



HOT Careers

A SPECIAL REPORT FOR RECENT AND MID-CAREER COLLEGE GRADUATES

for College Grads and Returning Students 2012

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Introduction

This is the fourth yearly edition of a special report prepared by UC San Diego Extension on “Hot Careers for College Graduates”. Anchored in one of the leading Research Universities in the United States, UC San Diego Extension is committed to providing timely and useful information on trends affecting life-long learning, as well as the changing employment opportunities emerging due to a rapidly shifting global economy and unprecedented changes in technology. The contextual factors most affecting jobs in the past year have been the Great Recession combined with significant transformations in the internet and the growth of social media. This has changed the landscape of opportunities for employment, as well as the strategies for job searches and updating skills.

Too often a graduate hears “congratulations” and “now what”? It may take months for the implications of “now what” to sink in – that a degree in the general Liberal Arts may not be enough to get a good job. In a changing and highly competitive job market, young graduates are often discouraged by their career horizons while working in low paid jobs. What we have learned through our work through UC San Diego Extension is that college grads increasingly need bridges to high quality employment. Those bridges help them understand where the job opportunities are, what the skill requirements are and how they can augment their Liberal Arts education with additional training and education to achieve their desired end - an interesting and challenging job with good compensation.

The changing trends in employment and skill requirements affecting the prospects of college grads are reflected in this report. Employment opportunities are also increasing, especially in technology related fields because of the retirement of “baby boomers”.

UC San Diego Extension has put together an in-house research team under my direction which is doing more and more sophisticated assessments of employment trends and opportunities. To this end, this fourth special report on “Hot Careers for College Graduates” has taken a different tact. We have used an algorithm to draw up a list of 18 hot job categories that are typically within the reach of current and recent college graduates. Many of these jobs require some additional training beyond the college degree, but the ones we examined do not typically require Masters or Ph.D. degrees. You won’t find veterinarians, registered nurses or advanced engineers on this list even though they are almost always in short supply. They are not included because they represent careers for which competitive admissions into long-term academic degree programs are typical. The occupations we have focused on are careers for which an individual with a college degree and some additional education or training can qualify.

Our experience with helping college grads build bridges to employment is heartening. We know it is possible for college grads to bridge into very high-quality jobs, many of which require technical skills, if they can find ways to increase their skills and networks through participation in an Extension Certificate. UC San Diego, Extension, as the continuing education arm of the university has more than 56,000 enrollees annually in about 4,300 courses. We are recognized across the nation and around the world for linking the public to the expert knowledge, leading professionals and “cutting edge” resources of the University of California.

To this end, the research team within Extension is committed to providing the general public with better and better information about trends in the world of work for college graduates. I want to thank Henry DeVries, our Assistant Dean for External Relations, for leading this effort and especially Josh Shapiro, Ph.D., Sociology, and Sundari Baru, Ph.D., Economics, for doing the “heavy lifting” on this project. Their work was informed by all the Academic Directors of UC San Diego Extension and the write-up of our results by Henry DeVries was significantly aided by Don Sevens, a former editor with UT San Diego.

Sincerely,



Mary L. Walshok, Ph.D.
Dean, UC San Diego, Extension

Methodology

Just what constitutes a “Hot Job”?

The research team at UC San Diego examined this question through an analysis of wage and employment information gathered by the US Department of Labor’s Bureau of Labor Statistics. Four weighted categories were used to arrive at our rankings; the number of current jobs in the fields, the ten-year projected growth from 2010 to 2020, the median wage and the work environment. The work environment category sums up factors relevant to employee satisfaction. It includes such things as: workplace atmosphere, relative time pressures on the job stress, responsibilities for others and the consequences of mistakes. Finally, a bridging parameter was added to account for the dilemma faced by so many college graduates struggling to find the right job in the wake of the Great Recession. Is the job one for which a college grad can quickly qualify with a minimal amount of post baccalaureate education and training?

There is a clear pattern as to where employment opportunities are growing. The data analysis revealed 18 major career sectors with strong employment potential. There is an increasing national demand for college graduates with “hands on” skills needed in computer related, finance and medical fields.

Results

Here is a more precise look at how the UC San Diego Extension research team created an algorithm to determine what constituted a “hot career” in today’s world for recent and mid-career college graduates. The five factors considered were:

- 1. Current rates of employment.** A total of 25 points were possible for this category based on current levels of employment data released by the Bureau of Labor Statistics.
- 2. Projected growth for jobs in the field.** A total of 25 points were possible based on projections from the Bureau of Labor Statistics.
- 3. Median wage for jobs in the field.** A total of 25 points were possible based on data from the Bureau of Labor Statistics.
- 4. Typical work environments in the field.** A total of 25 points were possible for this composite of 10 descriptors from various secondary research sources designed to capture the attractiveness of the workplace environment for the various occupations.
- 5. Bridgeability factor.** This was a simple “yes or no,” “in or out” decision based on whether a college graduate could bridge into this career with one or two years of study or reskilling. This is why excellent careers like registered nurse, medical scientist, veterinarian, optometrist and pharmacist did not make this hot careers list.

