

# How Do Wages in San Juan Compare to Wages on the Mainland?

Average weekly wages for full-time employees studied in the San Juan survey ranged from \$230 for general clerks to \$802 for engineers. Without exception, occupational wages were lower in the San Juan CMSA than for equivalent occupations on the mainland.

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A primary purpose of the Occupational Compensation Survey (OCS) was to produce measures of local labor market pay levels in the United States. The Federal Government used these data to set locality based Federal wages and salaries.<sup>1</sup> Prior to OCS, the Federal Government usually paid an identical wage for an occupation regardless of geographic location. This system made it difficult to recruit workers in certain higher paying areas. In response to this, Congress passed the Federal Employees Pay Comparability Act in 1990, which mandated the Bureau of Labor Statistics (BLS) to collect the necessary wage comparability data.

The Act only applies to Federal workers within the contiguous 48 States (mainland). Federal wages in Hawaii, Alaska, Puerto Rico, and other areas such as Guam and the Northern Marianas Islands, are adjusted using a methodology based on the Consumer Price Index (CPI). In response to litigation about pay adjustments in the

areas excluded from the Act, the Office of Personnel Management (OPM) contracted with BLS to conduct occupational wage surveys in Alaska, Hawaii, and Puerto Rico in 1996. This article presents selected survey results for the San Juan–Caguas–Arecibo Consolidated Metropolitan Statistical Area (CMSA) in the Commonwealth of Puerto Rico, hereafter known as the San Juan survey or the San Juan CMSA.<sup>2</sup>

## Survey design

The Bureau used standard OCS procedures to complete the San Juan

This is the last of three articles dealing with a special wage study completed in 1996 for Hawaii, Alaska, and Puerto Rico. An article on wages in Hawaii appeared in the Summer 1998 issue of *Compensation and Working Conditions* and an article on wages in Alaska appeared in the Fall 1998 edition.

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survey. As a result, data are comparable between all published OCS geographic areas. The OCS surveys described the level and distribution of occupational pay in a given labor market. In addition, the surveys provided information on the incidence of employee benefits among and within local labor markets. However, because the contract with OPM only included funds for the collection of wages and salaries, no benefit data were collected for the San Juan survey.

The OCS randomly sampled establishments<sup>3</sup> employing 50 workers or more in the industries that follow.

- Goods producing
- Mining
- Construction
- Manufacturing
- Service producing
- Transportation
- Communications
- Electric, gas, and sanitary services
- Wholesale and retail trade
- Finance, insurance, and real estate; and
- State and local government

Private household workers, Federal Government employees, the self-employed, and agricultural employees were excluded from the survey. Unless specifically included in a Bureau job description, working supervisors, trainees, and part-time employees were also excluded.<sup>4</sup>

Establishments in the San Juan survey were randomly sampled using State unemployment insurance reports as of October 1994 for the San Juan-Caguas-Arecibo CMSA. From these reports, establishments were classified into strata (groups) based on industry and employment size. The number of establishments sampled in a stratum was determined by the expectations of the number of workers to be found in professional, administrative, technical, protective services, clerical, and blue-collar occupations. In other words, the larger the number of employees expected to be found in the 46 selected occupations, the larger the number of establishments sampled in that stratum. Certain industry strata expected to have relatively high sam-

pling errors also led to increased establishment sampling.

A total of 1,324 establishments employing just over 431,000 employees in the San Juan-Caguas-Arecibo CMSA were found to be in scope of the survey.<sup>5</sup> Of those, 247 establishments employing 240,001 workers were studied in the San Juan survey. Data collection began in July 1996 and ended in November 1996. The average payroll reference month was October 1996. Data obtained for a payroll period prior to the end of September 1996 were updated to include general wage changes scheduled to be effective in October.

Wage data were collected for all employees in 46 preselected occupations<sup>6</sup> that met OCS definitions.<sup>7</sup> For example, the OCS defines a word processor as anyone who primarily produces items such as memos, forms, or graphs using word processing software packages. Excluded were typists who use non-editing typewriters, key entry operators, and employees requiring subject matter knowledge, even if their job title was word processor.

The purpose of using precise job descriptions is two-fold. First, it helps field economists classify workers into appropriate occupations. Second, it permits establishments to compare their employees' wages with the earnings of workers who do the same type of work. Because of the emphasis on comparability of occupational content, the Bureau's job description for an occupation may differ significantly from those used in individual establishments.

