

Future Trends in Technology and Education | June 2013

A monthly report on trend lines for higher education, compiled by Bryan Alexander.

Table of Contents: International education - Demographic trends - More MOOCs and online learning – Social media – Crowdfunding - eBooks continue to grow and develop –Device ecosystem growing - 3d printing innovates, grows - Automation’s promise - Adjunctification continues - Academic unions criticizing deployment of technology - The higher education bubble, continued – Countervailing trends – Other trends – About Future Trends – Endnotes

Editorial note: this is the first issue of FTTE, after nearly two years as NITLE’s Future Trends report. Welcome to new readers! Information about this newsletter can be found below.

International education. An increasing number of American students are attending Canadian universities, citing preferable tuition prices and concomitant debt.¹

Demographic trends. Northeastern and upper Midwestern states contain America’s leading proportion of student debt holders, while those regions also hold a declining number of pre-college children.² This adds to the difficulty of using alumni networks to recruit new students in the south and west.

More MOOCs and online learning. The California state system is considering shifting some science lab time to online versions, in order to free up room for more students.³

Liberal arts campuses currently show three different responses, based on a sample of three schools: teaching MOOCs, rejecting them, and offering small versions.⁴

MIT offered one MOOC for professional development credit, and for a fee.⁵ Yale joined Coursera, offering four initial classes.⁶

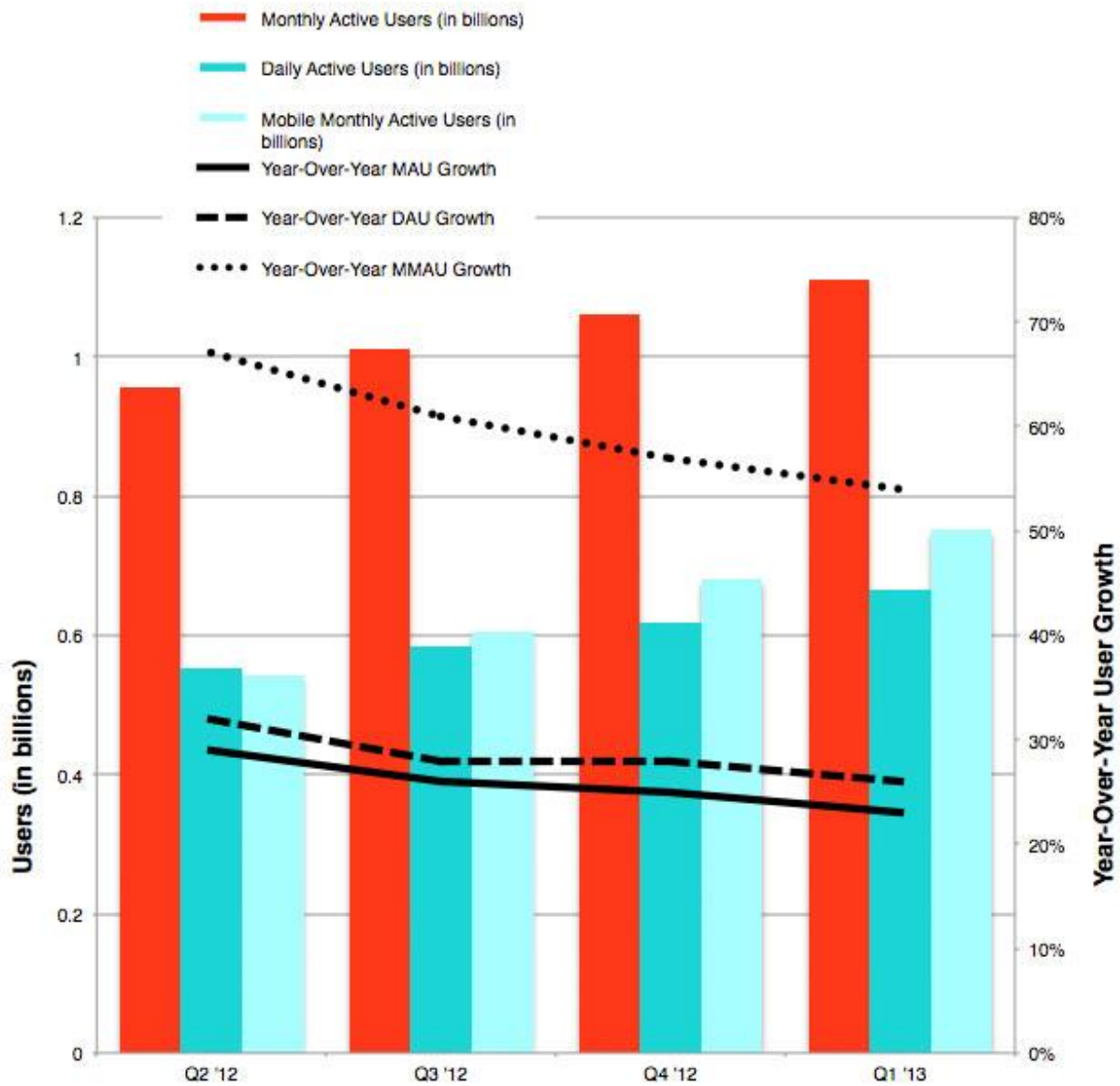
Georgia Tech announced a partnership with MOOC provider Udacity and AT&T, aimed at supporting a wholly online masters degree in computer science at 1/6th of normal tuition.⁷

MOOCs about teaching online began to appear, as HP announced a set of summer MOOCs in how to teach various disciplines online.⁸ A Wisconsin school offered a kind of meta-MOOC, concerning cheating in online classes.⁹

A European effort, the MOOC Production Fellowship, launched to raise money for crowdsourced class topics.¹⁰

Social media. One liberal arts university’s fraternity house sparked campus outrage and investigations after posting offensive comments on social media. Interestingly, the original content appeared on a closed Facebook group, but was aired via an open WordPress blog.¹¹

The number of Facebook users continued to grow, but the rate of increase was lower than ever before, suggesting a plateau ahead:¹²



Pinterest continues to grow, referring users to more sites than Twitter does.¹³ Yahoo! purchased independent blog platform Tumblr, which is popular with younger people and hosts more than one hundred million sites.¹⁴

Crowdfunding grows. (See “MOOCs” above, re: MOOC Production Fellowship)

eBooks continue to grow and develop. The number of ebooks and their monetary value grew significantly in 2012, according to recent surveys.¹⁵ Trend to watch: ebooks cannibalizing hardcover books.

