these occupations were high, with women earning between 87 percent and 97 percent of men's average wages, but overall wages were low for both. These types of jobs paid around \$30,000 — much lower than the average for this education category (\$42,567).

10 Largest Occupations for Women That Require a Postsecondary Award or Certificate, 2017

| Occupation | Total Wages in Millions | Total Workers | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|---|-------------------------|---------------|---------------|------------------|----------------|----------------|-----------------|---------------|
| Nursing assistants | \$58.9 | 2,084 | 88% | \$28,015 | \$30,041 | 93% | 37 | 36 |
| Medical assistants | \$56.5 | 1,808 | 89% | \$31,147 | \$32,260 | 97% | 34 | 34 |
| Dental assistants | \$35.8 | 1,228 | 93% | \$28,867 | \$33,193 | 87% | 34 | 31 |
| Hairdressers, hairstylists, and cosmetologists | \$15.2 | 706 | 94% | \$21,473 | \$21,943 | 98% | 34 | 35 |
| Medical records and health info technicians | \$22.0 | 578 | 86% | \$36,991 | \$44,920 | 82% | 42 | 37 |
| Massage therapists | \$15.0 | 567 | 87% | \$25,948 | \$30,046 | 86% | 38 | 41 |
| Licensed practical and vocational nurses | \$21.9 | 441 | 84% | \$46,204 | \$67,733 | 68% | 46 | 45 |
| Health care practitioners/technical workers | \$14.6 | 292 | 82% | \$48,451 | \$56,414 | 86% | 40 | 42 |
| Psychiatric technicians | \$9.6 | 345 | 61% | \$27,787 | \$28,034 | 99% | 36 | 35 |
| Health technologists and technicians, all other | \$12.0 | 290 | 67% | \$37,936 | \$48,368 | 78% | 39 | 41 |

10 Largest Occupations for Men That Require a Postsecondary Award or Certificate, 2017

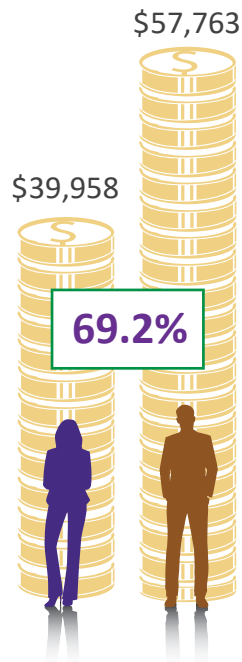
| Occupation | Total Wages in Millions | Total Workers | Percent Men | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|---|-------------------------|---------------|-------------|------------------|----------------|----------------|-----------------|---------------|
| Heavy and tractor-trailer truck drivers | \$139.8 | 2,922 | 95% | \$36,611 | \$48,419 | 76% | 43 | 46 |
| Automotive svc technicians and mechanics | \$76.8 | 1,964 | 97% | \$21,626 | \$39,735 | 54% | 32 | 38 |
| Aircraft mechanics and service technicians | \$66.2 | 1,207 | 96% | \$32,948 | \$55,887 | 59% | 36 | 44 |
| Firefighters | \$57.5 | 925 | 84% | \$24,257 | \$69,165 | 35% | 36 | 39 |
| Telecom equip install/repair, exc line installers | \$54.2 | 752 | 88% | \$69,183 | \$72,507 | 95% | 48 | 44 |
| Captains, mates, and pilots of water vessels | \$32.0 | 538 | 90% | \$34,717 | \$62,229 | 56% | 37 | 47 |
| Heating, air cond, refrig mechanics/installers | \$19.1 | 388 | 97% | \$21,733 | \$50,224 | 43% | 39 | 41 |
| Nursing assistants | \$58.9 | 2,084 | 12% | \$28,015 | \$30,041 | 93% | 37 | 36 |
| Emergency med technicians and paramedics | \$17.0 | 323 | 73% | \$42,298 | \$56,371 | 75% | 37 | 37 |
| Electrical/electronics repair, comm/industrial | \$19.0 | 202 | 98% | \$102,811 | \$93,908 | 109% | 41 | 46 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Occupations That Require an Associate Degree

Average wage: \$48,401

Women make about 69¢ on the dollar



An associate degree in college is typically a two-year degree, although it can take up to four years to complete. Jobs that require an associate degree include mechanical drafters, respiratory therapists, and dental hygienists.

