

## **What We Earn**

John F. Sase, Ph.D.

June 2018

Gerard J. Senick, General Editor

Julie Gale Sase, Copyeditor

*“Study hard what interests you the most in the most undisciplined, irreverent, and original manner possible.”*

— Richard Feynman, 20<sup>th</sup> Century American Theoretical Physicist and Quantum Mechanic

Most experienced Attorneys whom I (Dr. Sase) meet exhibit a good ballpark idea of the expected amount of economic loss in any case upon which they work. Their knowledge and understanding of basic Economics and how to perform the calculations leads to a transparent working relationship with Forensic Economists like myself. These Attorneys have a grasp of what Economists do and how we do it. There are many cases in which a simple estimate serves as the basis for discussing a settlement. However, if that fails, retaining a practiced Economist to provide professional objectivity and documentable precision becomes a necessity if there is a chance that the case will go to formal mediation, arbitration, or trial.

### **Real Work-Life Earnings**

The purpose of this month’s column is to educate and to inform Attorneys and other members of our primary audience. In this effort, we will concentrate our focus on the determination of progressive earnings over the course of time of a work life. Primarily, we will review the complex interrelationship of earnings that we have come to expect in respect to varying levels of educational attainment. In addition, we will look at how these earnings change over a work life.

For a person disabled in the latter part of his/her work life, we find that his/her determined lost earnings change at a fairly constant rate. However, our working assumption will consider the more challenging scenario in which a person becomes disabled early in life. For such cases, standard practices used in the past have tended not to address the life changes of many clients with higher levels of educational attainment adequately.

In overview, we will review relative real earnings for nine levels of educational attainment. The levels include formal education that terminates in elementary school, high school, undergraduate college, and graduate/professional school. We will perform our analysis using data obtained, reviewed, organized, and published by the United States Bureau of the Census.

### **Our Tools**

The Bureau works with data collected from our population. In addition to the well-known Decennial Census, the Bureau conducts the American Community Survey (ACS). What is the ACS? Unlike the Decennial Census, the ongoing ACS provides vital information that includes education and earnings on an ongoing annual basis. This data, which the Bureau collects from this survey about our nation and its people, is used in the determination that assists Federal and State Governments to distribute more than \$675 billion of public funds each year. Furthermore,

we increase our knowledge about educational attainment, jobs and occupations, veteran status, and whether residents own or rent their homes. Periodic reports produced by the Bureau help public officials, planners, and entrepreneurs to use this information in order to assess the past and to plan for the future. For the ACS, the Census Bureau contacts more than 3.5 million households across the United States for participation in this survey. (For additional information, see <https://www.census.gov/programs-surveys/acs/about.html>.)

In this month's column, we are most interested in the sections of the ACS that include the Median Annual Earnings by Age and Educational Attainment for full-time, year-round employees. Currently, the edition used by Economists relies upon data from the 2006 – 2008 American Community Surveys. I (Dr. Sase) have adapted a model based upon the compilation for nine distinct levels of educational attainment. The Bureau reports its results in 2008 inflation-adjusted dollars. However, I have converted the earnings into a set of relative metrics expressed in terms of "y" level of earnings on a scale of zero to five "y." In the overview graph, we measure relative earnings regarding "y" per nine levels of attainment over seven successive age ranges.

Generally, Economists might model the four highest levels of attainment through the application of a six-variable polynomial equation that has a goodness of fit beyond the 99% level. However, we will discuss this matter using the simpler seven-segment Spline Model employed in the Bureau report. What is a Spline Model? Those of us who have done carpentry since the Pre-Digital Age may remember using folding wood-rulers constructed of multiple six-inch segments that are hinged together at the ends. Economists much older than myself have told me that this measuring device provided the inspiration for the Spline Model. The simplifying advantage of this technique rests on the fact that we can use a straight line with a constant slope for each of the equal age-increments of data. In the overview graph of "Real Median Earnings by Age and Educational Attainment," real earnings are expressed relatively for nine levels of attainment over a 40-year period. The first aspect that we explore addresses the relatively constant earnings of the five levels of education.

