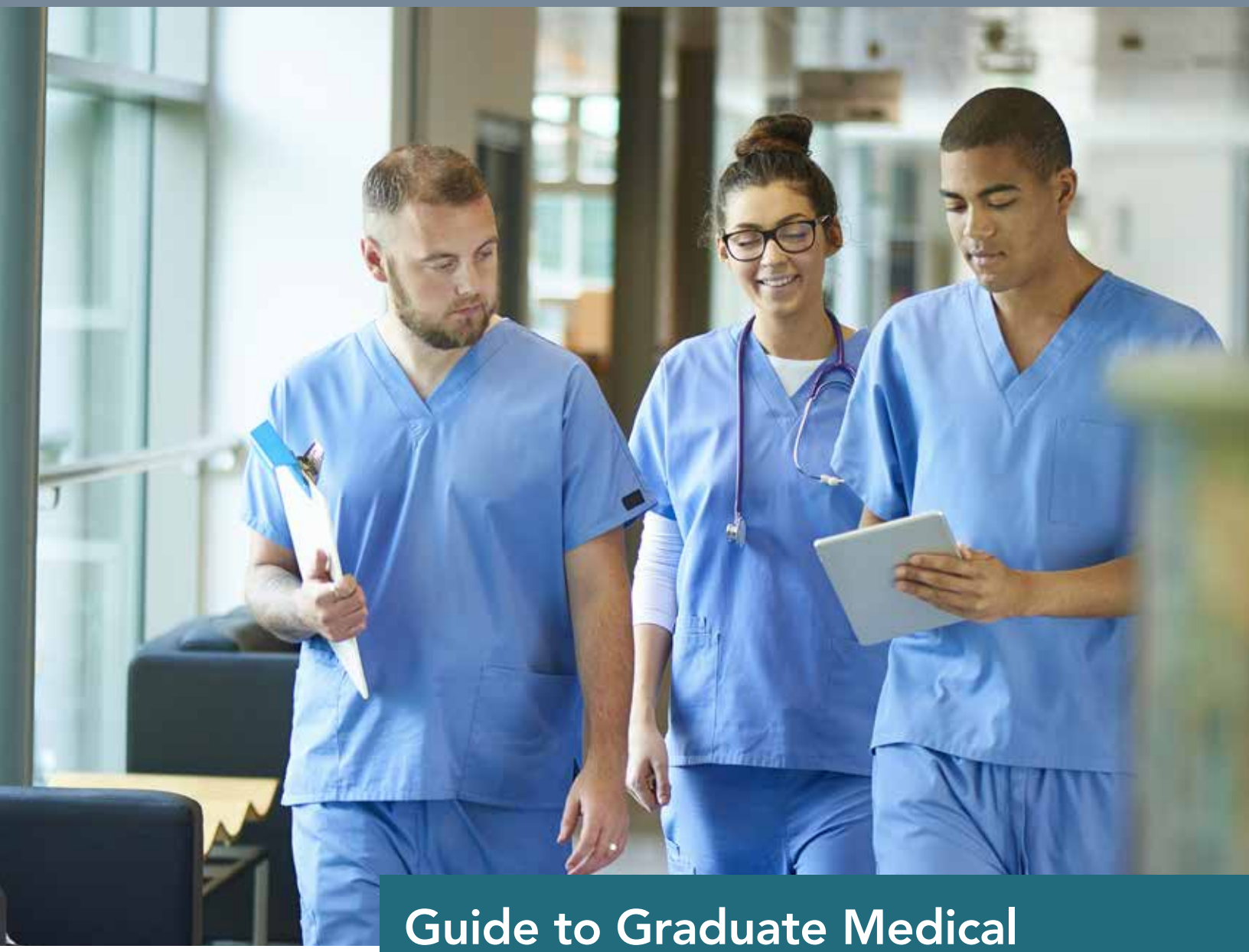
California Health Care Foundation



Guide to Graduate Medical Education Funding in California

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About the Foundation

The California Health Care Foundation is dedicated to advancing meaningful, measurable improvements in the way the health care delivery system provides care to the people of California, particularly those with low incomes and those whose needs are not well served by the status quo. We work to ensure that people have access to the care they need, when they need it, at a price they can afford.

CHCF informs policymakers and industry leaders, invests in ideas and innovations, and connects with changemakers to create a more responsive, patient-centered health care system.

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Introduction

California, the most populous state in the nation, continues to grow and become more diverse. As thought leaders and policymakers across California consider how to build a modern workforce to care for the future population, it is important to have information about how physicians are trained and how that training is financed. Using quantitative and qualitative data, this paper aims to inform these discussions by providing information on the history, process, sources, and implications of funding for graduate medical education in California.

Overview of Graduate Medical Education in California

Graduate medical education (GME) includes physician residency and fellowship training after graduation from allopathic or osteopathic medical school, domestically or internationally. (GME does not include dentistry.) GME determines the number and specialty types of practicing physicians in the workforce. Because there is no central GME planning effort at the federal or state level, the number and specialty types of GME graduates in the United States are largely determined by individual sponsoring institutions, which assume ultimate financial and academic responsibility for GME. Sponsoring institutions can include teaching hospitals, schools of medicine, and Federally Qualified Health Centers, as well as various other types of institutions, but all must be accredited by the Accreditation Council for Graduate Medical Education (ACGME).

California was home to 74 GME sponsoring institutions in 2015, the most recent year for which data are available, graduating 3,568 residents and fellows that year. Table 1 lists the 20 largest sponsoring institutions in California, by number of graduates, in 2015 (see page 4). Only 11 sponsoring institutions in California graduated over 100 residents and fellows in 2015.

Of the California residents and fellows that graduated in 2015, 48.4% graduated from University of California sponsoring institutions, and 23.9% graduated from private university sponsoring institutions (Loma Linda University, Stanford University, and the University of Southern California [USC]). Almost a fifth (19.2%) of graduates in 2015 graduated from private, independent hospital and health system sponsoring institutions (see Table 2, page 4).

KEY TAKEAWAYS

- There is no centralized state or federal planning for how GME resources are allocated and no single point of accountability for GME outcomes.
- The Centers for Medicare & Medicaid Services (CMS) is by far the largest payer for GME, but it lacks transparency and is based on antiquated formulas that are not related to actual GME costs.
- On a per capita basis, CMS has continually underfunded GME in California relative to other states.
- Medi-Cal payments to hospitals no longer have dedicated funds for GME, but instead are in the the form of supplemental payments that can be used at the discretion of the hospital.
- California's innovative Song-Brown program supplements primary care GME funding, but the program is small and dependent on the state's budgeting process.
- Proposition 56 was intended to provide substantial new funding for GME but the money has not been allocated as intended.

Table 1. Top 20 Residency and Fellowship Sponsoring Institutions, by Number of Graduates, 2015

SPONSORING INSTITUTION	NUMBER OF GRADUATES
University of California, San Francisco	403
Stanford Hospital and Clinics	319
UCLA David Geffen School of Medicine	296
University of Southern California	281
University of California, San Diego	251
University of California, Irvine	222
University of California, Davis	220
Los Angeles County-Harbor-UCLA	168
Cedars-Sinai Medical Center	146
Loma Linda University Medical Center	135
Kaiser Permanente – Southern California	115
Kaiser Permanente Medical Group	84
UCSF Fresno Medical Education Program	70
Children's Hospital Los Angeles	67
Santa Clara Valley Medical Center	51
Loma Linda-Inland Empire Consortium	49
California Pacific Medical Center	46
Alameda County Medical Center	41
Olive View / UCLA Medical Center	40
UCSF Benioff Children's Hospital Oakland	39

Source: American Medical Association (AMA) Physician Masterfile for 2015, the most recent year for which data are available.

Table 2. Percentage of Residents and Fellows Graduating from Sponsoring Institutions, by Institution Type, 2015

SPONSORING INSTITUTION	NUMBER OF GRADUATES	% OF OVERALL TOTAL
Public Universities	**1,727**	**48.40%**
University of California, San Francisco	513	14.38%
University of California, Los Angeles	504	14.13%
University of California, San Diego	251	7.03%
University of California, Irvine	223	6.25%
University of California, Davis	221	6.19%
University of California, Riverside	15	0.42%
Private Universities	**851**	**23.85%**
University of Southern California	348	9.75%
Stanford	319	8.94%
Loma Linda	184	5.16%
Private Hospitals*	**685**	**19.20%**
Independent, large†	225	6.31%
Kaiser Permanente	199	5.58%
Scripps Health	69	1.93%
Dignity Health	67	1.88%
Sutter Health	64	1.79%
Independent, small†	35	0.98%
Adventist HealthCare	26	0.73%
Public Hospitals	**228**	**6.39%**
Independent, large†	220	6.17%
Independent, small†	8	0.22%
Department of Defense / Department of Veterans Affairs	**77**	**2.16%**

*Though Teaching Health Centers (THCs) are not hospitals, they are included in this list; however, there was only one THC graduating a class in 2015.

†*Independent* hospitals (public and private) were classified based on the number of graduates annually: *large* is >10 and *small* is ≤10.

Source: American Medical Association (AMA) Physician Masterfile for 2015, the most recent year for which data are available.

Definitions

Teaching hospitals. A Center for Medicare & Medicaid Services (CMS) designation for hospitals that receive Medicare GME payments (direct or indirect).

Sponsoring institutions. An Accreditation Council for Graduate Medical Education (ACGME) designation for organizations (or entities) that assume the ultimate financial and academic responsibility for a program of graduate medical education. Sometimes the sponsoring institution is also a teaching hospital (e.g., Stanford Health Care) and sometimes it is not (e.g., UCSF School of Medicine). Only teaching hospitals receive Medicare funds directly.

Affiliate institutions. Entities that are officially attached to or connected with the sponsoring institution and contribute to the training of the residents/fellows by providing training opportunities. The sponsoring institution for an internal medicine residency program might be, for example, a school of medicine, but the residency program could be affiliated with multiple entities — such as the local Veterans Affairs Medical Center, the local county hospital, or a nearby Kaiser Permanente Medical Center — where the residents/fellows rotate and see patients. CMS will not make GME payments (direct or indirect) to a CMS teaching hospital for the time that a resident/fellow is training outside of that teaching hospital, so careful accounting of each resident/fellow's time is essential. Although the affiliate institution pays the salary of residents/fellows during the time that they are training at the affiliate institution, ultimate financial and academic responsibility for the residents/fellows remains at all times with the sponsoring institution.