The following table shows how the 18 careers were scored and ranked:

Occupation Title	Current Employment	Projected Growth	Median Wage	Work Environment	TOTAL POINTS
Software Developers, Systems Software	15.0	22.5	25.0	11.85	74.35
Physical Therapists and Assistants	15.0	25.0	22.5	8.20	70.70
Software Developers, Applications	15.0	17.5	25.0	12.03	69.53
Market Research Analysts/Data Miners	15.0	25.0	15.0	11.85	66.85
Cost Estimators	15.0	25.0	15.0	11.25	66.25
Database Administrators	12.5	20.0	20.0	12.80	65.30
Information Security Analysts	15.0	15.0	22.5	11.40	63.90
Web Developers	15.0	15.0	22.5	11.40	63.90
Computer Network Architects	15.0	15.0	22.5	11.40	63.90
Network and Computer Systems Admin	15.0	17.5	20.0	11.18	63.68
Occupational Therapists	12.5	22.5	20.0	8.65	63.65
Physician Assistants	12.5	20.0	25.0	6.05	63.55
Computer Systems Analysts	15.0	15.0	22.5	11.03	63.53
Biomedical Engineers	5.0	25.0	22.5	10.93	63.43
Personal Financial Advisors	15.0	20.0	17.5	10.20	62.70
Management Analysts	15.0	15.0	22.5	9.98	62.48
Computer and Info Systems Managers	15.0	12.5	25.0	9.83	62.33
Medical and Health Services Managers	15.0	15.0	25.0	7.05	62.05

10 HOT CAREERS FOR COLLEGE GRADUATES

1. Software Developers, Systems Software

The hottest of the hot careers is software developers for systems software, or more precisely, occupational category 15-1133 in the federal government's Standard Occupational Classification codes which make accurate job comparisons possible.

These software developers are the creative minds behind computer programs. They set up the underlying systems that run the devices or control networks. People with different occupational titles develop the applications that permit specific tasks and still others write the programming code and test it.

The No. 1 listing, software developer, is a large field and it is growing rapidly. The 392,300 persons employed in 2010 will be welcoming 127,200 new colleagues by 2020, a 10-year increase of 32 percent.¹

Software developers are in charge of creating the entire process for a software program. They begin by understanding how the customer intends to use the software, a close relationship that augurs against outsourcing their work to foreign countries. They design the program and eventually instruct programmers on writing the actual code.

The typical entry route is a bachelor's degree in computer science and strong programming skills, usually gained in a school environment. A degree in mathematics also qualifies.

Software system developers can expect long hours and a certain amount of time urgency. The pay is a starving student's dream: a median or halfway point salary of \$94,180.

What makes the long-term career outlook especially bright is the demand for new computer software. Mobile technology requires new applications. The paper-heavy health care industry is going electronic. Cyber security concerns call for upgraded systems. Many household appliances have embedded computer circuitry and today's luxury automobiles are really computers on four wheels. Offshoring of jobs, given the need for proximity to customers, seems impractical.

2. Physical Therapists and Assistants

Come 2020, gather all the physical therapists whose jobs did not exist in 2010 and they would fill San Diego's Qualcomm Stadium to overflowing. Nationally there are expected to be 77,400 new jobholders. Some of the therapists, no doubt, would be watching a football game or soccer match and wondering which athletes might need their services in the future.

This occupational field is experiencing an incredible growth rate of 39 percent over 10 years, moving from 198,600 employed in 2010 to 276,000 in 2020.

Our No. 2 ranking actually constitutes two occupational titles, therapists and assistants.

The therapist designation is a bit of a reach—although still doable—within our emphasis of jobs obtainable by college graduates with two years or less of additional study. Prerequisites for therapists, who help people improve their movement and manage their pain, increasingly are a professional or doctorate degree. A doctoral degree program typically takes four years, while a master of physical therapy can be done in two or three years. Median pay as of 2010 was \$76,310 a year, with the top 10 percent earning more than \$107,920.ⁱⁱ

The therapist assistant category is growing even faster at 46 percent, although the 30,800 new jobholders would only fill two-thirds of San Diego's Petco Park, capacity 46,000. The median pay is \$49,960, in part because the education requirement typically is an associates degree.

An assistant does more of the routine tasks, cleaning treatment areas, helping people to the site and assisting patients with insurance forms. But assistants also observe patients, help them do exercises and educate the entire family on what to do after treatment.

The demand for physical therapy is being driven by the aging of the Baby Boom generation—and more. This population cohort continues to rewrite the rule book, staying more active later in life than previous generations. Still, Baby Boomers are entering the prime age for heart attacks and strokes, increasing the demand for cardiac and physical rehabilitation. Medical and technological advances should permit an increased proportion of trauma victims and newborns with birth defects to survive, creating additional demand for therapy and rehabilitation.

