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**Higher education exists to increase the capacity of the economy by:**

- generating new ideas (research)**
- educating students and the public (teaching).**



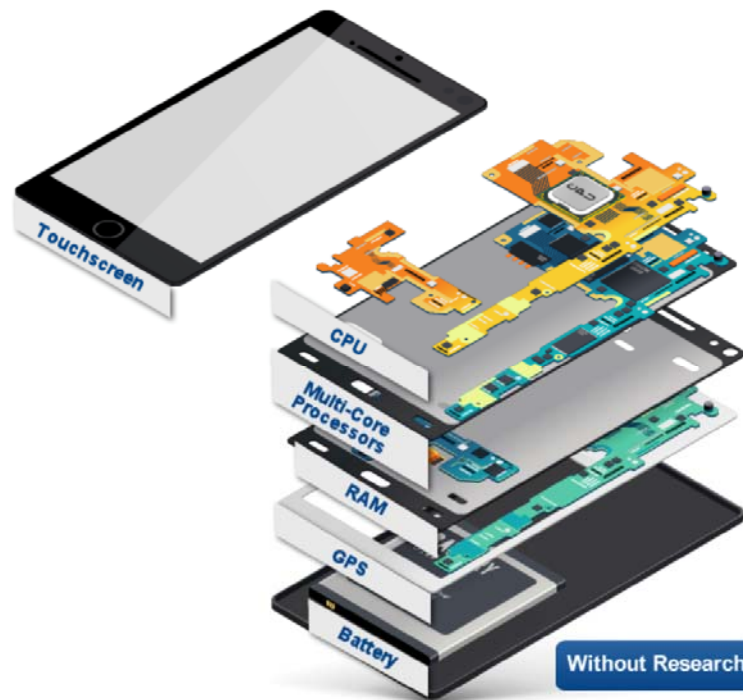
September 19, 2017

# University Research Made Your Smartphone Smart

*Click on one of the phone parts to learn more*

## Multi-Touch Screens

The resistive touch screen (a screen that can be manipulated with a finger or stylus) was developed in 1971 by **Samuel Hurst** at the **University of Kentucky**. The multi touch functionality was developed by **Wayne Westerman** and **John Elias** at the **University of Delaware**, with funding from the National Science Foundation. The two Delaware researchers would go on to found FingerWorks, a touch screen manufacturing company. FingerWorks would be acquired by Apple, Inc., and play a major role in the functionality of the Apple iPhone when it rolled out in 2007.



<https://www.aau.edu/university-research-made-your-smartphone-smart>



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# Journal of Urban Economics

Volume 65, Issue 3, May 2009, Pages 265-278



## The causes and consequences of land use regulation: Evidence from Greater Boston ☆

Edward L. Glaeser <sup>a, b</sup>  , Bryce A. Ward <sup>a</sup>

 **Show more**

<https://doi.org/10.1016/j.jue.2008.06.003>

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### Abstract

Over the past 30 years, eastern Massachusetts has seen a remarkable combination of rising home prices and declining supply of new homes, which doesn't appear to reflect any lack of land. In this paper, we examine the increasing number of land-use regulations in Greater Boston. These regulations vary widely over space, and are hard to predict with any variables other than historical density levels. Minimum lot size and other land use



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**MEDICINE PRIZE [FRANCE, UK]** — Jean-Pierre Royet, David Meunier, Nicolas Torquet, Anne-Marie Mouly, and Tao Jiang, for using advanced brain-scanning technology to measure the extent to which some people are disgusted by cheese.

**REFERENCE:** "The Neural Bases of Disgust for Cheese: An fMRI Study," Jean-Pierre Royet, David Meunier, Nicolas Torquet, Anne-Marie Mouly and Tao Jiang, *Frontiers in Human Neuroscience*, vol. 10, October 2016, article 511.

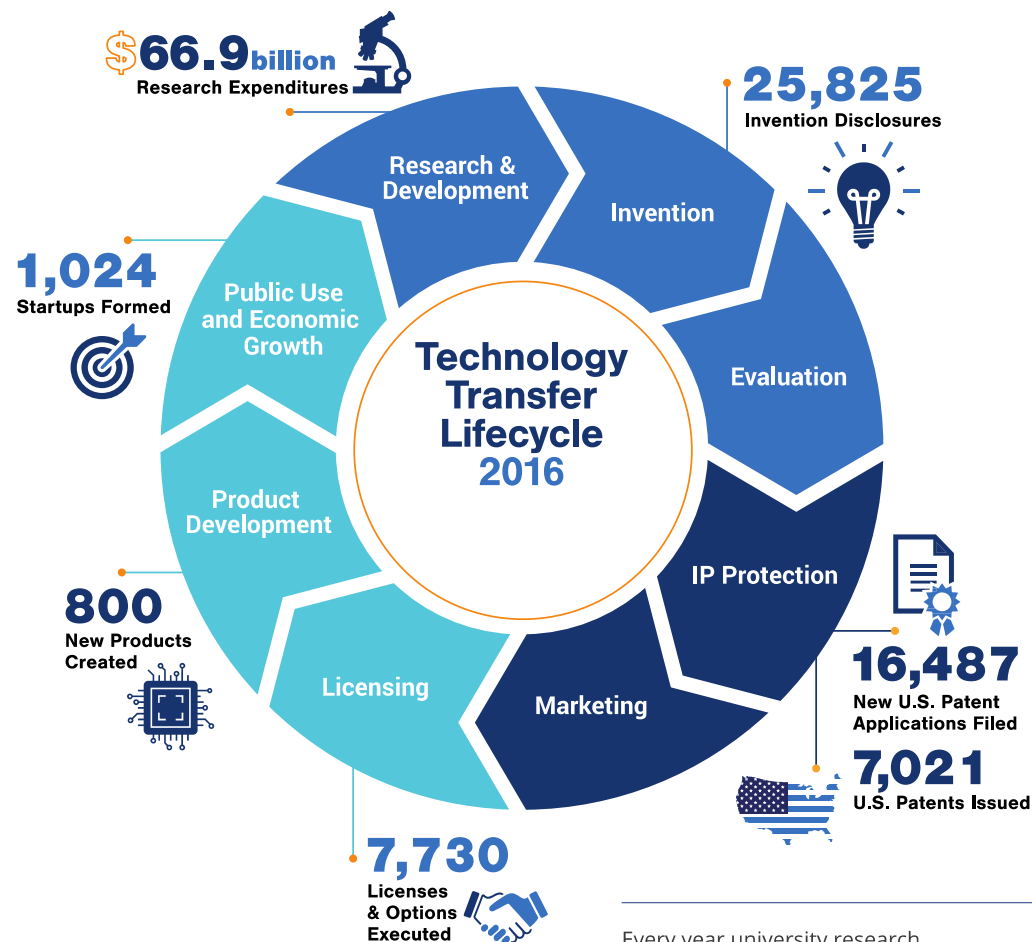
**COGNITION PRIZE [ITALY, SPAIN, UK]** — Matteo Martini, Ilaria Bufalari, Maria Antonietta Stazi, and Salvatore Maria Aglioti, for demonstrating that many identical twins cannot tell themselves apart visually.

