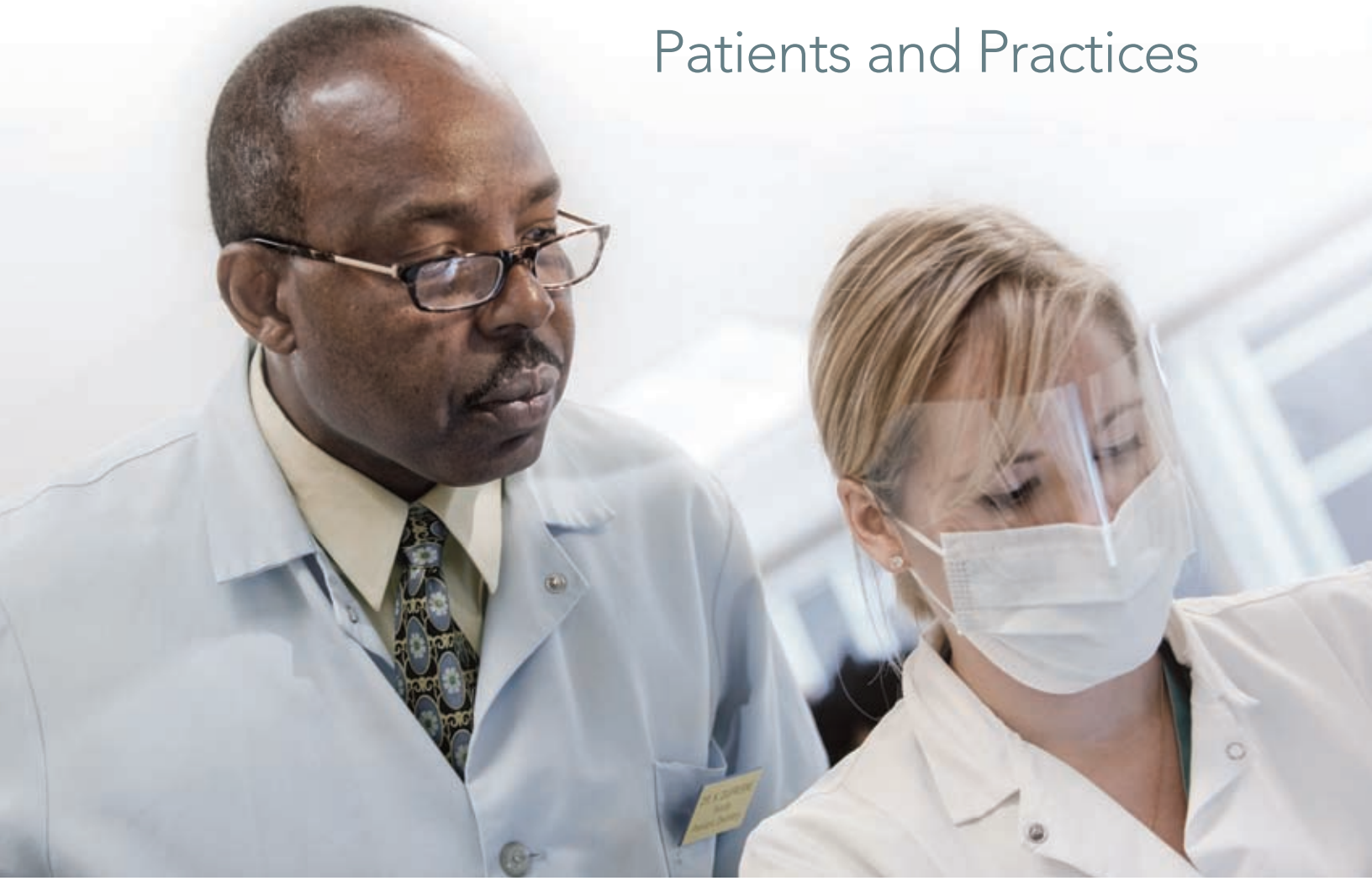
THE PEW CENTER ON THE STATES

It Takes a Team

How New Dental Providers Can Benefit Patients and Practices



DECEMBER 2010

The Pew Center on the States is a division of The Pew Charitable Trusts that identifies and advances effective solutions to critical issues facing states. Pew is a nonprofit organization that applies a rigorous, analytical approach to improve public policy, inform the public and stimulate civic life.

The Pew Children's Dental Campaign works to promote policies that will help millions of children maintain healthy teeth, get the care they need and come to school ready to learn.

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The calculator used in this report was developed for the Pew Children's Dental Campaign by Scott & Company, Inc., a health care and business management consultancy, principal investigator Mary Kate Scott.

For additional information on Pew and the Children's Dental Campaign, please visit www.pewcenteronthestates.org/dental.

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Contents

Introduction

Policy makers in a number of states are considering the creation of new types of licensed professionals who would work with dentists to deliver primary dental care to children and other underserved patients. This report is the first to examine the potential effects of dental therapists and hygienist-therapists—also called allied providers—on the productivity and profits of private dental practices, where 92 percent of the nation's dentists work.[1]

Some dentists are concerned that authorizing new types of dental professionals could negatively affect their businesses. Pew's analysis, however, shows that most private-practice dentists who hire an allied provider can serve more patients while maintaining or improving their financial bottom line. Importantly, most dentists who add a dental therapist or hygienist-therapist to their team can treat more Medicaid enrollees and still preserve or increase their income. Three representative scenarios in the following pages indicate that even practices focused on preventive care could benefit from employing these new allied providers.