Another factor is that under health care reform, “the market has shifted dramatically...driven by performance ratings of customer satisfaction, clinical outcomes and cost,” said Eric Rackow, MD. He is the chief executive officer of SeniorBridge, a 2,000-employee provider of home health care services for the elderly based in New York City. The new emphasis is pushing demand sharply higher. Rackow is seeing a 15 percent increase in demand for the gamut of rehabilitative care positions his firm offers. Physical therapists are among the most secure professionals in the health care industry, Rackow said, because supply fails to meet demand for their services practically everywhere. “There are pockets within the United States where there are only five therapists within a 100-mile area.”

The shortage could deepen, reports the American Physical Therapy Association, because the proportion of therapists aged 50 to 64 has increased from 15.6 percent in 2000 to 32 percent in 2010. “Health care reform in general will decrease the number of uninsured, which will increase demand for PTs,” said Marc Goldstein, senior director of research for APTA.ⁱⁱⁱ

Recent college graduates may not fully realize it but their choice of major, or their career path after improving skills through continuing study, is a bet on the national economy. The bet plays out over 40 or more years and shapes not only their work life, but also their quality of life.

3. Software Developers, Applications

Chances are every college student has been a software applications customer many times over. Download a song, comparison shop, find directions to the weekend party, play a computer game, submit a job application online or share a goofy photo electronically—all these functions and widespread access to the Internet distribution system did not exist when they were born.

The work possibilities and the chances to use one's creativity are limited only by the imagination. The initial public offering in Facebook stock in May 2012 created instant millionaires and billionaires—imagine!

Applications developers, similar to the No. 1 hot job of systems developers, have their own classification, or 15-1132 in code jargon. This is a huge field, 520,800 already employed, and getting larger at a 10-year clip of 28 percent, slightly less than the systems developers' projected 32 percent increase. Their median pay is comparable, \$87,790 a year. Their qualifying process is similar although graduates who are analytical and mathematically inclined can learn how to develop programs in such languages as Java and C++ for which there is great demand.

Applications developers design the word processors, games and zillion other functions for consumers. They may create custom software for a specific customer or a commercial product to be sold to the public.

California is the leading state for applications developers, 87,430 employed as of May 2011. It leads in median salary, too, at \$104,450 a year. The state of Washington, however, has the highest concentration, or 12.48 developers for every 1,000 jobs. Employment and educational information is available from the Computing Technology Industry Association, the Institute for Certification of Computing Professionals and the National Workforce Center for Emerging Technologies.^{iv}

How ironic that an occupation that did not exist when today's graduates were born appears certain to offer them opportunities and job security through retirement four decades or more away.

4. Market Research Analysts/Data Miners

High pay alone does not constitute a hot job. Take market research analysts and the emerging but as yet unclassified occupational title of data miner. They are everywhere, in every aspect of the economy and the field leads all others in expected growth at 41 percent (116,800 positions) between 2010 and 2020. The median salary, however, is \$60,570 a year.

Companies use these analysts to study market conditions, form sales campaigns, establish customer satisfaction levels and even decide where to locate stores. Market research analysts help financial institutions decide whether to grant loans or credit cards.

Law enforcement agencies use data mining to spot trends that indicate where a serial criminal may strike next and to draw up staffing schedules for peak efficiency. A private company is helping police agencies in the San Diego area and throughout California bridge jurisdictions and catch graffiti vandals. Photographs stored electronically identify the tagger's signature, the time and day the graffiti appears. Data miners then help establish patterns that the school administration can extrapolate to determine youngsters of interest who might be graffiti taggers.^v

Analysts sometimes deal directly with the public but most often the work involves sitting at a computer. They devise methods to best collect vast amounts of data and use statistical software to analyze it. Next comes the task of converting the data and findings into understandable tables, graphs and written reports.

Companies measure not only their own pricing, sales and marketing approaches, but also those of their competitors, seeking to gain a competitive advantage. Profits in the millions and millions can be gained. So can employment for market analysts, hence the projected 41 percent growth rate.

A sampling of spring 2012 job openings on one website is instructive of the wide spectrum of data mining opportunities:

- Data Modeling/Management Specialist at InGrain, Houston, TX

InGrain is commercializing groundbreaking technology to provide rock properties by numerical simulation, and provides oil and gas companies with comprehensive and accurate measurements of reservoir rock properties.

- Analytic/Forensic Technology professionals, all levels at Deloitte LLP...

Commercial investigations and litigations increasingly rely on collecting, preserving and analyzing vast amounts of data...

- Data scientist, Trulia Data Science Lab at Trulia, Bay Area – San Francisco, CA

Work with massive datasets—trillions of user actions and millions of homes...

- Analytical Modeling Staff Scientist at SAS Institute, San Diego, CA

Analyze customer data and build high-end analytical models for solving high-value business problems such as credit card fraud, credit risk, network security, tax fraud detection, and revenue and collection optimization.

- Sales Strategy & Operations Analyst at Starwood Hotels & Resorts, Stamford, CT

Help drive sales strategy... support leadership team with data analysis to solve business problems.^{vi}

This field offers opportunities for graduates with degrees in communications or social sciences (such as economics, psychology or sociology) who may be having trouble selling their skills. Entry-level hires often have degrees in market research, statistics, computer science or math. The Marketing Research Association offers a certification that is voluntary.

