

2013 October Agricultural Labor Survey Operational vs. Research Worker Categorization Analysis

Methodology

The 2013 October Agricultural Labor Survey, conducted by USDA's National Agricultural Statistics Service (NASS), included questions that asked for the number of paid workers, total hours worked, and total gross wages for the four traditional worker categories (Field Workers, Livestock Workers, Supervisor/Manager, and Other Workers). At the request of the Office of Management and Budget (OMB), the same questionnaire also included questions for the number of paid workers, total hours worked, and total gross wages for fifteen worker categories from the Standard Occupational Classification (SOC). Appendix A contains the fifteen SOC categories. The questions for the SOC categories always followed the operational Agricultural Labor Survey questions. The questionnaire included the following text that preceded the SOC category questions: "*NASS is testing a new set of worker groups for the Agricultural Labor Survey, and we are asking for your help with this project. In Sections 1R (page 8) and 2R (page 10), you will be asked to report on the same workers from pages 3 and 4, separating the workers by the main type of work they were hired to do based on the worker codes listed on page 9.*"

Data collected from the SOC category questions were not edited. There were two reasons for this decision. First, limitations in NASS staff resources prevented both the creation of an edit for the SOC questions as well as the added time in performing and reviewing the edit. Second, NASS wanted to avoid the possibility that editors would artificially force agreement between the traditional four worker category questions and the SOC category questions.

However, the data collected from the operational questions were edited. In some cases, the respondent-provided responses may have been changed to satisfy edits or to be more consistent with previously reported data. The post-edited data from the operational questions were used in the comparison with the research questions.

Post data collection, data from the fifteen SOC worker categories were collapsed into the four operational worker categories; each of the fifteen SOC categories was mapped to exactly one of the four operational categories.

Results

Note: These results do not include actual summary values from the survey since such values are administratively confidential.

Table 1 contains the number of usable reports for both the operational question and the SOC research question for the Number of Paid Workers (all worker categories). Usable reports include those with positive data or valid zeros (i.e., the operation hired no agricultural workers). The number of usable records for Number of Paid Workers was unanimously higher for the operational questions than for the SOC research question. However, it is possible that much of this difference can be attributed to the fact that the SOC research questions were not edited. Also, some respondents may have been confused with the questionnaire since they were asked essentially the same information twice (despite the research questions lead-in). Hence, it is difficult to draw any conclusions from Table 1.

Table 1: Usable Counts for Number of Paid Workers

Region	Number of Usable Records		Percent Difference
	Operational Question	SOC Research Question	
Northeast I	349	314	-10.03
Northeast II	380	308	-18.95
Appalachian I	449	443	-1.34
Appalachian II	560	550	-1.79
Southeast	468	458	-2.14
Florida	349	339	-2.87
Lake	551	511	-7.26
Cornbelt I	605	578	-4.46
Cornbelt II	489	479	-2.04
Delta	463	458	-1.08
Northern Plains	621	597	-3.86
Southern Plains	876	866	-1.14
Mountain I	271	266	-1.85
Mountain II	237	231	-2.53
Mountain III	210	206	-1.90
Pacific	333	329	-1.20
California ^{2/}	633	--	--
Hawaii	290	272	-6.21

1/ See Appendix B for the Region definitions

2/ The 15 SOC categories were not available for California because NASS obtains Farm Labor data for California from administrative records.

Tables 2, 3, and 4 contain the results of comparisons made between data reported from the operations four worker categories and the corresponding four worker categories that were created after collapsing the fifteen SOC worker categories into the operations four categories. Each table contains only those worker categories that NASS traditionally publishes in the *Farm Labor* report (Supervisor/Manager and Other Workers are not published separately due to date sparseness). The comparisons were made using the Wilcoxon signed-rank test. The tables provide the *w* test statistic and the *p*-value for each comparison. *P*-values that are significant at the 0.05 level are identified with an asterisk (*). An adjustment for the number of tests was not made. Comparisons were made for only situations where a non-missing value was present for both the operational question and the SOC research question.

Of the 153 possible comparisons made, 19 were statistical significant at the 0.05 level. However, it should be noted that the *Field Workers* and *Livestock Workers* categories are also included in the *All Hired Worker* category.

As previously noted, the data for the operational questions were subjected to an edit process (which include both objective and subjective review), were as the data for the SOC research questions were not edited. Further investigation was done on the full dataset and questionnaires for those comparisons which showed a significant difference. In virtually all cases, one or two records were identified which overly influenced the comparisons. It is possible that had the SOC research questions been edited in a similar manner to the operations questions, many (if not most) of the significant differences would have gone away. However, it is unknown the exact effect editing had on the data.

