

**IDA Module**  
**Education and Earnings: Does Education Pay?**

**LEARNING OBJECTIVES:**

*Skill*

- Using software to access and analyze census data
- Identifying independent and dependent variables
- Employing control variables
- Quantitative writing
- Learning how to construct, read, and interpret bivariate tables displaying frequencies and percentages
- Using real world data to enhance and support key course concepts

*Substance*

- Examine the influence of education on earnings. Do higher levels of education lead to higher earnings? In other words, does education pay off?
- Examine whether race and sex still have an effect on earnings, once we control for education. Is the reason women and people of color make less money because they have less education?

In our last data exercise, we examined the effects of race and sex on the earnings of full-time workers. We found, not too much to our surprise, that women make less than men, and that Non-Hispanic whites make more than all other groups. Now we want to consider the influence of education on earnings. Does education actually pay off?

To begin, we will investigate the impact of education on earnings. Do people with higher levels of education indeed make more money? Then, we will return to the question of race and sex differences in earnings. Earlier, we found that women made less than men, and that people of color made less than Whites. There are many possible reasons for this. One reason might be differences in education across groups. For example, women may have less education than men, and therefore have lower earnings than men. It may not be discrimination, but simply a matter of education. To test this, we will look within each educational level and find out if women still make less than men. Likewise, we can determine if people of color make less than whites because they have less education. Once again, we will be looking at all full-time workers aged 25-64.

**VARIABLES**

For this exercise, we will be examining the following variables:

**EARNINGS:** Money a person makes from working, as wages, salary, or a form of self-employment, expressed as an annual amount

**RACE (RaceLat)** – individual's self-identification as:

- **Non-Latino White (NLwhite)** – all persons who indicated their race as white and not of Hispanic origin.
- **Black** – all persons who indicated their race as black.

- **Latino**– persons of white or “other” races who identified themselves as Mexican, Puerto Rican, Cuban, or Other Spanish/Hispanic. This category can refer to ancestry, nationality group, lineage, or country of birth of the person’s parents or ancestors before their arrival in the U.S.
- **Asian (or Pacific Islander)** – includes all persons who indicated their race or ethnicity as Chinese, Filipino, Japanese, Asian Indian, Korean, Vietnamese, Cambodian, Hmong, Laotian, Thai, or other Asian as well as Hawaiian, Samoan, Guamanian or other Pacific Islander.
- **American Indian (AmIndian)** – all persons who classified themselves as American Indian, Eskimo or Aleut.

**SEX (Gender)** - individual’s self-identification as either male or female.

### **EDUCATION (Educ)**

- **Less Than High School (LTHS)** - less than 12 years of schooling
- **High School Graduate (HSGRAD)** – graduated from high school
- **Some College (SomeColl)** – completed some years of college or attained an Associate Degree
- **College Graduate (CollGrad)** – graduated from college or beyond

### **OCCUPATION (Occup)**

- **Top White Collar (TopWC)** – professional workers, executives, administrators, and managers
- **Other White Collar (OtrWC)** – administrative support, clerical and sales workers, technicians, and related support
- **Service (Service)** – private household, protective service, and other service workers
- **Top Blue Collar (TopBC)** – “skilled blue collar” jobs such as precision production, craft, and repair workers
- **Other Blue Collar (OtrBC)** – workers in less skilled blue collar jobs
- **Farm (Farm)** – workers in farm, forestry, and fishery occupations

Note that these have been defined somewhat differently than before. Hispanic is now labeled “Latino.” The age group of the entire sample is now restricted to ages 25-64, and income groupings have been categorized slightly differently.

### **GETTING STARTED**

1. Go to <http://www.ssdan.net/datacounts>
2. Click on the “Data” in the menu bar
3. From there, click “Browse” on the left sidebar. Find “**custom**” in the drop-down box and select it.
4. Scroll down through the list of data sets until you find “**ocedin2k.dat**” Highlight and click “submit.”
5. You can also click [here](#) to launch the dataset in WebCHIP.