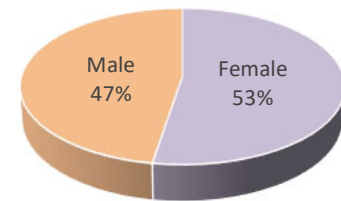
Only about 3 percent of occupations in Alaska require an associate degree, and they employed less than 9,000 workers in 2017. Women made up a slight majority, at 53 percent.

Twenty-seven occupations requiring an associate degree paid at least \$50,000 a year, and they employed more than 3,500 people in 2017.

Women made up 29 percent of these workers and earned nearly \$13,000 less than the men, on average.

Women with associate degrees are concentrated in medical, dental, and legal support occupations, while men are concentrated in engineering, computer support, and extraction.

Total workers: 8,772



Total occupations 46

| | |
|--------------------------------|----------|
| High-wage occupations (\$50k+) | 27 |
| Number of high-wage women | 1,029 |
| Number of high-wage men | 2,488 |
| High-wage women's average | \$58,704 |
| High-wage men's average | \$71,656 |

10 Largest Occupations for Women That Require an Associate Degree, 2017

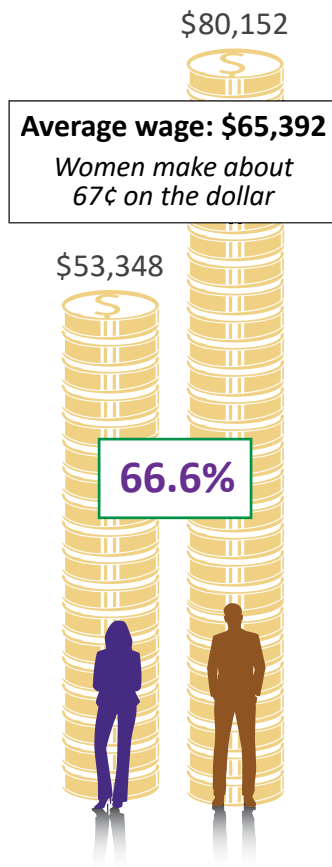
| Occupation | Total Wages in Millions | Total Workers | Women | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|----------------------------|------------------|-------|------------------|---------------------|-------------------|-------------------|--------------------|------------------|
| Preschool teachers, exc spec ed | \$18.4 | 853 | 796 | 93% | \$21,064 | \$29,164 | 72% | 37 | 39 |
| Dental hygienists | \$25.3 | 514 | 494 | 96% | \$48,493 | \$67,041 | 72% | 42 | 41 |
| Paralegals and legal assistants | \$24.9 | 547 | 475 | 87% | \$45,776 | \$44,216 | 104% | 45 | 40 |
| Life, physical, and social science technicians | \$20.5 | 887 | 421 | 47% | \$22,404 | \$23,667 | 95% | 37 | 38 |
| Human resrc assts, exc payroll/timekeeping | \$14.7 | 393 | 343 | 87% | \$38,703 | \$29,341 | 132% | 40 | 37 |
| Radiologic technologists | \$25.8 | 426 | 293 | 69% | \$57,510 | \$67,370 | 85% | 43 | 47 |
| Medical and clinical laboratory technicians | \$13.9 | 345 | 246 | 71% | \$38,892 | \$44,247 | 88% | 40 | 40 |
| Legal support workers, all other | \$12.8 | 263 | 195 | 74% | \$45,700 | \$56,893 | 80% | 45 | 44 |
| Veterinary technologists and technicians | \$5.0 | 198 | 180 | 91% | \$25,854 | \$20,823 | 124% | 34 | 31 |
| Engineering technicians, exc drafters, all other | \$40.4 | 562 | 133 | 24% | \$53,952 | \$77,371 | 70% | 39 | 41 |