In addition to specific employee occupational classifications, occupations were further classified into grade levels. Just as the occupations are clearly defined, so are grade levels. For example, a level-1 accounting clerk is someone who "Performs very simple and routine accounting clerical operations...." The description then goes on to explain the level of supervision received and the specific procedures incumbents are expected to be able to complete, such as

"verifying mathematical accuracy." At level 2, accounting clerks are expected to "perform one or more routine operations such as examining... transactions to ensure accuracy...." At the next level, they are expected to do double entry bookkeeping. Finally, accounting clerks level 4, the highest level surveyed, balance and reconcile accounts. (Actual published occupational and grade level definitions used are much more detailed than shown in this example.)

As these definitions illustrate, the responsibilities and knowledge needed to complete the work rises from one level to the next. The number of levels within an occupation depends upon its range of complexity. For example, the occupation of engineer has eight levels, while receptionist has one level.

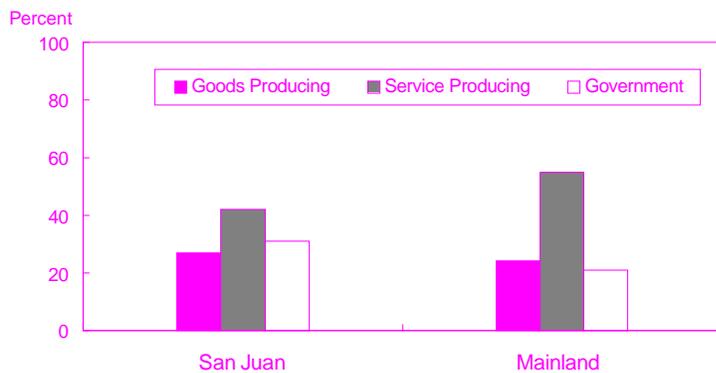
The classification of workers within an occupation into various levels allows true comparability of duties and skills. This is particularly useful to wage and salary administrators and others who compare wage rates among establishments for workers who do the same work, not just workers who have the same job title.

### Large establishments

The San Juan CMSA had 121 large establishments of 500 workers or more. Of these, 75 were surveyed and they employed 58 percent of all workers in the San Juan survey, compared to the mainland average of 51 percent. This is probably because the San Juan survey only included metropolitan areas, where larger establishments are expected to be concentrated, while the mainland average also includes nonmetropolitan areas.

Previous BLS studies have shown that average occupational wages in large establishments tend to be higher than those in small establishments.<sup>8</sup> The results of the San Juan survey were mixed. (See table 1.) Wages of most clerical and maintenance occupations were higher in the large establishments, whereas wages for professional and administrative occupations followed no pattern.

Percent of non-agricultural workforce sector, San Juan CMSA and the Mainland, 1996



Unless otherwise noted, wage data presented in the rest of this article are from all surveyed establishments regardless of size.

### Different industry concentrations

Industry employment distributions differed between the San Juan CMSA and the mainland, particularly for the State and local government and the service sectors, as the tabulation below shows. (See chart.)

Sector	Percent employment	
	San Juan	Mainland
Goods producing .....	27	24
Service producing ...	42	55
State and local government .....	31	21

### Occupational pay data

The occupational pay data presented in this article are for full-time employees who work a regular weekly schedule as established by their employer (just under 40 hours, on average, in San Juan). The published data exclude premium pay for overtime, weekends, holidays, and late shifts. Also excluded are non-production bonuses and lump-sum payments. Pay increases under cost-of-living clauses and incentive payments (production bonuses) however, are included.

Unless otherwise noted, the pay data presented are for employees in

private industry, as well as State and local governments. Average pay data were published in San Juan for 36 selected occupations; however, detailed data for only 13 occupations are presented in this article. Occupations are included based on their prevalence in the local economy, their comparability with mainland averages, and their suitability to illustrate a point.<sup>9</sup>

The earnings data presented are the mean weekly or hourly wages of all sampled workers in an occupation. Mean wages were computed by totaling the pay for all workers in each occupation and level and then dividing by the total number of employees in each category. Median wages, the point at which half the workers earned less and half earned more, as well as middle ranges were also published, but are not included in this article.