5. Cost Estimators

Few occupations require the focus and precision of cost estimators. If a cost estimator for a construction company overestimates the expense of erecting a building, the firm bids too high and probably does not win the project. If a cost estimator underestimates, the firm probably wins the project but may lose money on the work. Cost estimators are important to technology development companies, defense contractors and manufacturers as well.

Median salary is \$57,860 and the expected growth in positions is 36 percent increase, resulting in 67,500 new positions by 2020.^{vii}

More than half of the cost estimators work for construction firms while the remainder generally help manufacturing firms calculate the costs of developing or redesigning a firm's goods or services. For example, a firm can design a new dishwasher but will it be profitable to manufacture?

Given the construction emphasis, the employment outlook is tied to the fortunes of the building industry. However, because of the growth in new technology firms like medical devices and recent increases in manufacturing opportunities, a projected 36 percent increase in jobs from 2010 to 2020 is still likely.

The typical path to entry is a bachelor's degree in a related field—construction management or building science for construction jobs, or engineering, physical sciences or mathematics for manufacturing. New hires often learn the industry by being teamed with a veteran. Three professional societies offer voluntary certification although it is not normally a hiring requirement.

6. Database Administrators

Forgive database administrators if they wake up in the middle of the night screaming. They are the people who worry about what to do if someone hacks into the computer system, steals sensitive personal information, and how the firm will have to tell the world. Database administrators who work for a government agency, such as the Department of Motor Vehicles, strain under the information load placed on an antiquated system while the conversion to a modern new system runs significantly over budget and behind schedule. The purchased computer hardware, it seems, does not work as well as promised.

In 2011 and the first four months of 2012, the Privacy Rights Clearinghouse reported that among retailers and financial institutions, 65 organizations had to tell the world of security breaches and the possible compromise of personal financial information. Those victimized included Ford Motor Company, website operators BullMarket.com, MilitarySingles.com, Genentech, and even Flores Mexican Restaurant of Lakeway, Texas.^{viii}

Clearly database administrator is a very responsible job and one for which there is an increasing demand. The U.S. Department of Labor projects a 10-year growth rate of 31 percent and 33,900 new positions by 2020.

Crises aside, database administrators can anticipate a very favorable work environment, the highest of our 18 hot jobs. Database administrators work with the organization's management to determine their needs, establish a system to store and process information, then make sure the organization can easily access it while the outside world cannot. They also concentrate on more than business as usual, planning backup systems in case of a natural disaster or power failure. They enjoy a median salary of \$73,490, higher (\$82,820) for computer systems design and lower (\$62,580) for education services.

Qualifying for this occupational title may take one to five years in a related field. Prospective administrators generally have a bachelor's degree in a computer- or information-related subject, then first gain jobs as database developers or data analysts. About 15 percent of those who become administrators work in computer systems design, 13 percent for finance and insurance companies, and 10 percent in information services.

7. Information Security Analysts

If database administrators worry primarily about security breaches, information security analysts live it; their job is to make sure computer hacking is not successful.

Information security analysts are in high demand for several reasons. Cyberattacks have grown in frequency and sophistication. The federal government is expected to greatly increase its hiring to protect the country's critical information technology systems. Further demand is being fueled as the healthcare industry converts to electronic medical records. Patients' medical histories, after all, are as sensitive as their personal financial information.

Security analysts usually need at least a bachelor's degree in computer science, programming or a related field. Many schools are in the process of devising information security programs to prepare students. Analysts typically are expected to have experience in a related field.

The median salary for the current 347,200 analysts is \$69,160. At an occupational 10-year growth rate of 28 percent, they should have 96,600 more colleagues by 2020.

Career information is available from the Association for Computing Machinery, the Institute of Electrical and Electronics Engineers Computer Society and the Computer Research Association. Education information can be obtained from the National Workforce Center for Emerging Technologies.

Closely related job specialties are web developers, those who build the websites to help firms have a public face, and computer network architects, who create the internal networks that an organization's employees use. This is an especially promising field for college grads willing to hone their skills. Network architects are expected to see increased demand as firms continue to expand their use of wireless and mobile networks. Countering that trend, however, is the advent of cloud computing, which allows users to access storage, software and other computer services over the Internet. Cloud computing allows network services to be shared online, the result being less in-house demand for the network architect. As commerce grows, web developers' job opportunities will, too. Some web developer jobs may be outsourced to countries with lower wages.^{ix}

8. Web Developers

Build a better mousetrap, the saying goes, and the world will beat a path to your door. That's not true today unless the fledgling entrepreneur or the established enterprise has a website for the public to find its way. Every new business owner seems to realize the need for a website; the public takes it for granted that any business today will have one. Many ventures come up with an assortment of niche products, such as an imported bar of soap with a delightful scent, and begin business with a website but no physical storefront.

Opportunities abound at the grass-roots level for aspiring developers to create simple websites on a freelance basis. Other small entrepreneurs turn to Internet services that offer a choice of prepackaged off-the-shelf website selections.