Open access possibilities. A group of scholarly publishers proposed a partnership to ease creation of open scholarship for federal requirement, to be called Chorus (Clearinghouse for the Open Research of the United States).¹⁶

Device ecosystem keeps growing.

- Microsoft demoed its new Xbox One gaming plus other media console.¹⁷ This continues the trend of development for the living room space, plus the development of gesture-based computing through its associated Kinect platform.
- Voice interfaces grew, as Google announced speech-activated search for more devices, including laptops.¹⁸
- The amount of text messages actually declined last year, probably as smartphone users shifted to other communication channels.¹⁹
- Tablet ownership grew significantly over the past year, doing especially well among those with higher incomes, college graduates, and adults in their 30s and 40s.²⁰

3d printing continues to innovate and grow. A 3d-printed gun was successfully test-fired.²¹ The creator took its designs offline, following a munitions-export control request from the US State Department; however, the plans are already widely available online through the Pirate Bay and elsewhere.²²

Medical doctors designed and printed a tracheal splint to save a baby's life.²³

Automation's promise. IBM is developing mobile device connections to Watson-driven applications.²⁴ The VGo device lets home- or hospital-bound students participate in classes via a mobile, telepresence-equipped robot.²⁵

Cloud computing grows. Adobe announced it would no longer make disk copies of its popular Creative Suite tools (Flash, Dreamweaver, etc); instead, they can only be subscribed to online.²⁶

Educational entrepreneurship. New learning management system (LMS) Canvas won a \$30 million shot of investment capital.²⁷

Onshoring. Google-owned Motorola will open a smartphone-manufacturing plant not in east Asia but in Texas.²⁸

Adjunctification continues. A group of Ohio public universities is exploring sharing information about adjuncts, in order to keep the latter's hours down due to an interpretation of the Affordable Care Act.²⁹ Two campuses used the lecturer category to make available to adjuncts a position with medical coverage.³⁰

Academic unions criticizing deployment of technology. The union of California’s public faculty issued a statement against San Jose State’s president’s embrace of MOOCs.³¹ SUNY faculty unions...³²

In a nonunion but related move, a group of Harvard faculty requested more input into HarvardX MOOC work.³³ The National Council of Teachers of English (NCTE) issued a statement objecting to the deployment of writing assessment technologies.³⁴

Athletics budgets doing well. Collegiate athletics budgets continued to grow, on average outpacing the growth of institutions’ total spending.³⁵ Coach salaries grew more rapidly than faculty’s, including during the Great Recession’s depths.³⁶

The higher education bubble, continued.

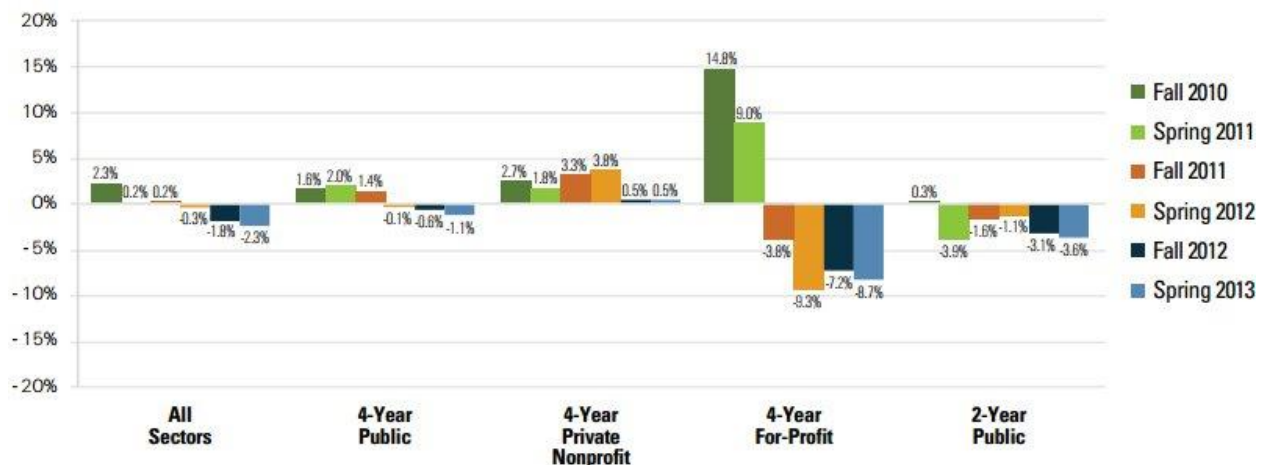
"Student debt has become the defining feature of their lives—the millstone around their necks that holds them back from a full financial future”

-Richard Cordray, director of the United States Consumer Financial Protection Bureau³⁷

This concept, which we began to track in 2012, continues to build across multiple fronts. It holds that colleges are overpriced, that student demand is questionable, and both could drop together:

