

Demographic Characteristic Analysis: American Community Survey 2010-2014

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1. Abstract

The United States Census Bureau performs the American Community Survey on a yearly basis in order to explore the demographics of the American people. The survey helps determine where federal and state funds are dispersed. From the US Census Bureau: “When you respond to the ACS, you are doing your part to help your community plan hospitals and schools, support school lunch programs, improve emergency services, build bridges, and inform businesses looking to add jobs and expand to new markets, and more.” To learn more, visit <https://www.census.gov/programs-surveys/acs/>.

In this analysis, we begin to explore household-level and individual-level demographics in a small subset of the millions of records from 2010-2014.

2. Methods

Provided with two comma-separated values files: household-level data (one record for each unique household, identified using the SERIALNO variable) and individual-level data (one record for each unique household member who completed the survey), where individuals are uniquely identified with SERIALNO and SPORDER, where SERIALNO can be used to link to the household-level file and SPORDER indicates person number within a given household. The data received had already been filtered to exclude vacant units (records with number of persons equal to 0).

Using a set of 2,500 randomly selected households, each with a unique serial number, and the set of almost 12,000 individuals, identified with their household serial number, we subset the individuals based on the serial numbers in our household data set with SAS. This subset results in a set of 5,943 individuals from our 2,500 households.

With the set of individuals, we further subset this to create a set of individuals who live alone so we can investigate their characteristics. Another subset we create was married males and married females so that they are paired by their household Serial Number. This means we were unable to include same-sex couples, but it allows us to investigate the gender differences between married individuals.

3. Results

Without going into extensive detail, some major findings from the tables and figures are listed.

Household-Level Demographic Characteristics

Referring to Table 1, this subset of the data contains houses mainly in the South and West regions of the United States. A significantly large portion (91%) of units are housing units and on average, units have approximately 2-4 bedrooms.

Almost half (46%) of these homes are shared by married couples. A single-parent family home is twice as likely to be headed by a female than a male and a non-family home is almost equally likely to be occupied by a female as a male (13% vs 11%). In addition to this, approximately two thirds of homes have no children at all.

There is approximately an even split (50 vs 40%) between individuals who have lived in their residence for less than 10 years or for more than 10 years. However, 10% of responses were either missing or miscoded which could fall into either group. These missing responses could either level the two groups out or make the less than 10 years group much larger. Another example of missing responses muddling analysis is the number of persons response, with almost half missing. Regardless, of the total, approximately 44% of units are occupied by two people which agrees with the proportion of homes shared by married couples.

Person-Level Demographic Characteristics

From Table 2, we can see that this subset is split almost directly in half by gender. Also, the majority of these individuals are either unemployed or in the private sector. Regarding educational attainment, about one-fourth of the 5,943 individuals have a college degree and 40% of these citizens either received a high school diploma, its equivalent, or attended some college.

Table 3 contains the continuous variables. We find that the average age of individuals in this subset is 40 with a large standard deviation of 23, implying two thirds of people are aged 17 to 63. Of the people who work, the average yearly salary is \$24,000 and the average citizen has a 40 hour work week. Also, this group has an average hourly wage of \$23.50.

Characteristics by Survey Response Mode among Single Persons

We define single persons to be people living alone. There were a total of 849 people living alone in this subset of the data. Of the individuals living alone, we looked at the average age by their mode of response to the survey. On average, those who responded by Internet were younger than by CATI/CAPI and Mail. Those who responded by mail were older on average than any other type of response.

When broken down by gender, we see that both women and men who live alone predominately responded by mail and very few of them responded to the survey using the internet.

Husband and Wife Employment Characteristics among Married Couples

There are a lot of large differences in the tables of summary statistics between husbands and wives in heterosexual couples. One of the first major differences we see is that on average men are making \$42,000 while women are only making \$21,000. One would think that this is due to the fact that women are also working fewer hours a week on average but it seems they are also making almost \$10 an hour less on average. This discrepancy in pay could possibly be attributed to the larger number of men with degrees in science, which can be seen in Table 5.

From Figure 1, it is difficult to see how a couple's average age could explain their difference in salaries since there is a huge outlier. There is a man who made \$330,000 for only 20 weeks, 6.5 hours per week of work and his wife clearly did not need to work at all. The line of best fit is

basically flat at 0 suggesting difference in salary stays the same as the average age of the couple goes rises.