The bulk of the demand, however, is from larger organizations that want to present their face to the public in every way imaginable. Today, with the explosion of social media, the alternatives are multiplying—Facebook, Twitter, the proper tags or keywords for higher Internet search visibility, and frequent communication with those who sign up for blog alerts.

The educational hurdle for would be web developers is lower. A high school diploma, an associate's degree or a traditional liberal arts degree all can suffice depending upon the setting. Developers by necessity must have an understanding of HTML, the leading Hyper Text Markup Language for websites. Employers expect job aspirants to know other languages and have some knowledge of multimedia publishing tools. Computer tools and languages are constantly evolving. Web developers must keep up with continuing education. UC San Diego Extension, for example, offers a wide range of computer classes and certificate programs.

The salary range for web developers, according to a 2012 survey by Robert Half Technology, is from \$61,250 to \$99,250. The U.S. Department of Labor rates their job outlook as "favorable", with a growth forecast of 22 percent over 10 years.

9. Computer Network Architects

Have you ever started a new job, eager to impress the boss and your colleagues as a quick learner, only to be thrown for a loop by the quirks of the in-house computer system? If you have never had that problem, thank the computer network architect.

Building an internal network for employees is not that simple. These architects must deal with creating communications systems that are local area networks, wide area networks and intranets. They may be asked to connect just two offices or to link globally distributed communications systems spread across many nations. First, they must understand the organization's business plan so they can help it achieve its goals. Typically they create a layout for a data communication network, present and sell the plan to management, decide what hardware will be needed and tend to such "details" as to how cables will be laid out in the building. They must be ever alert for new technology that can support the organization in the future.

Network architects make from \$95,500 to \$137,000, according to Robert Half Technology. They fall into the same classification with information security analysts and web developers, a category with a total of 302,300 employed and 65,700 new positions projected by 2020.

Network architects are generally experienced staffers with five to 10 years of experience working in network administration or other aspects of information technology. They are expected to be well versed in all facets of the organization's business. A bachelor's degree in computer science is the common preparation. However, computer savvy generalists can be trained for these jobs.

10. Network and Computer Systems Administrators

If computer network architects are the people who design systems, the systems administrators are the people who keep them running day in and day out.

The administrators manage an organization's servers. They make sure that email and data storage networks function properly. It is up to them to see that employees' workstations operate efficiently and stay connected to the central computer network.

They are the nuts and bolts people. The administrators help determine what an organization needs in a network, install the hardware and software, maintain the security and collect data on how well the system is running. And they often train employees on how best to use the computers. They definitely are just a phone call away when there's a problem to solve.

The most common entry route is with a bachelor's degree in computer science. Computer engineering and electrical engineering are acceptable as well. In some cases, an associate's degree plus related work experience will land the job. Additionally, certification programs are offered by companies such as Microsoft, Red Hat and Cisco for users of their products.

The field is growing at a 10-year clip of 28 percent, meaning 96,600 more positions by 2020. The median salary of \$69,160 slightly lags the median for all computer occupations of \$73,710.^X

11. Occupational Therapist

An occupational therapist, as the title suggests, helps people get back to work. But she or he may also help people just cope with the tasks of daily living. These therapists may assist those hurt in an industrial accident or the veteran who lost a limb. They help the young —people with autism or cerebral palsy. They help the old —particularly those with Alzheimer’s. Many a proud senior is able to maintain additional years of independence because an occupational therapist has recommended home modifications and strategies that make daily activities easier.

This is a fast-growing occupation. In 2010 there were 108,000 employed. Fast forward to 2020 and 36,400 more are expected to be employed, a gain of 33 percent. The pay is good, a median salary of \$72,320 with the top 10 percent earning more than \$102,520 in 2010.^{XI}

Naturally, compassion is among the qualities sought. So are oral and written communication skills, the ability to listen and plenty of patience.

Can a humanities major qualify to become an occupational therapist in two years? Yes. The entry-level requirements are a master’s degree and state licensure (a degree from a qualified educational program and passing a national test).

The aging of the Baby Boom generation means job security for healthcare professionals. “Right now, the hardest jobs to fill can’t be outsourced or turned over to robots,” said Melanie Holmes, vice president of North American corporate affairs for employment services company Manpower.^{XII}

By 2014, the United States can expect to have over 40 million citizens past the age of 60. While these seniors are relatively healthy compared to the retirees of previous generations, they still are going to need more and more medical care. Nursing homes can be prohibitively expensive and many people prefer to receive care from health aides who make house calls.^{XIII}

“Health care has become the core industry in this country, just like manufacturing in another era,” said John Challenger, CEO of the outplacement company Challenger, Gray & Christmas. “It’s a confluence of forces causing this, including the science involved in uncovering new frontiers, the aging of the population, and government’s commitment to providing healthcare to a broader generation of people.”^{XIV}

The U.S. Labor Department places 13 healthcare specialties in the 20 fastest-growing occupations. Not all require long paths of study. Home health aides, medical assistants and physician assistants are especially in demand.^{XV} Some of these niches are not high in pay but in satisfaction. A medical assistant requires no extensive training, for example, and the median salary is less than \$40,000.^{XVI}

12. Physician Assistants

There is a difference in responsibilities—and pay—for physician assistants as compared to medical aides, though both categories have very positive employment outlooks.