**REFERENCE:** "Is That Me or My Twin? Lack of Self-Face Recognition Advantage in Identical Twins," Matteo Martini, Ilaria Bufalari, Maria Antonietta Stazi, Salvatore Maria Aglioti, *PLoS ONE*, vol. 10, no. 4, 2015: e0120900.



# How does academic research lead to tangible innovation and improvements in welfare?

- (1) *Faculty publishing*
- (2) *University patenting and licensing*
- (3) *Faculty consulting*
- (4) *Faculty entrepreneurship*
- (5) *Informal interactions between university and industry researchers*
- (6) *Training and placement of students in industrial positions*



Every year university research yields discoveries with commercial potential.

Source: <http://www.autm.net/AUTMMain/media/SurveyReportsPDF/AUTM-FY2016-Infographic-WEB.pdf>



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# University Innovation and Local Economic Growth

Naomi Hausman\*

October 2017

## Abstract

Universities, often at the center of innovative clusters, are believed to be important drivers of local economic growth. This paper identifies the extent to which U.S. universities stimulate nearby economic activity using the interaction of a national shock to the spread of innovation from universities – the Bayh-Dole Act of 1980 – with pre-determined variation both within a university in academic strengths and across universities in federal research funding. Using longitudinal establishment-level data from the Census, I find that long-run employment and wages around universities rise particularly rapidly after Bayh-Dole in industries more closely related to local university innovative strengths. The impact of university innovation increases with geographic proximity to the university and initial city size. Counties surrounding universities that received more pre-Bayh-Dole federal funding – particularly from the Department of Defense and the National Institutes of Health – experienced faster employment growth after the law. Entering establishments - in particular multi-unit firm expansions - over the period from 1977 to 1997 were especially important in generating long-run employment growth, while incumbent establishments experienced high turnover, consistent with creative destruction. R&D data from the Census indicate that large firms opening new establishments near universities in related industries after 1980 are indeed substantially more likely to have university R&D partnerships.

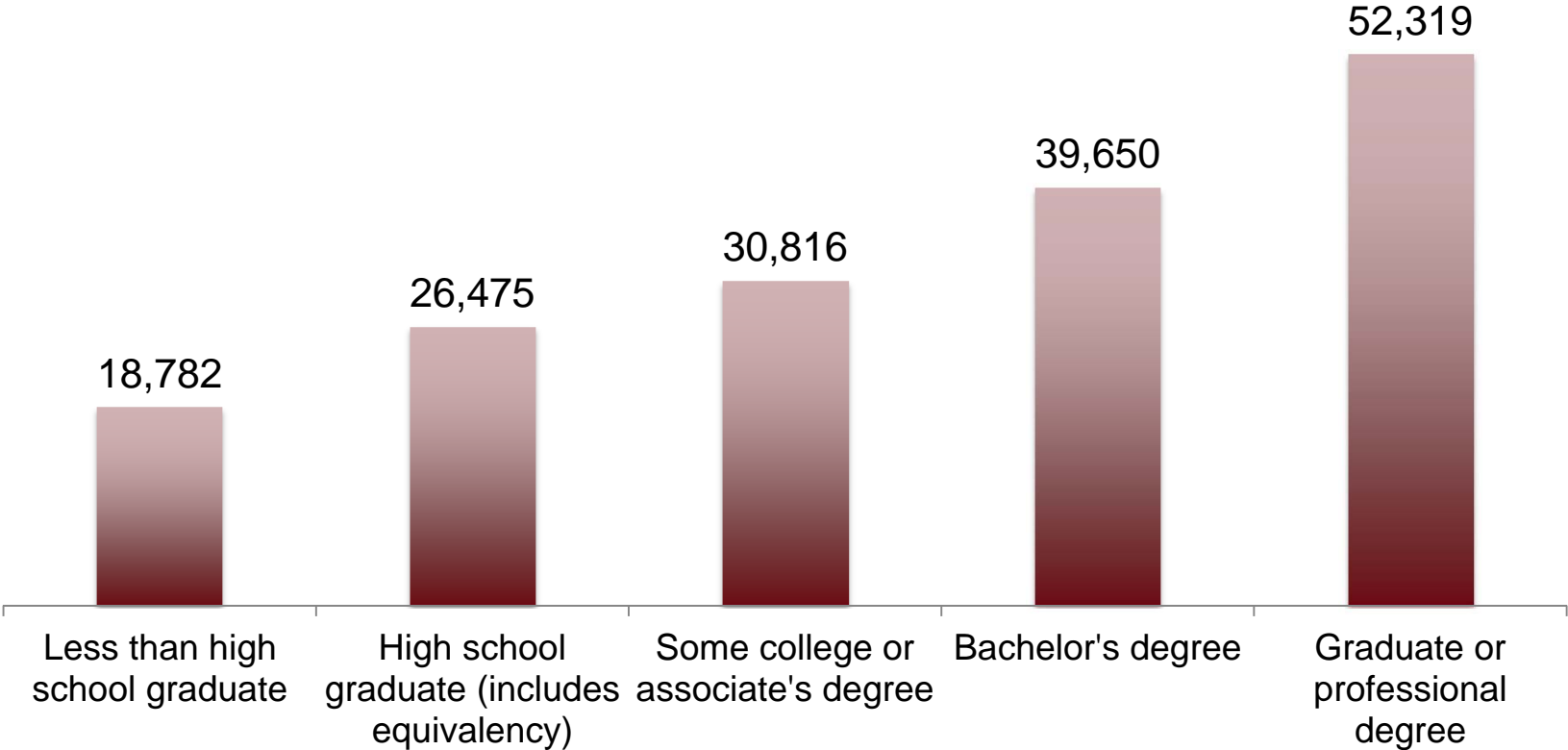


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# People who go to college earn more.

