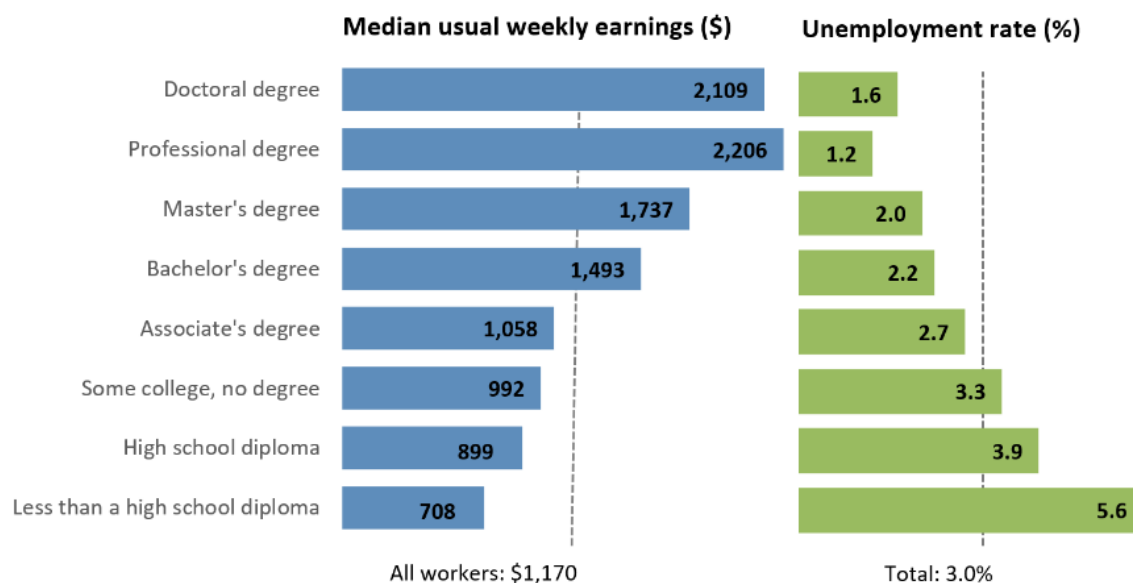


## TOPIC 18: SIGNALING AND EDUCATION

- I. The value of a degree
  - a. There is ample evidence that having a college degree not only increases your average salary, but also decreases the chance of unemployment.<sup>1</sup>

**Earnings and unemployment rates by educational attainment, 2023**



Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.  
Source: U.S. Bureau of Labor Statistics, Current Population Survey.

- b. Why this distinction? We'll cover two major theories as to why earning a college degree increases your attractiveness to employers.
- II. Human Capital
  - a. This first is the most intuitive: skills. In college, you learn things that are practical in the real world. Armed with this knowledge (and with the proof that you've learned it...i.e. a degree), more people want to hire you.
  - b. This is the *human capital* theory, human capital being the "tools of the mind:" reasoning skills, writing skills, technical skills, time

<sup>1</sup> <https://www.bls.gov/emp/chart-unemployment-earnings-education.htm>

management skills. It also includes experience, intelligence, and anything else in someone's mind which makes them more productive.

- c. The human capital theory suggests your major matters. According to data gathered by the Center for Education and the Workforce at Georgetown University, it matters a lot. Here is a sample of various nationwide median earnings:<sup>2</sup>
  - i. Chemical Engineering: \$96,000
  - ii. Computer Science: \$83,000
  - iii. Economics: \$76,000
  - iv. Accounting: \$69,000
  - v. Biology: \$56,000
  - vi. History: \$54,000
  - vii. Fine Arts: \$49,000
  - viii. Elementary Education: \$43,000
- d. It's important to remember at this time that compensating differentials also play a role here. For most people, fine arts is more fun than accounting. Still, it is reasonable to believe that some of this difference comes from differences in skills.
- e. Over time, the value of a college degree relative to only a high school degree has risen which might suggest human capital is becoming more important.