At a Glance: Medical Education

Students wishing to become doctors can pursue a degree at either an allopathic (MD) medical school or an osteopathic (DO) medical school. *Allopathic* refers to more traditional medical instruction focusing on the diagnosis and treatment of human diseases. *Osteopathic* refers to a more holistic, patient-centered approach to medical instruction. Both degrees produce fully licensed physicians able to practice medicine and surgery in all states, and the distinction between the two degrees has diminished considerably over the years. Once graduated from medical school, physicians are not prepared to enter directly into clinical practice.

Residency is the next step in a physician's training. Residency training typically takes from three to five years and is specialty specific (e.g., dermatology, internal medicine, pediatrics, general surgery). Following residency, some physicians will complete one to five years of additional *fellowship* training to become a subspecialist in their field. Some common fellowships after internal medicine residency include cardiology, gastroenterology, and infectious diseases. Common fellowships after general surgery residency include thoracic and vascular surgery.

Although the number of GME sponsoring institutions in California has declined since 1997 (see Figure 1), the number of residents and fellows graduating each year in California has increased by 10%, from 3,236 in 1997 to 3,568 in 2015 (see Figure 2), indicating consolidation of residency and fellowship training. The expansion in the number of graduates over time is attributable to the expansion of large sponsoring institutions (more than 50 residents and/or fellows), rather than the opening of new, smaller GME sponsoring institutions.

Figure 1. Sponsoring Institutions, by Number of Graduates, California, 1997–2015

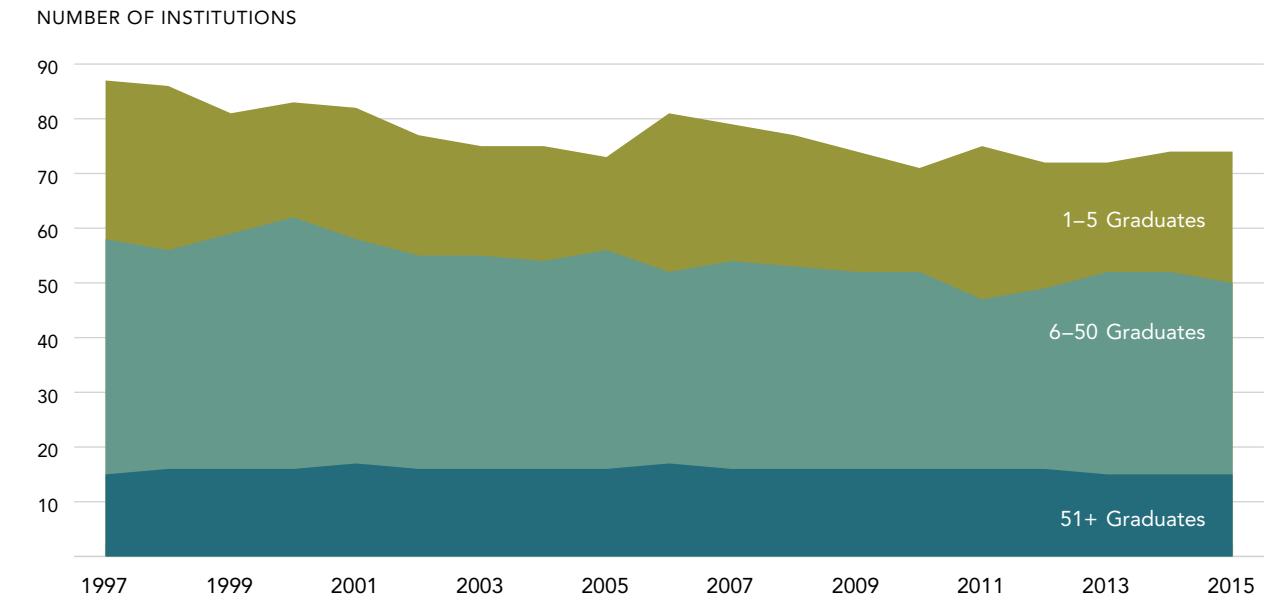
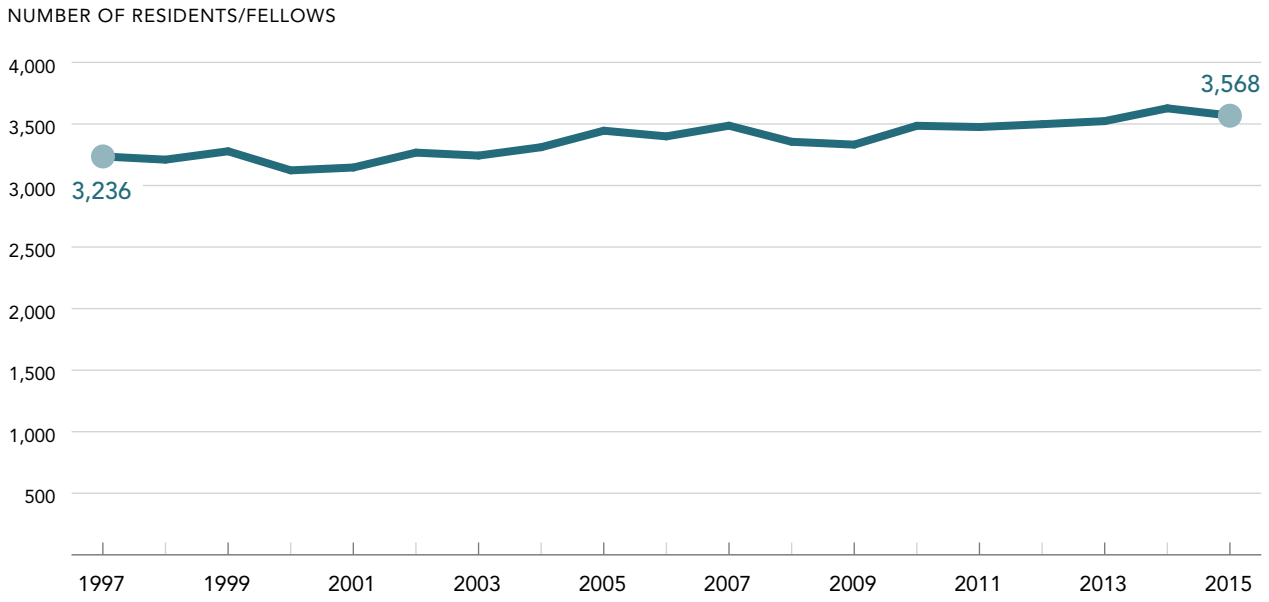


Figure 2. Residents/Fellows Graduating from Sponsoring Institutions, California, 1997–2015



Source (Figures 1 and 2): American Medical Association (AMA) Masterfile Historical Residency File, 2017.

Between 1997 and 2012, the number of non-primary care residents and fellows graduating from California GME sponsoring institutions increased, while the number of primary care graduates declined (see Figure 3). The percentage of graduates choosing primary care (out of total graduates in California) also declined over this same period (see Figure 4). There is no universal definition regarding which specialties are considered "primary care." State and federal programs will often state which specialties are included in specific programs. This paper

Figure 3. Non-Primary and Primary Care Residents/Fellows Graduating from Sponsoring Institutions, California, 1997–2012

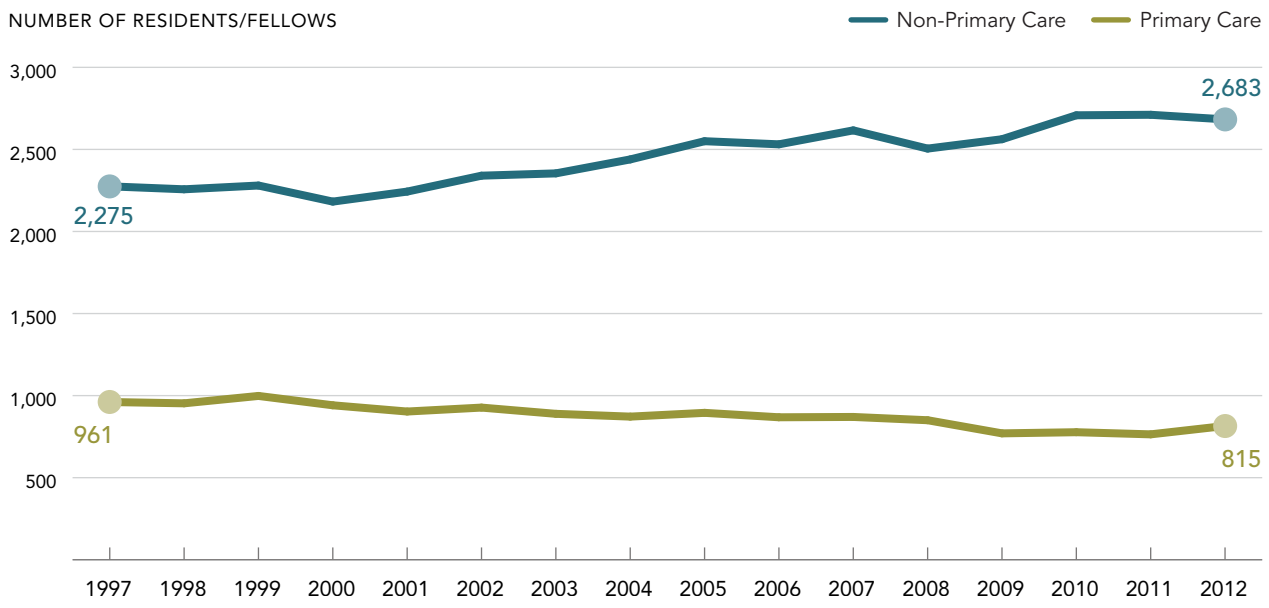
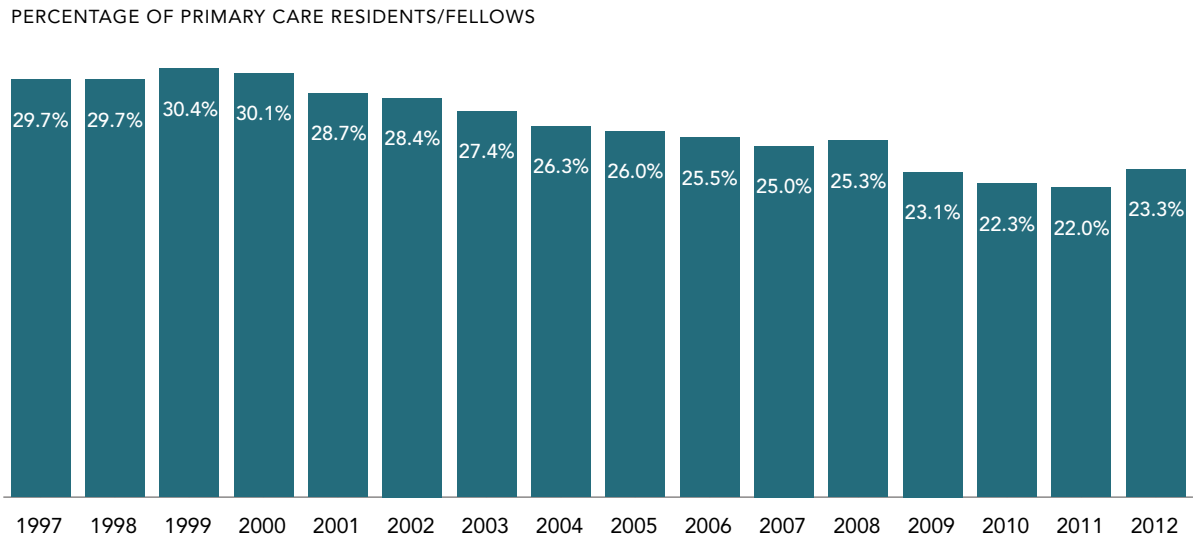