States have pressing reasons to find cost-effective ways to expand the patient capacity of the dental health system. Nationwide, 49 million Americans live in areas federally designated as having a shortage of dental providers.[2] Limited access is a particular problem for poor children—17 million of them go without care each year[3]—and is fueled by multiple factors, including low reimbursement rates offered by state Medicaid programs. The imbalance between provider supply and patient demand is likely to increase due to the federal health care reform law enacted in 2010, which will extend dental insurance to an estimated 5.3 million more children by 2014.[4]

Hiring new types of professionals would build on dentists' experience with dental hygienists. Hygienists are employed by most practices and trained to provide a set of preventive services.[5] Dentists have learned that having these practitioners on their team means they can devote more of their time to more sophisticated procedures and enhance their practices' income.

New types of allied providers present dental practices with a similar opportunity. Dental therapists can offer a limited array of restorative services—for example, filling cavities. These practitioners have existed for many years in Great Britain, Canada, New Zealand and other countries, and since 2005 have served in Native Alaskan communities. Hygienist-therapists can be trained to deliver both preventive and restorative care. (See Exhibit 1 on page 7 for a summary of procedures each type of provider could perform.)

As a companion to this report, the Pew Children's Dental Campaign is releasing an economic tool—called the Productivity and Profit Calculator—that evaluates new professionals' impact in the context of real-world dental practices. Policy makers, advocates and dentists can use this calculator to assess the unique variables from their states or communities to better understand the potential effects of adding allied providers to the dental team.

Pew's desire to examine and strengthen the dental workforce is not new. Indeed, from 1985 to 1991, the Pew National Dental Education Program invested $8.75 million in strategic planning and curriculum development for six U.S. dental schools.

State policy changes are essential to ensure that today's unmet need for dental care—and the coming rise in demand created by health care reform—is met by a larger supply of dental professionals. The multiple private-practice scenarios Pew tested demonstrate that states' authorization of allied providers is a sound strategy that can significantly improve access for low-income patients. By employing these new providers, dentists can create a win-win outcome: making sure that coverage will translate to actual dental care without weakening their practices' financial stability.

Key Findings

The three scenarios outlined in this report assess how current and new types of allied providers could change the patient capacity and revenues of private dental practices. These providers include registered dental hygienists and two new types: dental therapists and dental hygienist-therapists.

These scenarios were calculated using the Productivity and Profit Calculator, a financial tool created for Pew by Scott & Company, Inc., a California-based firm that works with organizations interested in developing or assessing new business models in health care. Scott & Company developed the calculator in close consultation with a panel of dentists, dental hygienists and dental office managers.[6]

■ Allied providers can strengthen the productivity and financial stability of dental practices.

When serving only privately insured patients, all practice types tested—solo pediatric, solo general and small group—increased their productivity and earnings by adding any one of the three allied providers. Solo practices, where most dentists work, saw profit gains of between 17 and 54 percent.

■ Allied providers can help practices treat more Medicaid-insured patients in a financially sustainable way.

By raising the number of patients served each day, allied providers can make it possible for most existing private practices to care for Medicaid-enrolled patients without sacrificing profitability. This is noteworthy because most dentists do not accept Medicaid patients.[7]

Consider the example of a solo general dental practice in a state with a Medicaid reimbursement rate of 60 percent of a dentist's fees—a rate that is the 50-state average and is widely cited as a practice's overhead costs. (As of 2008, 24 states and the District of Columbia offered reimbursements above 60 percent.) When a dental therapist is added to the team and the practice shifts from treating only the privately insured to a patient mix of 80 percent privately insured and 20 percent Medicaid-enrolled, pre-tax profits increase by 6 percent.

■ Medicaid reimbursement rates play a critical role.

Reimbursement rates that are set too low discourage dentists' participation in Medicaid and contribute to the access problem for children. As Pew's analysis reveals, inadequate reimbursements also weaken the financial viability of hiring allied providers.

In scenarios using a Medicaid reimbursement rate of 60 percent a solo general dental practice's profits rise when hiring a dental therapist or hygienist-therapist and moving from a patient population that is entirely privately insured to one in which 20 percent of patients are enrolled in Medicaid.

By contrast, in scenarios using a rate of 30 percent (as of 2008, only four states had Medicaid rates paying dentists below 40 percent) the addition of allied providers creates productivity gains but not higher earnings. Yet, even in this case, a solo dental practice seeing more low-income patients performs better financially with an allied provider on the team than without one.

Although raising reimbursement rates is difficult during tight fiscal times, research confirms that doing so is a smart investment that improves access. For example, after Alabama and Tennessee raised their rates, the number of enrollees receiving dental care more than doubled.[8]

- **Fully utilizing allied providers is key to realizing productivity and profit gains.**

Given their large fixed costs, dental practices need to maintain steady, high patient volume to ensure financial viability.[9] In all scenarios tested, hygienist-therapists—the provider with the broadest scope of services among the three types studied—are better able to generate revenue that covers the costs of their employment and benefits the practice's bottom line. (For more details on the provider utilization issue, see "The Utilization Factor" on page 9.)

Gains in productivity and profits are more likely to occur if the dental community and state policy makers ensure that allied providers are seamlessly integrated into existing dental practices. Dental education should train dentists to manage a team of professionals and work efficiently with allied providers. States must review their Medicaid policies to confirm that new types of providers can be properly reimbursed for services they deliver. (For more considerations that policy makers should weigh, see "Policy Implications" on page 16.)