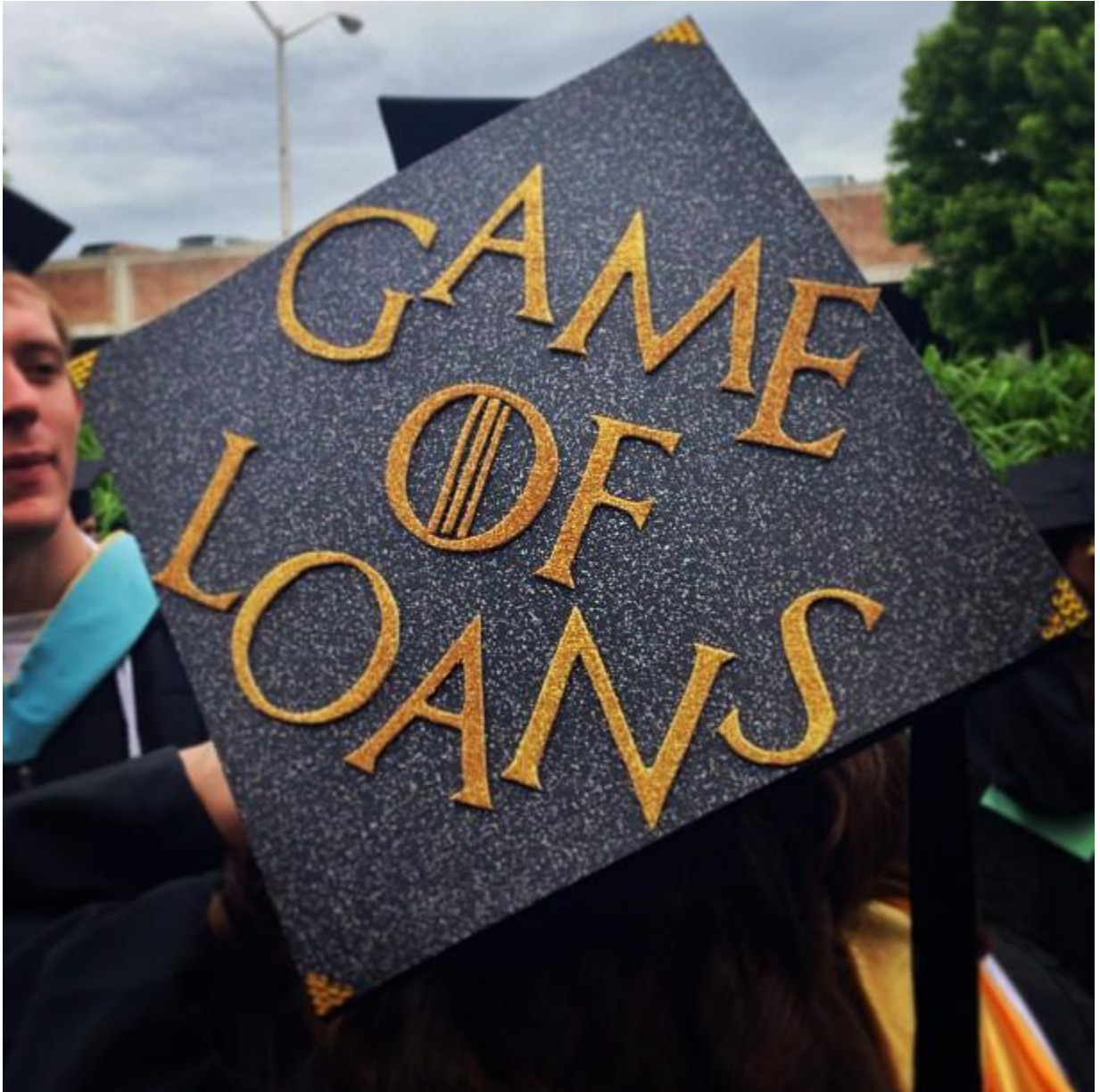
- One public liberal arts institution ran into a dangerous budget crisis as its fall class numbers fall far below expectations.³⁸
- The number of undergraduate students attending colleges and universities declined, slightly, for the third year in a row. Private institutions alone avoided a negative trajectory.³⁹

Figure 1: Percent Change from Previous Year, Enrollment by Sector (Title IV, Degree-Granting Institutions)



- Students protested Cooper Union’s decision to charge tuition, occupying that institution’s president’s office for at least one week.⁴⁰
- Student debt continued to loom as a major issue. The proportion of delinquent student loans increased.⁴¹ One poll found one-third of current undergraduates wishing they’d