Figure 4. Primary Care Residents/Fellows Graduating from ACGME-Accredited Programs, California, 1997–2012



Notes: *Primary care* residencies include pediatrics, family medicine, and internal medicine. Corrected for further *non-primary care* specialized residents.
Source (Figures 3 and 4): American Medical Association (AMA) Masterfile Historical Residency File, 2017.

considers *primary care* to include those residents and fellows whose final reported residency/fellowship training was in family medicine, pediatrics, internal medicine, hospice/palliative medicine, geriatrics, or general practice. Because many internal medicine and pediatric residents continue on to fellowship training in other specialties rather than remaining in primary care, this paper restricts the primary care count to those graduates who terminate their training in one of the above specialties.

Funding for Graduate Medical Education

US graduate medical education, unlike training for any other profession, is heavily subsidized by the federal and state governments, regardless of where the resident completed medical school. In 2015, the federal government and state Medicaid agencies spent over $16.3 billion to fund GME. In California, funding for GME does not come from one source but rather is cobbled together from multiple federal, state, and often private sources. Despite the substantial public investment in GME, there are few data on GME funding and its outcomes.[1] Table 3 shows a comparison of spending on GME in California in 2015.

Table 3. Spending on GME, by Type, California, 2015

	SOURCE	AMOUNT	DURATION
Federal*	Medicare	$552,235,626	Ongoing, subject to CMS regulations
	Medi-Cal	No direct contribution	N/A
	Veterans Affairs	$90,662,608	Ongoing, subject to VA regulations
	Children's Hospitals GME Payment Program	$32,061,000	Last authorized for five years (2014–2018), with annual funding applications
	Teaching Health Center GME Program	$13,476,745	Last authorized for two years (2018–2019), with annual funding applications
	Preventive Medicine Residency Program	$1,329,459	Annual funding applications
State	The Song-Brown Program	$5,987,340	Competitive grants, with annual applications
	Proposition 56	Not yet enacted ($40,000,000 when passed in 2016)	Annual, though allocated at the discretion of the governor
Private	Various	Unknown	Varies

*The Department of Defense trained roughly 1% of residents/fellows in California, but the cost of that training is unknown. In 2010, HRSA awarded eight 5-year grants in California that were not renewed; the actual amount distributed in 2015 is unknown.

Source: Centers for Medicare & Medicaid Services Cost Reports.

Federal Sources of California GME Funding

The federal government subsidizes GME in California through a variety of agencies and mechanisms:

- Medicare and Medicaid GME funding through the Centers for Medicare & Medicaid Services (CMS)
- Veterans Health Administration GME through the Department of Veterans Affairs (VA)
- Children's Hospitals GME and Teaching Health Center GME programs through the Health Resources and Services Administration (HRSA)
- Military GME through the Department of Defense (DoD)

Centers for Medicare & Medicaid Services

Medicare

Medicare is the largest federal contributor to GME funding both nationwide and in California. Medicare GME funding began in 1965 when the Medicare program was established by the US Congress, stating that "educational activities enhance the quality of care in an institution, and it is intended, until the community undertakes to bear such education costs in some other way, that a part of the net cost of such activities (including stipends of trainees, as well as compensation of teachers and other costs) should be borne to an appropriate extent by the hospital insurance program."[2] Teaching hospitals, which are hospitals that offer one or more accredited residency or fellowship programs, are eligible to receive GME payments from federal programs. There are 119 teaching hospitals in California.

Medicare GME payments comprise two distinct funding mechanisms: (1) direct GME payments (DGME) and (2) indirect medical education payments (IME), both of which are formula based and set by statute. Both formulas, which were created in the 1980s, rely heavily on the number of Medicare patients in the hospital rather than the actual costs of a medical residency program.

- **DGME pays teaching hospitals for costs directly incurred with residency programs**, such as resident stipends, supervisory physician salaries, and administrative costs. Medicare computes DGME payments using a formula (see Appendix A, Figure A1) that includes the "total approved DGME costs" and the teaching hospital's "Medicare patient load" percentage. Included in the formula is a per resident amount (PRA), which varies widely between teaching hospitals. Medicare also limits the number of years a hospital can receive full funding for a given trainee, reducing funding to 50% of the PRA after three years of residency training. This affects reentry professionals and residents who wish to switch programs. For most hospitals the PRA was set in fiscal year 1984, though for newer programs it is set when the first resident begins. PRA is based on each hospital's direct costs and the number of full-time equivalent (FTE) residents at the time the PRA was set, and is adjusted annually for inflation. Each teaching hospital has a separate PRA for primary care and non-primary care specialties, with the former being slightly higher than the latter. Over fiscal years 2008–2010, the average Medicare PRA for the US as a whole was $112,642; the average Medicare PRA for California was $87,121.[3]

- **IME pays teaching hospitals for indirect costs associated with residency programs**, such as the higher patient care costs from additional diagnostic testing that residents may order, or the longer time spent by residents in interpreting test results. Again, actual costs are not used. Instead, Medicare computes IME payments using a formula (see Appendix A, Figure A2) that adjusts the inpatient prospective payment system (IPPS) operating and capital reimbursement amounts paid to teaching hospitals on a per-discharge basis.

Between 1965 and 1997, Medicare GME payments to teaching hospitals did not limit the number of residents trained. According to a Congressional Research Service report published in 2016, "In 1997, graduate medical education stakeholders released a consensus statement arguing that the United States was on the verge of a serious oversupply of physicians and recommending

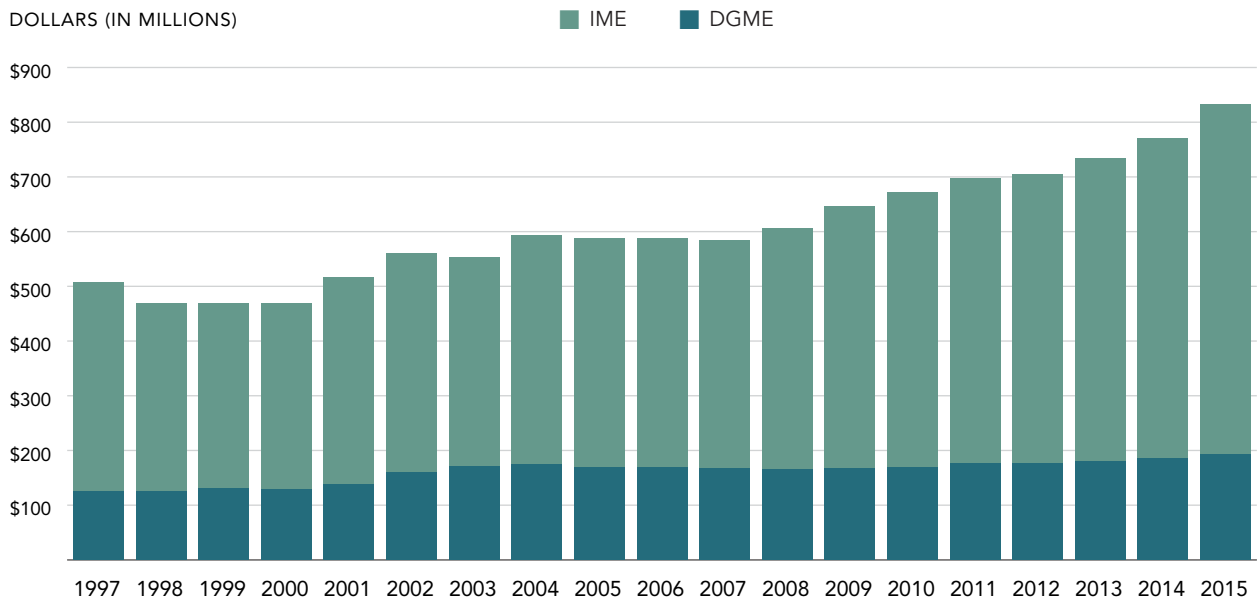
limiting federal funding of GME positions to more align with the number of graduates of accredited U.S. medical schools."[4] The Balanced Budget Act of 1997 limited, or "capped," Medicare GME payments for each teaching hospital to the number of FTE residents and fellows that it had in training in 1996. This limit on Medicare FTE positions, or "slots," is referred to as the 1997 Medicare GME cap. The cap essentially freezes the geographic and financial distribution of Medicare-supported residencies without regard for future changes in local or regional health workforce priorities or the geographic distribution and demographic makeup of the US population. As a result, the highest density of Medicare-supported slots and Medicare GME funding remains in the northeastern United States.[5] Over fiscal years 2008–2010, California ranked 26th among US states in the number of Medicare GME FTE positions (19.36) per 100,000 population.[6] Yet California was the most populous state during the same time frame, with 12.1% of the nation's population.

Despite the 1997 Medicare GME cap on the number of residency positions, the total amount of Medicare GME funding given to California grew over the past two decades, from $340,591,000 in 1997 to $552,235,626 in 2015. Adjusted for inflation, this represents a 64.3% increase. Most of this increase was due to growth in IME funding. DGME funding has been relatively stable since 1997 (see Figure 5).

Table 4 lists the top 20 teaching hospitals in California based on Medicare GME dollars received in 2015 (see page 11). There is wide variation in both DGME and IME payment levels among California teaching hospitals. For each of the top 20 teaching hospitals, the PRAs for primary care and non-primary care specialties are also listed.