Physician assistants, median annual pay \$86,410, practice medicine under the direction of physicians and surgeons. Medical aides, median pay \$24,010, provide basic care in long-term facilities such as nursing homes.

Yet, practicing some aspects of medicine under supervision is within the reach of college graduates in a two-year time frame. Two years of fulltime study under an accredited educational program, often leading to a master's degree, and state licensing are the prerequisites.

What do physician assistants do? Under supervision, they review patients' medical histories, perform physical exams and order diagnostic tests. They make preliminary diagnoses and may provide treatment such as setting broken bones. They counsel patients and families, record patient progress and complete insurance paperwork.

When the "Teens Decade" ends, 30 percent more physician assistants will be needed, projects the U.S. Department of Labor. That's 24,700 jobs offering the satisfaction of helping people and a salary level \$53,000 higher than the median for all occupations.^{xvii}

Several factors are driving demand: growth in national population, retirements of the Baby Boomers and a shift of physicians from primary into specialty care. Physician assistants are more cost effective than physicians on routine care and help the health care system address rising costs. Demand is especially high in rural and inner city areas where many physicians choose not to practice. In addition, many states are expanding the services they will allow physician assistants to provide such as writing prescriptions.^{xviii}

Job creation will provide opportunities for today's graduates. But so will job replacements. More than 60 percent of the 54.8 million total job openings that are expected through 2020 will come from the need to replace retiring workers, according to the U.S. Department of Labor.

That has important implications for healthcare. In the less-enlightened 1960s, women attending college to prepare for the work force had fewer career choices. Teaching and nursing were popular choices because the doors were open to women, while in other fields they often were not. Those college students of the 1960s have now reached retirement age.

The demand for physician assistants, reports Elizabeth Hannigan of The Writers Network, is actually outpacing the demand for doctors or nurses.^{xix}

College graduates of the Great Recession era have a number of incentives to consider continuing their education. Going back to school offers the possibility of joining the labor force when the economy is better. Advanced schooling translates into advanced prospects.

Those who do not go back to school may be on a lower-paying trajectory for years. They start at a lower salary, and they may begin their careers with employers who have less room for growth. Carl Van Horn, a labor economist at Rutgers University, put it this way in an interview with The New York Times:

"Their salary history follows them wherever they go. It's like a parrot on your shoulder, traveling with you everywhere, constantly telling you 'No, you can't make that much money.'"^{xx}

The best way to nullify an unlucky graduation date is to change jobs later when you can, says Till von Wachter, an economist at Columbia University, told the NYT.

13. Computer Systems Analysts

Do you have an analytical mind? Can you talk to a techie and translate computerese for someone non-technical? Are you creative enough to find a solution to a problem by thinking about it in a different way? Are you able to work with other team members to reach a goal?

If so, you have the makings to be a computer systems analyst. And yes, you may be able to get there with a liberal arts or business degree if you happen to have computer program writing skills.

Computer analysts bring the business and information technology worlds together by understanding the needs and limitations of both. These are the people responsible for determining how much memory and how much speed that the work environment's computer system needs. They study an organization's current systems and procedures and find ways to make them better.

The field is growing faster than average, at a projected 22 percent. Because more than a half million people already are involved in it, the numerical increase for the current decade could be 120,400 positions.

There are four types of analysts. Systems analysts specialize in designing new systems or tweaking existing ones. System designers help a firm choose the right hardware and software. Software quality assurance analysts do rigorous testing of the system they design. Programmer analysts design and update the software and custom applications their organization needs.

While analysts work in many industries, one in four is hired by a computer systems design firm. That's the fastest-growing part of the industry, at a sizzling 10-year pace of 43 percent. The median salary in 2010 was \$77,740 with the top 10 percent earning in excess of \$119,070.^{xxi}

Perhaps you have gained a broad education from studying liberal arts but the doors have not opened to you for the kind of job you really want. Chances are you used a computer extensively to get your degree. Now, if only you could pick up computer program writing skills. UC San Diego Extension or the National Workforce Center for Emerging Technologies can tell you how.

14. Biomedical Engineers

Have you ever watched a veteran, now an amputee, experience the joy of running on a prosthetic device? Or watched someone “running” a marathon in a modern racing wheelchair? Did your aunt finally work up the courage to undergo invasive surgery to have a device implanted to send signals to the heart or brain, confident that the new body part would last for years?

How satisfying for biomedical engineers, to blend engineering and medicine to build replacement body parts and help rebuild lives.

This is not an occupation within reach with just a two-year career fix. Persons entering this field need a bachelor’s degree in biomedical engineering, or at least some other engineering emphasis plus a graduate degree in biomedical engineering. Prospective biomedical engineers should do their course planning as they enter high school. Even the sales engineers who market these devices are just that—people with engineering degrees.