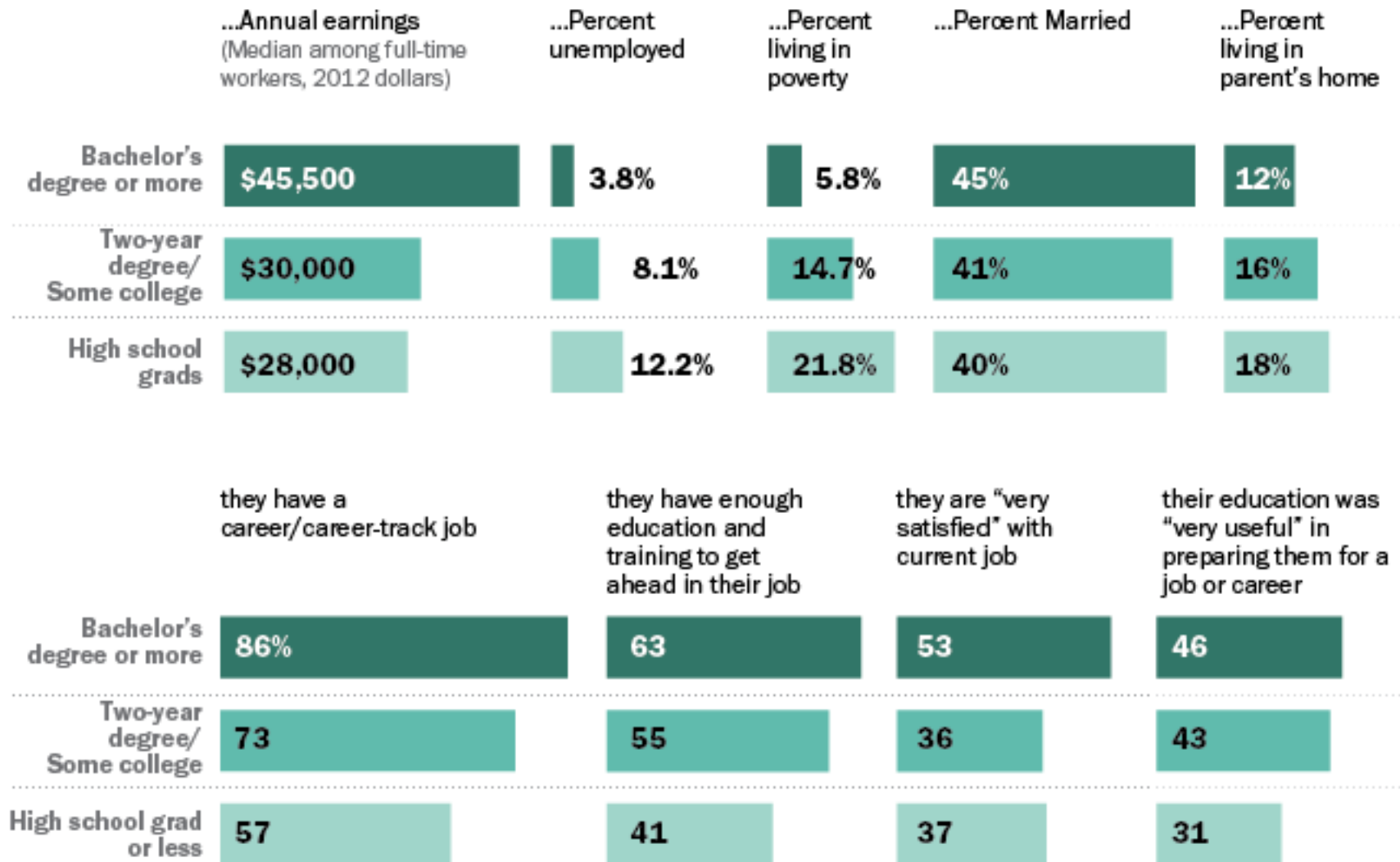
Median earnings by educational attainment for Montana adults aged 25+, 2016



Source: BBER analysis of 2016 American Community Survey



*Disparity among Millennials ages 25 to 32, by education level in terms of...*



Source: Pew Research Center

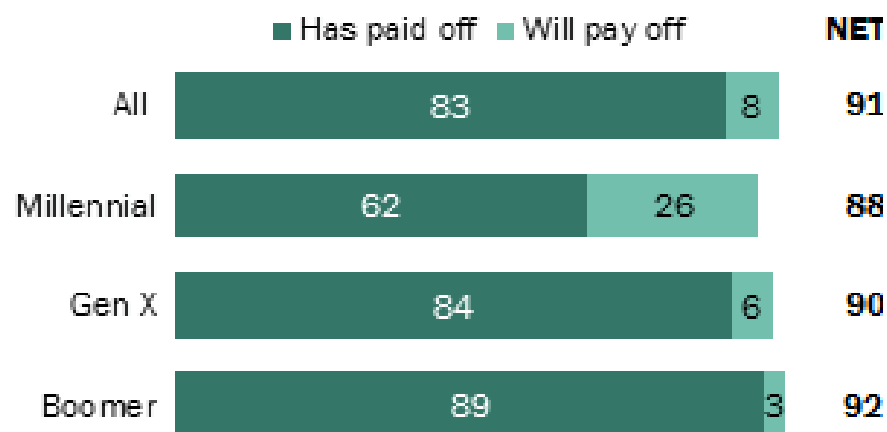


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## Generations Agree: College Is Worth It