Why Access to Dental Care Matters

Children's dental care—especially in low-income communities—is the most prevalent unmet health need in the United States, and it has real consequences for kids and for our nation.[10] Dental problems cause absences from school, an inability to focus in class, a decline in overall health, worsened job prospects in adulthood, and—in extreme cases—premature death. Moreover, increased demands on public health systems, poor performance in school and lost employee productivity all cost taxpayers in both the short and long terms.[11] For example:

- In a single year, students may miss as many as 51 million hours of school due to dental health problems.[12] In California alone, 504,000 children ages five to 17 were absent at least one school day in 2007 due to a toothache or other dental concern. The state's kids missed a staggering total of 874,000 school days that year due to dental problems.[13]
- A year-long study of five major hospital systems in the Minneapolis-St. Paul area revealed that patients made more than 10,000 emergency room visits for dental problems, such as toothaches or abscesses, at a total cost of more than $4.7 million.[14]

- Individuals who received inadequate dental care as children often miss work to deal with ongoing oral health problems. An estimated 164 million hours of work are missed each year because of dental issues.[15]
- A 2008 study of the armed forces found that 52 percent of new recruits had dental problems that needed urgent attention and would delay overseas deployments.[16]
- Dental problems can hurt a person's ability to find a job. A University of Nebraska study confirmed a widely held but little-discussed prejudice: People who are missing front teeth are seen to be less intelligent and less trustworthy than people without a gap in their smiles.[17]

EDUCATION AND SALARY OF ALLIED PROVIDERS

State policy makers considering new dental workforce models must decide what level of education will be required of allied providers. International experience reveals that two or three years of post-high school training is sufficient to produce practitioners with the necessary skills to deliver quality care.[18]

Given that more education generally results in higher earnings, the Productivity and Profit Calculator uses an allied provider's salary as a proxy for education.[19] When setting education requirements, policy makers should be mindful that practitioners who are required to undergo lengthier periods of training or education generally demand higher salaries. Based on the calculator's analyses, lengthier periods of education will moderately reduce the revenue benefits that dentists would otherwise accrue by hiring new providers.[20]

How the Calculator Tests the Economics of Allied Providers

The Productivity and Profit Calculator is an economic tool that provides information to help dentists and policy makers understand how adding current and new types of allied providers (with distinct scopes of dental practice, levels of training and amounts of supervision) could affect the revenues and productivity of different dental practices.

The calculator is a model that is intended to gauge the direction and magnitude of the gain or loss to earnings and productivity associated with hiring allied providers. It is intended for illustrative purposes only and should not be relied upon as a business-planning tool to forecast actual profit and loss.

Variables also may be adjusted to account for Medicaid participation or to test a provider model that differs from those presented in the dental practice scenarios. (For more information on how the calculator was developed, see "Methodology" on page 18.)

The scenarios start by assessing the impact a practice experiences when hiring a registered dental hygienist. The calculator includes two new types of providers in addition to a registered dental hygienist. The first is the "dental therapist," who would be certified to perform a limited set of preventive and restorative services. The second is the "hygienist-therapist," who would have training necessary for a larger range of restorative and preventive services. These terms reflect the outlines of provider models being explored by states; however, this report is not intended to advocate for a specific type of allied provider. See Exhibit 1, which describes the scope of services performed by each provider.

Exhibit 1

Summary of Dental Procedures Included in the Calculator[21]

Category of Services	Procedures Provided by Dentists and Allied Providers*	Dental Hygienist	Dental Therapist	Hygienist-Therapist	Dentist (Owner or Associate)
Diagnostic	Oral evaluations			●	●
Radiographs/imaging	Panoramic X-ray	●	●	●	●
Preventive	Cleanings	●	●	●	●
	Sealants	●	●	●	●
Restorative	Silver fillings		●	●	●
	Tooth-Colored fillings		●	●	●
	Prefabricated stainless crown		●	●	●
	Temporary filling		●	●	●
	Temporary crown			●	●
	Permanent crown				●
Endodontics	Pulpotomy**		●	●	●
Periodontics	Non-surgical services	●		●	●
Prosthodontics	Complete dentures				●
Extractions	Simple extractions of primary or permanent teeth		●	●	●

Exhibit 1 enumerates the procedures included in the calculator and is not intended as a comprehensive list reflecting the complete scope of care offered by dentists, who may provide other sophisticated procedures, such as root canal therapy or orthodontia.

In practice, allied providers have different scopes of services and go by different names. New providers already are being trained in Minnesota and deployed in parts of Alaska. In 2009, the Minnesota legislature authorized the creation of the bachelor's-level dental therapist and the master's-level advanced dental therapist.[22] In 2005, dental health aide therapists (DHAT) began to be deployed to remote Alaska Native communities. DHATs are trained in a two-year program to provide oral exams and preventive services and to conduct basic restorative services and tooth extraction.[23]

* These are non-technical descriptions of the procedures contained in the calculator. For the technical names of the procedures, as well as the Current Dental Terminology codes they fall under, see Tab 1, "Procedures, Time, Fee" of the Productivity and Profit Calculator.

**A pulpotomy is a procedure for removing infected tissue from a primary tooth.

SOURCE: Pew Center on the States, 2010.

Scenarios

The Productivity and Profit Calculator has been used to determine the impact of adding allied providers on three types of private dental practices:

1. A solo, pediatric dental practice, with a dentist, two dental assistants and administrative support
2. A solo, general practice, with a staff structure similar to type 1 above
3. A small-group practice with a dentist owner, two associate dentists, six dental assistants and administrative support

Each of these scenarios begins with an overview of the practice being tested—its existing staff, annual profits and approximate productivity. In the baseline case, the practices are assumed to have a primarily preventive-diagnostic case mix, and to not serve Medicaid patients. This baseline scenario is then adjusted to reflect the effect of hiring each of the three different allied providers.

A second set of graphs demonstrates the impact of modifying the patient mix from 100 percent privately insured to a combination of 80 percent privately insured and 20 percent Medicaid-enrolled. Most dentists do not accept Medicaid patients, and shifting their practices to include 20 percent Medicaid patients is viewed as a significant yet realistic shift.[24] In addition, these scenarios measure this effect at varying Medicaid reimbursement rates—both with and without the addition of allied providers.