### Professional occupations

**Accountants.** Like all other occupations surveyed, accountants are paid less in the San Juan CMSA than in the 48 contiguous States.<sup>10</sup> The average weekly pay of accountants in the San Juan CMSA and on the mainland are presented in table 2.

To be classified as an accountant, the employee must perform professional accounting work requiring knowledge of financial transactions. Public accountants are considered a separate occupation.

As seen in several of the occupations surveyed, the difference in pay

for accountants between the San Juan CMSA and the mainland average varied by grade level. Generally, the higher the grade level, the closer the relative San Juan CMSA wage was to the comparable mainland average. For example, a level-1 accountant in the San Juan CMSA earned roughly 60 percent of the average earnings of a level-1 accountant on the mainland. In comparison, a level-4 accountant in the San Juan CMSA, the highest level published, earned 85 percent of the average mainland wage for the same occupation.

**Engineers.** The average weekly pay for all engineers surveyed was \$836. The average increased to \$863 for those in private industry and as much as \$903 for engineers in the manufacturing sector. With an average wage of no less than 80 percent of the equivalent mainland average, engineers were the highest paid occupation in the San Juan CMSA, both in dollar amount and relative pay to the mainland. (See table 2.)

To be categorized as an engineer, workers must hold a Bachelor of Science degree in engineering (or in rare instances, equivalent experience or education). They must also perform professional work including development, design, or testing of facilities, systems, or devices. As the knowledge required increases, the level of supervision required decreases.

### Technical occupations

**Computer programmers.** These workers primarily convert specifications into a sequence of detailed computer instructions. They earned, on average, \$560 per week in the San Juan CMSA. Like most of the sampled professional occupations, the gap between their pay and the mainland average decreased as their duties and responsibilities increased. For example, a level-1 computer programmer earned roughly 70 percent as much as a level-1 programmer on the mainland, yet a level 3 earned nearly 80 percent of the equivalent mainland average.

TABLE 1. Average weekly or hourly wages in the San Juan CMSA by establishment size, selected occupations, 1996

Occupation	All establishments surveyed	Surveyed establishments employing 500 workers or more
Weekly mean		
Accountants .....	\$521	\$498
Attorneys .....	762	783
Engineers .....	836	798
Buyers .....	486	453
Computer programmers .....	560	572
Computer systems analysts .....	664	653
Computer operators .....	306	282
Personnel specialists .....	581	601
Accounting clerks .....	282	268
General clerks .....	230	236
Personnel assistants .....	372	403
Hourly mean		
General maintenance workers .....	\$6.66	\$7.26
Maintenance electricians .....	10.06	10.81
Guards .....	4.81	5.01
Janitors .....	4.96	5.03
Maintenance electricians .....	10.06	10.81
Truckdrivers .....	6.73	7.14

**Computer systems analysts.** In contrast to computer programmers, system analysts are more likely to analyze overall business and scientific problems and develop the needed specifications. As illustrated in table 2, analysts' earnings in the San Juan survey lagged behind the average earnings of mainland analysts at each level.

**Personnel specialists.** Entry-level personnel specialists were among the lowest paid occupations within the administrative occupations surveyed. In contrast, level-4 specialists were among the highest paid. Level-4 workers also earned 94 percent of the equivalent mainland average earnings, the highest ratio of any occupation surveyed.

### Clerical occupations

**Clerks.** Accounting and general clerks were among the lowest paid occupations studied in the San Juan survey. General clerks earned the least of any occupation in this group, averaging \$230 per week. They also had the largest pay difference relative to the mainland. For example, the wages of level-2 accounting clerks were 66 percent

of the mainland average for the same occupation, while level-2 general clerks earned 62 percent of the mainland average. (See table 2.) General clerks are responsible for a combination of clerical tasks such as maintaining records and compiling information at each grade level. Accounting clerks perform one or more simple accounting tasks in an entry level position, whereas level-4 accounting clerks maintain ledgers and reconcile accounts. These added responsibilities explain why accounting clerks earned more than general clerks at each grade level both in San Juan and on the mainland.

Unlike the majority of workers found in professional and technical occupations, the ratio of San Juan to mainland wages in clerical occupations varied little by grade level. For example, both entry-level and level-3 accounting clerks in San Juan earned 69 percent of the equivalent mainland wage. Similar results were seen with general clerks and secretaries.