*% of college graduates in each generation who say that considering what they and their family paid for their undergraduate education, it ...*



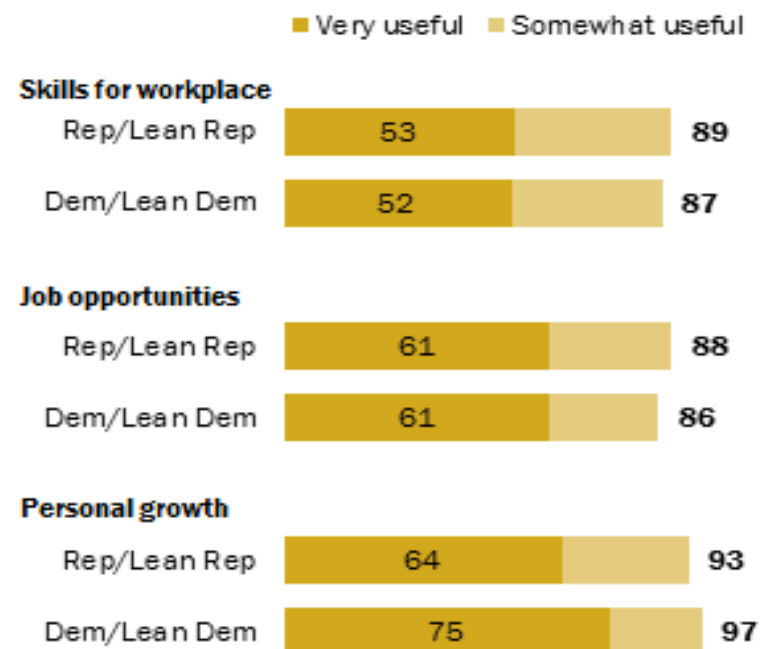
Notes: Based on college graduates (n=790). "College graduates" are those with a bachelor's degree or more. "All" includes adults in the Silent and older generations. Millennials are ages 18 to 32. Those who said college has not and will not pay off and voluntary responses of "Not sure/Don't know/Refused" not shown.

PEW RESEARCH CENTER

Q9-11

## Across party lines, college grads viewed their college experience positively

*% of college graduates with four-year degrees who say their own college education was \_\_\_\_\_ in each*



Source: Survey conducted May 25-June 29, 2016.

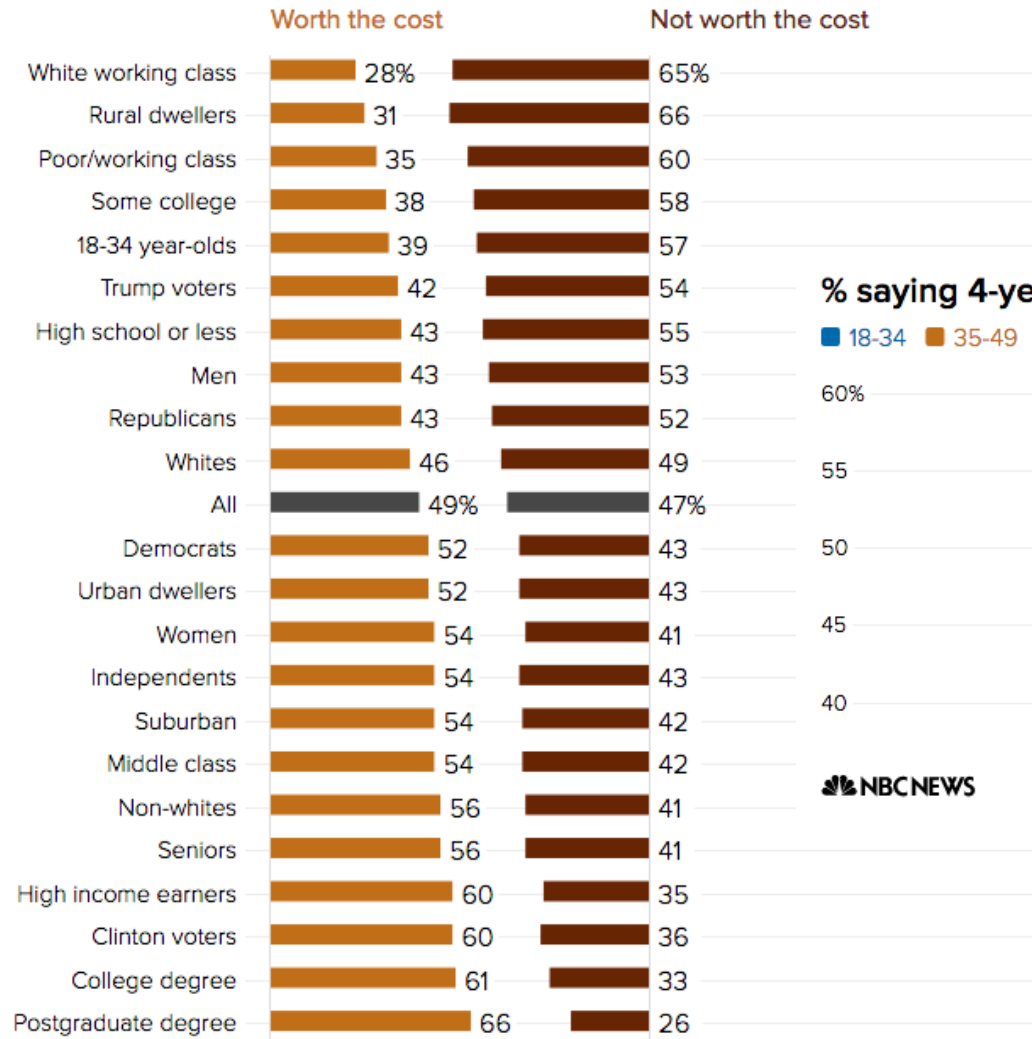
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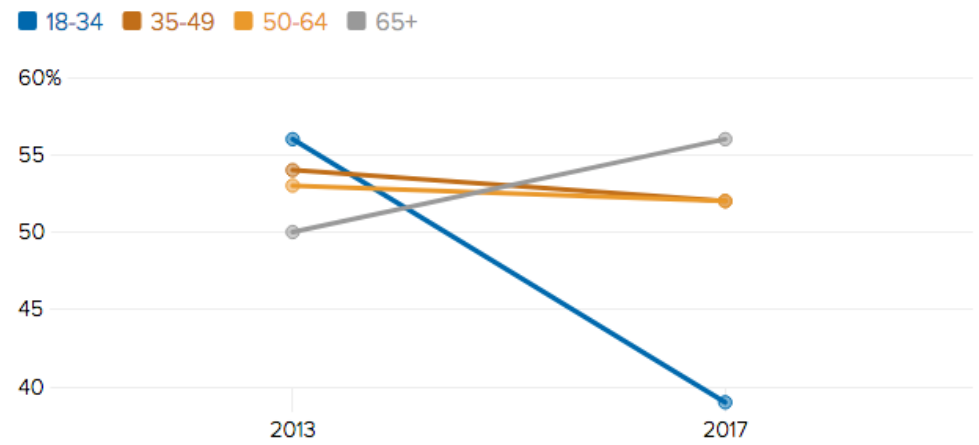
## A four-year college degree is ... ?