### III. Signaling

- a. The human capital theory isn't perfect and has difficulty in explaining some data. For example, using the same information about earnings by major, commercial art and graphic design has about the same median income as philosophy. There is a clear practical skill to one, but not the other.
- b. Moreover, many things you learn in college you will not use in the real world. For example, you will never have to do so much of the modeling we will do later in this class (unless you go on to teach economics!). So what's going on?
- c. A *signal* is an action or observable trait which can be used to demonstrate you have some unobservable trait. It is the natural response to the adage: talk is cheap.
  - i. Some students find the idea of signaling confusing. If you referenced a past leadership position you held during an interview, is that a signal? In the interview, you are *talking* about the position; you're not actually it.

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<sup>2</sup> <https://cew.georgetown.edu/cew-reports/valueofcollegemajors/>

- ii. But it *is* a signal. It's impractical to literally show them—to take that leadership position—during an interview. Yes, you could be lying about the leadership position which is why the interviewer will ask you follow-up questions. If you're nervous or inconsistent or vague, they will assume you're exaggerating your role. They may also contact your references or ask follow-up questions. Because the claim is verifiable, it's a signal. It's less likely to be cheap talk.
    - iii. In other words, there's sometimes a distinction between the action and letting people know that you did it. The former is about fostering achievements and the latter is about selling yourself. But because the two are so closely connected, the pair is collectively thought of as signaling.
  - d. Signaling works when it's significantly easier to send the signal if you have the trait than if you lack the trait.
    - i. Thus the people who have sent the signal are more likely to have the trait.
  - e. The *signaling* theory of education argues that education signals traits which employers find valuable. Economist Bryan Caplan [identifies](#) three traits a college degree signals: intelligence, conscientiousness, and willingness to conform to expectations.
    - i. If you are smart and hardworking, getting a college degree is easy. If you are stupid or lazy, getting a college degree is hard.
    - ii. The same goes for grades, which is why your grades in even “blow off” classes matter.
  - f. Signaling solves our philosophy/graphic design major paradox.
    - i. Philosophy requires *a lot* of reading, thinking, and logic skills. It is hard for most people.
    - ii. Graphic design is also difficult to learn, but not nearly as hard as philosophy. Some people have an intuitive grasp of it. Some people do it for fun.
    - iii. Thus philosophy is impractical, but hard for everyone. Graphic design is useful, but much easier (if you are majoring in graphic design, you probably have a natural talent for it).
    - iv. To the extent that there's a natural talent for philosophy, we have another name for that: intelligence.
  - g. Signaling can also solve why your major matters: some majors are harder to learn than others.
- IV. Signaling and Societal Wealth
- a. The value of a signal, unlike human capital, is relative. This is crucial.

- b. A signal is more valuable the rarer it is, *ceteris paribus*, because it causes the person to stand out more. An award that many people get isn't as impressive as an award that few people get.
- c. Because the value is relative, signals can succumb to a kind of *arms race*—a competition where parties attempt to accumulate more weapons than the other. Note the use of the word “more.” It's all about being better than someone else.
  - i. Arms races tend to be wasteful—each side spends more and more resources only to outdo the other. If each country agreed to spend half as much as they do, the victor wouldn't change but they would both save a lot of resources.
  - ii. During the Cold War, the U.S. and the USSR had an arms race for nukes. Each side eventually created and maintained enough nukes to destroy each other many times over.
- d. Education has its own arms race. Because the value of the degree is relative, students have to work harder to stand out.
  - i. In 1940, [less than 6 percent](#) of Americans aged 25-29 has a bachelor's degree. Now it's about 40 percent. College degrees used to be really special. Now, for many jobs, they are expected.
  - ii. To stand out, students seek out internships, extracurriculars, and more degrees. The “best” students don't change, but everyone spends more time and money.
- e. Thus the big distinction between signaling and human capital theories.
  - i. According to human capital theory, more education makes society richer (because the labor force is more productive).
  - ii. According to signaling theory, more education makes society poorer (because everyone unnecessarily spent a bunch of time and money).

## V. Signaling Extensions

- a. Signaling has a lot of applications beyond educational value. In fact it's one of the most useful ideas in economics.
- b. *Interviews*. Dressing nicely and being organized signals that you are serious about the position, that you can act in a professional manner, and that you have valuable skills like attention to detail.
- c. *Dating*. Looking good and being funny signals that you take the date seriously, are genuinely interested, and are worth being around.
- d. *Credit Score*. Paying off your debt quickly and keeping a low balance on your credit card signals you are fiscally responsible and thus worthy of a low interest rate if you need a loan.