Hospitals that have never been teaching hospitals are not subject to the 1997 Medicare GME cap. These hospitals are sometimes referred to as Medicare "naive" or "virgin" hospitals and are of great interest to policymakers because of their potential for GME growth. If one of these hospitals becomes a new teaching hospital, the Medicare GME cap is calculated and implemented in the fifth year of the new training program. In 2015, there were approximately 260 Medicare-naive hospitals in California, defined as not having received Medicare DGME or IME funding between 1996 and 2015. However, CMS staff has said that a hospital is a teaching hospital (i.e., not naive) if there is training that occurs according to a planned and regular schedule (i.e., not spontaneous or

Figure 5. Total GME Funding, California, 1997–2015



Notes: All amounts adjusted for inflation and in 2016 dollars. *DGME* is direct graduate medical education; *IME* is indirect medical education.

Source: Centers for Medicare & Medicaid Services Cost Reports.

Table 4. Top 20 Hospitals Based on Medicare GME Dollars Received, California, 2015

	GME DOLLARS (IN THOUSANDS)			PER RESIDENT AMOUNT (PRA)	
HOSPITAL NAME	DGME	IME	TOTAL	PRIMARY CARE	NON-PRIMARY CARE
Stanford Hospital & Clinics	$13,817	$72,475	**$86,292**	$115,025.13	$108,749.29
Ronald Reagan UCLA Medical Center	$15,867	$65,327	**$81,194**	$97,406.34	$97,406.34
UCSF Medical Center	$12,733	$57,452	**$70,185**	$100,998.82	$100,847.17
UC Davis Medical Center	$10,478	$47,883	**$58,360**	$88,847.98	$88,847.98
Cedars-Sinai Medical Center	$10,447	$40,420	**$50,867**	$97,367.96	$97,367.96
UCSD Medical Center	$7,790	$32,431	**$40,221**	$89,267.81	$89,267.81
Loma Linda University Medical Center	$8,642	$20,514	**$29,156**	$98,722.73	$92,409.29
UC Irvine Medical Center	$5,469	$23,531	**$29,000**	$96,171.11	$96,171.11
Kaiser Foundation Hospital – Los Angeles	$4,433	$19,816	**$24,249**	$97,402.84	$97,402.84
Keck Hospital of USC	$4,011	$15,342	**$19,353**	$107,064.67	$101,697.25
Community Regional Medical Center	$4,542	$12,114	**$16,656**	$118,874.34	$112,513.16
Kaiser Foundation Hospital – Santa Clara	$2,636	$13,315	**$15,952**	$99,255.61	$99,255.61
Kaiser Foundation Hospital – Oakland	$2,983	$12,263	**$15,246**	$95,814.75	$95,814.75
Zuckerberg San Francisco General	$4,255	$10,797	**$15,052**	$100,847.32	$100,847.32
Kaiser Foundation Hospital – San Francisco	$2,487	$12,440	**$14,927**	$100,843.70	$100,843.70
California Pacific Medical Center	$4,232	$10,338	**$14,570**	$122,574.10	$116,066.88
Scripps Mercy Hospital	$4,135	$10,006	**$14,141**	$135,668.78	$128,466.39
Santa Monica UCLA Medical Center	$4,812	$8,346	**$13,157**	$186,565.08	$173,227.62
LAC+USC Medical Center	$4,129	$9,010	**$13,138**	$105,237.86	$99,650.98
Eisenhower Medical Center	$2,906	$8,574	**$11,481**	$104,704.48	$0.00

Notes: *DGME* is direct graduate medical education; *IME* is indirect medical education; *LAC* is Los Angeles County. Totals may not sum due to rounding.

Source: Centers for Medicare & Medicaid Services Cost Reports.

random), even if the hospital is not incurring the costs of the residents' salaries, is not the sponsor of the program, and is training only a very small number of FTEs. If CMS determines that a hospital has not claimed a resident it previously should have, CMS will penalize the hospital by setting its PRA to zero.

Critical access hospitals, small rural hospitals with no more than 25 inpatient beds, are reimbursed for CMS Medicare GME based on 101% of the reasonable costs incurred.[7] There are 34 critical access hospitals in California, none of which is considered a teaching hospital.

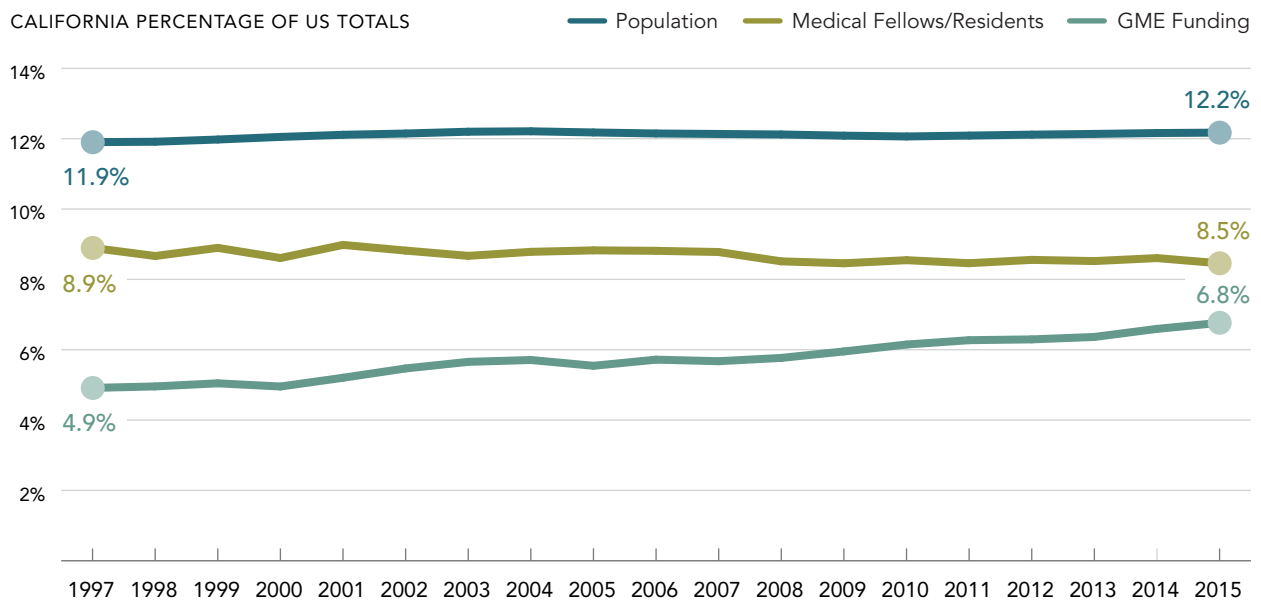
Since 1997 there has been a significant and persistent gap between California's proportion of the US population, its proportion of US GME graduates, and its proportion of CMS Medicare GME funding. In 2015, California constituted approximately 12.2% of the US population, yet trained 8.5% of US GME graduates and received 6.8% of the total CMS Medicare GME dollars (see Figure 6).

Medicaid

Medicaid GME funding began in 1965 at the inception of the Medicaid program. Medicaid is a joint federal-state program, with federal funds representing over half of the program's financing, and is the second-largest federal contributor to GME funding nationwide. No federal guidance exists for Medicaid GME; instead, each state has the option to develop a Medicaid GME program, and to receive matching federal funds, under its Medicaid fee-for-service delivery system, its managed care delivery system, or both systems. Although nearly all states historically have developed Medicaid GME programs, these programs vary substantially from state to state.

Medi-Cal, California's Medicaid program, had an explicit GME funding program prior to 2005. At that time, teaching hospitals received DGME and IME for their GME programs based on the Medi-Cal patients served, much in the same way as Medicare operates. Teaching hospitals that serve large populations of low-income patients

Figure 6. California's Population, Medical Residents/Fellows, and GME Funding as a Percentage of US Totals, 1997–2015



Sources: US Census Bureau; American Medical Association (AMA) Masterfile Historical Residency File, 2017; Centers for Medicare & Medicaid Services Cost Reports.

received the designation of Disproportionate Share Hospitals (DSH), and both CMS and the state would share costs for the GME program. One way to increase funding was through intergovernmental transfers (IGTs), through which matching funds could be leveraged by the DSH and the state to increase federal funds. In 2005, hospital financing dramatically changed in California due to pressures from CMS to move away from a dependence on IGTs. Under the new hospital payment methodology, payments for GME were recategorized into "supplemental payments" that could be used for any purpose. California is one of only eight US states that do not have an explicit Medicaid GME funding program. In 2018, California hospitals — in aggregate — are receiving federal Medicaid funding at the Upper Payment Limit, which is the federal limit placed on payment to each class of Medicaid providers.

If Medi-Cal returned to an explicit GME funding program, in theory the total aggregate funds paid to hospitals would not increase, though that money would be reallocated among hospitals that do more or less GME. Additionally, funds that had previously been dedicated specifically for GME (for instance, from previous IGTs) would return to that purpose. Medicaid funding is currently linked to value-based performance programs, such as transitioning fee-for-service patients into managed care, so any effort to implement an explicit GME program in California would need to be framed in terms of value-based care. Pending approval by CMS, a proposed State Plan Amendment (SPA) would provide $900 million in additional federal funding for direct and indirect GME payments to be made to designated public hospitals under the Medi-Cal managed care system. If approved, this program would be effective retroactively to January 2017.

Department of Veterans Affairs

One of the VA's four statutory missions is to train health care professionals — including physicians — to improve the quality of care provided to veteran patients within the VA's health system.

According to a Congressional Research Service report published in 2016, "Generally, the VA does not operate its own GME programs because accrediting bodies require that medical residents see a diverse population in terms of age, sex, and medical conditions throughout their training, which the VA's patient population generally does not provide. Instead, the VA partners with teaching hospitals, and residents from those hospitals' training programs rotate to a VA medical facility for a period of time. About 99% of VA's GME programs are sponsored by academic affiliates. When the VA partners with a teaching hospital that operates a residency program, it shares the costs of faculty and residents when the residents are training at the VA medical facility. During the time that residents are at a VA facility, they are not counted for the purposes of the Medicare GME cap (and are not paid using Medicare funds). This permits hospitals to train additional residents above their Medicare FTE cap to account for the time that residents are at VA facilities and therefore being paid by the VA."[8]

Veterans eligible for VA benefits tend to be sicker and to live in more rural areas than the general population. Stemming from a scandal regarding wait times, the 2014 Veterans Access, Choice, and Accountability Act was passed by Congress and signed into law, increasing funding to expand GME in underserved areas by developing new teaching sites and increasing the number of residents trained. Over five years, up to 1,500 primary care, mental health, and other "high-priority" specialists for the VA would be added (nationally). In 2017, 8.4% of the veteran population was living in California.