Table 2: Number of Paid Workers – Comparison of Operational vs. SOC-Generated Categories

Region ^{1/}	Field Workers			Livestock Workers			All Hired Worker		
	n	w	p value	n	w	p value	n	w	p value
Northeast I	73	-1.387	0.442	34	-1.277	0.500	96	-0.329	0.672
Northeast II	41	2.084	0.023 ^{3/}	17	1.000	1.000	57	1.240	0.250
Appalachian I	97	0.412	0.738	24	0.000	1.000	142	1.611	0.000 [*]
Appalachian II	47	1.421	0.016 [*]	23	^{3/}	^{3/}	84	2.074	0.000 [*]
Southeast	73	0.756	0.938	32	-0.812	0.750	114	-1.067	0.816
Florida	105	-0.553	0.647	16	1.000	1.000	122	-0.384	0.406
Lake	100	0.906	0.907	47	-0.645	1.000	132	0.186	0.505
Cornbelt I	105	0.826	0.800	27	-0.823	1.000	136	-1.003	0.750
Cornbelt II	50	0.735	1.000	22	1.380	0.250	69	-1.000	1.000
Delta	112	-1.416	0.075	21	1.110	0.500	144	-0.403	0.952
Northern Plains	68	-0.814	0.750	37	-0.936	0.625	106	-0.985	0.531
Southern Plains	92	0.095	1.000	75	1.000	0.625	171	-1.446	0.156
Mountain I	46	1.148	0.250	32	2.104	0.125	70	-1.425	0.500
Mountain II	38	-0.891	0.750	30	1.232	0.125	61	1.080	0.250
Mountain III	41	-1.367	0.500	12	^{3/}	^{3/}	58	-1.410	0.500
Pacific	83	1.215	0.045 [*]	10	-1.000	1.000	99	1.410	0.094
California ^{2/}	--	--	--	--	--	--	--	--	--
Hawaii	87	0.332	0.530	19	-0.809	0.750	111	1.137	0.438

* = significant at the 0.05 level.

1/ See Appendix B for the Region definitions.

2/ The 15 SOC categories were not available for California because NASS obtains Farm Labor data for California from administrative records.

3/ The operational and research worker categories agreed for every record.

Table 3: Total Hours Worked – Comparison of Operational vs. SOC-Generated Categories

Region ^{1/}	Field Workers			Livestock Workers			All Hired Worker		
	n	w	p value	n	w	p value	n	w	p value
Northeast I	73	-1.316	0.471	34	-0.927	0.438	95	-1.135	0.478
Northeast II	41	2.369	0.008*	17	0.472	1.000	54	1.051	0.141
Appalachian I	96	0.402	0.309	24	-0.273	0.750	139	2.241	0.000*
Appalachian II	47	0.016*		23	0.863	1.000	83	2.252	0.000*
Southeast	73	0.098		32	0.370	0.875	112	-0.975	0.328
Florida	105	-0.791	0.614	16	1.000	1.000	121	-1.267	0.546
Lake	100	1.001	0.552	47	-1.017	0.742	131	0.512	0.536
Cornbelt I	100	0.387	0.991	27	-0.914	0.875	131	0.930	0.956
Cornbelt II	47	0.516	0.953	21	1.093	0.602	63	2.051	0.064
Delta	111	1.932	0.059	21	0.496	0.375	140	0.501	0.505
Northern Plains	68	-1.379	0.188	37	-1.064	0.438	106	-1.380	0.065
Southern Plains	91	1.394	0.226	75	0.630	0.836	163	-0.704	0.763
Mountain I	46	0.989	0.426	32	2.094	0.125	67	-1.097	0.024*
Mountain II	36	-1.372	0.438	28	1.278	0.063	56	1.892	0.020*
Mountain III	40	0.318	0.383	10	0.915	1.000	54	1.294	0.110
Pacific	83	1.618	0.056	30	-0.614	1.000	96	1.021	0.352
California ^{2/}	--	--	--	--	--	--	--	--	--
Hawaii	86	-0.319	0.491	19	-1.501	0.250	110	0.248	0.775

* = significant at the 0.05 level.

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Table 4: Total Wages – Comparison of Operational vs. SOC-Generated Categories

Region ^{1/}	Field Workers			Livestock Workers			All Hired Worker		
	n	w	p value	n	w	p value	n	w	p value
Northeast I	73	-1.109	0.819	33	-0.913	0.438	95	-1.135	0.478
Northeast II	38	2.010	0.004*	17	0.890	0.750	54	1.051	0.141
Appalachian I	94	1.103	0.176	24	-0.552	0.438	139	2.241	0.000*
Appalachian II	47	1.353	0.025*	22	0.863	1.000	83	2.252	0.000*
Southeast	72	-0.033	0.898	29	1.167	0.375	112	-0.975	0.328
Florida	104	-1.278	0.963	16	-1.072	0.625	121	-1.267	0.546
Lake	198	1.042	0.953	47	-0.901	0.938	131	0.512	0.536
Cornbelt I	101	0.473	0.719	26	1.038	0.500	131	0.930	0.956
Cornbelt II	44	0.942	0.469	20	1.631	0.039*	63	2.051	0.064
Delta	109	-0.201	0.510	20	0.612	0.625	140	0.501	0.505
Northern Plains	68	-0.411	0.043*	37	-0.842	0.547	106	-1.380	0.065
Southern Plains	90	0.318	0.641	69	0.987	0.410	163	-0.704	0.763
Mountain I	45	-0.984	0.547	31	0.234	0.438	67	-1.097	0.024*
Mountain II	33	-0.809	1.000	26	1.391	0.500	56	1.892	0.020*
Mountain III	38	0.779	0.469	10	0.894	1.000	54	1.294	0.110
Pacific	82	1.008	0.169	9	-0.786	1.000	96	1.021	0.352
California ^{2/}	--	--	--	--	--	--	--	--	--
Hawaii	86	-1.009	0.464	19	-1.488	0.250	110	0.248	0.775

* = significant at the 0.05 level.