Additional variations on all practice models were tested to capture the effects of reducing utilization (described in "The Utilization Factor" on page 9).

Although these scenarios are intended to represent the majority of dental practices and the better-known new provider types, those who wish to use the calculator to assess their local circumstances can and should alter the model to more closely approximate the existing dental practices in their area and to test providers with differing scopes of practice.

The calculator was developed in consultation with an advisory panel of private-practice dentists. This panel offered input on the assumptions regarding the procedures included in the calculator, the time required to perform each procedure and the costs related to operating a dental practice (wages, supplies and capital expenditures). Taxes are not accounted for in the model.

THE UTILIZATION FACTOR

The utilization rate—the percentage of working hours spent treating patients—is a variable that significantly shapes the financial impact that an allied provider has on a private dental practice. The data presented in the scenarios were generated assuming a utilization rate of 90 percent—which takes into account time spent on lunch, breaks and administrative tasks, leaving 6.12 hours per day for patient care, 244 working days a year. This utilization rate was chosen because it closely reflects the average utilization rate reported by the American Dental Association for general dentists who operate solo practices.[25]

Utilization rates may be lower than 90 percent for several reasons. A new practice may take time to develop a regular stream of patients. Missed appointments may create down-time, and economic slumps may reduce the frequency with which patients seek dental care.

Yet, even when working at less than a 90 percent utilization rate, new types of providers can contribute positive financial benefits to a dental practice. A solo pediatric practice serving only privately insured patients sees a 10 to 35 percent improvement over its baseline profit ($320,593) by hiring any of the three allied providers, even if the new practitioner has only a 75 percent utilization rate and the dentist is busy 90 percent of the time.

The utilization rate becomes more critical when the practice serves Medicaid patients, because Medicaid reimbursements ordinarily are lower than dental practices' usual fees.

States focusing on deploying new allied providers to improve access for Medicaid enrollees must consider methods to help enrollees keep appointments so that dental practices can operate sustainably.

Other scenarios can be tested by adjusting the utilization rates of the dentist and other team members when using the calculator.

Where possible, this information was validated using sources such as the American Dental Association's Survey of Dental Practice. See the "Methodology" section for more details.

The calculator, step-by-step instructions for using it, complete lists of financial data, variables for each scenario and detailed findings are accessible at **www.pewcenteronthestates.org/ittakesateam**.

Impact on a Solo Pediatric Dental Practice

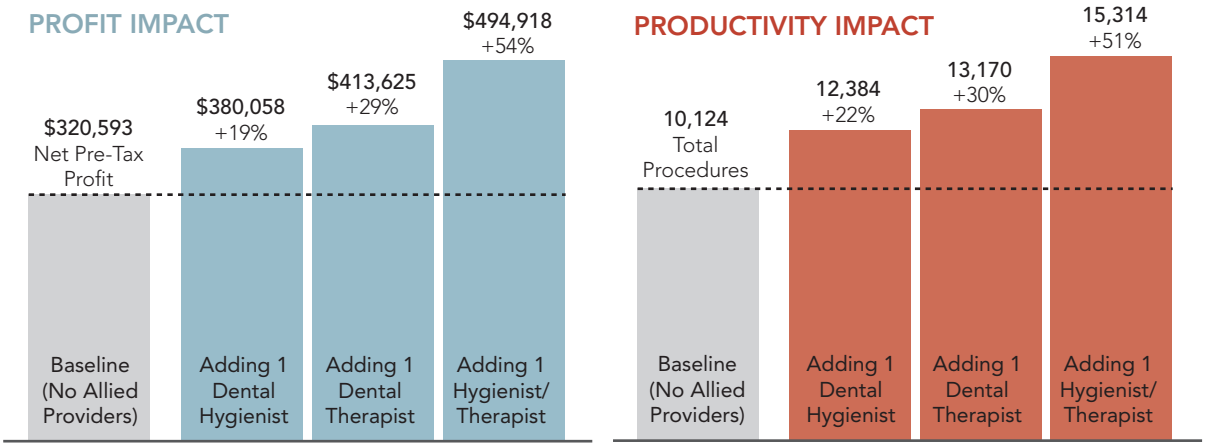
Independent dentists, who run the majority of dental practices in the United States, generally concentrate on providing preventive care and are supported by dental assistants and office staff.[26] The calculator tested the effect of introducing an allied provider into this type of practice. The assessment for this scenario was based on a pediatric dentist with a 2,000-square-foot office and four operatories (rooms with patient chairs), two dental assistants, two support staff and appropriate equipment.

- This solo pediatric dentist serves the privately insured and generates pre-tax profits of $320,593. The addition of any allied provider yielded higher profits. The practice's earnings rose 19 percent when a dental hygienist was hired, 29 percent when a dental therapist was added and 54 percent when a hygienist-therapist was hired.

- This practice performs an estimated 10,124 procedures annually, including hygiene, restorative and endodontic procedures. The number of patient-care procedures performed by the practice

Exhibit 2

Allied Providers' Impact on a **Solo Pediatric Dental Practice**



SOURCE: Pew Center on the States, 2010.