We could not resist slipping this in as hot career number 14 because of one key statistic: The 10-year growth rate is an astounding 62 percent. The numerical increase will be somewhat modest as there were only 15,700 biomedical engineers in 2010. The median salary is \$81,540, with the top 10 percent earning above \$126,990, according to the U.S. Department of Labor.^{xxii}

These are the people who design artificial organs, body part replacements such as artificial hips, rehabilitative equipment or complicated software to run complex instruments. They use their knowledge of chemistry and biology to develop new drug therapies. These are the math whizzes who build models that help explain the signals transmitted by the brain or heart.

In any event, an America exporting medical technology to the rest of the world needs more, many more.

15. Personal Financial Advisors

No generation in American history has had the affluence of the Baby Boomers. No generation in American history has had the life expectancy of the Baby Boomers.

So this demographic wave, born from 1946 through 1964, enters retirement with more money to manage and more years to make it last. Bring on the personal financial advisors.

This occupational category is growing rapidly, at a 10-year pace of 32 percent, and spawning 66,400 new jobs to serve a population cohort most frequently estimated at 76 million and, of course, generations not yet focused on retirement.

Just how affluent are Baby Boomers? Census and marketing data suggest they have \$13 trillion in assets or half of the nation's asset base. They are responsible for half of our nation's discretionary spending but 77 percent of prescription drug purchases and 80 percent of leisure travel.^{xxiii}

Personal financial advisors had median pay of \$64,750 in 2010, but that is a figure that is very deceiving. It does not include the pay of the one in four advisors who are self-employed or the bonuses of those who work for financial services firms. Remuneration is all over the road map—by hourly wages, commissions on financial products sold or a flat percentage of clients' assets managed. Schedules are arranged to match the clients' free time and the hours are long, with a quarter of the advisors putting in more than 50 hours a week.

A bachelor's degree is a necessity but employers do not require a specific field. Finance, economics, accounting, business, mathematics and law are considered good preparation. Advisors need a combination of licenses depending upon the type of financial products offered. Financial firms face state and federal regulation.

16. Management Analysts

Every day an army 718,000 strong, fans out across the nation to businesses big and small. They talk to employees and watch how things get done. They may study gigabytes of data and run sophisticated mathematical models. After considerable thought, they present a plan to management on how things can be done better and at reduced cost.

These management analysts or sometimes management consultants—but never efficiency experts, the discarded label of yesteryear—rarely work for the company being studied, instead responding to a request for proposals and submitting what they hope will be the favored plan. They work for consulting firms or are self-employed (23 percent). Theirs is a living-out-of-suitcase existence, workweeks lasting more than 40 hours, racing insanely tight deadlines and frequently attending conferences to update their knowledge.

Theirs is an occupation growing faster than average, 22 percent over 10 years. By 2020 this army will be 157,200 stronger. Driving the demand are the never-ending effort to control costs, expansion of U.S. organizations into foreign markets with a need for strategic advice, and the dramatic changes in information technology as well as the emergence of green technology.

Soldier No. 359,000 makes \$78,160, the midpoint. Soldier No. 71,800, in the top decile, makes \$118,790. How does one enlist? It helps to have a bachelor's degree from years ago or a master's (28 percent of them do). Their formal study runs the gamut of business disciplines, computer science or engineering. It generally does not include formal instruction in management consulting as few universities offer it. Instead these people learn their profession over the years by coming up the ranks. ^{xxiv}

17. Computer and Information Systems Managers (especially health care and education)

Lucrative salaries, not ease of entry or fast growth, pushed this job category onto our top-18 list. Computer and information systems managers make a median salary of \$115,780 and the top 10 percent earn above \$166,400.

The field, which now employs 307,900, is expected to grow only 18 percent over 10 years, about the average for all occupations. Still, that's 55,800 new positions.

It is not easy to meet the prerequisites and many firms report a scarcity of qualified applicants. First it is necessary to have a bachelor's degree in computer or information science studies. A master's degree is quite common. Then come several years of experience in a related IT job. The job applicant should have experience in that specific industry and probably have been a lower-level manager. Smaller companies may not require as much experience as larger, more established firms.

While overall growth in the field is average at best, health care and education should have sharp demand. Health care is considered to be far behind in its use of information technology and is being pressed by the federal government to do away quickly with paper records. Paper records result in delays in referrals as files must be shipped physically; electronic records can be accessed from many locations instantly. Schools are finding that paper textbooks are costly and cannot be produced or distributed as quickly as information via electronic means. But cash-strapped elementary and high schools have lagged in providing computer access to students and in hiring managers to supervise budding IT networks.

The need for health care and education to play catch-up should spell opportunity over time for the recent wave of college graduates.

18. Medical and Health Service Managers

American health care is changing rapidly. The national spotlight is on the Obama administration's effort to provide access and require that every citizen have health insurance. The voluminous paper recordkeeping system is being converted to electronic form to reduce costs and enable better sharing of information. Co-pays are being raised to drive home the point that care is not free. Insurance companies, by refusing to pay or pay enough for certain procedures, are discouraging providers and patients from desirable but elective choices.