**Receptionists.** Among the lowest paid occupations found in the San Juan survey, receptionists averaged \$256 per week. Workers in this occupation pri-

marily use telephone switchboards to relay calls and greet visitors. Like many of the other occupations studied, they earned roughly 30 percent less than the mainland average.

**Secretaries.** With an average salary of \$374, secretaries were among the highest paid clerical occupations found in the San Juan survey. For example, a level-4 secretary earned over \$100 per week more, on average, than any other occupation in this group. Like many of the higher paying occupations, the wages of secretaries relative to the mainland were also high, ranging from 72 to 82 percent.

### Blue-collar occupations

**Maintenance workers.** Pay rates between maintenance workers in the San Juan CMSA varied more than in the other occupations studied. (See table 3.) For example, a skilled multi-craft maintenance worker earned almost twice as much as a general maintenance worker.

Skilled multi-craft maintenance workers were among the highest paid blue-collar occupations studied, at \$12.62 per hour. Workers in these journey-level jobs perform maintenance and repair work in two or more craft trades such as masonry, plumbing, or carpentry. General maintenance workers, on the other hand, perform work related to the repair and upkeep of buildings, equipment, and related fixtures. Although a worker needs to have practical skill and knowledge in two or more trades to be included in this category, journey-level experience is not required. As expected, general maintenance workers were paid less than journey-level skilled multi-craft workers and averaged \$6.66 per hour.

**Truckdrivers.** Compared to the equivalent mainland average, truckdrivers were among the lowest paid occupations. For example, the average hourly wage for drivers of heavy trucks, at \$6.19 per hour, was 46 percent of the mainland average of

TABLE 2. Average weekly wages, selected occupations and occupational levels, 1996

Occupation and level	San Juan	Mainland	Ratio <sup>1</sup>
<b>Professional</b>			
<b>Accountants</b>			
1 .....	\$310	\$523	59
2 .....	429	626	69
3 .....	595	811	73
4 .....	887	1,041	85
<b>Engineers</b>			
1 .....	587	675	87
2 .....	663	805	82
3 .....	769	959	80
4 .....	934	1,167	80
5 .....	1,242	1,411	88
<b>Technical</b>			
<b>Computer programmers</b>			
1 .....	383	543	71
2 .....	485	639	76
3 .....	621	788	79
<b>Systems analysts</b>			
1 .....	523	779	67
2 .....	685	940	73
3 .....	853	1,111	77
<b>Personnel specialists</b>			
1 .....	322	515	63
2 .....	422	611	69
3 .....	586	804	73
4 .....	984	1,045	94
<b>Clerical</b>			
<b>Accounting clerks</b>			
1 .....	222	320	69
2 .....	251	379	66
3 .....	322	464	69
<b>General clerks</b>			
1 .....	186	289	64
2 .....	211	342	62
3 .....	301	429	70
4 .....	304	493	62
<b>Secretaries</b>			
1 .....	312	385	81
2 .....	345	476	72
3 .....	421	557	76
4 .....	546	665	82
<b>Receptionists</b>	256	355	72

<sup>1</sup> Ratio is San Juan to mainland wages.

TABLE 3. Average hourly wages, selected blue-collar occupations and occupational levels, 1996

Occupation and level	San Juan	Mainland	Ratio <sup>1</sup>
<b>Maintenance workers</b>			
<b>General</b>			
1 .....	\$6.43	-	-
2 .....	10.56	-	-
<b>Electricians</b>	10.06	\$18.74	54
<b>Motor vehicle</b>	9.99	15.91	63
<b>Skilled multi-craft</b>	12.62	-	-
<b>Truckdrivers</b>			
<b>Light</b>	5.41	8.53	63
<b>Heavy</b>	6.19	13.38	46
<b>Tractor-trailer</b>	8.40	14.24	59
<b>Guards</b>			
1 .....	4.80	7.11	68
2 .....	5.01	12.14	41

<sup>1</sup> Ratio is San Juan to mainland wages.

NOTE: A dash indicates data are not available.

\$13.38. None of the published driver occupations earned more than 63 percent of their mainland counterparts.<sup>11</sup> (See table 3.)

As expected, the hourly wages of truckdrivers in the San Juan survey, like those on the mainland, varied by the size of truck driven. As the size of the vehicle increased (and often the driver's level of required experience and education) so too did the hourly wage rate. For example, drivers of light trucks earned \$5.41 per hour while drivers of tractor trailers earned \$8.40.