### **Less than Eighth Grade**

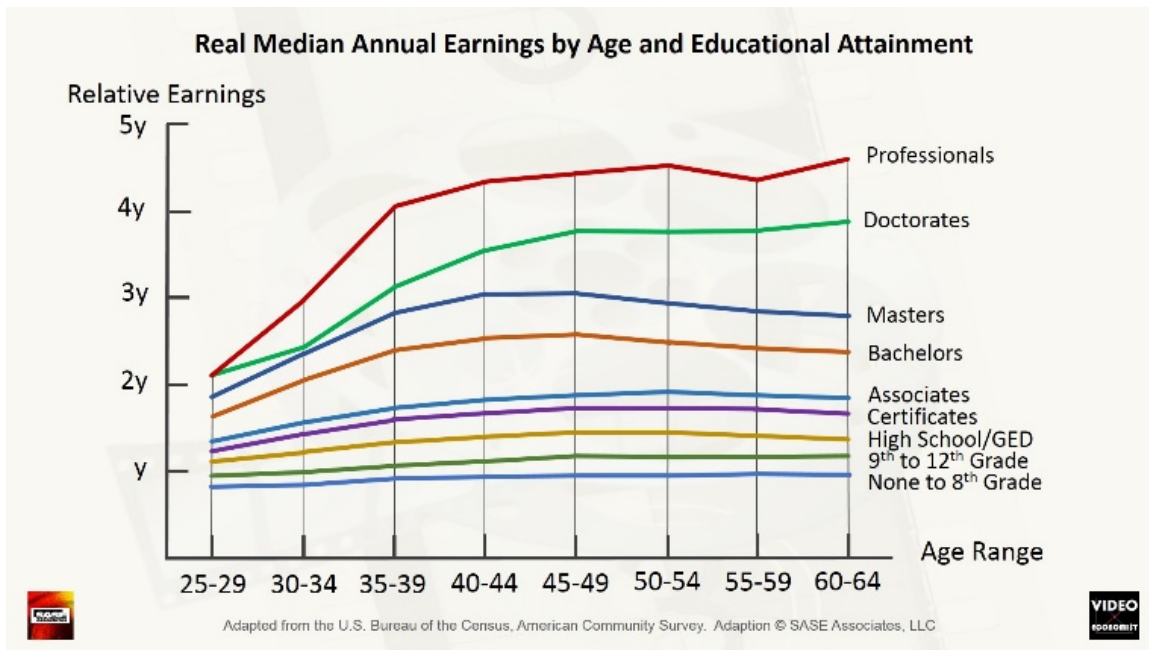
Looking at the cohort that terminated formal education at an eighth-grade completion or less, we find that the real-wage gradient remains relatively flat. Nevertheless, by holding a straight-edge over this graph we can estimate that real earnings do increase for this cohort by almost 19% over the course of forty years.

Employers pay workers for productivity; we may surmise that experience and on-the-job development supports the real gain in earnings of approximately one-half percent per year. For this educational-attainment cohort, Forensic Economists tend to represent future wage-growth at a constant rate over long periods of time.

### **Through High School**

The picture remains similar for those with some high-school education as well as for those who have attained a high-school diploma or a GED. However, the difference appears in the increase of total earnings over a work life. Those persons with some high school but no degree earn a higher amount early on and realize an earnings-increase of about 27%. This translates to an average annual increase of just under three-quarters of a percent per year. High-school graduates appear to earn more than either of the two preceding cohorts in earlier work years. Their

apparent overall increase in real earnings hovers at 23%. However, this observation may appear somewhat deceptive because high-school graduates hit peak earnings between the ages of 50 and 55 years. In their early fifties, the real earnings of high-school completers top at 6% higher than at their benefit-eligible retirement ages for Social Security.