4. Tables and Figures

Variable	Values	Freq	Percent*
Region Code	Northeast	90	3.60
	Midwest	0	0
	South	1108	44.32
	West	1302	52.08
	Puerto Rico	0	0
Number of Bedrooms	.	231	9.24
	0	55	2.20
	1	214	8.56
	2	601	24.04
	3	940	37.60
	4	362	14.48
	5	66	2.64
	6	16	0.64
	7	7	0.28
	8	2	0.08
	9	1	0.04
	10	5	0.20
Units in Structure	One-Family House	1649	65.96
	Apartment	490	19.60
	Other (includes mobile home, trailer, boat, RV, etc)	361	14.44
Type of Unit	Housing unit	2269	90.76
	Institutional group quarters	118	4.72
	Noninstitutional group quarters	113	4.52

Table 1 (a): Household Demographics, structure characteristics

*Percents based on frequency out of 2,500 households

Variable	Values	Freq	Percent*
Household/ Family Type	Missing or Miscoded	231	9.24
	Married couple household	1143	45.72
	Other family household: Male householder, no wife present	101	4.04
	Other family household: Female householder, no husband present	272	10.88
	Nonfamily household: Male householder: Living alone	270	10.80
	Nonfamily household: Male householder: Not living alone	81	3.24
	Nonfamily household: Female householder: Living alone	348	13.92
	Nonfamily household: Female householder: Not living alone	54	2.16
Household Presence and Age of Children	Missing or Miscoded	231	9.24
	With children under 6 years only	151	6.04
	With children 6-17 years only	372	14.88
	With children under 6 years and 6 to 17 years	151	6.04
	No children	1595	63.80
Family Income (Past 12 months)	Missing or Miscoded	984	39.36
	< \$30,000	323	12.92
	\$30,000 - \$49,999	272	10.88
	\$50,000 - \$69,999	230	9.20
	\$70,000 - \$99,999	276	11.04
	\$100,000 or more	415	16.60
When Moved into This House or Apartment	Missing or Miscoded	231	9.24
	Less than 10 years	1268	50.72
	10 or more years ago	1001	40.04
Number of Persons in Family	Missing or Miscoded	1077	43.08
	2	724	28.96
	3	324	12.96
	4	265	10.60
	5 or more	110	4.40
Response Mode	Missing or Miscoded	231	9.24
	Mail	1214	48.56
	CATI/CAP	694	27.76
	Internet	361	14.44

Table 1 (b): Household Demographics, occupant characteristics

*Percents based on frequency out of 2,500 households

Variable	Values	Freq	Percent*
Sex	Male	2938	49.44
	Female	3005	50.56
Class of Worker	Without pay or unemployed	2552	42.94
	Private Sector Employee	2468	41.53
	Government Employee	530	8.92
	Self-employed	393	6.61
Military Service	N/A (less than 17 years old), or missing	1196	20.12
	Now on active duty	20	0.34
	On active duty in the past, but not now	460	7.74
	Only on active duty for training in Reserves/National Guard	47	0.79
Educational Attainment	Never served in the military	4220	71.01
	N/A (less than 3 years old) or missing	184	3.10
	No schooling completed	208	3.50
	Some to completed elementary school	731	12.30
	Some to completed middle school	225	3.79
	Incomplete high school	595	10.01
	High school diploma or equivalent	1240	20.86
	Some college	1129	19.00
	Associates degree	348	5.86
	Bachelors degree	795	13.38
	Masters or Professional degree beyond Bachelors	426	7.17
	Doctorate degree	62	1.04

Table 2 (a): Individual Demographics, individuals
*Percents based on frequency out of 5,943 individuals

Variable	Values	Freq	Percent*
Marital Status	Married	2497	42.02
	Widowed	329	5.54
	Divorced	520	8.75
	Separated	95	1.60
	Never married or under 15 years old	2502	42.10
Relationship	Reference person	2269	38.18
	Husband/wife	1143	19.23
	Biological son or daughter	1438	24.20
	Adopted son or daughter	43	0.72
	Stepson or stepdaughter	77	1.30
	Brother or sister	69	1.16
	Father or mother	77	1.30
	Grandchild	145	2.44
	Parent-in-law	29	0.49
	Son-in-law or daughter-in-law	21	0.35
	Other relative	118	1.99
	Roomer or boarder	24	0.40
	Housemate or roommate	86	1.45
	Unmarried partner	120	2.02
	Foster child	3	0.05
	Other nonrelative	50	0.84
	Institutionalized group quarters population	118	1.99
	Missing or Miscoded	113	1.90

Table 2 (b): Individual Demographics, relationships
*Percents based on frequency out of 5,943 individuals

Variable	N	Mean	Standard Deviation
Age, in years	5943	40.18	23.42
Wages or salary income, past 12 months	4899	\$23,952.80	\$46,042.09
Usual hours worked per week, past 12 months	2876	38.41	13.25
Weeks worked during past 12 months	5943	21.31	23.98
Average hourly wages or salary income, past 12 months	2876	\$23.53	\$56.59

Table 3: Measures of Center and Spread of Continuous Variables

Age, in years					
Response Mode	Std	Q1	Median	Mean	Q3
Mail	17.12	51.00	62.00	61.39	73.50
CATI/CAPI	18.07	46.00	58.00	57.16	69.50
Internet	17.90	35.00	51.50	52.20	65.00
All	17.77	48.00	60.00	58.97	73.00