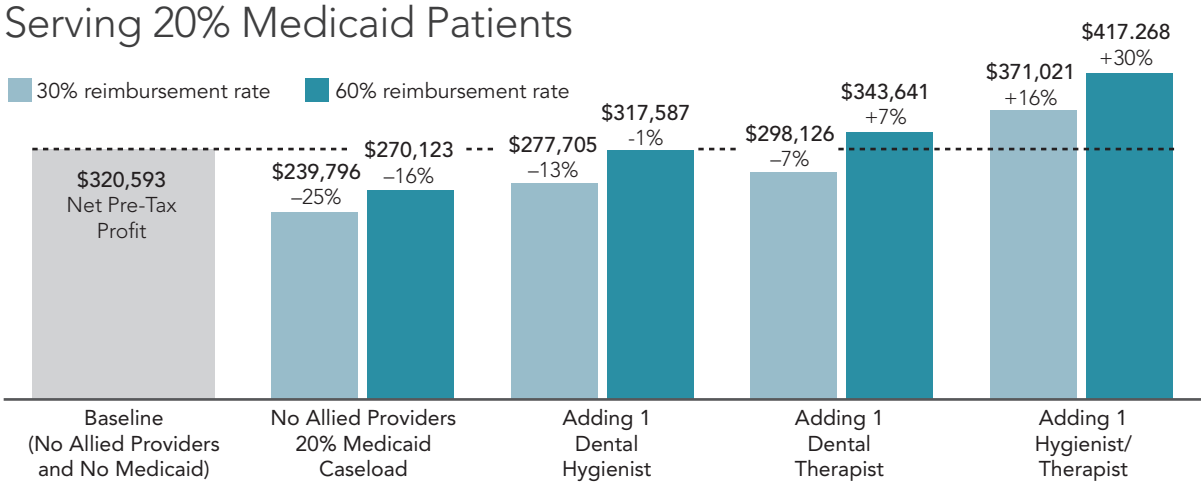
jumped between 22 and 51 percent when a new provider was hired. Notably, the earnings and productivity gains were greater when the allied provider's scope of services was greater (Exhibit 2).

■ Adding a dental therapist or hygienist-therapist, who can perform some restorative procedures, also enables this pediatric practice to devote up to 20 percent of its time to Medicaid-enrolled patients and still increase its income. In this scenario, Medicaid reimbursement rates are assumed to be 60 percent of the practice's usual fees.

■ A Medicaid rate of 30 percent creates a significantly different outcome than a 60 percent rate. Adding a dental therapist to this pediatric practice can increase profits by 7 percent when the reimbursement is higher, but the practice's earnings fall 7 percent with a Medicaid rate of 30 percent.[27] Regardless of the reimbursement rate, a pediatric dentist's solo practice fares much worse financially when serving 20 percent Medicaid-enrolled patients without adding a new provider (Exhibit 3).

Exhibit 3

Profit Impact on a **Solo Pediatric Dental Practice** Serving 20% Medicaid Patients



SOURCE: Pew Center on the States, 2010.

Impact on a Solo General Dental Practice

The second scenario examines a solo general dental practice that serves both adults and children. In general, the findings were very similar to the findings for solo pediatric practices. Operating at 90 percent utilization, this practice saw a profit of about $337,242.

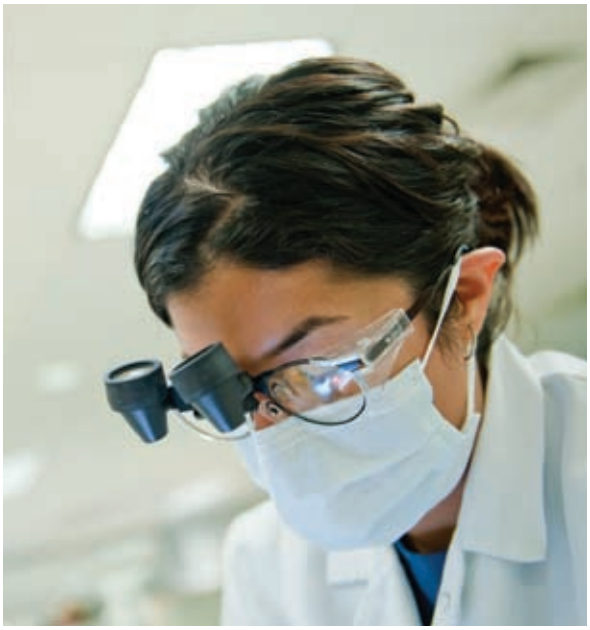
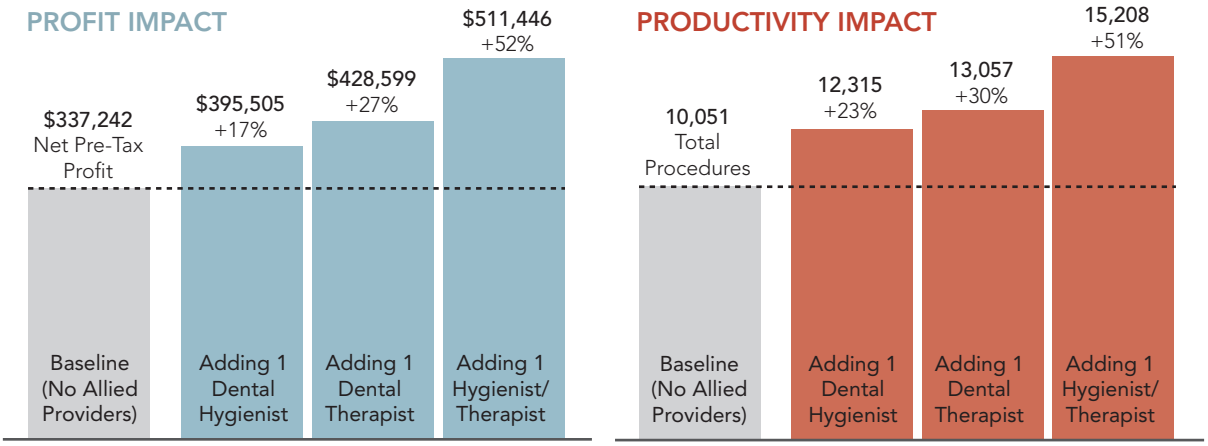


Exhibit 4

Allied Providers' Impact on a **Solo General Dental Practice**



SOURCE: Pew Center on the States, 2010.