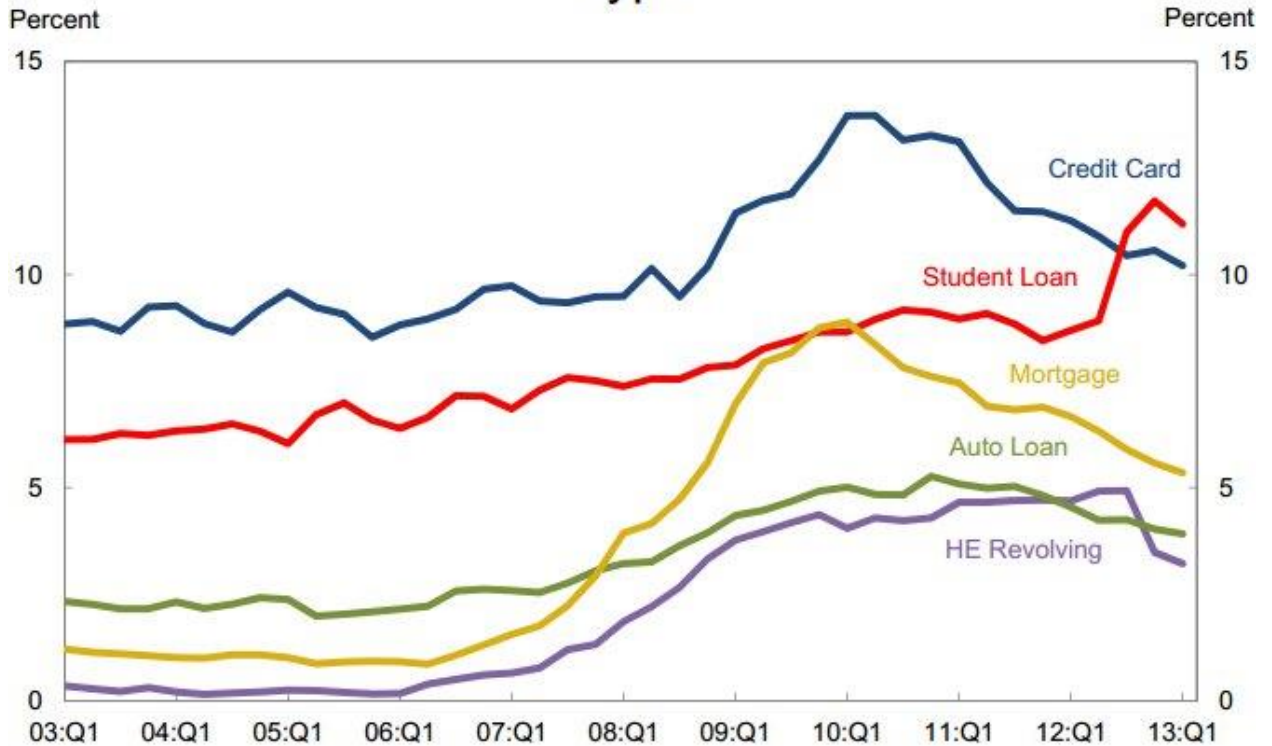
worked instead of attending school.⁴² Student debt is also the subject of popular culture humor, such as:



⁴³

The United States Consumer Protection Agency published a report stating that student debt, especially from private financial institutions, was depressing the nation's economic growth and harming the careers of college graduates.⁴⁴ Meanwhile the total amount of student loan debt increased, even as Americans reduced their holdings of other types of debt.⁴⁵

Percent of Balance 90+ Days Delinquent by Loan Type



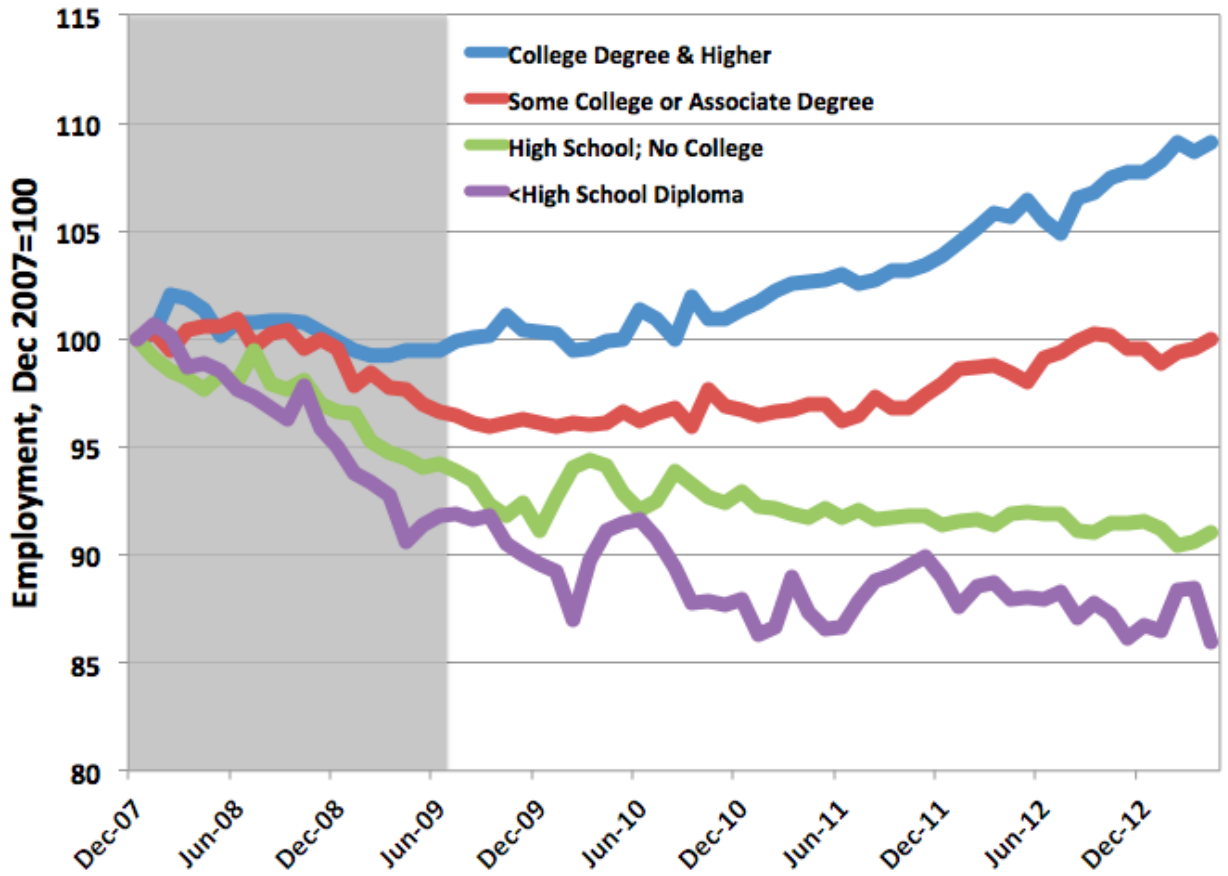
Source: FRBNY Consumer Credit Panel/Equifax