10 Largest Occupations for Men That Require an Associate Degree, 2017

| Occupation | Total Wages in Millions | Total Workers | Men | Percent Men | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|----------------------------|------------------|-----|----------------|---------------------|-------------------|-------------------|--------------------|------------------|
| Life, physical, and social science technicians | \$20.5 | 887 | 466 | 53% | \$22,404 | \$23,667 | 95% | 37 | 38 |
| Engineering technicians, exc drafters, all other | \$40.4 | 562 | 429 | 76% | \$53,952 | \$77,371 | 70% | 39 | 41 |
| Geological and petroleum technicians | \$34.4 | 464 | 389 | 84% | \$82,531 | \$72,571 | 114% | 39 | 38 |
| Civil engineering technicians | \$18.3 | 376 | 287 | 76% | \$47,425 | \$49,094 | 97% | 36 | 37 |
| Computer network support specialists | \$15.0 | 274 | 249 | 91% | \$48,848 | \$55,229 | 88% | 44 | 40 |
| Environmental engineering technicians | \$14.6 | 225 | 187 | 83% | \$54,270 | \$67,287 | 81% | 40 | 39 |
| Forest and conservation technicians | \$7.2 | 203 | 175 | 86% | \$28,739 | \$36,398 | 79% | 35 | 35 |
| Electrical and electronics engineering techs | \$13.9 | 167 | 154 | 92% | \$52,340 | \$85,523 | 61% | 39 | 44 |
| Radiologic technologists | \$25.8 | 426 | 133 | 31% | \$57,510 | \$67,370 | 85% | 43 | 47 |
| Chemical technicians | \$9.0 | 187 | 128 | 68% | \$43,382 | \$50,243 | 86% | 33 | 36 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Occupations That Require a Bachelor's Degree



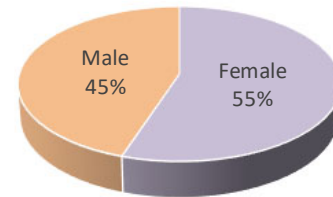
A bachelor's degree requires four or five years at a college or university. Common jobs requiring a bachelor's include budget analysts, dietitians and nutritionists, and civil engineers.

This is the third largest education category in Alaska, after occupations requiring a high school diploma and those without formal requirements. Nineteen percent of Alaska's occupations require a bachelor's degree, representing more than 63,000 workers in 2017. Women were the majority (55 percent) and earned about 67 percent of what men made.

The highest-paying occupations in this category — those averaging at least \$60,000 — employed 35,766 people, and nearly half were women. But while men made an average of \$98,832 in those occupations, women averaged nearly \$31,000 less.

The largest number of women worked as registered nurses, where they made up 88 percent of the workforce and earned an average of \$60,659 while

Total workers: 63,479



| | |
|--------------------------------|------------|
| Total occupations | 171 |
| High-wage occupations (\$60k+) | 71 |
| Number of high-wage women | 16,852 |
| Number of high-wage men | 18,914 |
| High-wage women's average | \$67,923 |
| High-wage men's average | \$98,832 |

men averaged \$69,273. As in other categories that are mostly women, the earnings ratio of 88 percent for nurses was more equal than for jobs requiring a bachelor's degree overall.

The largest occupation for men was general and operations manager, where they were 63 percent of the workers and outearned women by \$26,000 a year.

10 Largest Occupations for Women That Require a Bachelor's Degree, 2017

| Occupation | Total Wages in Millions | Total Workers | Women | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|-------------------------|---------------|-------|---------------|------------------|----------------|----------------|-----------------|---------------|
| Registered nurses | \$356.3 | 5,777 | 5,093 | 88% | \$60,659 | \$69,273 | 88% | 44 | 43 |
| Teachers and instructors, all other | \$108.0 | 4,607 | 3,286 | 71% | \$22,226 | \$26,442 | 84% | 46 | 46 |
| Elementary school teachers, exc spec ed | \$137.2 | 2,530 | 2,014 | 80% | \$54,046 | \$55,006 | 98% | 44 | 45 |
| General and operations managers | \$330.2 | 4,055 | 1,519 | 37% | \$65,033 | \$91,266 | 71% | 46 | 49 |
| Accountants and auditors | \$118.5 | 1,861 | 1,376 | 74% | \$59,654 | \$75,172 | 79% | 44 | 43 |
| Managers, all other | \$212.3 | 2,753 | 1,310 | 48% | \$63,155 | \$89,804 | 70% | 46 | 49 |
| Secondary teachers, exc spec/career/tech | \$123.4 | 2,086 | 1,291 | 62% | \$57,566 | \$61,706 | 93% | 44 | 45 |
| Administrative services managers | \$74.7 | 1,472 | 1,022 | 69% | \$46,921 | \$59,337 | 79% | 44 | 46 |
| Business operations specialists, all other | \$92.3 | 1,427 | 797 | 56% | \$54,163 | \$77,932 | 70% | 44 | 44 |
| Chief executives | \$241.1 | 1,818 | 775 | 43% | \$93,612 | \$161,615 | 58% | 48 | 52 |