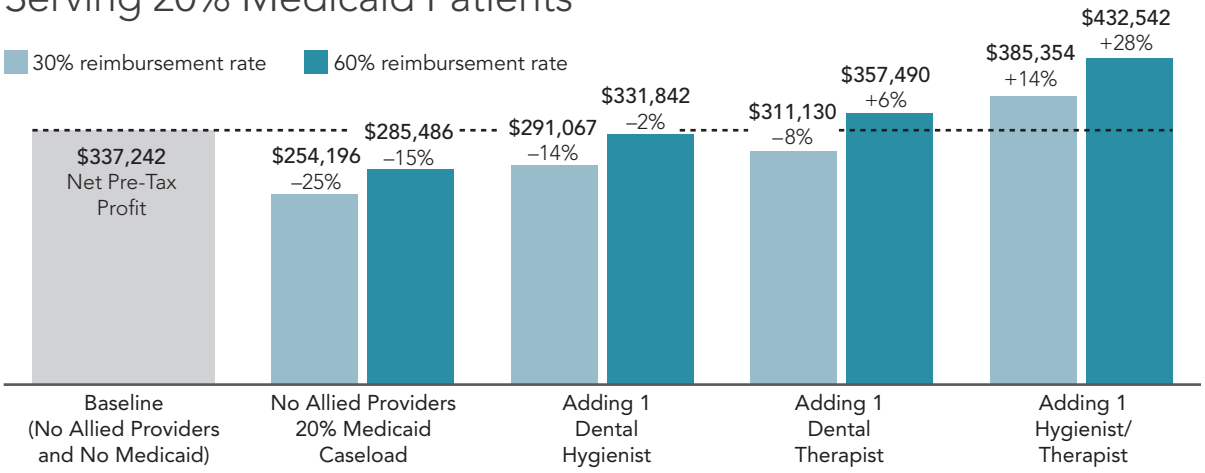
- When adding allied providers to this practice, profits increased 17 percent with a dental hygienist, 27 percent with a dental therapist and 52 percent with a hygienist-therapist (Exhibit 4).

- Hiring a new provider caused this practice's productivity to climb between 23 percent and 51 percent, depending upon the new team member's scope of services (Exhibit 4).

- When the practice's patient mix was modified to include 20 percent Medicaid-enrolled patients, a dental therapist or a hygienist-therapist bolstered the practice's pre-tax profits in three out of the four instances that were tested. These results were similar to those from Scenario 1 (Exhibit 5).

Exhibit 5

Profit Impact on a **Solo General Dental Practice** Serving 20% Medicaid Patients



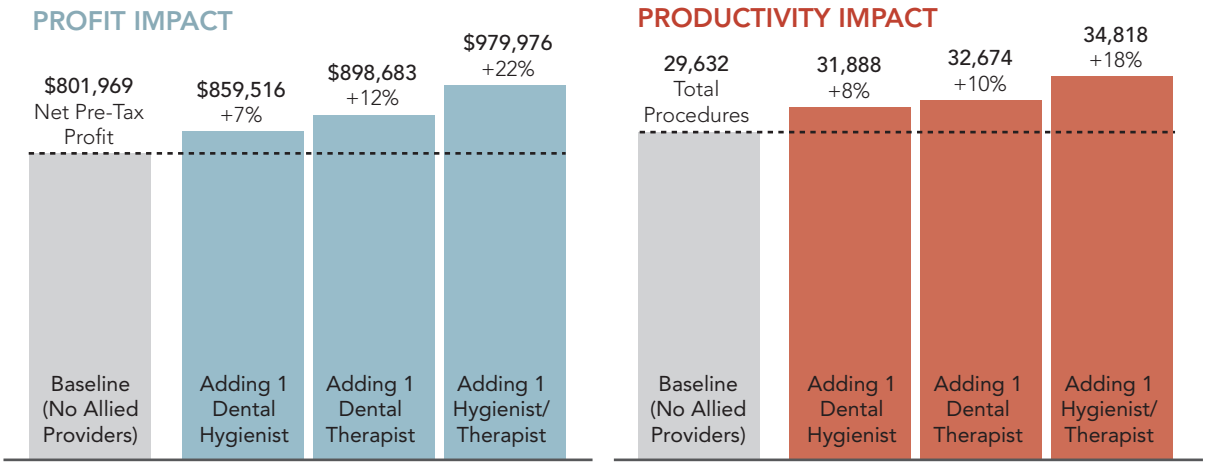
SOURCE: Pew Center on the States, 2010.

Impact on a Small Group Practice with Associate Dentists

The small group practice is defined as a single owner-dentist with two or more associate dentists. The associate dentists provide the complete set of dental procedures and are compensated at 30 percent of the fees for the procedures they perform. In this scenario, the office is 4,000 square feet with eight operatories and associated equipment, such as additional sterilization equipment, digital cameras, office computers and furniture. The team includes two dental assistants for each dentist and three office support staff.

Exhibit 6

Allied Providers' Impact on a **Small Group Dental Practice**



SOURCE: Pew Center on the States, 2010.

■ This practice has an annual pre-tax profit of $801,969 and provides 29,632 procedures per year. Both profits and productivity were enhanced when allied providers were hired by a small group practice whose case mix focuses on the privately insured (Exhibit 6).