- Law schools continue to suffer, as enrollments for fall 2013 programs dropped “down 13.4 percent from 2012.”⁴⁶
- Politicization, nonpartisan: Criticism of inequities in financial aid appeared.⁴⁷ A Brookings Institute paper argued that college is not a worthwhile investment for some people and careers, casting doubt on the call for all Americans to experience higher education.⁴⁸ A Democratic representative (and former college president) circulated a proposal for an alternative higher education accreditation system.⁴⁹ And Congress explored a proposal to track colleges by the economic fortunes of their graduates.⁵⁰

Countervailing trends:

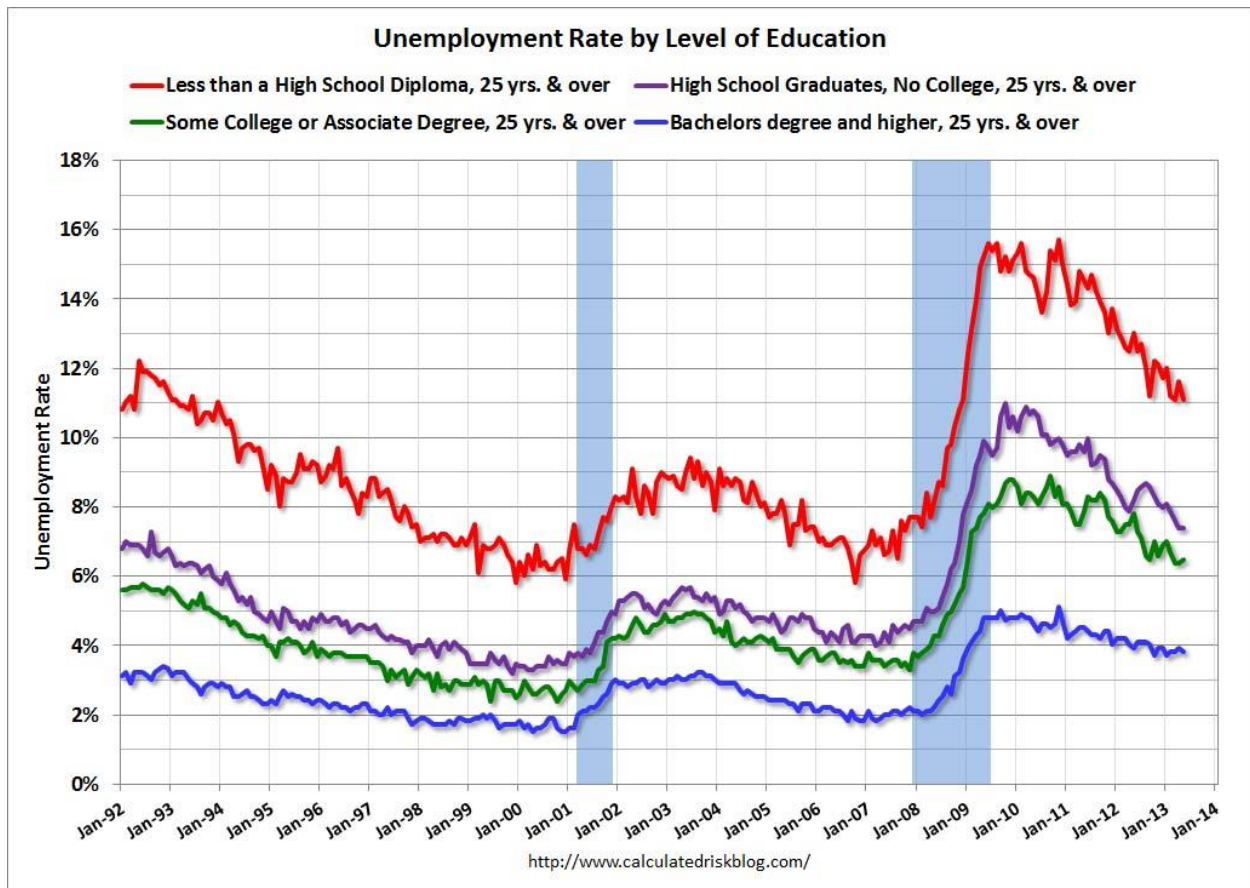
- College graduates continue to win more jobs than non-grads.

Employment By Education Since the Great Recession



51

The college premium's effects appear to be long-lasting, functioning both before and during recession.⁵²



Some campuses experiment with new measures to offset financial challenges. Reed College reached out to low-income prospective students by dropping its application fee.⁵³ Georgia State trialed data-backed microgrants to support students falling just short of paying their bills.⁵⁴

Other trends. We have been tracking the following additional trends since early 2012, but found no new developments during this month. Possible explanations: one or more are fading as future trends; some may be building slowly over time; some stories were underreported.

Those trends include: Liberal arts intervening in K-12; intergenerational tensions; the liberal arts sector shrinks or transforms; badges progressing; open access and open education growing; changes to racial and other demographics; the limits of internships; shared academics; big data; onshoring hardware production; crowdsourcing; digital video for teaching; continued development of Digital Humanities; library budget crunches; LMSs and open source; digital copyright battles; augmented reality's steady march; Cloud computing; the durability of Moore's Law; the limits of the Web.

About Future Trends in Technology and Education

Future Trends in Technology and Education (FTTE) is a monthly report. It surveys recent developments in how education is changing, primarily under the impact of digital technologies. Its purpose is to help educators, policy-makers, and the public think about the future of teaching, learning, research, and institutions.

Every month FTTE aggregates recent developments, checking them against previously-identified trendlines. As certain trends build in support and significance, the report recommends watching them for future impact. FTTE also notes trends which appear to be declining in significance. Every single item is backed up by footnoted research, often accessible through the open Web. Trends are also aired for feedback and development via the author's Twitter (<https://twitter.com/bryanalexander>) and blog (<http://bryanalexander.org/>).

Subscriptions are free, and open to any interested person or institution.

For more information, see <http://bryanalexander.org/future-trends-in-technology-and-education/>.