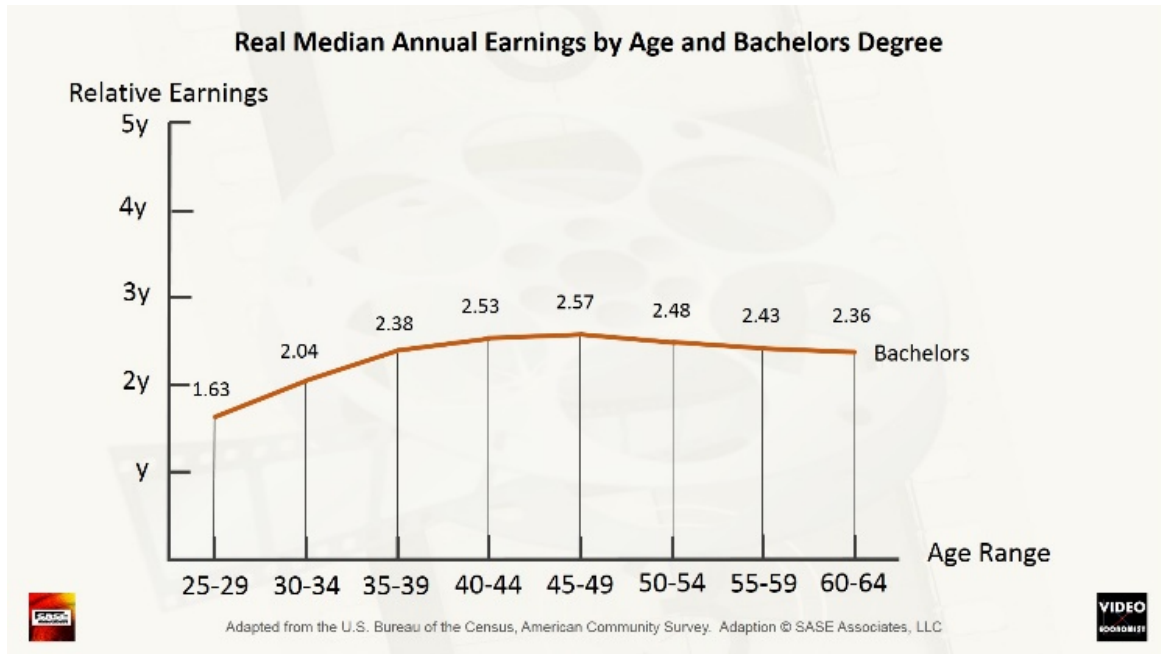
Though an overall difference in earnings exists for the next two higher attainment-cohorts, they seem similar in terms of general outcomes. High-school graduates with some college tend to outperform those with less-formal education. These two in-between cohorts either have earned a Certificate from a higher-education program or have completed an Associate’s Degree. Typically, Certificate programs can be completed in two terms with a minimum of 18 credit hours. The program for an Associate’s Degree can be completed within four or five terms with about 60 credit hours. The earnings-differential between these two attainment levels in respect to their increased knowledge and skills is reflected in this difference of course requirements. Over the span of a work life, both of these junior-college programs lead to an earnings growth of 36%. However, those with an Associate’s Degree appear to start and finish with real earnings that are 9% to 10% higher than the other cohort. We can notice other similarities in the earnings of these junior/community-college groups in contrast to those who topped their formal education with a high-school diploma. We also note that all three intermediate-attainment levels hit a peak in real earnings during the late forties or early fifties of the individuals in these cohorts.

### Through a Baccalaureate

Hopefully, it is no surprise that the relative real earnings of those who have attained a Baccalaureate or beyond realize higher lifetime earnings. In the following graphs, it appears that distinct differences exist between those who have earned a Bachelor’s or Master’s Degree in contrast to those who have earned a Doctorate or Professional Degree. We will review each of these separately.