The VA has been actively reducing its role nationally as a sponsoring institution; there is now only one VA sponsoring institution in California, out of four nationwide. Of the 3,568 residents and fellows who graduated in California in 2015, only 25 — less than 1% — graduated from a VA sponsoring institution. Despite its diminished role as a sponsoring institution, the VA continues to play a major role in training physicians, as residents and fellows from other sponsoring institutions rotate through the 10 VA teaching hospitals in California. In 2017, for example, there were 11,627 residents and fellows training in California. Of these, 5,956 (51%) rotated through VA facilities. These residents and fellows accounted for 14% of those trained by the VA nationwide. That same year, the VA spent $93,864,109 on GME in California, or 13% of the national GME allocations. Given its substantial resources, the VA remains, through its affiliations, a significant contributor to GME funding, providing the second-largest amount of explicit GME funding from any one source.

Health Resources and Services Administration

Children's Hospitals GME Payment Program

The Children's Hospitals GME (CHGME) Payment Program is a discretionary program of the HRSA established by the federal Healthcare Research and Quality Act of 1999. The purpose of the program is to provide GME funding to freestanding children's hospitals to train pediatricians and pediatric subspecialists. According to a Congressional Research Service report published in 2016, "CHGME was created because children's hospitals typically received little, if any, Medicare GME payments because Medicare's GME payments are made based on a hospital's Medicare patient volume, which is generally low at children's hospitals because Medicare beneficiaries are individuals aged 65 and over, individuals receiving Social Security Disability Insurance benefits, and individuals with end-stage renal disease (i.e., permanent kidney failure).… The program must make payments to all children's hospitals that meet the program's definition and have an eligible training program."[9]

In 2017, CHGME was HRSA's biggest GME program, with a budget of $300 million and 58 grantees throughout 29 states, the District of Columbia, and Puerto Rico, allocating one-third of its payments to DGME and two-thirds to IME. Seven of those grantees are from California, with a combined award of $38,902,309. The Children's Hospital GME Support Reauthorization Act of 2013 extended the program for five years, through 2018. Funding for the program will need reauthorization to continue beyond 2018, and will also require annual US Congressional approval.

Teaching Health Center GME Program

The Teaching Health Center GME (THCGME) program was established within HRSA by the 2010 Patient Protection and Affordable Care Act (ACA). Because of Medicare's and Medicaid's emphasis on hospital-based GME financial subsidies, the vast majority of GME — including primary care — occurs in teaching hospitals. The purpose of the THCGME program is to provide payments to outpatient Teaching Health Centers to subsidize the training of primary care medical (including family medicine, internal medicine, psychiatry, pediatrics, obstetrics-gynecology, and geriatrics) and dental residents. HRSA awards THCGME funds to all facilities that meet the statutory definition of a Teaching Health Center, which is that they are located primarily in Federally Qualified Health Centers (FQHCs), rural health clinics, and tribal clinics. Teaching Health Centers typically provide care to low-income and otherwise underserved populations and are generally located in federally designated Health Professional Shortage Areas (HPSAs). Payments to Teaching Health Centers are in the form of DGME and IME payments.

Funding for the THCGME program requires congressional approval, and was originally appropriated for five years, then extended for two years at a reduced amount in the Medicare Access and CHIP [Children's Health Insurance Program] Reauthorization Act of 2015. Most recently, funding for this program was extended through fiscal year 2019 by the Bipartisan Budget Act of 2018 at $126.5 million per year. Funding after 2019 will need to be approved by Congress for the program to continue. Considering future fiscal uncertainties, current priorities are to stabilize the existing cohort as opposed to adding more grantees. There are currently 9 grantees in California (out of 57 nationally), with a combined award of $7,404,981 in 2017, down from $13,476,745 in 2015.

Preventive Medicine Residency Program

HRSA also provides funding designed to expand and support preventive medicine residencies. Programs must be ACGME accredited but can be located in a state or local health department or a school of public health, in addition to the other more traditional venues for GME education. Four preventive medicine residency programs in California were funded in 2017, for a total of $904,705. Twenty-five of these programs were supported nationally.

Primary Care Residency Expansion Program

In 2010, HRSA initiated a Primary Care Residency Expansion (PCRE) program. It provided $18,240,000 over five years to eight residency programs in California for the expansion of family medicine, internal medicine, and pediatrics programs. Over $167 million was given to 77 programs nationally. The grants were not renewed after 2015, however, leaving the programs to find alternative funding or decrease their program size to pre-PCRE levels.

Department of Defense

In 2015, only 52 residents and fellows in California graduated from a Department of Defense sponsoring institution. This represents a 67% reduction in the number of residents graduating from such institutions in 1997. There has also been a national trend toward reduction of GME training within the military. Combined DoD and VA graduates as a percentage of total graduates in California has fallen from 8.0% in 1997 to 2.1% in 2015.

Other Federal Funding

Other federal agencies, such as the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), and HRSA provide supplemental funding that indirectly supports GME. Examples include an NIH research grant that supports a trainee's salary during the research portion of their fellowship or a CDC grant that supports faculty development for a residency program.

State Sources of California GME Funding

The California state government provides GME funding through two main mechanisms: (1) the Song-Brown program through the Office of Statewide Health Planning and Development (OSHPD) and (2) the California Healthcare, Research and Prevention Tobacco Tax Act of 2016, commonly known as Proposition 56.

OSHPD Song-Brown Program

California's Song-Brown program was established in 1973 with the passage of the Song-Brown Family Physician Training Act (sponsored by Senator Alfred Song and Assemblyman Willie L. Brown Jr.). The Song-Brown program provides funding through competitive contracts to sponsoring institutions that meet the following statutory priorities: (1) attracting and admitting underrepresented minorities and those from underserved communities, (2) training residents in underserved areas, and (3) placing graduates in underserved areas. The Song-Brown Act was passed in the wake of the creation of the new board-certified specialty of family practice, designed to equip physicians with the knowledge and skills necessary to provide high-quality primary care. In 2014, the range of primary care training programs eligible to apply for Song-Brown GME funding was permanently expanded to include family medicine, internal medicine, ob/gyn, and pediatrics. The goals of the Song-Brown program remain the same: to increase the number of students and residents receiving quality primary care education and training in areas of unmet need throughout California.

Funding for the Song-Brown program was historically composed of appropriations from the California general fund and an annual allocation from the California Health Data Planning Fund (fees assessed on California hospitals, skilled nursing facilities, and long-term care facilities). For the period 2000–2013, the total annual amount awarded to training programs ranged from $2 million to $3 million, funding between 22 and 29 family medicine programs annually. Over the three-year period spanning fiscal years 2013–2014 and 2015–2016, The California Endowment, a major California philanthropic foundation, contributed $7 million annually to the Song-Brown program, allowing for funding of additional primary care residency programs. In 2017, the California state budget appropriated $100 million over a three-year period, resulting in a substantial expansion of the program. In fiscal year 2017–2018, 78 primary care residency programs received Song-Brown funding.

Long-Term Funding Is Necessary for Program Stability

Graduate medical education (i.e., residency and fellowship training) is a process that requires a minimum of three years (e.g., for dermatology, family medicine, and pediatrics) and can require many additional years (e.g., for interventional cardiology, neurosurgery, and urology). A program that commits to providing GME for any given physician is therefore committed financially to that physician for multiple years. For this reason, unstable GME funding strategies that provide funds to institutions/programs for a short period of time (e.g., one to two years) make GME strategic planning extremely difficult if not impossible.

Song-Brown GME funds are competitive grants dispersed in the form of contracts to sponsoring institutions that administer residency and training programs in the eligible primary care specialties. Funds are distributed on a per-resident basis and can be expended on any valid activity within the residency program (e.g., faculty and staff positions). Not every program that qualifies for Song-Brown funding receives it, and applications are evaluated on a point system.

The California Healthcare Workforce Policy Commission, a 15-member advisory board established by the Song-Brown Act and staffed by OSHPD, meets four times annually to review applications for Song-Brown funding and make recommendations to the director of OSHPD for the awarding of contracts to sponsoring institutions. Members of this commission represent the University of California, the state's private medical schools, OSHPD, practicing family physicians, practicing physician assistants, family practice residents, consumers, practicing nurse practitioners, and osteopathic family physicians.

Proposition 56

As part of the California Healthcare, Research and Prevention Tobacco Tax Act of 2016, $40 million has been allocated annually to support medical resident education in California. The goal of the program is to increase the number of primary care (defined as internal medicine, family medicine, obstetrics, gynecology, and pediatrics) and emergency physicians trained in California, with priority given to DGME costs for programs serving medically underserved areas and populations. All accredited GME programs meeting the stipulated guidelines are eligible to receive funding. The governor allocates these funds annually in the California budget. In its first year of disbursement (fiscal year 2017), instead of providing new revenue, the governor allocated the total amount raised from this new tax to the University of California while eliminating the same amount previously allocated to the UC system from the general fund, essentially voiding any increase in GME funding. Fiscal year 2018 appears to be similar: The governor eliminated $40 million from the UC budget and distributed the entire $40 million in allocated GME funding to the UC system.

Private Sources of California GME Funding

GME in California is also supported by private sources. According to a recent National Academies Press publication, "Private funding is difficult to quantify but may be significant. Private insurers support GME implicitly by paying higher rates to teaching institutions. Hospitals, universities, physicians' organizations, and faculty practice plans also support residencies and fellowships. Private philanthropy and gifts or grants from industry (primarily pharmaceutical and medical device companies) are another source of financial support. Many of these GME funding streams individually represent a minor fraction of GME funding nationally, but for some teaching programs they may support most, if not all, of the operating budget."

Additionally, some senior residents and fellows generate enough clinical revenue to offset the costs of their training. Teaching hospitals may be motivated to expand procedure-based subspecialty and surgical training programs because of the ability to offset costs using fees generated from such procedures, which also enhances the Medicare IME payment.

Best-Kept Secret: Residents and Fellows Generate Clinical Revenue

Although residents in their first year of residency training (often called "internship") face a steep learning curve and are unlikely to generate much clinical revenue in a fee-for-service setting, residents and fellows in the latter years of their training operate with increasing autonomy and are able to generate fee-for-service revenues more akin to those of their faculty colleagues. Revenues may vary by specialty, with more lucrative and procedure-based specialties, such as orthopedics and dermatology, generating more clinical income relative to more cognitive-oriented specialties, such as family medicine and psychiatry. Whether or not residents and fellows are able to generate enough clinical revenues to offset the costs of their training remains a topic of much debate.[11]

Conclusion

The federal government is by far the largest contributor to GME funding in California, yet there remains a persistent gap in the amount of federal funding received relative to the size of California's population. Furthermore, there is little to no related regulation regarding which specialists get trained or where, nor is there any form of centralized planning on either the federal or state level. Rather, the regulations tied to the largest source of funding, Medicare, have more to do with each teaching hospital's program size based on 1997 standards and the number of Medicare patients in the hospital facility.