Endnotes

¹ Rehema Ellis and Jeff Black, "Americans head north for affordable college degrees", NBC News, April 24, 2013, accessed May 2, 2013, <http://usnews.nbcnews.com/news/2013/04/24/17882085-americans-head-north-for-affordable-college-degrees?lite>.

² Phil Izzo, "Which States Have Highest Student-Loan Delinquencies?" Wall Street Journal, May 14, 2013, accessed May 15, 2013, <http://blogs.wsj.com/economics/2013/05/14/which-states-have-highest-student-loan-delinquencies/?mod=WSJBlog>.

³ Ry Rivard, "Virtual Lab Experiment" Inside Higher Ed, May 23, 2013, accessed May 24, 2013, <http://www.insidehighered.com/news/2013/05/23/cal-state-may-turn-virtual-labs>.

⁴ David F. Carr, "MOOCs: What University CIOs Really Think", Information Week, May 2, 2013, accessed May 3, 2013, http://www.informationweek.com/education/online-learning/moocs-what-university-cios-really-think/240154120?cid=RSSfeed_IWK_government_blog.

⁵ scarsonmsm, "New MIT physics MOOC to offer continuing education credit", May 1, 2013, accessed May 8, 2013, <http://mitopencourseware.wordpress.com/2013/05/01/new-mit-physics-mooc-to-offer-continuing-education-credit/>. https://www.edx.org/courses/MITx/8.MReV/2013_Summer/about.

⁶ "Provost Polak appoints Professor Craig Wright as first academic director of online education, creates university-wide committee, and partners with Coursera for MOOCs", press release, May 15, 2013, accessed May 16, 2013, <http://news.yale.edu/2013/05/15/provost-polak-appoints-professor-craig-wright-first-academic-director-online-education-cr>.

⁷ Sebastian Thrun, "Sebastian Thrun: Announcing Online Masters Degree in Computer Science in Collaboration with Georgia Tech and AT&T", Udacity blog, May 14, 2013, accessed May 15, 2013, <http://blog.udacity.com/2013/05/sebastian-thrun-announcing-online.html>. Ry Rivard, "Massive (But Not Open)", Inside Higher Ed, May 14, 2013, accessed May 15, 2013, <http://www.insidehighered.com/news/2013/05/14/georgia-tech-and-udacity-roll-out-massive-new-low-cost-degree-program>.

⁸ Ellis Booker, "HP Unveils Online 'STEMx' Courses For Teachers", Information Week, April 18, 2013, accessed May 8, 2013, <http://www.informationweek.com/education/online-learning/hp-unveils-online-stemx-courses-for-teac/240153209>. <http://catalyst.navigator.nmc.org/>.

-
- ⁹ Jake New, "MOOC Teaches How to Cheat in Online Courses, With Eye to Prevention", Chronicle of Higher Education, May 2, 2013, accessed May 6, 2013, <http://chronicle.com/blogs/wiredcampus/mooc-teaches-how-to-cheat-in-online-courses-with-eye-to-prevention/43699>.
- ¹⁰ <https://moocfellowship.org/info>.
- ¹¹ Anna Staver, "Willamette fraternity posts prompt outrage", Statesman Journal, May 7, 2013, accessed May 8, 2013, http://www.statesmanjournal.com/article/20130507/NEWS/305070021/Willamette-fraternity-posts-prompt-outrage?nclick_check=1.
- ¹² Mike Isaac and Beth Callaghan, "Facebook's Declining User Growth Rate, Pictured", All Things D, May 2, 2013, accessed May 2, 2013, <http://allthingsd.com/20130502/facebook-declining-user-growth-rate-pictured/>.
- ¹³ Janet Aronica, "Pinterest Sent More Referral Traffic Than Twitter in February", Shareaholic, March 7, 2012, accessed May 3, 2013, <http://blog.shareaholic.com/2012/03/pinterest-referral-traffic-2/>.
- ¹⁴ Marissa Mayer, "Tumblr. + Yahoo! = !!" Yahoo! blog post, May 20, 2013, accessed May 21, 2013, <http://yahoo.tumblr.com/post/50902111638/tumblr-yahoo>. David Karp, "News!" Tumblr staff blog post, May 20, 2013, accessed May 21, 2013, <http://staff.tumblr.com/post/50902268806/news>. Matt Buchanan, "What Yahoo Bought With A Billion Dollars: Hope", May 20, 2013, accessed May 21, 2013, http://www.newyorker.com/online/blogs/elements/2013/05/yahoo-tumblr-acquisition-tumble-into-the-unknown.html?mbid=gnep&google_editors_picks=true.
- ¹⁵ Jim Milliot, "Online Retailers, E-books Gained in 2012", Publishers Weekly, May 11, 2013, accessed May 13, 2013, <http://www.publishersweekly.com/pw/by-topic/digital/retailing/article/57201-online-retailers-e-books-gained-in-2012.html>.
- ¹⁶ Jennifer Howard, "Publishers Propose Public-Private Partnership to Support Access to Research", Chronicle of Higher Education, June 4, 2013, accessed June 7, 2013, <http://chronicle.com/blogs/wiredcampus/publishers-propose-public-private-partnership-to-support-access-to-research/44005>.
- ¹⁷ Peter Rubin, "Xbox One Revealed", Wired, May 2013, accessed May 24, 2013, <http://www.wired.com/gadgetlab/2013/05/xbox-one/>.
- ¹⁸ Evan Dashevsky, "Google I/O 2013 keynote", Techhive blog post, May 15, 2013, accessed May 16, 2013, <http://www.techhive.com/article/2038817/googles-vision-for-search-highlights-knowledge-graph-speech.html>.
- ¹⁹ "US Text Messaging Volume Declined by 5% Last Year", Marketingcharts, May 3, 2013, accessed May 14, 2013, <http://www.marketingcharts.com/wp/topics/wireless/us-text-message-volume-declined-by-5-last-year-29212/>.
- ²⁰ Kathryn Zickuhr, "Tablet Ownership 2013", Pew Internet and American Life report, June 10, 2013, accessed June 10, 2013, <http://pewinternet.org/Reports/2013/Tablet-Ownership-2013.aspx>.
- ²¹ Andy Greenberg, "Meet The 'Liberator': Test-Firing The World's First Fully 3D-Printed Gun", May 5, 2013, accessed May 6, 2013, <http://www.forbes.com/sites/andygreenberg/2013/05/05/meet-the-liberator-test-firing-the-worlds-first-fully-3d-printed-gun/>. <http://defcad.org/>.
- ²² Dan Nosowitz, "U.S. State Department Tells Defense Distributed To Take Down 3-D Printed Gun Plans", Popular Science, May 9, 2013, accessed May 12, 2013, <http://www.popsci.com/technology/article/2013-05/us-state-department-tells-defense-distributed-take-down-3-d-printed-gun-plans>. Jennifer Preston, "Printable-Gun Instructions Spread Online After State Dept. Orders Their Removal", New York Times, May 10, 2013, accessed May 11, 2013, <http://thelede.blogs.nytimes.com/2013/05/10/printable-gun-instructions-spread-online-after-state-dept-orders-their-removal/>.
- ²³ David A. Zopf, Scott J. Hollister, Marc E. Nelson, Richard G. Ohye, Glenn E. Green, "Bioresorbable Airway Splint Created with a Three-Dimensional Printer", New England Journal of Medicine, 2013; 368:2043-2045, May 23, 2013, accessed May 24, 2013, DOI: 10.1056/NEJMc1206319, <http://www.nejm.org/doi/full/10.1056/NEJMc1206319>.
- ²⁴ Bruce Upbin, "IBM's Watson Now A Customer Service Agent, Coming To Smartphones Soon", Forbes, May 21, 2013, accessed May 21, 2013, <http://www.forbes.com/sites/bruceupbin/2013/05/21/ibms-watson-now-a-customer-service-agent-coming-to-smartphones-soon/>. Clay Dillow, "IBM's Watson Is Bringing 'Cognitive Computing' to Customer Service", Popular Science, May 21, 2013, accessed May 24, 2013, <http://www.popsci.com/technology/article/2013-05/ibms-watson-bringing-cognitive-computing-power-customer-service>.