**Guards.** Guards were among the lowest paid occupations in the survey, both in real terms and relative to the average pay of guards on the mainland. For example, level-2 guards in the San Juan survey earned 41 percent of the mainland average, the largest pay gap for any occupation surveyed. On the mainland, level-2 guards earned approximately \$5.00 per hour more than level-1 guards. In comparison, the pay difference between level-1 and -2 guards in the San Juan CMSA was less than \$0.25.

**Summary**

Wage progression within most of the sampled occupations was more in the San Juan survey than for comparable occupations on the mainland. In every occupation studied, workers in the San Juan CMSA earned less than their counterparts on the mainland. The pay difference was particularly evident for the entry-level positions in the studied occupations. There are many illustrations of this phenomenon. For example, entry level accountants earned less than 60 percent of the average mainland wage while level-4 accountants, the highest grade published, earned close to 85 percent of the mainland average. Similar wage progression was found in each of the salaried occupations studied with the exception of several administrative and clerical jobs.

With the exception of clerical occupations, average occupational wages in San Juan tended to have a

larger range in pay between the low-est and highest skilled employees than they did on the mainland. For ex-ample, the average mainland weekly pay for entry level personnel special-ists was \$515, while experienced per-sonnel specialist (level 4) earned over twice as much, \$1,045. Experienced personnel specialists in the San Juan CMSA, in comparison, earned three times as much as entry level person-nel specialists. Similar results are seen for many of the occupations stud-ied. The specific cause for San Juan's higher spread in occupational wages is unknown. The opposite trend was found in a recent study of Alaskan wages.<sup>12</sup>

### Technical considerations

**Publishing data by occupation and grade level.** Although the list of oc-cupations and grade levels are known prior to collection, the occupations and grade levels which meet the necessary requirements for publication are de-termined only after the survey is com-pleted. For a specific occupation or grade level to be published, it must: (1) Be sampled from at least three es-tablishments; (2) have a minimum of 6 weighted workers; and (3) not have a single establishment contribute more than 60 percent of the workers in that occupation or grade level.

The prevalence of an occupation in the surveyed area is the primary fac-tor determining which occupations will meet publication requirements. For example, a State or MSA with

large numbers of engineers is more likely to have data for all eight levels of engineers published than an area with relatively few engineers. In the San Juan survey, 36 of the 46 occupa-tions had at least one level published.

Occupational pay information is published for both private industry and State and local governments when possible. Within private industry, more detailed information is presented to the extent that the surveys' estab-lishment sample can support such de-tail. In the San Juan survey, data are also published for occupations regard-less of establishment size (50 or more workers) and for occupations within establishments that employ 500 or more workers.

**Survey nonresponse.** Sample loss rates were lower in the San Juan sur-vey than for OCS in general. Wage data were not collected from 5.3 per-cent of the sampled establishments, primarily due to lack of cooperation. The sample weights originally as-signed to the establishments that chose not to participate were redistrib-uted among the participating estab-lishments. This ensures that pub-lished average wages take into account industry variations, among other fac-tors. In addition to refusals, 6.4 per-cent of establishments were excluded from the survey because they were out-of-business or out-of-scope at the time of collection.<sup>13</sup>

In addition to establishment losses, certain participating respondents re-fused to provide wage data for each

occupation requested. The proportion of employees for whom wage data were not available was less than 5 percent. No weight adjustments were made for those establishments providing partial data.

**Data quality.** Estimates of relative standard errors<sup>14</sup> for these surveys vary among occupational work levels, and depend upon such factors as the fre-quency with which the job occurs, the dispersion of salaries for the job, and the survey design. The tabulation be-low shows the distribution of the pub-lished work levels for one relative stan-dard deviation from both surveys. These sampling errors are measurable, nonsampling errors are not.

<i>Relative standard error in percent</i>	<i>Percent of published occupational work levels in San Juan</i>
Less than 1 .....	0.9
1 and under 3 .....	37.9
3 and under 5 .....	52.9
5 and over .....	8.4

Nonsampling errors stem from many sources, such as the inability to obtain information from some estab-lishments, difficulties with survey defi-nitions, and the inability of respon-dents to provide accurate data. While very difficult to measure, such errors are expected to be minimal due to the high response rate, the extensive train-ing of field economists who collect the data, and constant, rigorous review of both the occupational definitions and the collected data. ■

<sup>1</sup> In July 1997, BLS concluded 6 years of locality pay and Service Contract Act surveys collected under the umbrella of the Occupational Compensation Survey (OCS) program. The OCS program was discontinued as the first step in phasing in the new National Compensation Survey (NCS) program. For additional information on NCS, see Beth Levin Crimmel, "COMP2000: Designing a New Wage Survey," *Compensation and Working Conditions*, December 1996, pp. 9-11.