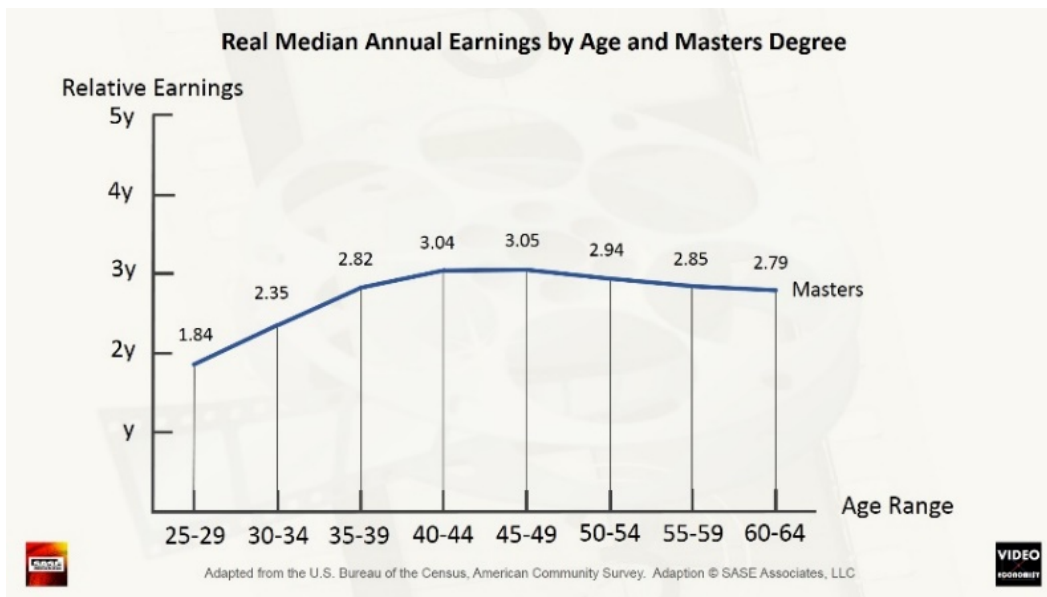
Depending upon specifics of degree programs, a Baccalaureate usually requires a minimum of 120 credits, double the number of credits required for an Associate’s Degree and with a greater

concentration of prerequisite and upper-level field courses beyond the common body of general education courses. Those students who have attained the level of a B.A., B.S., B.F.A. or similar undergraduate degree appear to have early-career real earnings that are 22% higher than those topping out with an Associate’s Degree. In their late forties, the Baccalaureate cohort appears to peak at earnings that are 35% greater than the latter cohort. From the beginning to the end of work life, those with 120 credits of skill- and knowledge-development experience an increase in real earnings of 45%, a bit more than 1% per year on average.