-
- ²⁵ Robbie Brown, "A Swiveling Proxy That Will Even Wear a Tutu", New York Times, June 7, 2013, accessed June 10, 2013, http://www.nytimes.com/2013/06/08/education/for-homebound-students-a-robot-proxy-in-the-classroom.html?hp&_r=0.
- ²⁶ Frederic Lardinois, "Adobe Goes All-In With Subscription-Based Creative Cloud, Will Still Sell CS6 For Now But Will Stop Developing It", TechCrunch, May 6, 2013, accessed May 6, 2013, <http://techcrunch.com/2013/05/06/adobe-goes-all-in-with-subscription-based-creative-cloud-will-stop-selling-regular-cs-licenses-shrink-wrapped-boxes/>.
- ²⁷ Sara Grossman, "As Course-Management Market Gets More Competitive, Instructure Raises \$30-Million in Funds", Chronicle of Higher Education, June 5, 2013, accessed June 7, 2013, <http://chronicle.com/blogs/wiredcampus/as-course-management-market-gets-more-competitive-instructure-raises-30-million-in-funds/44017>.
- ²⁸ Craig Timberg, "Plan by Google's Motorola to open Tex. factory signals shift as tech firms look to add U.S. jobs", Washington Post, May 29, 2013, accessed June 3, 2013, http://www.washingtonpost.com/business/technology/plan-by-googles-motorola-to-open-tex-factory-signals-shift-as-tech-firms-look-to-add-jobs-in-us/2013/05/29/9e91b0c0-c875-11e2-9245-773c0123c027_story.html.
- ²⁹ Carl Straumsheim, "Trading Adjuncts", Inside Higher Ed, May 7, 2013, accessed May 8, 2013, <http://www.insidehighered.com/news/2013/05/07/ohio-public-institutions-consider-creating-adjunct-referral-system>.
- ³⁰ Colleen Flaherty, "Bucking the Trend", Inside Higher Ed, May 22, 2013, accessed May 24, 2013, <http://www.insidehighered.com/news/2013/05/22/college-offers-health-insurance-coverage-some-adjuncts-ahead-new-regulations>.
- ³¹ California Faculty Association - San Jose State University, Executive Board, "Massive Virtual Fires Engulf San Jose State University", Chronicle of Higher Education, May 9, 2013, accessed May 9, 2013, <http://chronicle.com/article/San-Jose-State-Us-Faculty/139139/>.
- ³² <http://www.insidehighered.com/news/2013/05/31/amid-coordinated-effort-transform-higher-ed-coursera-some-faculty-remained-dark>.
- ³³ Nicholas P. Fandos, "58 Professors Sign Letter Calling for Faculty Oversight of edX" Harvard Crimson, May 23, 2013, accessed May 24, 2013, <http://www.thecrimson.com/article/2013/5/23/professors-edx-oversight-fas/>.
- ³⁴ NCTE Task Force on Writing Assessment, "NCTE Position Statement on Machine Scoring", May 3, 2013, accessed May 6, 2013, http://www.ncte.org/positions/statements/machine_scoring.
- ³⁵ Daniel L. Fulks, Revenues & Expenses 2004 – 2012: NCAA® Division I Intercollegiate Athletics Programs Report, National Collegiate Athletic Association, 2013, <http://www.ncaapublications.com/productdownloads/2012RevExp.pdf>.
- ³⁶ Allie Grasgreen, "Disproportionate Paychecks", Inside Higher Ed, May 8, 2013, accessed May 9, 2013, <http://www.insidehighered.com/news/2013/05/08/coaching-salaries-rising-10-times-faster-instructional-salaries>.
- ³⁷ Allie Bidwell, "Rising Student-Loan Debt Hinders Spending and Hurts the Economy, Report Says", Chronicle of Higher Education, May 9, 2013, accessed May 9, 2013, http://chronicle.com/article/Rising-Student-Loan-Debt-Hurts/139141/?cid=at&utm_source=at&utm_medium=en.
- ³⁸ Jenna Johnson, "St. Mary's College short about 150 freshmen, plans for budget cuts", Washington Post, May 13, 2013, accessed May 16, 2013, http://www.washingtonpost.com/local/education/st-marys-college-short-about-150-freshmen-plans-for-budget-cuts/2013/05/13/4b0fa1c8-bbff-11e2-89c9-3be8095fe767_story.html.
- ³⁹ National Student Clearinghouse Research Center, "Current Term Enrollment Estimates", Spring 2013, accessed May 20, 2013, <http://research.studentclearinghouse.org/files/TermEnrollmentReport-Spring2013.pdf>.
- ⁴⁰ Sydney Brownstone, "VIDEO: Cooper Union Students Take Over President's Office, Hold Vote of No Confidence (Update)", Village Voice, May 8 2013, accessed May 9 2013, http://blogs.villagevoice.com/runninscared/2013/05/video_cooper_occupy.php. "Students Take President's Office", Cooper Union Student Action to Save Our School blog post, May 8, 2013, accessed May 10, 2013, <http://cosos.org/students-take-presidents-office/>. William S. Smith, "Cooper Occupation Exceeds One-Week Mark", Art in America, May 16, 2013, accessed May 18, 2013,