Against this backdrop, the role of the medical or health service manager is becoming more important than ever. So important that 68,000 new positions will be created by 2020, a 10-year growth rate of 22 percent. Obviously, they plan, direct, and coordinate medical or health services. Their responsibility may be for an entire facility, a specific clinical area or department, or for the medical practice of a group of physicians.^{XXV}

Pay varies with the size and type of the facility. The median was \$84,270 in 2010 with the top 10 percent earning in excess of \$144,880.

Job growth is expected in particular in the offices of health practitioners. Services that once were the purview of hospitals are shifting to office settings as medical technologies improve. Medical practices are becoming ever larger, requiring more assistant administrators. Pharmacy chains are opting for simple-procedure care delivery via nurse practitioners at drugstores, creating an entire new system.

The most common route to the occupational category is a bachelor's degree in health administration. Others enter via graduate programs that may last two or three years, including a year of supervised administrative experience.

All states require licensing, typically specifying a bachelor's degree, a licensing exam and completion of a state-approved training program. A number of associations can provide information on the field, including the American Health Information Management Association, the Association of University Programs in Health Administration and the American College of Healthcare Executives.

The Job-Hunt Strategy

More than anecdotal data suggest that the class of 2012 will have it easier than the graduates of the previous four years. Employers expect to hire 9.5 percent more graduates this year than last year, according to an annual survey by the National Association of Colleges and Employers. A similar survey by Arizona State University in Tempe—at 72,000 students the nation's largest—found two-thirds of employers interviewed said they anticipated hiring needs greater or far greater than the previous year.^{xxvi}

Unemployment statistics for college graduates up to age 24 support that optimism. The unemployment rate for the category declined from 9.8 percent in February 2011 to 8.1 percent in February 2012, although still much higher than the 4.6 percent in 2008.^{xxvii}

Employment services CareerBuilder and CareerRookie teamed up for an outlook survey. For the first time since the recession began, they found, a majority of surveyed employers intend to hire new graduates. Some 54 percent of employers expect to hire this year, up from 46 percent last year, 44 percent in 2010 and 43 percent in 2009. Twenty-nine percent of employers with hiring plans said they would offer higher starting salaries than a year ago.

There are millions of job-hunting stories from the graduates of the past four years, the results probably depending more upon the occupation, the geographic location, the depth of the economic downturn and the jobseeker's understanding of strategies in an online age than upon the grades, academic institution or recommendations on the resume. The CareerBuilder/CareerRookie survey found that 49 percent of employers recruit recent graduates through employee referrals, and 42 percent through online job sites. Alas, 15 percent of employers said they did not hire a recent graduate because of something they found on a social media site.^{xxviii}

Vignettes from 2011 graduates include those of David Ortega of Temecula, who received a political science degree from California State University, San Marcos but six months later was still trying to find that coveted job with a municipality, his first choice, or a retailer. Despite working part-time, he was \$8,000 in student debt, living at home to save money and doing unpaid internships to gain experience while he searched. Robin Monfredini received a degree in communications and mass media from the same university. She was struggling last December to break into public relations but was keeping an interim job at a fitness facility to pay the bills.^{xxix}

A statistical picture of the job search challenge was contained in a survey released in early May by the John J. Heldrich Center for Workforce Development at Rutgers University. Only 49 percent of graduates from the classes of 2009 to 2011 had found a fulltime job within a year of finishing school, compared with 73 percent for students who graduated in the three previous years.^{xxx} This difficulty came despite the hiring plans of large companies. The class of 2011 was finishing just as Verizon planned to hire 10,000 new employees, Enterprise Rent-A-Car 8,000, Teach for America almost 5,000 and Ernst & Young about 2,000.^{xxxi}

There's a systemic issue to the job picture as well, in the view of Alan Krueger, chairman of the Council of Economic Advisers. In a May address at Columbia University, the president's chief economic adviser said the United States has the "best educated 60-year-olds in the world" but is in the middle of the pack as to its 30-year-olds, citing a study by the Organization for Economic Cooperation and Development. The United States has the largest share of college-educated citizens in the 55-to-64 bracket of any developed nation, but ranks 15th in 25-to-34-year-olds. South Korea, by the way, is first.^{xxxii}

As evidenced in the profiles of the top 18 hot jobs, the economy is different in 2012 than previous years, specific occupational demand is growing and retirements are creating many replacement vacancies. For any given job seeker, it only takes one vacancy, one hiring decision.

Research Team

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Dr. Josh Shapiro is the director of research and evaluation at UC San Diego Extension, and a current member of the team working under a grant from the National Science Foundation on the role that social and cultural dynamics play in regional innovation. He also leads Extension's market research team, which focuses on assisting educational programs, conduct market research, and curricula development. Among his prior work, Shapiro was one of the core evaluators on the effectiveness of the Department of Labor's \$500 million WIRED initiative, which involved 15 regions across the United States. Shapiro holds a Ph.D. and M.A. in sociology from UC San Diego and a B.A. in social thought and analysis from Washington University in St. Louis.

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