10 Largest Occupations for Men That Require a Bachelor's Degree, 2017

| Occupation | Total Wages in Millions | Total Workers | Men | Percent Men | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|-------------------------|---------------|-------|-------------|------------------|----------------|----------------|-----------------|---------------|
| General and operations managers | \$330.2 | 4,055 | 2,536 | 63% | \$65,033 | \$91,266 | 71% | 46 | 49 |
| Managers, all other | \$212.3 | 2,753 | 1,443 | 52% | \$63,155 | \$89,804 | 70% | 46 | 49 |
| Teachers and instructors, all other | \$108.0 | 4,607 | 1,321 | 29% | \$22,226 | \$26,442 | 84% | 46 | 46 |
| Airline pilots, copilots, and flight engineers | \$146.3 | 1,182 | 1,095 | 93% | \$125,708 | \$123,651 | 102% | 43 | 46 |
| Construction managers | \$109.4 | 1,178 | 1,069 | 91% | \$79,605 | \$94,233 | 84% | 45 | 49 |
| Chief executives | \$241.1 | 1,818 | 1,043 | 57% | \$93,612 | \$161,615 | 58% | 48 | 52 |
| Engineers, all other | \$127.5 | 1,104 | 888 | 80% | \$94,225 | \$120,666 | 78% | 39 | 44 |
| Civil engineers | \$90.6 | 1,126 | 852 | 76% | \$70,472 | \$83,700 | 84% | 42 | 44 |
| Secondary teachers, exc spec/career/tech | \$123.4 | 2,086 | 795 | 38% | \$57,566 | \$61,706 | 93% | 44 | 45 |
| Registered nurses | \$356.3 | 5,777 | 684 | 12% | \$60,659 | \$69,273 | 88% | 44 | 43 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Occupations That Require a Master's Degree

Average wage: \$60,943

Women make about 83¢ on the dollar



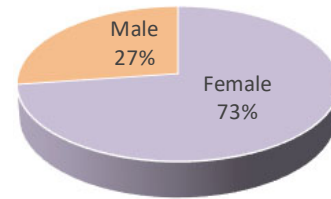
A master's degree typically requires an additional year or two of education beyond a bachelor's degree and is required for occupations such as statisticians, physician assistants, and various types of counselors.

Only about 2 percent of Alaska's occupations require a master's degree. Women held the large majority of these positions in 2017 and had the highest earnings ratio among educational categories. Only six occupations had a higher percentage of men than women, and only statistician stood out as being heavily male (80 percent).

Twelve occupations paid \$60,000 or more, and this was the only high-wage category among all educational levels where women were the majority (64 percent). However, men still earned an average of \$10,000 more.

While higher education requirements usually mean higher wages, that doesn't always hold true for master's degrees in Alaska.

Total workers: 5,789



| | |
|--------------------------------|-----------|
| Total occupations | 35 |
| High-wage occupations (\$60k+) | 12 |
| Number of high-wage women | 1,177 |
| Number of high-wage men | 648 |
| High-wage women's average | \$85,741 |
| High-wage men's average | \$96,160 |

This category's occupations pay an average of \$5,000 less than those requiring a bachelor's. The bachelor's category has a much higher share of high-paying occupations, and while there are high-paying occupations in the master's category as well, it includes a number of relatively low-paying jobs such as counselors and social workers.