Medicaid, traditionally the second-largest funder of GME in most states, is impossible to analyze for California, as Medi-Cal has no explicit GME program. Instead, each hospital receives a hospital provider fee, which means it receives all federal monies allowed, but which permits the hospital to use the funds at its discretion. HRSA provides some additional funds, though a much smaller percentage, with stipulations that these funds be used for specific programs (e.g., children's hospitals, Teaching Health Centers). The VA plays a significant role financially but is for the most part an affiliate institution.

Song-Brown and Proposition 56 are California state programs aimed to address the primary care shortages in the state; even with these programs in place, the overall number of primary care GME graduates in California has remained stagnant at best over the past 20 years. Song-Brown funds are desirable due to their flexibility of use, but they are competitive, time-limited, and, historically, too small to make a major impact. The recent increase in Song Brown annual funding to $33 million is a step in the right direction. Proposition 56 funds were promising, but so far have not been allocated appropriately, resulting in no increase in GME funding from the tax. The extent that individual sponsoring institutions rely on private funds for GME is not known.

As a result of this complex and deeply fragmented system of GME subsidies, and the associated lack of transparency and accountability, decisions regarding which physicians to train and where remain largely at the discretion of individual sponsoring institutions.

MORE INFORMATION

Additional information on graduate medical education in California will be published by the California Health Care Foundation in the fall of 2018. Please check **www.chcf.org/gmefunding** for more information on policy options for strengthening GME in California and related policy topics, such as the Song-Brown program and the geographic distribution of sponsoring institutions.

Graduate Medical Education Case Studies

Explores launching and maintaining GME programs from the perspective of sponsoring institutions.

Introduction

The following brief case studies are intended to shed light on graduate medical education (GME) funding in California from the perspective of the sponsoring institutions. We chose organizations that have been successful at launching and maintaining GME, and that reflect the size, type, and geographic diversity of sponsoring institutions across California (see Table 5). We focus on the history, organizational structure, and sources of GME funding, and on drivers and barriers to GME expansion.

Across the institutions, several themes emerge. First, each sponsoring institution has medical education deeply rooted in its organizational identity and makes education an organizational priority. These are not institutions that simply responded to a clinical service need by launching a training program. Each understands and acknowledges the challenges of maintaining a quality educational program while balancing the patient care demands of the organization.

Second, each of the sponsoring institutions we studied is poised to expand GME within its organization, and each reported that funding is the primary barrier to expansion. All reported that GME funding must last for the duration of the program; in other words, one-year competitive grants for three-year training programs are not rational.

Third, each sponsoring institution acknowledged the potential impacts, both positive and negative, that a GME program can have on the faculty. Faculty physicians reap the benefits of GME in terms of enhanced quality of life, intellectual stimulation, and reduced burnout. On the other hand, balancing teaching with clinical service demands can create additional stress in some situations.

Finally, a consistent theme across sponsoring institutions was the impact of GME on organizational and community workforce. Without exception, institutions reported that GME programs helped to boost recruitment and retention of excellent faculty physicians, and further helped to meet workforce demands by producing graduates willing to stay and practice at the institution and in the local community.

Table 5. Characteristics of Case Study Institutions

	SHASTA COMMUNITY HEALTH CENTER	VALLEY CONSORTIUM FOR MEDICAL EDUCATION	KAISER PERMANENTE – SOUTHERN CALIFORNIA	UCSF
Region	Northern	Central Valley	Southern	Northern
Geography	Rural	Mixed	Mixed	Urban
Program size*	7	51	>400	>1,500
Program inception	2013	2010†	1954	1949‡
Sponsoring institution type	Teaching Health Center	Consortium	Integrated health delivery system	Academic medical center
Major GME funding sources	HRSA, Song-Brown program	Medicare, HRSA, Song-Brown program	Medicare, community benefit funds	Medicare, UC Health, VA, state, and county
Specialty area(s)	Family medicine	Family medicine, orthopedics	Multispecialty, with a focus on primary care	Multispecialty, with a focus on subspecialties

*Program size is measured by the number of trainees.

†Though VCME officially began in 2010, the original residency program began in 1975.

‡Date of designation of UC Medical Center in San Francisco.

Notes: *HRSA* is Health Resources and Services Administration; *VA* is Department of Veterans Affairs.

GME CASE STUDY #1

Shasta Community Health Center

Organizational Overview

Shasta Community Health Center (SCHC) is a Teaching Health Center (THC) located in Redding, California. Shasta County has a population of just under 180,000, roughly half of whom live in Redding, the county seat. SCHC is the sponsoring institution for a rural residency program in family medicine, established in 2013, which has a total of six residents, two in each year of the program. The main hospital affiliate is Mercy Medical Center Redding. SCHC is also affiliated with the University of California, Davis, School of Medicine, which is located 160 miles away.

SCHC had prior experience with family medicine residency training. Its initial GME program was established as a county affiliate of the Mercy Medical Center sponsoring institution in Redding. Around 2004, new leadership at Mercy Medical Center decided to cut back the number of residency positions because they were training more residents than they were receiving Medicare GME funds for (i.e., they were "over the cap" by 3 to 4 positions). A unilateral decision was made to terminate the affiliate relationship with SCHC. When, following the passage of the Affordable Care Act in 2010, Teaching Health Center GME (THCGME) funds became available through the US Health Resources and Services Administration (HRSA), SCHC saw the opportunity to become its own sponsoring institution and establish a new family medicine residency. Due to its previous GME experience and existing resources (e.g., faculty), SCHC was able to go through the Accreditation Council for Graduate Medical Education (ACGME) process quickly, becoming a sponsoring institution in just one year. SCHC started its program with two residents per year (2-2-2) because its hospital partner — Mercy Medical Center Redding — argued that it did not have adequate capacity (faculty and patients) to take on more than that number of new residents. SCHC would like to double the size of its family medicine residency program (4-4-4) and has been approved by the ACGME to do so. However, growth must happen gradually due to current funding limitations.

Graduate Medical Education Funding

SCHC and its affiliate hospital are not eligible for any Medicare GME funds for the THC family medicine residents, as the federal government would consider that "double dipping." SCHC received a grant from the Blue Shield of California Foundation, which helped with the yearlong "start-up costs" prior to the initiation of THCGME grant funding. Subsequently, SCHC's primary funding source has been HRSA THCGME time-limited grant funding.

THCGME funding levels have varied from year to year. In fiscal years 2013–2015, SCHC received an annual grant of $150,000/full-time equivalent (FTE); in fiscal years 2016–2017, $95,000/FTE; and in fiscal years 2018-2019, $116,000/FTE. SCHC has also applied for and received Song-Brown program funding from the California Office of Statewide Health Planning and Development (OSHPD), although SCHC has not received every grant it has applied for. Song-Brown funds have helped to cover some of the gaps during fluctuations in HRSA funding levels. SCHC also applied for and received a Song-Brown Primary Care Expansion Grant, which is being used to increase the program to 3-2-2 this year, with the hopes of shifting to a 3-3-3 program over the next several years.

SCHC estimates that it costs roughly $200,000/FTE to train its family medicine residents each year. This relatively high cost can be attributed to the small program size, as many of the ACGME administrative costs are the same regardless of program size. Additionally, as a THC, SCHC needs to provide additional malpractice coverage. Any shortfalls in funding have been covered by SCHC's own financial reserves, generated primarily from clinical income.

Drivers of GME Expansion

The biggest driver for the establishment and growth of the SCHC GME program is workforce needs in the local community. Recruiting family physicians to rural Northern California has been very difficult, and SCHC leadership estimates that they are short 25 to 30 primary care physicians in the community. Having a large applicant pool (over 500 applications) for the three residency positions has allowed SCHC to hone its selection process, prioritizing local, "homegrown" applicants who might be more likely to stay in the area. So far, about 25% to 30% of

graduating residents are staying to practice in Redding, and the rest are being recruited out of the area — particularly to Kaiser Permanente because of recruitment packages that include higher starting salaries, loan repayment programs, housing deposits, pensions, and other benefits. SCHC notes additional benefits of the GME program, including improved quality of care delivered at SCHC, and also easier recruitment and retention of excellent faculty physicians. Some doctors look at the ability to teach residents as a benefit, whether because it provides intellectual stimulation, complements their work life, allows them to give back to their profession by mentoring the next generation of doctors, or simply because they like being able to say they are members of the UC Davis faculty. An additional incentive for program growth is economies of scale. Doubling the size of the current program would allow for a more efficient use of SCHC resources (faculty and administrative support).

Barriers to GME Expansion

The largest barrier to growth is lack of funding. Currently, HRSA has frozen expansion grants and is only providing funds to stabilize the existing cohort of THC residents. Song-Brown funding is available, but it is competitive, time-limited, too small to fund major program growth, and therefore typically used to supplement existing programs. Additionally, because of California state budget negotiations, there is no guarantee that funding will be granted in subsequent years. This funding instability places enormous pressure on SCHC, which needs to ensure that it has adequate funds for each resident for the entire three-year program. In addition to funding, there are capacity issues that require careful consideration as the program grows. Concern that Mercy Medical Center Redding won't be able to provide sufficient clinical experience for the larger number of residents has led to partnerships with other, outlying hospitals, as well as with UC Davis Medical Center in Sacramento. These partnerships relieve the immediate issue of capacity but are more expensive as they involve other fees, such as housing and travel costs. The only reason the program would close or contract would be if the funding sources ended. The program has committed to finishing the training for whatever current residents it has, but if it were to lose its funding, SCHC would stop admitting new classes and terminate the program.

GME CASE STUDY #2

Valley Consortium for Medical Education

Organizational Overview

Valley Consortium for Medical Education (VCME) is a partnership comprised of Doctors Medical Center (DMC), Sutter Health's Memorial Medical Center, and Stanislaus County Health Services Agency (SCHSA), located in Modesto, California. Stanislaus County has a population of almost 550,000, with almost 40% living in Modesto, the county seat. VCME serves as the sponsoring institution for two ACGME-accredited residency programs — one in family medicine and one in orthopedic surgery. The main hospital affiliate for both programs is DMC, part of the for-profit Tenet Health System. VCME is also affiliated with the University of California, Davis, School of Medicine (located 75 miles away) and the Midwestern University / Arizona College of Osteopathic Medicine (located 700 miles away).