### Through a Master’s Degree

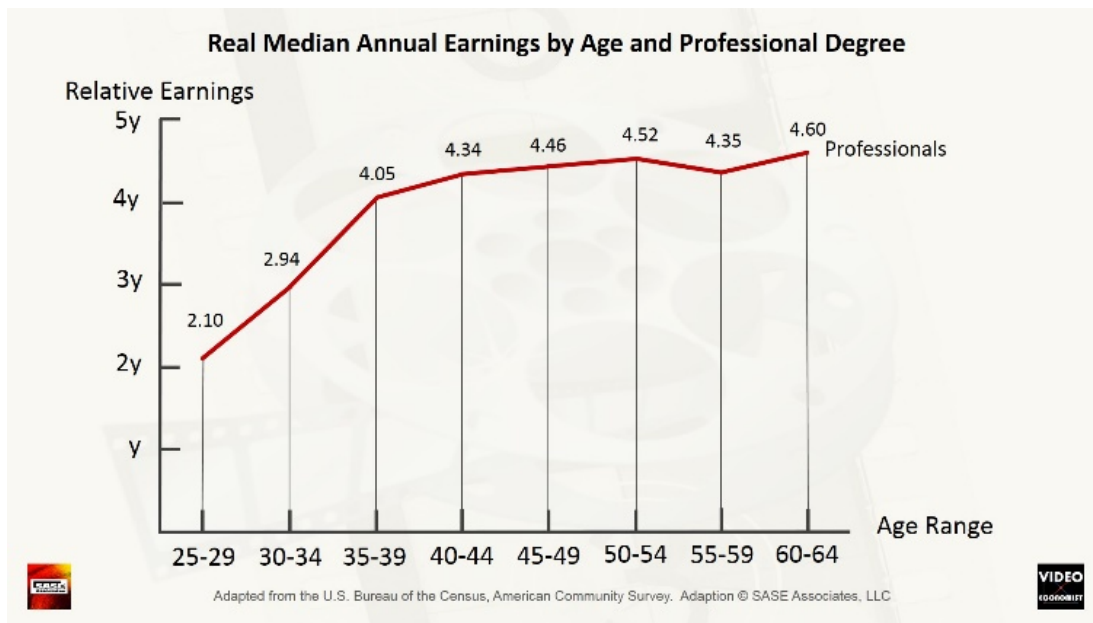
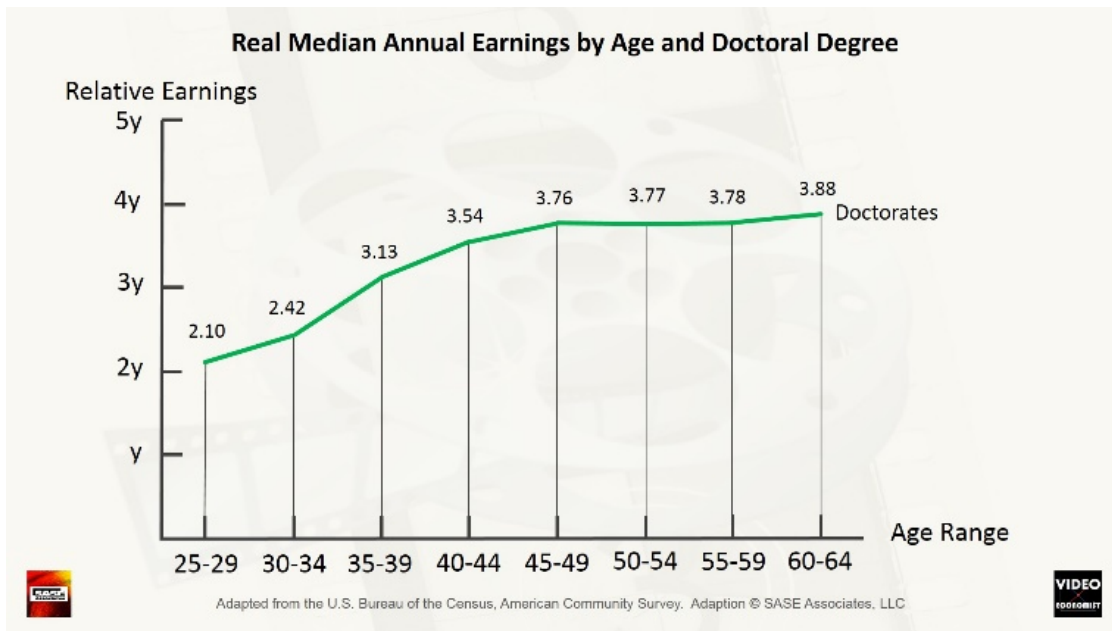
Individuals who have earned a Master’s Degree perform similarly to those with a Bachelor’s Degree. Typically, a Master’s Degree requires an additional 40 to 60 credits beyond a Baccalaureate. Not surprisingly, an expected differential in real earnings exists from early work-years through retirement. Those individuals who earn a Master’s Degree appear to earn 13% more than the Baccalaureates. Furthermore, those with a graduate degree experience faster wage growth. For them, the advanced degree can lead to an 18% overage in comparison to those with a terminal Bachelor’s Degree. Both cohorts reach their peaks in real earnings in their forties before experiencing a mild decline in real-earnings later in life. However, it appears that those with a Master’s Degree reach retirement age with real earnings that are 17% greater annually than those in the Baccalaureate cohort.



Our final two levels of educational attainment share some notable characteristics with one another. In previous Bureau reports, those individuals who had attained Doctorates (Ph.D. or similar) and Professional Degrees (J.D., M.D., and others) were grouped into one level. Both groups have similar earnings during their early careers. This shared characteristic suggests that it may be very challenging to complete one of these career degrees along with other accompanying professional requirements (such as passing the Bar, defending a dissertation, or doing internship and residency before the ages of late twenties to early thirties).