10 Largest Occupations for Women That Require a Master's Degree, 2017

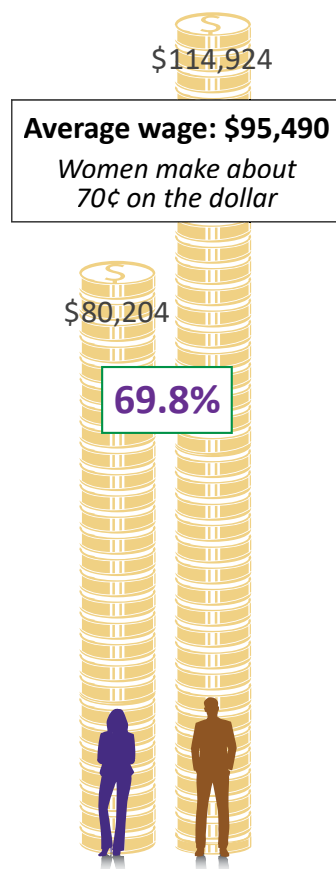
| Occupation | Total Wages in Millions | Total Workers | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|---|-------------------------|---------------|---------------|------------------|----------------|----------------|-----------------|---------------|
| Mental health counselors | \$24.8 | 550 | 75% | \$44,051 | \$48,370 | 91% | 44 | 47 |
| Educ, guidance, school, vocational counselors | \$28.4 | 523 | 76% | \$53,591 | \$56,830 | 94% | 44 | 47 |
| Nurse practitioners | \$27.2 | 327 | 92% | \$83,468 | \$79,187 | 105% | 48 | 48 |
| Physician assistants | \$45.7 | 472 | 61% | \$93,750 | \$101,541 | 92% | 44 | 49 |
| Speech-language pathologists | \$16.8 | 297 | 96% | \$55,097 | \$86,128 | 64% | 42 | 45 |
| Mental health/substance abuse social workers | \$16.2 | 395 | 71% | \$41,897 | \$39,010 | 107% | 41 | 46 |
| Education administrators, elem/secondary | \$49.7 | 555 | 48% | \$86,648 | \$92,304 | 94% | 50 | 49 |
| Instructional coordinators | \$16.6 | 359 | 74% | \$45,396 | \$48,435 | 94% | 45 | 46 |
| Librarians | \$14.1 | 282 | 90% | \$49,961 | \$50,845 | 98% | 49 | 47 |
| Counselors, all other | \$12.8 | 325 | 77% | \$37,261 | \$46,520 | 80% | 44 | 48 |

10 Largest Occupations for Men That Require a Master's Degree, 2017

| Occupation | Total Wages in Millions | Total Workers | Percent Men | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|---|-------------------------|---------------|-------------|------------------|----------------|----------------|-----------------|---------------|
| Education administrators, elem/secondary | \$49.7 | 555 | 52% | \$86,648 | \$92,304 | 94% | 50 | 49 |
| Physician assistants | \$45.7 | 472 | 39% | \$93,750 | \$101,541 | 92% | 44 | 49 |
| Mental health counselors | \$24.8 | 550 | 25% | \$44,051 | \$48,370 | 91% | 44 | 47 |
| Educ, guidance, school, vocational counselors | \$28.4 | 523 | 24% | \$53,591 | \$56,830 | 94% | 44 | 47 |
| Mental health/substance abuse soc wkrs | \$16.2 | 395 | 29% | \$41,897 | \$39,010 | 107% | 41 | 46 |
| Instructional coordinators | \$16.6 | 359 | 26% | \$45,396 | \$48,435 | 94% | 45 | 46 |
| Urban and regional planners | \$11.2 | 189 | 45% | \$56,869 | \$61,894 | 92% | 44 | 48 |
| Counselors, all other | \$12.8 | 325 | 75% | \$37,261 | \$46,520 | 80% | 44 | 48 |
| Education administrators, postsecondary | \$14.1 | 169 | 43% | \$72,588 | \$98,429 | 74% | 52 | 54 |
| Rehabilitation counselors | \$6.1 | 176 | 65% | \$34,568 | \$35,181 | 98% | 41 | 42 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Occupations That Require a Doctoral or Professional Degree



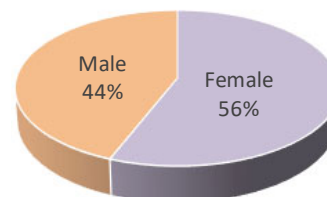
Doctorates (Ph.D.) and professional degrees usually require at least three years of full-time academic work beyond a bachelor's degree. Jobs requiring these advanced degrees include lawyers, physicists, and dentists.

Just 2 percent of Alaska's occupations are in this category, and while women are the majority, they earned 70 percent of what men earned in 2017.

Lawyer was the largest occupation for both men and women, and employment was fairly evenly split (51 percent women). Men earned considerably more, however, with an average annual wage nearly \$24,000 higher.