The Stanislaus Family Medicine Residency program has been in operation for over 35 years, initially owned by SCHSA and then bought as part of a larger acquisition by DMC in 1996. In 2009, due to a very complex interaction with the Centers for Medicare & Medicaid Services (CMS), the decision was made to create the VCME to function as the sponsoring institution for the renamed Valley Family Medicine Residency program. To do this, the Stanislaus Family Medicine Residency program closed in 2010, and a brand new Valley Family Medicine Residency program launched the following day under the newly created VCME. The Valley Family Medicine Residency program is ACGME-accredited for 12 residents per year, for a total of 36 residents in the three-year program. Family medicine residents run their own family medicine inpatient service for indigent patients at DMC, and care for outpatients in the program's county-based Family Medicine Center. The Valley Orthopedic Surgery Residency program, launched in 2013, is ACGME-accredited for 3 residents per year, for a total of 15 residents in the five-year program. Orthopedic surgery residents rotate through DMC, but also through affiliate hospitals and private orthopedic surgery practices in the community.

Graduate Medical Education Funding

In 2009 DMC was determined by CMS to be a Medicare naive teaching hospital, and it was therefore allowed to create a new Medicare cap (35 slots, set after the first three years of the "new" family medicine residency program) and per resident amount (PRA) (set when the first resident began). In addition to Medicare GME funding, VCME has applied for and received two types of competitive, time-limited grants for its family medicine residency program: Teaching Health Center grants from the HRSA, and Song-Brown training grants from the California OSHPD. This additional funding has allowed VCME to launch an orthopedic surgery residency program at the hospital, using funding from 15 of the Medicare cap positions. Though DMC is the only Medicare teaching hospital in the VCME, and therefore receives all of the Medicare funding, it passes 100% of the funds (both direct and indirect) through to VCME for use in direct GME program funding. Grant funding goes directly to VCME. Any expenses related to GME or VCME that are not covered by grants or by CMS are shared by the consortium members. At the end of each year, excess money beyond the expenses of the GME program and VCME is returned to consortium members.

Drivers of GME Expansion

The main driver of the VCME GME program is the need to build the local physician workforce. The family medicine residency program finds it easier to recruit faculty physicians to work in the county-based clinic because of teaching opportunities. Historically, roughly 30% to 35% of the family medicine residency graduates have remained in practice in Modesto, with even more remaining in practice in the greater Central Valley. A substantial number of these physicians choose to work for Kaiser Permanente due to such inducements as higher compensation and signing bonuses compared to county- or community-based practices. The choice to work for Kaiser Permanente is viewed by VCME as a "loss" to the community. The orthopedic surgery program is too new to see any workforce development, with the first class of two graduates moving on to fellowship programs in Maryland and Texas, respectively. However, the new residency program has addressed the workforce shortage indirectly by attracting orthopedic surgery faculty physicians to the community, and to DMC in particular. Orthopedic surgery volume and related revenue have also increased at DMC as a direct result of the new residency program.

Barriers to GME Expansion

VCME would like to launch additional residency programs but lacks the funding to do so. Because the consortium has reached its Medicare cap, adding additional residents would be entirely "above the cap," and funds would need to come from other sources besides Medicare GME funding. Some leaders within the consortium are ready to launch a psychiatry residency program due to a huge need in the community for psychiatric services. Others point out that for-profit hospitals don't make money on family medicine and psychiatry, and therefore prioritize launching residencies in more lucrative, hospital-based specialties such as anesthesia, emergency medicine, and hospitalist medicine. Despite substantial physician interest and an abundance of learning opportunities, there are no plans at present to launch a new VCME residency program. If VCME loses its Teaching Health Center or Song-Brown primary care grant funding, it will reduce the number of available slots in the family medicine residency program. VCME is pleased with the size of the orthopedic surgery residency, and DMC has committed to paying whatever is necessary to keep the program at its current size.

GME CASE STUDY #3

Kaiser Permanente – Southern California

Organizational Overview

Kaiser Permanente (KP) is a private, integrated health care system comprised of the nonprofit Kaiser Foundation Health Plan and Kaiser Foundation Hospitals, and the for-profit, independent physician group Permanente Medical Group. KP operates in eight states plus the District of Columbia and is the largest managed care organization in the US. KP has been committed to GME since its founding — its first residency was an obstetrics and gynecology program launched in Los Angeles in 1954 — and is currently responsible for almost 6% of the GME graduates in California, and almost 11% of primary care graduates in the state. In California, KP is separated into two regions, which operate and are funded autonomously from each other. Kaiser Permanente – Southern California (KP-SCal) serves 4.5 million members, from Kern County in the north to San Diego County in the south, and operates as the sponsoring institution for six clinical sites offering 33 training programs in 24 specialties, with

over 400 residents and fellows. In addition, KP-SCal has training affiliations with many educational institutions in the region. Major affiliates include the area's academic health centers: the University of Southern California, Loma Linda University, and the University of California academic health centers in Los Angeles, Riverside, Irvine, and San Diego.

Graduate Medical Education Funding

The Kaiser Foundation Hospitals in Southern California are designated Medicare teaching hospitals and receive Medicare indirect medical education (IME) and direct graduate medical education (DGME) funds. Their Medicare GME cap is around 250 trainees, but they train an additional 180 residents and fellows who are "above the cap" and require institutional support. The Kaiser Foundation Hospitals and Health Plan are nonprofit, so they are tax-exempt; in exchange, they have a legal obligation to spend approximately 3.8% of annual gross revenue on community benefit activities, part of which is used to fund KP-SCal's GME efforts. The Southern California Permanente Medical Group provides "in-kind" donations to KP-SCal's GME programs by donating faculty time. However, individual residency or fellowship programs see funding only in terms of a lump sum from the community benefit budget. Any potential cost savings that may be generated by residents and fellows delivering clinical services are absorbed by the Kaiser Foundation Hospitals and Health Plan.

KP-SCal pays the salaries of the affiliates' residents when they are rotating through KP-SCal facilities, and the affiliates pay the salaries of KP-SCal residents rotating through affiliate sites. Some KP-SCal residency programs have qualified for and received competitive, time-limited government grants, such as Song-Brown training grants from the California OSHPD, which go directly to the program. These funds may be used to enhance the quality of the teaching programs or to increase the program size by adding a resident FTE.

Drivers of GME Expansion

The main drivers of GME expansion within KP-SCal are (1) the workforce needs of the local community, and (2) physician intellectual stimulation. The workforce needs of the local community are measured by the level of difficulty that the KP-SCal medical group has in recruiting particular specialties. In general, the focus is on primary care and "pipeline programs"; KP-SCal's most recent new programs have been residencies in family medicine, internal medicine, psychiatry, and emergency medicine, as well as a fellowship in community health. The belief is that these areas are not only where physician shortages exist, but also where KP-SCal's strengths lie. About 50% of KP-SCal's trainees remain in practice within the KP-SCal system after graduation, although KP-SCal's leadership is adamant that its GME mission is not strictly to develop its own workforce and that it is pleased to seed local communities with Kaiser Permanente graduates. In addition, KP-SCal believes that sponsoring GME programs helps with physician recruitment by attracting excellent faculty physicians and providing intellectual stimulation through teaching opportunities.

Barriers to GME Expansion

Currently, the greatest barrier to GME expansion at KP-SCal is limited funding. Because nearly all GME funding comes from the Kaiser Foundation Hospitals and Health Plan in the form of community benefit dollars, GME competes with other internal and external community benefit program priorities. For many years, KP-SCal GME experienced ever-growing investment of community benefit dollars into GME. However, for the past few years, the investment in GME has leveled off. Two major priorities that have put a strain on available community benefit dollars are (1) the costs of treating increasing numbers of under- and uninsured patients at KP-SCal medical centers since the passage of the Affordable Care Act, and (2) the launch of KP's first medical school, in Pasadena, California. Community benefit dollars are also used to invest in research and to make smaller community grants — for example, to local schools, food banks, and community recreation programs. Investments in these types of grants can be shorter-term, compared to the long-term commitment required of investing in GME programs. Another obstacle to growth is capacity, particularly in terms of faculty time. KP-SCal's medical group's primary mission is to provide high levels of access and high-quality care to its members. This operational focus must be continually reconciled with its teaching mission in terms of protecting faculty time to teach and ensuring physician wellness. Also, it is not seen as appropriate to rely on community benefit funding of GME to improve access within the for-profit medical group. Despite these obstacles, KP-SCal has a long history of investment in GME, and even in periods of financial hardship has not reversed any of its GME commitments by shrinking its programs.

GME CASE STUDY #4

University of California, San Francisco

Organizational Overview

The University of California, San Francisco (UCSF), has the largest GME program in California, and one of the largest in the United States. UCSF is situated in San Francisco County (population: approximately 884,000) and specializes in tertiary and quaternary care as well as research, serving as a major referral center for patients across California and beyond. The UCSF sponsoring institution is the UCSF School of Medicine, an urban public academic institution. UCSF School of Medicine hosts 27 ACGME-accredited residency programs, 64 ACGME-accredited fellowship programs, and another 80 nonaccredited fellowship programs, with a total of over 1,500 trainees. Each of its programs is housed within one or more School of Medicine academic departments (e.g., the Department of Pediatrics, the Department of Surgery, the Department of Ophthalmology).

Teaching hospitals affiliated with UCSF include several that are organized into the clinical enterprise UCSF Health: UCSF Helen Diller Medical Center at Parnassus Heights, UCSF Medical Center at Mount Zion, and UCSF Medical Center at Mission Bay; UCSF Benioff Children's Hospitals in Oakland and San Francisco; and Langley Porter Psychiatric Hospital and Clinics. In addition, UCSF School of Medicine has strong affiliations with two other key partners: Zuckerberg San Francisco General Hospital (ZSFG) and the San Francisco Veterans Affairs Medical Center (SFVAMC). ZSFG is owned and operated by the City and County of San Francisco and is a Medicare teaching hospital with a Medicare GME cap of 230 residents and fellows. The SFVAMC is owned and operated by the US Department of Veterans Affairs and is not a Medicare teaching hospital. At any given time, roughly one-quarter to one-third of UCSF residents and fellows are rotating through ZSFG and SFVAMC.