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Appendix A

Code	Work Hired to Do
FIELD WORKERS	
11	Agricultural Equipment Operators - Crop, Nursery and Greenhouse: Drive and control farm equipment to till soil and to plant, cultivate, and harvest crops.
12	Farmworkers - Crop, Nursery and Greenhouse: Manually plant, cultivate, and harvest vegetables, fruits, nuts, horticultural specialties, field crops, Christmas trees and short rotation woody crops. Use hand tools, such as shovels, trowels, hoes, tampers, pruning hooks, shears, and knives. Duties may include tilling soil and applying fertilizers; transplanting, weeding, thinning, or pruning crops; applying pesticides; or cleaning, grading, sorting, packing, and loading harvested products. May construct trellises, repair fences and farm buildings, or participate in irrigation activities.
13	Graders And Sorters - Crop, Nursery and Greenhouse Products: Grade, sort, or classify agricultural crops by size, weight, color or condition.
14	Hand Packers And Packagers - Crop, Nursery and Greenhouse Products: Pack or package by hand a wide variety of products and materials.
15	All Other Field Workers: All agricultural workers working with crops, nursery or greenhouse products not included in codes 11-14.
LIVESTOCK WORKERS	
21	Farmworkers - Farm, Ranch, and Aquacultural Animals: Attend to live farm, ranch, or aquacultural animals that may include cattle, sheep, swine, goats, horses and other equines, poultry, finfish, shellfish, and bees. Attend to animals produced for animal products, such as meat, fur, skins, feathers, eggs, milk, and honey. Duties may include feeding, watering, herding, grazing, castrating, branding, de-beaking, weighing, catching, and loading animals. May maintain records on animals; examine animals to detect diseases and injuries; assist in birth deliveries; and administer medications, vaccinations, or insecticides as appropriate. May clean and maintain animal housing areas. Includes workers who drive and control equipment to accomplish the tasks described.
22	Graders And Sorters - Farm, Ranch, and Aquacultural Animal Products: Grade, sort, or classify unprocessed food and other agricultural products by size, weight, color, or condition.
23	Hand Packers And Packagers - Farm, Ranch and Aquacultural Animal Products: Pack or package by hand a wide variety of products and materials.
24	All Other Livestock Workers: All agricultural workers working with farm, ranch and aquacultural animals or products not included in codes 21 – 23.
SUPERVISORS	
31	Farmers, Ranchers and Other Agricultural Managers: Plan, direct, or coordinate the management or operation of farms, ranches, greenhouses, aquacultural operations, nurseries, tree farms, or other agricultural establishments.
32	First-Line Supervisors of Farm Workers: Directly supervise and coordinate the activities of agricultural, aquacultural, and related workers.
OTHER WORKERS	
41	Agricultural Inspectors: Inspect agricultural commodities, processing equipment and facilities, and aquacultural operations, to ensure compliance with regulations and laws governing health, quality, and safety.
42	Animal Breeders: Select and breed animals according to their genealogy, characteristics, and offspring.
43	Pesticide Handlers and Sprayers: Mix or apply pesticides, herbicides, fungicides, or insecticides through sprays, dusts, vapors, soil incorporation, or chemical application to all crops including nursery and greenhouse products and facilities, and livestock, and livestock facilities. Usually requires specific training and state or federal certification. Excludes pilots who dust or spray crops from aircraft.
44	Any Other Worker Not Listed Above: Including, but not limited to, mechanics, shop workers, truck drivers, aerial crop dusters, accountants, bookkeepers, office workers.

Appendix B

Regions were consistent with those used in the *Farm Labor* report and were defined as follows:

Northeast I: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont.

Northeast II: Delaware, Maryland, New Jersey, Pennsylvania.

Appalachian I: North Carolina, Virginia.

Appalachian II: Kentucky, Tennessee, West Virginia.

Southeast: Alabama, Georgia, South Carolina.

Lake: Michigan, Minnesota, Wisconsin.

Cornbelt I: Illinois, Indiana, Ohio.

Cornbelt II: Iowa, Missouri.

Delta: Arkansas, Louisiana, Mississippi.

Northern Plains: Kansas, Nebraska, North Dakota, South Dakota.

Southern Plains: Oklahoma, Texas.

Mountain I: Idaho, Montana, Wyoming.

Mountain II: Colorado, Nevada, Utah.

Mountain III: Arizona, New Mexico.

Pacific: Oregon, Washington.