After lawyers, the largest numbers of women worked as physical therapists, family and general practitioners, and pharmacists. Women made up the majority of each of these categories, but the nearest their wages came to equal was pharmacists with an earnings ratio of 91 percent.

Total workers: 5,651



Total occupations 62

| | |
|--------------------------------|-----------|
| High-wage occupations (\$75k+) | 27 |
| Number of high-wage women | 1,693 |
| Number of high-wage men | 1,614 |
| High-wage women's average | \$106,415 |
| High-wage men's average | \$147,526 |

Twenty-seven occupations in this category paid \$75,000 or more. Women made up just over half the workers but earned an average of \$41,000 less than the men, resulting in an earnings ratio of 72 percent: slightly more equitable than this educational category overall.

10 Largest Occupations for Women That Require a Doctoral or Professional Degree, 2017

| Occupation | Total Wages in Millions | Total Workers | Women | Percent Women | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|--|-------------------------|---------------|-------|---------------|------------------|----------------|----------------|-----------------|---------------|
| Lawyers | \$95.9 | 1,034 | 531 | 51% | \$81,143 | \$104,946 | 77% | 42 | 45 |
| Physical therapists | \$31.6 | 495 | 377 | 76% | \$60,014 | \$76,239 | 79% | 42 | 43 |
| Family and general practitioners | \$53.2 | 373 | 228 | 61% | \$128,441 | \$164,688 | 78% | 43 | 50 |
| Pharmacists | \$34.2 | 347 | 210 | 61% | \$94,815 | \$104,452 | 91% | 41 | 44 |
| Postsecondary teachers, all other | \$7.8 | 293 | 178 | 61% | \$25,276 | \$28,733 | 88% | 52 | 53 |
| Physicians and surgeons, all other | \$88.3 | 351 | 133 | 38% | \$204,104 | \$280,369 | 73% | 46 | 50 |
| Clinical, counseling, school psychologists | \$9.2 | 169 | 131 | 78% | \$54,066 | \$55,991 | 97% | 42 | 44 |
| Business teachers, postsecondary | \$9.7 | 235 | 113 | 48% | \$31,681 | \$50,426 | 63% | 51 | 55 |
| Veterinarians | \$11.9 | 148 | 113 | 76% | \$77,442 | \$88,731 | 87% | 43 | 50 |
| Dentists, general | \$23.5 | 209 | 96 | 46% | \$89,555 | \$131,905 | 68% | 36 | 49 |

10 Largest Occupations for Men That Require a Doctoral or Professional Degree, 2017

| Occupation | Total Wages in Millions | Total Workers | Men | Percent Men | Women's Avg Wage | Men's Avg Wage | Earnings Ratio | Women's Avg Age | Men's Avg Age |
|-------------------------------------|-------------------------|---------------|-----|-------------|------------------|----------------|----------------|-----------------|---------------|
| Lawyers | \$95.9 | 1,034 | 503 | 49% | \$81,143 | \$104,946 | 77% | 42 | 45 |
| Physicians and surgeons, all other | \$88.3 | 351 | 218 | 62% | \$204,104 | \$280,369 | 73% | 46 | 50 |
| Family and general practitioners | \$53.2 | 373 | 145 | 39% | \$128,441 | \$164,688 | 78% | 43 | 50 |
| Pharmacists | \$34.2 | 347 | 137 | 39% | \$94,815 | \$104,452 | 91% | 41 | 44 |
| Business teachers, postsecondary | \$9.7 | 235 | 122 | 52% | \$31,681 | \$50,426 | 63% | 51 | 55 |
| Physical therapists | \$31.6 | 495 | 118 | 24% | \$60,014 | \$76,239 | 79% | 42 | 43 |
| Postsecondary teachers, all other | \$7.8 | 293 | 115 | 39% | \$25,276 | \$28,733 | 88% | 52 | 53 |
| Dentists, general | \$23.5 | 209 | 113 | 54% | \$89,555 | \$131,905 | 68% | 36 | 49 |
| Engineering teachers, postsecondary | \$7.5 | 82 | 66 | 80% | \$87,555 | \$92,777 | 94% | 46 | 53 |
| Internists, general | \$15.4 | 105 | 52 | 50% | \$131,911 | \$161,512 | 82% | 45 | 51 |

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section