Table 4 (a): Age in years by Survey Response Mode among Single Persons

Response Mode	Sex				Both Genders	
	Male		Female			
	Count	Percent	Count	Percent	Count	Percent
Missing or Miscoded	157	18.5	74	8.7	231	27.2
Mail	145	17.1	215	25.3	360	42.4
CATI/CAPI	85	10.0	91	10.7	176	20.7
Internet	40	4.7	42	4.9	82	9.7
All Methods	427	50.3	422	49.7	849	100.0

Table 4 (b): Sex by Survey Response Mode among Single Persons

Response Mode	Class of Worker								All Classes	
	Without Pay or Unemployed		Private Sector Employee		Government Employee		Self-Employed			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Missing/Miscoded	120	14.1	79	9.3	25	2.9	7	0.8	231	27.2
Mail	134	15.8	158	18.6	37	4.4	31	3.7	360	42.4
CATI/CAPI	60	7.1	86	10.1	19	2.2	11	1.3	176	20.7
Internet	18	2.1	44	5.2	15	1.8	5	0.6	82	9.7
All Methods	332	39.1	367	43.2	96	11.3	54	6.4	849	100.0

Table 4 (c): Class of Worker by Survey Response Mode among Single Persons

<i>Variable</i>	<i>Status</i>	<i>Mean</i>	<i>Standard Deviation</i>
<i>Wages or salary income, past 12 months</i>	Husband	\$42,516.13	\$67,028.85
	Wife	\$20,687.53	\$34,872.40
<i>Travel Time to Work</i>	Husband	27.66	21.70
	Wife	24.91	20.99
<i>Usual hours worked per week, past 12 months</i>	Husband	32.26	23.50
	Wife	24.86	24.13
<i>Average hourly wages or salary income</i>	Husband	\$22.53	\$81.45
	Wife	\$13.24	\$30.97

Table 5 (a): Husband and Wife Employment Characteristics among Married Couples

*There were a total of 1,142 couples

	Field of Degree - Science							
	Less than Bachelor's		Yes		No		Total	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
<i>Husband</i>	742	32.5	205	9.0	195	8.5	1142	50.0
<i>Wife</i>	740	32.4	114	5.0	268	11.7	1142	50.0
<i>Total</i>	1482	64.9	319	14.0	463	20.3	2284	100.0

Table 5 (b): Husband and Wife Employment Field of Degree – Science

*all percents based on frequency out of total population of married people

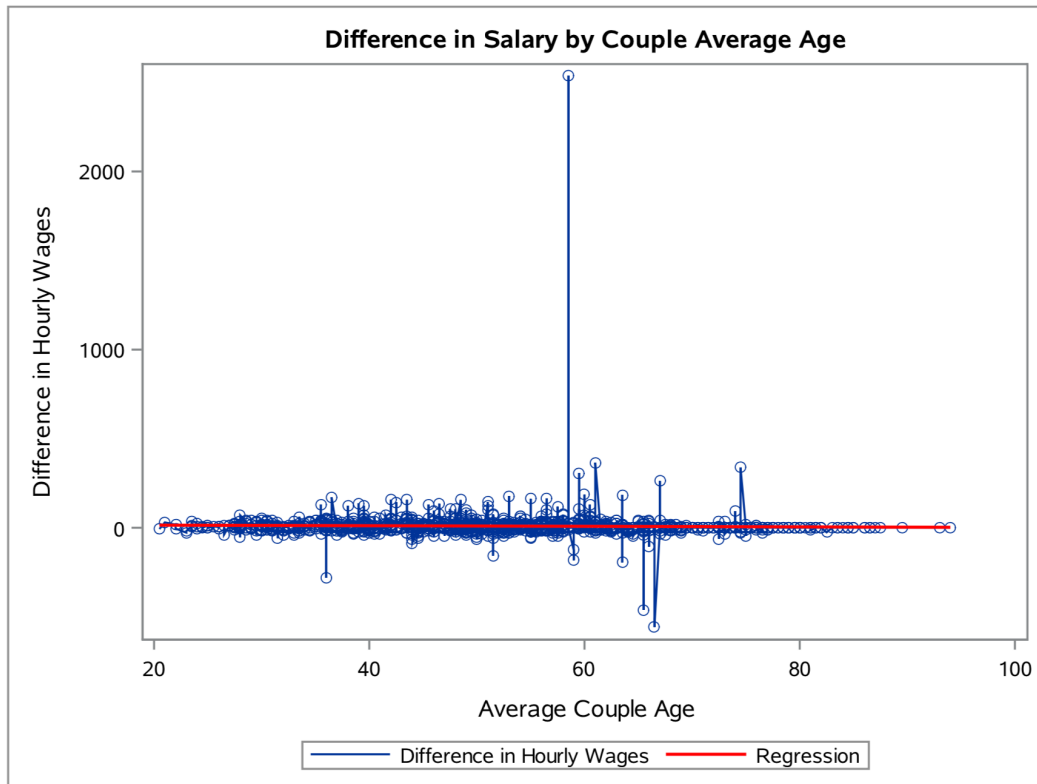


Figure 1: Plot of Couple Average Age by Difference in Salary