### **FREQUENCIES**

- 1) To examine the frequencies for each variable, click on “marginals”
  - A. What percentage of all full-time workers are men? \_\_\_\_\_

- B. What percentage of all full-time workers are white? \_\_\_\_\_ Black? \_\_\_\_\_ Latino? \_\_\_\_\_
- C. What percentage of all full-time workers make less than \$25,000? More than \$50,000? \_\_\_\_\_
- D. What percentage of all full-time workers have less than a high-school degree? \_\_\_\_\_ Have a college degree? \_\_\_\_\_
- E. What percentage of all full-time workers are top white collar \_\_\_\_\_? Service workers? \_\_\_\_\_ farmers? \_\_\_\_\_
- F. According to these data, how many full-time workers, aged 25-64 were in the US in the year 2000? \_\_\_\_\_
- G. Examine the frequencies and write a **brief** description of all full-time workers in 2000:

**CROSS-TABS (Bivariate analysis)**

- 1) What is the effect of education on earnings? First, identify your independent and dependent variables (remember, the independent variable is the one that influences the dependent variable) and make a hypothesis.
  - A. Independent variable: \_\_\_\_\_
  - B. Dependent variable: \_\_\_\_\_
- 2) HYPOTHESIS: \_\_\_\_\_
- 3) Now run the cross-tab, creating a Percent Down table with the Dependent variable as the ROW variable and the Independent variable as the COLUMN variable
- 4) What is the influence of education on earnings? Describe your findings below:
- 5) We now know, from this exercise and our previous work, that education, race, and gender all affect earnings. Is it possible that education is the real reason that women and people of color make less money than men or whites? First, let's look to see if women and non-whites have less education.

**HYPOTHESES**

- 1) Gender → Education:
- 2) Race → Education:

**CROSS-TABS:**

- 1) Gender → Education: Run a crosstab between gender and education, using the directions from 3 above.
- 2) Briefly describe the educational differences between men and women:
- 3) Race → Education: Run a cross-tab between race and education, using the directions from 3 above.
- 4) Briefly describe the educational differences across race: Start by making a broad, generalized statement (e.g. In general, \_\_\_ have the lowest levels of education, and \_\_\_ have the highest). Then use statistics to make your case. (e.g. \_\_\_ % of \_\_\_ have less than a high school degree, compared to \_\_\_ % of \_\_\_).

**CONTROL Variables**

We have now found several relationships. Race and gender affect education; race and gender affect earnings; and education affects earnings. (Note that earnings and education do NOT affect race or gender.) Now let's think more carefully about the effects of race, gender, and education on earnings. We know that all three variables affect earnings – is it possible that education can explain all of the differences? Is it possible that women make less than men, because they have less education? Is it possible that Blacks and Latinos make less than Whites, because they have less education?

To answer these questions, we must CONTROL for education. Let's start by thinking about the effect of gender on earnings. We'd like to see if it's true that women make less money than men at every level of education. So, for all workers with less than a high school education, do women still make less than men? For all workers with a college education, do women still make less than men? What we are doing is examining the effect of gender on earnings, controlling for (or holding constant) education.

Create a Percent Down table with "EARNINGS" as the ROW variable. "GENDER" as the COLUMN variable and "EDUCATION" as the control variable.

Interpreting your output:

- a) Your output will include four sets of tables, one for each level of education. The first table will show only the workers who have **less than a high school** education. You can now compare the earnings of men and women in this group. What do you find?
- b) The next table shows the earnings of all workers with a **high school degree**. Are there differences between the earnings of men and women in this group? Describe what you find:
- c) Similarly, compare the earnings for men and women with **some college**:
- d) Finally, compare the earnings for men and women with **college degrees**:
- e) Overall, what have you found? When controlling for education, do men and women make the same amount?

Now you can do the same exercise with race. Examine the influence of race on earnings, controlling for education.

When you have finished all the above analysis, please write a paper analyzing either the effect of race on earnings, controlling for education, or the effect of gender on earnings, controlling for education. To write your essay, please organize it as if you were writing a brief scientific research paper:

- I. Introduction – what is the main issue you are investigating? Why is it important to understand?
- II. Lit review – What do you already know about this topic, given your readings in class and elsewhere? You should refer to information provided in some of your readings, either in class or from outside sources. This can be quite brief – just a paragraph or so. However, you should be referring to published sources here. You should not be writing your own opinions, but instead, reviewing findings that are found in scholarly publications. **Make sure to properly cite your sources and include them in a works cited page.**
- III. Data – describe your data. Who is the population in your data set? Describe briefly the marginal frequencies.
- IV. Results – what have you found? You'll want to describe your bivariate table and then discuss what you found when you controlled for education.
- V. Conclusion: What did you learn about the effect of either race or gender on income, when controlling for education? Speculate about why we still find race or gender differences in income.
- VI. Cover sheet and Works Cited page