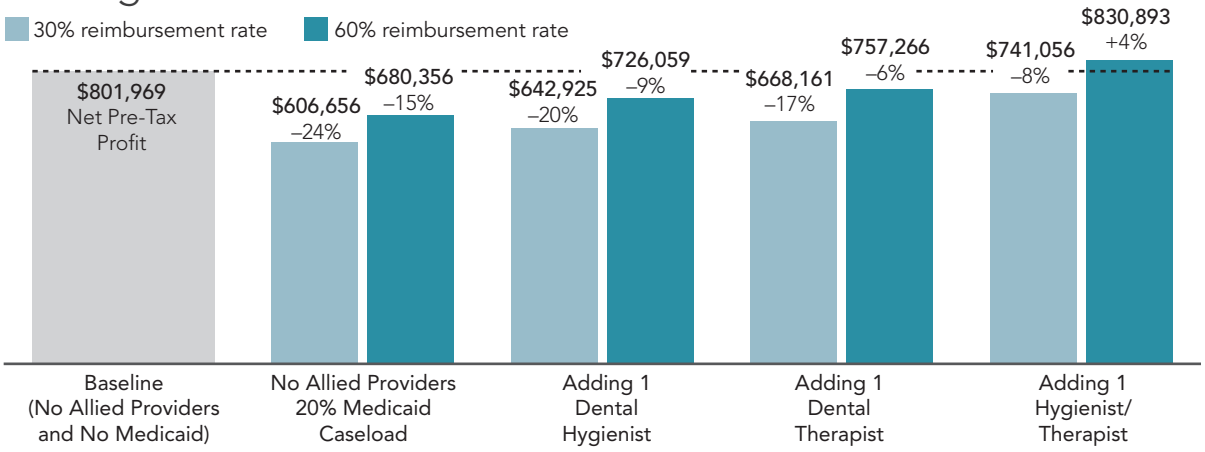
■ When adding allied providers to this practice, profits increased by 7 percent with a dental hygienist, 12 percent with a dental therapist and as high as 22 percent with a hygienist-therapist (Exhibit 6).

■ When one new provider was hired, the practice saw its productivity rise between 8 and 18 percent, depending upon the new team member's scope of services (Exhibit 6).

■ Hiring a new provider and devoting 20 percent of the practice's patient mix to Medicaid enrollees presented a financial challenge for this business, especially when measured at the lowest reimbursement rate of 30 percent. Yet the addition of allied providers significantly mitigated the economic impact. In a group practice with no allied providers, profits fell 24 percent; with one hygienist-therapist, earnings dropped by only 8 percent (Exhibit 7).

Exhibit 7

Profit Impact on a **Small Group Dental Practice** Serving 20% Medicaid Patients



SOURCE: Pew Center on the States, 2010.

Policy Implications

Private practices provide the majority of dental care in the United States. As outlined in Pew's 2009 policy framework, *Help Wanted: A Policy Maker's Guide to New Dental Providers*, states interested in pursuing new types of providers should think carefully about how these practitioners will complement the system.[28] Policy makers should consider the following:

1. The Productivity and Profit Calculator assumes that allied providers are seamlessly integrated into a dental practice. This requires effective collaboration among team members. Dental school curricula should ensure that graduating students have been trained to manage a team of professionals and to work efficiently with allied providers. Continuing education should be offered to practicing dentists to enhance these skills.

2. States that are seriously committed to improving dental care access must ensure their Medicaid reimbursement rates are high enough to cover the cost of care. States that do so will be more successful in encouraging broad Medicaid participation by dentists. It is unrealistic to expect dental practices—with or without allied providers—to accept Medicaid patients if doing so means their practices take a significant loss of profit.

3. State Medicaid programs should ensure that enrollees have the supports they need to successfully make and keep dental appointments. This could include enhancing transportation assistance, offering translation services or providing case management services to help patients navigate the Medicaid system. These and other supports will help dental practices maintain the utilization levels they need to remain profitable.

4. State leaders and Medicaid administrators should ensure that their policies permit reimbursement for services performed by allied providers. Policy makers should review existing rules that cover public and private dental insurance and take appropriate action to address issues that might arise in the billing process.

Conclusion

Hiring an allied provider can make smart business sense for a private dental practice by increasing its productivity and—in the process—meeting the needs of many low-income Americans who currently go without care.

To make these innovations and benefits a reality for patients and practices, states first must authorize allied providers. As policy makers consider new workforce models, this report and the Productivity and Profit calculator can inform their deliberations and proposals.

State leaders, dentists, public health advocates and other stakeholders should be heartened to know that expanding the dental team is an effective strategy to improve access to care, but they cannot overlook the importance of setting adequate Medicaid reimbursement rates. While raising rates is difficult during tight fiscal times, research confirms its positive impact on access,[29] and several states, including Maryland and Rhode Island, have taken this step in recent years despite budget constraints.

As the American Dental Association notes on its website, "for people who live in areas where a dentist is not available or who cannot afford treatment, access to dental care can be difficult."[30] Shortages of dentists and low Medicaid rates that discourage practices' participation have serious health, education and economic consequences—consequences felt by millions of families firsthand. With stakes this high, now is the time to welcome new allies to the team.

Methodology

The Productivity and Profit Calculator was developed by Scott & Company, Inc.—a California-based consultancy that works with organizations interested in developing or assessing new business models in health care. The calculator's purpose is to determine the impact of an allied dental health professional on a private dental practice's productivity and pre-tax profit. The calculator uses a Microsoft Excel-based model that can be adapted by users to simulate a variety of dental practices, including those presented in the three scenarios of this report.

Scott & Co. consulted with a group of dentists, practice managers, dental hygienists and other practitioners to develop the calculator. In addition, an advisory panel reviewed the project scope, model structure, inputs and findings. (See Advisory Panel members on page 20.)

The expert team guided the creation of the set of procedures that represent those performed in a typical dental practice and that acts as a proxy for the hundreds of procedures conducted within a practice. The team made recommendations on 20 common procedures in eight categories. The model also allows the user to select "Other" as a ninth category, which enables the user to add a specific procedure not found in the standard eight categories.