During the early careers of these two groups, the earnings for each are on par with one another and are only 14% higher than for those attaining terminal Master’s Degrees. However, those with Professional Degrees have experienced a 40% increase in real earnings by their early thirties. Those scholars with Doctorates experience an earnings growth of 15% by the same age. The earnings-growth rate for Doctorates falls behind those holding terminal Master’s Degrees during this phase of life. However, as earnings for graduates with terminal Master’s Degrees begin to level off, those with academic doctorates begin to catch up with Attorneys and Medical Doctors.

The margins between these two groups put the Professionals 29% ahead of the Doctorates by their late thirties. The earnings gap for the two groups narrows to 15% by their mid-to-late fifties. Professionals experience a slight downturn while the earnings of the Doctorates remain virtually flat. Then something happens that seems unique to these two groups. Their real earnings begin to rise again as they approach their benefit-eligibility ages. Overall, those with Doctorates appear to experience an 85% increase in real earnings during a “standard” work life while the Professionals mark a 119% increase during the same period.



The “second-wind” effect that leads to increased earnings by Professionals and Doctorates later in life stand in contrast to the experiences at all other levels of educational attainment. Second-wind may point to a number of possible events. Perhaps those who cannot stand the heat leave early. Alternately, we may attribute this phenomenon to the ongoing accumulation of Intellectual Capital, in which one grows wise rather than simply growing old. Another thought is that many persons who earn doctorates and professional degrees do not complete all of the requirements for their mortarboards until the ages of thirty or forty. Based upon the investment of time and money up to that point, a “standard” work life of forty years may extend until the ages of seventy or eighty. Then again, some of us may keep going until our nineties as life expectancy increases.

### *Prospettiva Takeaway*

Thus far, I have determined that the progression of real earnings appears to increase with the levels of education and work experience. However, within each educational-attainment cohort we may expect to find a lot of variation in the microdata. Bear in mind that some individuals defy the average. For example, our current President received a Bachelor's degree in Economics from the University of Pennsylvania. However, he has more than managed to outperform the real earnings of most persons who have attained a Master's Degree or higher. However, one may not need much in the way of formal education if all that s/he desires is the accumulation of money, power, and stuff. Many roads to that goal are moral as well as legal.

Hopefully, those of us who survived the raising of our collective consciousness in the 1960s and have retained our visions through the present decade may remember that education requires a drawing out from oneself in order to grow in knowledge and understanding while attaining a reasonable level of cosmic awareness at the same time. Many of us stand by our belief that the mere accumulation of the trappings of material wealth provides only the superficiality that surrounds real wealth. By its very nature, the pursuit of this shell of trappings exists as an insatiable, never-realizable goal because the real wealth held by the philosopher's pearl of wisdom within the shell never materializes. Like hamsters in pursuit of freedom from our cages, we continue to run on our "wheels of empty quest" while remaining trapped unconsciously in a prison of our own making.

However, I digress....

Smoke 'em if you have 'em.

Dr. John F. Sase teaches Economics at Wayne State University and has practiced Forensic and Investigative Economics for twenty years. He earned a combined M.A. in Economics and an MBA at the University of Detroit, followed by a Ph.D. in Economics from Wayne State University. He is a graduate of the University of Detroit Jesuit High School ([www.saseassociates.com](http://www.saseassociates.com)).

Gerard J. Senick is a freelance writer, editor, and musician. He earned his degree in English at the University of Detroit and was a Supervisory Editor at Gale Research Company (now Cengage) for over twenty years. Currently, he edits books for publication ([www.senick-editing.com](http://www.senick-editing.com)).

Julie G. Sase is a copyeditor, parent coach, and empath. She earned her degree in English at Marygrove College and her graduate certificate in Parent Coaching from Seattle Pacific University. Ms. Sase coaches clients, writes articles, and edits copy ([royaloakparentcoaching.com](http://royaloakparentcoaching.com)).