<http://www.artinamericamagazine.com/news-opinion/news/2013-05-16/cooper-occupation-hits-one-week-mark/>.

⁴¹ John Hechinger, "Overdue Student Loans Reach Record as U.S. Graduates Seek Jobs", Bloomberg, May 23, 2013, accessed May 25, 2013, <http://www.bloomberg.com/news/2013-05-23/overdue-student-loans-reach-record-as-u-s-graduates-seek-jobs.html>.

⁴² Halah Touryalai, "Student Loan Problems: One Third Of Millennials Regret Going To College", Forbes, May 22, 2013, accessed May 25, 2013, <http://www.forbes.com/sites/halahtouryalai/2013/05/22/student-loan-problems-one-third-of-millennials-regret-going-to-college/>.

⁴³ <http://i.imgur.com/Fddsg1u.jpg>.

⁴⁴ "Student Loan Affordability Analysis of Public Input on Impact and Solutions", Consumer Financial Protection Bureau, MAY 8, 2013, accessed May 9, 2013, files.consumerfinance.gov/f/201305_cfpb_rfi-report_student-loans.pdf.

⁴⁵ Federal Reserve Bank Of New York, *Quarterly Report On Household Debt And Credit*, May 2013, accessed May 14, 2013, http://www.newyorkfed.org/research/national_economy/householdcredit/DistrictReport_Q12013.pdf.

⁴⁶ Catherine Ho, "Law school applications continue to slide", Washington Post, June 2, 2013, accessed June 9, 2013, http://www.washingtonpost.com/business/capitalbusiness/law-school-applications-continue-to-slide/2013/06/02/db4929b0-c93f-11e2-9245-773c0123c027_story.html.

⁴⁷ John Hechinger & Janet Lorin, "Colleges Soak Poor Students to Funnel Aid to Rich", Bloomberg, May 8, 2013, accessed May 9, 2013, <http://www.bloomberg.com/news/2013-05-08/colleges-soak-poor-u-s-students-while-funneling-aid-to-rich.html>.

⁴⁸ Stephanie Owen and Isabel Sawhill, "Should Everyone Go To College?" Center on Children and Families at Brookings Brief #50, May 2013, accessed May 9, 2013, <http://www.brookings.edu/~media/research/files/papers/2013/05/07-should-everyone-go-to-college-owen-sawhill/08-should-everyone-go-to-college-owen-sawhill.pdf>.

⁴⁹ Libby A. Nelson, "Accreditation Fast Track?" Inside Higher Ed, June 7, 2013, accessed June 9, 2013, <http://www.insidehighered.com/news/2013/06/07/minerva-pushing-proposal-create-new-accreditation-system>.

⁵⁰ Libby A. Nelson, "Idea Whose Time Has Come?" Inside Higher Ed, May 13, 2013, accessed May 15, 2013, <http://www.insidehighered.com/news/2013/05/13/political-winds-shift-federal-unit-records-database-how-much>.

⁵¹ Matthew O'brien, "The College Grad Recovery Continues", The Atlantic, May 3, 2013, accessed May 5, 2013, http://www.theatlantic.com/business/archive/2013/05/the-college-grad-recovery-continues/275541/?google_editors_picks=true.

⁵² Bill McBride, "Graphs for Duration of Unemployment, Unemployment by Education and Diffusion Indexes", Calculated Risk blog post, June 08, 2013, accessed June 10, 2013, <http://www.calculatedriskblog.com/2013/06/graphs-for-duration-of-unemployment.html>.

⁵³ Kevin Kiley, "Free Apps", Inside Higher Ed May 23, 2013, accessed May 25, 2013, <http://www.insidehighered.com/news/2013/05/23/reed-college-eliminates-application-fee-increase-applications-low-income-students>.

⁵⁴ Jeffrey Selingo, "How a Little Data Can Solve One of Higher Education's Biggest Problems", Chronicle of Higher Education, May 20, 2013, accessed May 25, 2013, <http://chronicle.com/article/How-a-Little-Data-Can-Solve/139347/>.