NBC NEWS

Data: NBC News/Wall Street Journal poll, August 2017

### % saying 4-year degree is worth the cost, by age



NBC NEWS

Data: NBC News/WSJ poll, August 2017; CNBC poll, June 2013

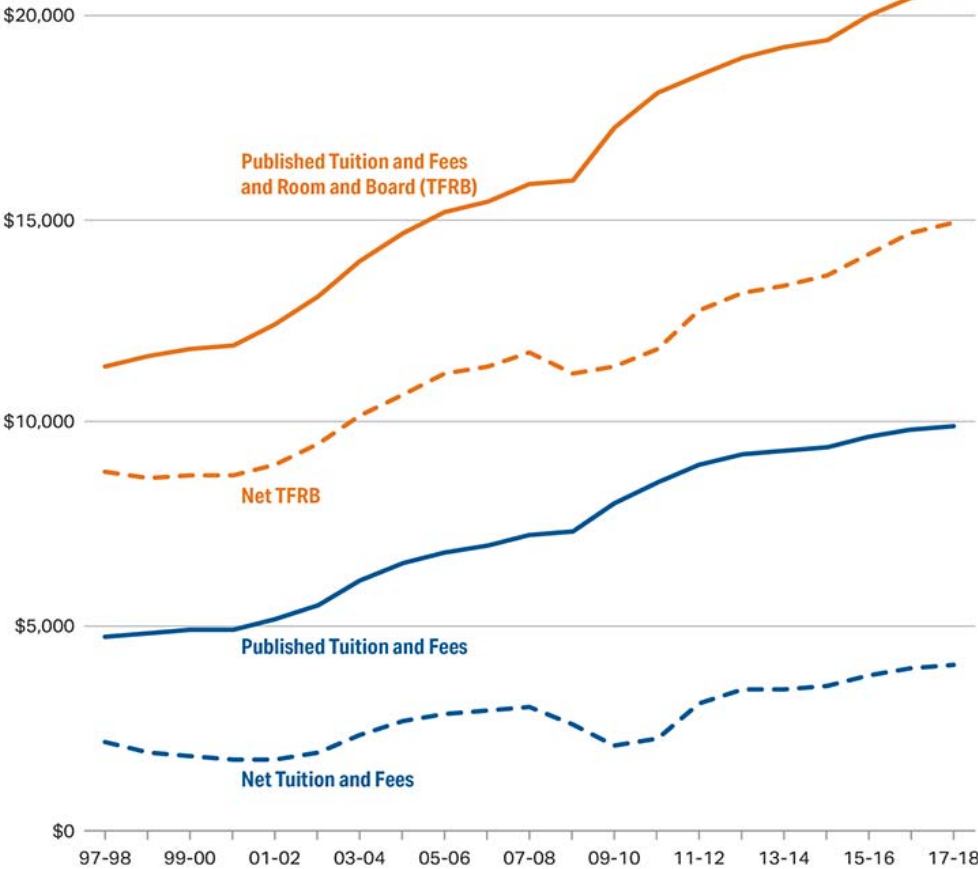


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# Costs are rising. Will this continue?

Average Published and Net Prices in 2017 Dollars, Full-Time In-State Undergraduate Students at Public Four-Year Institutions, 1997-98 to 2017-18