<sup>2</sup> The San Juan-Caguas-Arecibo CMSA includes the following: Arguas Buenas, Arecibo, Barceloneta, Bayamon, Caguas, Camuy, Canovanas, Carolina, Catano, Cayey, Ceiba, Cidra, Comerio, Corozal, Dorado, Fajardo, Florida, Guaynabo, Gurabo, Hatillo, Humacao, Juncos, Las Piedras, Loiza, Luquillo, Manati, Morovis, Naguabo, Naranjito, Rio Grande, San Juan, San Lorenzo, Tao Alta, Tao Baja, Trujillo Alto, Vega Alta, Vega Baja, and the Yubicoa municipios.

<sup>3</sup> For these surveys, an establishment is an economic unit which produces goods or services, a central administrative office, or an auxiliary unit providing support services to a company. In manufacturing industries, the establishment is usually at a single physical location. In service-producing industries, all locations of a company in a Metropolitan Statistical Area or nonmetropolitan county are usually considered an establishment. In government, an establishment is generally defined as all locations of a specific government entity.

<sup>4</sup> Working supervisors, apprentices, learners, beginners, and trainees, as well as part-time, temporary, and probationary workers are excluded, unless specifically included in the job description.

<sup>5</sup> Includes all workers in all establishments with total employment at or above the minimum limitations.

<sup>6</sup> The selected occupations are as follows: **Professional**—accountants, public accountants, attorneys, engineers, registered nurses; **administrative**—budget analysts, buyers, computer programmers, computer systems analysts, computer systems analysts supervisors/managers, personnel specialists, personnel supervisor/managers, tax collectors; **clerical**—accounting clerks, general clerks, order clerks, key entry operators, personnel assistants, secretaries, switchboard operator/receptionists, word processors; **protective service**—corrections officers, firefighters, police officers; **technical**—computer operators, drafters, engineering technicians, civil engineering technicians, licensed practical nurses, nursing assistants; **maintenance and powerplant**—general maintenance workers, maintenance electricians, maintenance electronics technicians, maintenance machinists, machinery maintenance mechanics, motor vehicle maintenance mechanics, tool and die makers; **custodial and material movement**—forklift operators, guards, janitors, material handling laborers, order fillers, shipping and receiving clerks, truckdrivers, and warehouse specialists.

<sup>7</sup> See Appendix B. Occupational Descriptions, *Occupational Compensation Survey: Pay Only*,

*San Juan-Caguas-Arecibo, PR, Consolidated Metropolitan Area*, Bulletin 3085-44, Bureau of Labor Statistics, October 1996.

<sup>8</sup> See, for example, Robert W. VanGiezen, "Occupational Pay by Employment Size," *Compensation and Working Conditions*, Spring 1998, pp. 28-36.

<sup>9</sup> Occupations and occupational levels with fewer than 100 workers were not included in this article.

<sup>10</sup> *Occupational Compensation Survey: Pay Only, San Juan-Caguas-Arecibo, PR, Consolidated Metropolitan Area*, Bulletin 3085-44, Bureau of Labor Statistics, October 1996.

<sup>11</sup> BLS categorizes truckdrivers by the type and rated capacity of the vehicle they drive as follows: Light trucks—under 1.5 tons, usually 4 wheels; heavy trucks—over 4 tons, usually 10 wheels; and tractor trailers—separable cab and trailer, usually 18 wheels.

<sup>12</sup> For an analysis of Alaska wages, see Hilery Z. Simpson, "How Do Wages in Alaska Compare to Wages on the Mainland?" *Compensation and Working Conditions*, Fall 1998, pp. 18-24.

<sup>13</sup> Out-of-scope establishments primarily include those in agriculture, private households, and the self-employed.

<sup>14</sup> The standard error indicates the precision with which an estimate from a particular sample approximates the average result of all possible samples. The relative standard error is the standard error divided by the estimate. The smaller the relative error, the greater the reliability of the estimate.