Graduate Medical Education Funding

The UCSF School of Medicine is the sponsoring institution for UCSF training programs but is not a teaching hospital, so it does not receive Medicare GME funds directly. However, its affiliated teaching hospitals do receive Medicare GME funding. Medicare GME dollars are collected by UCSF Health, which then passes money to the UCSF School of Medicine GME sponsoring institution according to an annual budget negotiated between the two entities. Because the UCSF School of Medicine trains many more residents and fellows than its Medicare cap allows, UCSF Health provides the School of Medicine with additional supplemental funds out of its clinical revenues to help cover the costs of trainees that are "above the cap." The City and County of San Francisco and the Department of Veterans Affairs also fund resident and fellow salaries as trainees rotate through ZSFG and SFVAMC, respectively. Additionally, the UCSF School of Medicine receives a relatively small amount of money from the State of California general fund to support GME. These funds were designated many decades ago, and the total dollar amount has remained stagnant over time. These flexible funds are distributed among the different academic departments and can be used to cover a wide variety of GME-related expenses. Within the UCSF School of Medicine, each academic department is responsible for securing its own funding for training programs beyond what it receives from UCSF Health, the City and County of San Francisco, the US Department of Veterans Affairs, and the state of California. A department's clinical revenues are one important source of funding. Procedural-based specialties (e.g., dermatology and orthopedics) are more successful than cognitive-based specialties (e.g., family medicine and psychiatry) at generating sufficient clinical revenues to support GME. Another source of funding is partnership with other local hospitals and health systems, such as Kaiser Permanente. During the time that trainees rotate through these organizations, their salaries are covered by the organization. In addition to these sources, some departments are eligible to apply for competitive, time-limited federal and state grants, such as Primary Care Residency Expansion grants from HRSA or Song-Brown training grants from the California OSHPD. Other grants, such as from the National Institutes of Health, can help cover the research portion of fellowships.

Drivers of GME Expansion

The main drivers of growth in GME programs at UCSF are (1) a desire to maintain national prestige; (2) the need to recruit, and provide intellectual stimulation for, faculty physicians; and (3) service demands in a large and growing clinical enterprise. Program growth does not stem from centralized workforce planning but instead is department driven. Those departments that have GME programs in good standing and can demonstrate a stable funding source and adequate capacity (i.e., patient volume to create the educational experiences, faculty

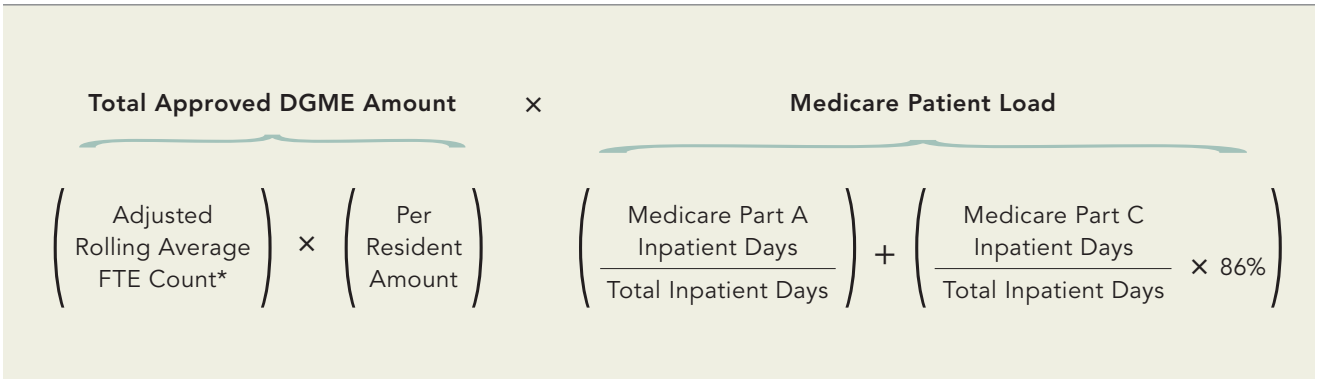
time and interest, and physical space) present their case for approval by the UCSF GME Committee and, when appropriate, the ACGME. Given the large number of training programs at UCSF, it is imperative that growth in one program does not adversely affect the educational experiences of other trainees. Rarely, growth in a program is approved by the UCSF School of Medicine but rejected by the ACGME. Alternatively, sometimes ACGME regulations result in a program's expansion, such as an added requirement for an additional year of a fellowship.

Barriers to GME Expansion

The main obstacle to growth in GME programs at UCSF is lack of funding. The process of putting together enough funding to expand a residency or open a new fellowship program is a complicated negotiation that differs every time. An example was launching a new four-year, 14-residents-per-year, ACGME-accredited emergency medicine residency program — a program that was entirely "above the cap" and funded jointly by UCSF Health, ZSFG, and Kaiser Permanente. Another example is the launching of a new sleep medicine fellowship program, funded mostly by the SFVAMC, with contributions from clinical revenues from several departments at the UCSF School of Medicine. At times programs can find funding for program expansion in the form of time-limited grants only to have the grants expire. This was the case for both internal medicine primary care and family medicine residency programs at ZSFG when they received a five-year HRSA Primary Care Residency Expansion grant and subsequently were left scrambling to find alternative funding or face a reduction in program size after the grant expired. Another barrier to growth at UCSF is its own reputation and branding. As a top training institution, it is focused on filling its GME positions with graduates of the nation's top medical schools and residencies. This focus has led to placing limits on training programs in specialties (e.g., nephrology, geriatrics, and internal medicine primary care) where the workforce need is high, but the overall level of interest among US graduates is low.

Appendix A. GME Formulas and Related Figures

Figure A1. Medicare DGME Payment Formula



*The adjusted rolling average full-time equivalent (FTE) count is subject to the GME cap.

Source: Congressional Research Service (CRS) analysis of Title XVIII of the Social Security Act (SSA) and relevant regulations.

DGME is calculated by multiplying the per resident amount (PRA), which represents the DGME costs incurred by a teaching hospital, by the number of full-time equivalent (FTE) residents during that year. This number is then multiplied by the Medicare patient load, which is the number of total inpatient days Medicare patients spend in the hospital divided by the hospital's total inpatient days for all patients. See Figure A1.

For **IME**, cost variation is evaluated between teaching and other costs using regression analysis, where the explained variable is each hospital's standardized cost per case, and the explanatory variable is the hospital's ratio of interns and residents to beds (IRB). The IME cost function is expressed as follows:

$$(1 + IRB)^{\text{IME coefficient}} - 1$$

For example, if a hospital had 100 residents and 400 beds, and the IME coefficient was 0.405, the hospital's IRB would be 100 ÷ 400 = 0.25, and its teaching program would be estimated to increase its average cost per case by $1.25^{0.405} - 1$, or about 9.5%.

In 1985, the Congressional Budget Office determined the IME coefficient to be 0.405, and it has remained the same since then. Although the IME cost function has an exponential form, it is described as the coefficient multiplied by 10 per 10% increment in the IRB. Using the current payment coefficient of 0.405, the function would be expressed as IME increases cost per case by 4.05% per 10% increment in the IRB.

Figure A2. Medicare IME Operating and Capital Adjustment Formulas

IME Operating Adjustment	=	$1.35 \times ((1 + IRB)^{0.405} - 1)$
IME Capital Adjustment	=	$(e^{0.2822 \times RADC} - 1)$

Notes: *IRB* is an intern and resident-to-bed ratio; *RADC* is residents-to-average daily census ratio. Both the IRB and RADC are subject to the GME cap. Other limits and restrictions to the formula may apply.

Source: Congressional Research Service (CRS) analysis of Title XVIII of the Social Security Act (SSA) and relevant regulations.

The **Medicare inpatient prospective payment system (IPPS)** includes an IME adjustment to the wage-adjusted and case mix–adjusted operating payment rate. The formula for this adjustment is the IME cost function described above multiplied by a constant, currently 1.35, that is set in statute and reflects an increase in the empirical adjustment to provide extra support for teaching hospitals. See Figure A2.

Using the example above, where a hospital had an IRB of 0.25, its IME adjustment would be:

$$([1 + 0.25]^{0.405} - 1) \times 1.35 = 12.8\%$$

Further, if the hospital's average wage-adjusted and case mix–adjusted payment was $8,300, its IME payment would be 12.8% of $8,300, or $1,062.

Appendix B. Acknowledgments

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Note: *OSHPD* is Office of Statewide Health Planning and Development.

Endnotes

1. For further information on the evaluation of the federal funding of GME, please see *HHS Needs Better Information to Comprehensively Evaluate Graduate Medical Education Funding* (pub. no. GAO-18-240), Government Accountability Office, March 9, 2018, www.gao.gov; and *Graduate Medical Education Outcomes and Metrics: Proceedings of a Workshop*, National Academies of Sciences, Engineering, and Medicine, National Academies Press, 2018, doi.org.
2. House Rep. 89-213 (1965); Senate Rep. 89-404, at Pt. 1 (1965).
3. Fitzhugh Mullan, Candice Chen, and Erika Steinmetz, "The Geography of Graduate Medical Education: Imbalances Signal Need for New Distribution Policies," *Health Affairs* 32, no. 11 (November 2013): 1914–21, doi:10.1377/hlthaff.2013.0545.
4. Elayne J. Heisler et al., *Federal Support for Graduate Medical Education: An Overview* (report no. R44376), Congressional Research Service, February 12, 2016: 7, fas.org (PDF).
5. For more information on the history of the Medicare cap, see "Chapter 3: GME Financing," in Jill Eden, Donald Berwick, and Gail Wilensky, eds., *Graduate Medical Education That Meets the Nation's Health Needs*, National Academies Press, July 29, 2014, www.nap.edu; and HHS Needs Better Information to Comprehensively Evaluate Graduate Medical Education Funding (pub. no. GAO-18-240), Government Accountability Office, March 9, 2018, www.gao.gov.
6. Mullan, Chen, and Steinmetz, "Geography."
7. Heisler et al., *Federal Support*, 7 (footnote 41).
8. Heisler et al., *Federal Support*, 12.
9. Heisler et al., *Federal Support*, 16–17.
10. "Chapter 3: GME Financing," in Graduate Medical Education.
11. For more information on the difficulties measuring potential revenues from graduate medical education, see Barbara O. Wynn, "Opening the 'Black Box' of GME Costs and Benefits: A Conceptual Model and a Call for Systematic Studies," *Journal of Graduate Medical Education* 7, no. 1 (March 2015): 125–27, doi:10.4300/JGME-D-14-00751.1; Barbara Wynn, Robert Smalley, and Kristina Cordasco, *Does It Cost More to Train Residents or to Replace Them? A Look at the Costs and Benefits of Operating Graduate Medical Education Programs*, RAND Corporation, 2013, www.rand.org; Jeremy Stoller et al., "Financial Contribution of Residents When Billing as 'Junior Associates' in the 'Surgical Firm,'" *Journal of Surgical Education* 73 no. 1 (January/February 2016): 85–94, doi:10.1016/j.jsurg.2015.06.013; and Amitabh Chandra, Dhruv Khullar, and Gail R. Wilensky, "The Economics of Graduate Medical Education," *New England Journal of Medicine* 370 (June 19, 2014): 2357–60, doi:10.1056/NEJMp1402468.