	MSU	UM
Published TFRB	20,467	19,521
Net TFRB (14/15)	14,236	13,112

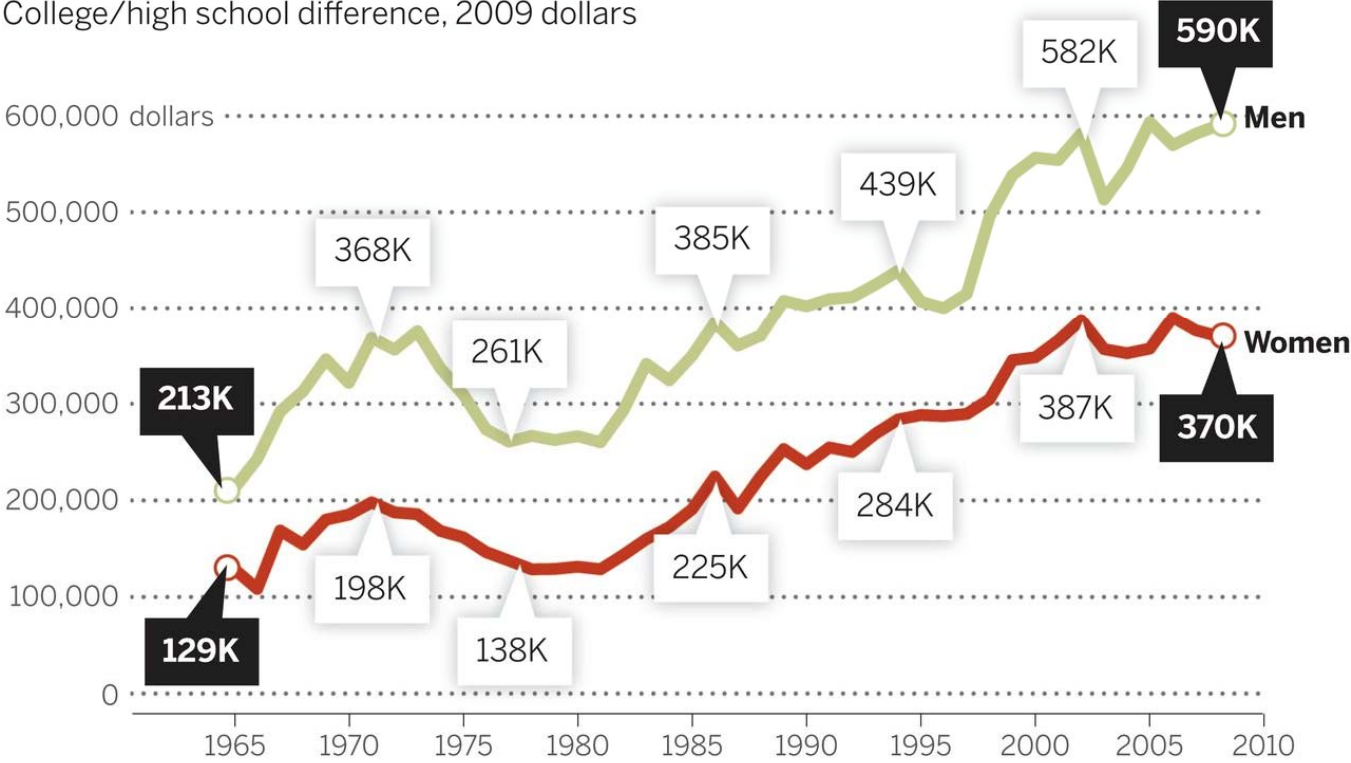
Source: collegesimply.com

Source: College Board Trends in Higher Education

**For average attendee, college pays off (gain in lifetime earnings exceed costs), and the expected return on college has increased over time.**

### **Present discounted value of college relative to high school degree net of tuition, 1965–2008**

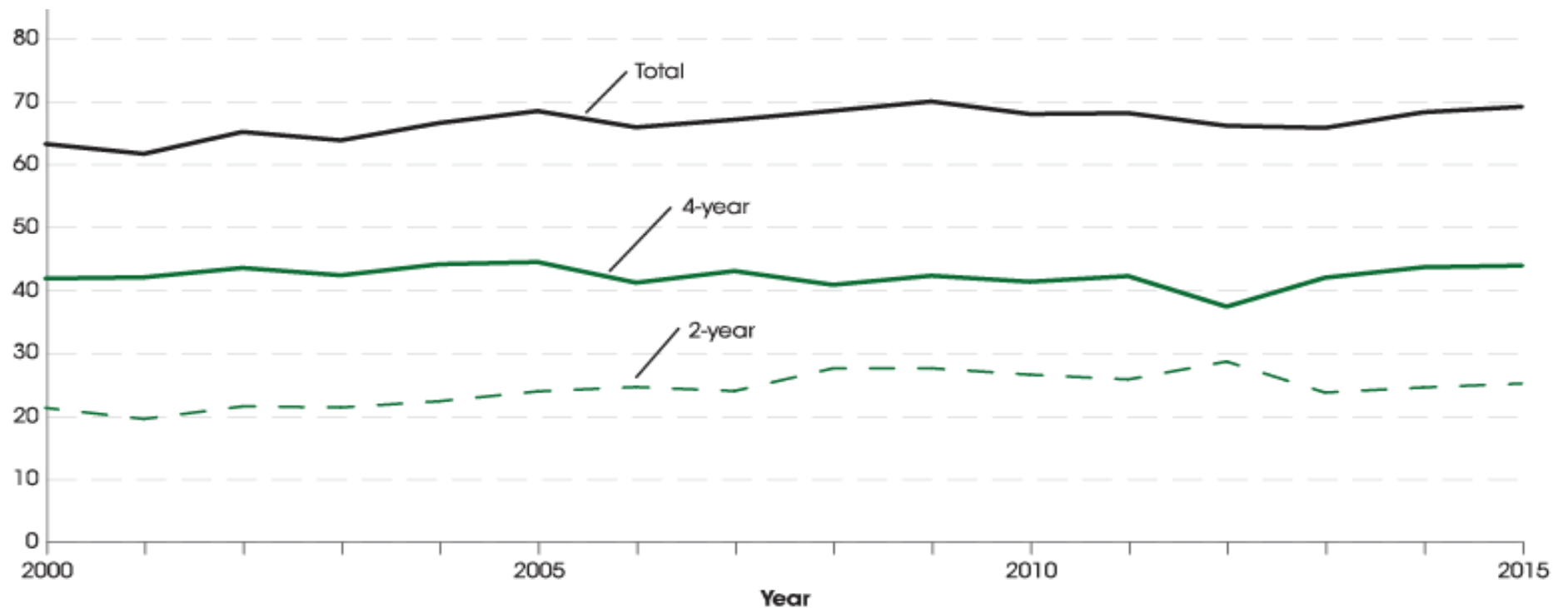
College/high school difference, 2009 dollars



Source: Autor, D. (2014) Skills, education, and the rise of earnings inequality among the “other 99 percent”

## In spite of net cost growth, enrollment propensity has remained fairly constant...

*Percentage of high school completers who were enrolled in 2- or 4-year colleges by the October immediately following high school completion, by level of institution: 2000–2015*



**SOURCE:** U.S. Department of Education, National Center for Education Statistics. (2017). *The Condition of Education 2017* (2017-144), [Immediate College Enrollment Rate](#).



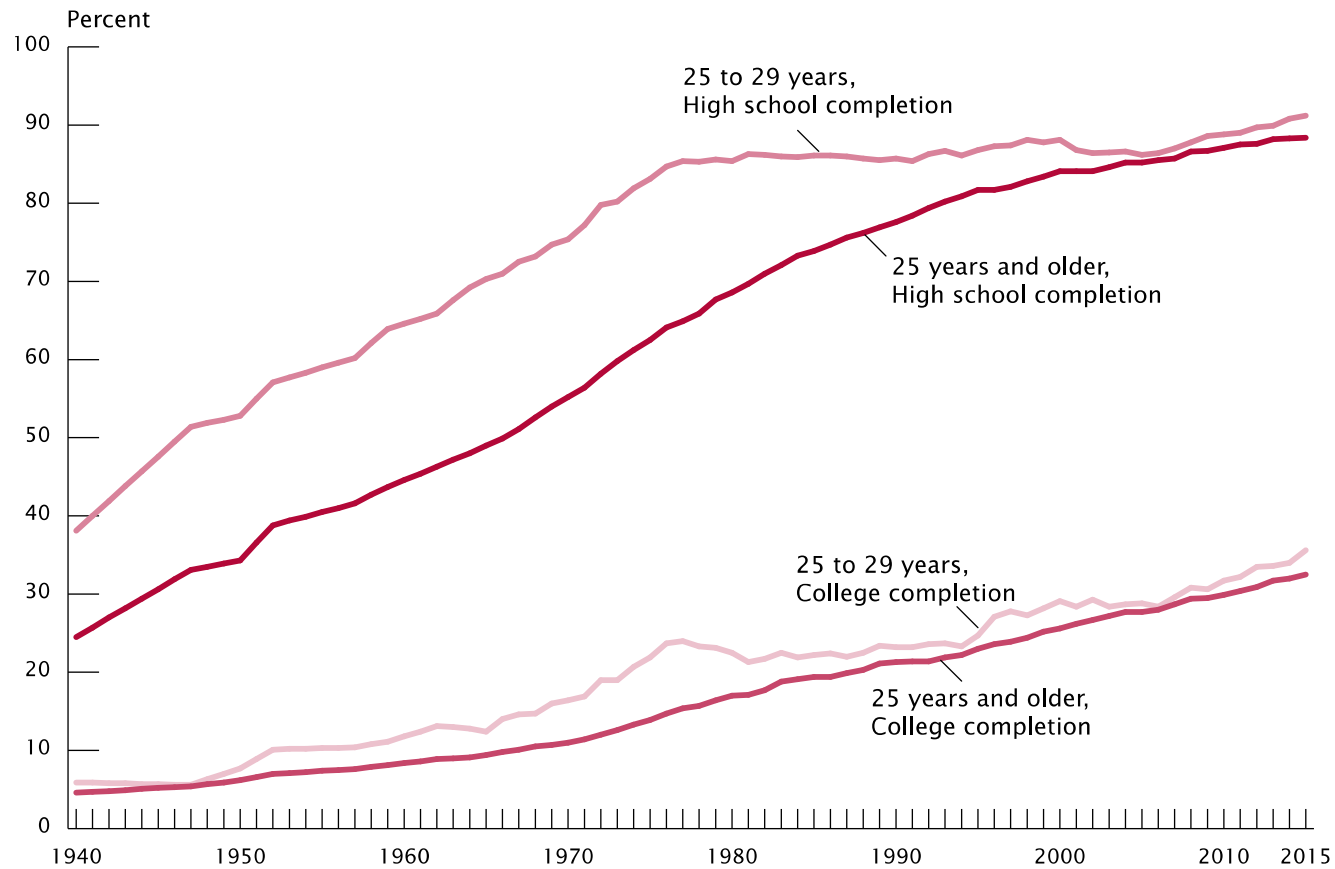
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... and the share of people with a college degree has continued to grow.

**Percentage of the Population 25 Years and Over Who Completed High School or College by Age Group: Selected Years 1940–2015**

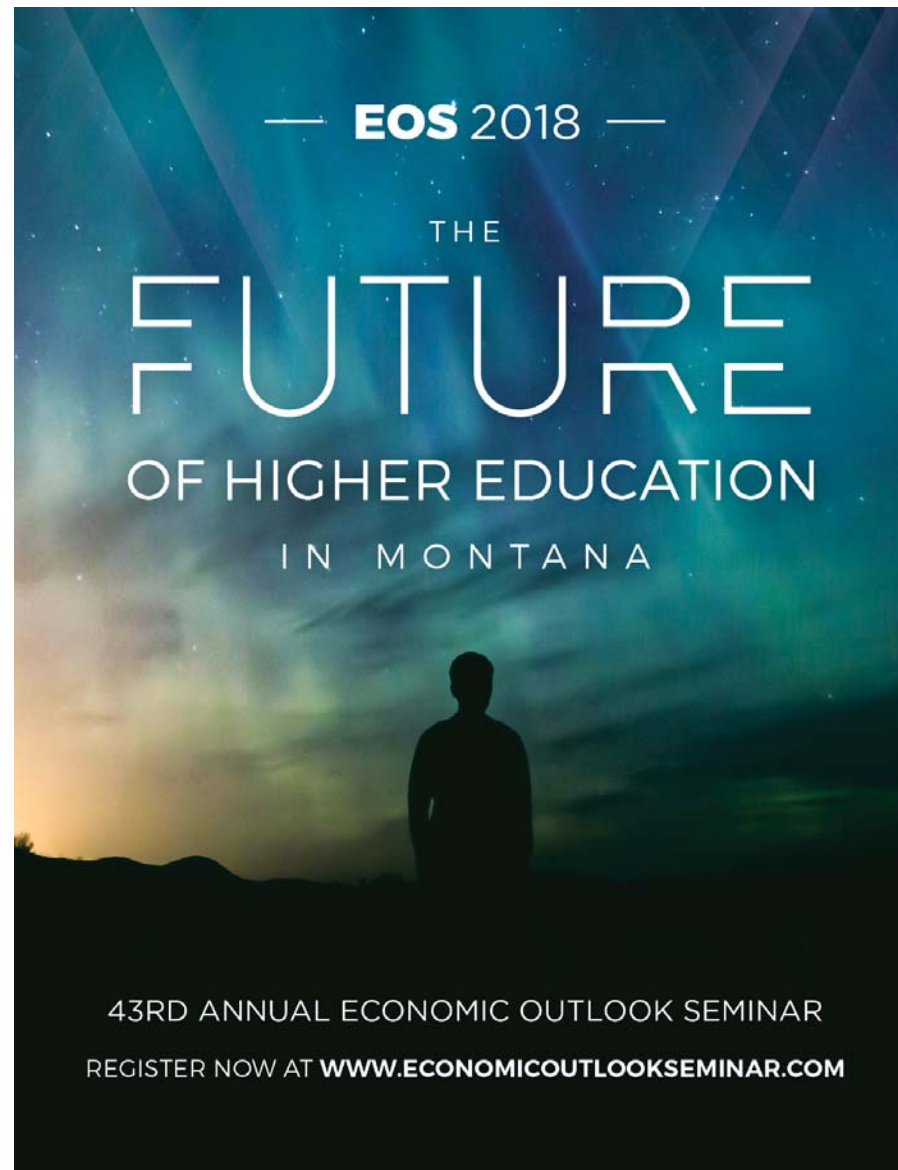


Note: Data for every individual year are not available for years prior to 1964.  
Source: U.S. Census Bureau, 1947–2015 Current Population Survey and 1940 Decennial Census.



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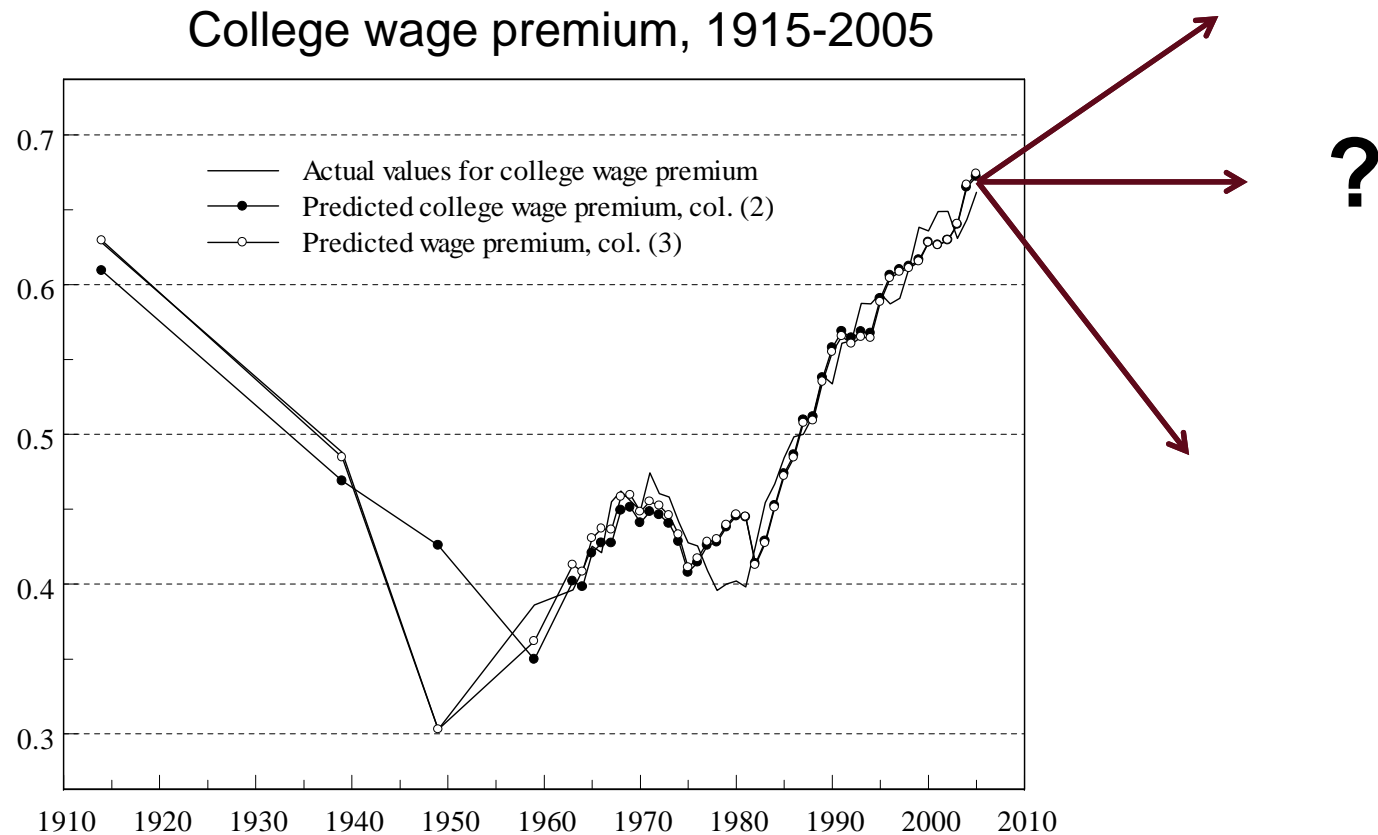
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# Will economic changes reduce the benefits of attending college? Will demand for college educated workers fall?



Source: Goldin and Katz (2009) *The Race Between Education and Technology*

Will technological change lead *"50 percent of the 4,000 colleges and universities in the U.S. [to] be bankrupt in 10 to 15 years."* (Clayton Christiansen, Harvard Business School)?

*To Be Continued ...*



If you yearn for more, check out my appearance on the College of Business' new podcast, "**A New Angle**", hosted by COB professor Justin Angle.

**Available 1/26** wherever you get your podcasts (e.g., iTunes, Stitcher, SoundCloud)



A New Angle is an educational and business podcast highlighting awesome people doing cool things in Montana.



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