The expert group provided input on the initial set of fees for each procedure and the time needed to perform them. Fees for each procedure were drawn from the American Dental Association's 2009 Survey of Dental Fees.[31] Medicaid reimbursements are calculated as a percentage of the practice's usual fees. The initial Medicaid reimbursement rate in the calculator is 60 percent of usual fees. This percentage is roughly the national average for the state reimbursement rates paid to dentists for five common dental procedures.[32] The calculator uses one "case mix" for the entire practice and assumes that Medicaid-enrolled patients will receive services similar to those received by privately insured patients.[33]

The allied providers' scopes of practice were based on a 2009 W.K. Kellogg Foundation report.[34] The initial fixed-cost structure was developed under

the guidance of the expert panel and uses salaries from the Bureau of Labor Statistics and publicly available price lists for equipment, leasing fees and tenant improvements.[35] The model assumes a 244-day working year. The model also assumes that a dentist will spend some portion of the day supervising the allied provider; the value of 30 minutes of supervision time for allied providers was developed in consultation with the advisory group.

Users of the calculator can change all variables (allowable procedures, fees, supervision time and cost structure). The model includes initial variables, which provide a starting point for users to generate findings. Fees for services, Medicaid reimbursement rates, salaries, equipment costs, leasing fees and tenant improvements vary significantly across the country; users should make adjustments to reflect local conditions.

For instructions on how to use the calculator, please refer to the user manual at ***www.pewcenteronthestates.org/ittakesateam****. A detailed breakout of inputs and outputs for all three scenarios that were tested can also be found at this Web page.*

Advisory Panel

This report benefited tremendously from the insights and expertise of an advisory panel and two additional external reviewers. These experts provided feedback and guidance at critical stages in the project. While they have screened the report for accuracy, neither they nor their organizations necessarily endorse its findings or conclusions.

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Endnotes

1 In 2006, there were 164,864 private-practice dentists, out of a total of 179,594 professionally active dentists. *See* "Key Dental Facts" (American Dental Association, September 2008), 13, http://www.ada.org/ada/prod/survey/publications_freereports.asp#key (accessed December 7, 2009). In 2007, 73.3 percent of private-practice dentists were sole proprietors. *See* ADA *2008 Survey of Dental Practice*, 5.

2 As of September 30, 2009, those 49 million Americans lived in one of 4,230 dental health professional shortage areas. *See* "Shortage Designation: HPSAs, MUAs & MUPs," Health Resources and Services Administration, U.S. Department of Health and Human Services, http://bhpr.hrsa.gov/shortage (Accessed November 12, 2010).

3 Pew Center on the States, "The Cost of Delay: State Dental Policies Fail One in Five Children," http://pewcenteronthestates.org/costofdelay (February 2010).

4 The estimated number of children who will benefit from the health care reform law comes from Pew Center on the States, Children's Dental Campaign. Pew used national statistics of the insured and uninsured to determine the number of children (approximately 8 million) who are currently uninsured and who would likely qualify for public health insurance (Medicaid and the Children's Health Insurance Program), which includes dental coverage, and the state-based exchanges. Pew then used studies from Massachusetts' health care implementation experience to determine a 66 percent discount rate, allowing for exemptions, and people declining coverage and choosing to pay a fine. *See* "Distribution of the Nonelderly Uninsured by Age" (Henry J. Kaiser Family Foundation, 2009), http://www.statehealthfacts.org/comparetable.jsp?typ=1&ind=134&cat=3&sub=40 (accessed August 17, 2010). *See also* S. Long and L. Phadera, "Estimates of Health Insurance Coverage in Massachusetts from the 2009 Massachusetts Health Insurance Survey" (The Urban Institute, October 2009), http://www.mass.gov/Eeohhs2/docs/dhcfp/r/pubs/09/his_policy_brief_estimates_oct-2009.pdf (accessed August 17, 2010).

5 In 2007, 68 percent of independent dentists employed dental hygienists. *See* American Dental Association Survey Center, *2008 Survey of Dental Practice: Employment of Dental Practice Personnel* (Chicago: American Dental Association, 2009), 6, https://www.ada.org/sections/professionalResources/pdfs/08_sdpe.pdf (accessed September 2, 2010).

6 The calculator is a model that is intended to gauge the direction and magnitude of the gain or loss to earnings and productivity associated with hiring allied providers. It is intended for illustrative purposes only and should not be relied upon as a business-planning tool to forecast actual profit and loss.

7 U.S. Government Accountability Office, "Factors Contributing to Low Use of Dental Services Among Low-Income Populations" (September 2000), http://www.gao.gov/archive/2000/he00149.pdf (accessed December 7, 2009).

8 A study of six states that raised reimbursement rates for dentists found that provider participation

increased by at least one-third and sometimes more than doubled following rate increases. *See* A. Borchgrevink, A. Snyder and S. Gehshan, "The Effects of Medicaid Reimbursement Rates on Access to Dental Care," National Academy of State Health Policy, (March 2008), http://www.nashp.org/sites/default/files/CHCF_dental_rates.pdf (accessed September 30, 2010).

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10 P. W. Newacheck et al., "The Unmet Health Needs of America's Children," *Pediatrics* 105 (2000): 989–997.

11 Pew Center on the States, "The Cost of Delay," 16–20.

12 U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General" (National Institutes of Health, 2000), 2, http://silk.nih.gov/public/hck1ocv@www.surgeon.fullrpt.pdf (accessed December 16, 2009).

13 N. Pourat and G. Nicholson, *Unaffordable Dental Care Is Linked to Frequent School Absences* (Los Angeles, CA: UCLA Center for Health Policy Research, 2009), 1–6, http://www.healthpolicy.ucla.edu/pubs/publication.aspx?pubID=387 (accessed September 2, 2010).

14 E. Davis, A. Deinard, and E. Maiga, "Doctor, My Tooth Hurts: The Costs of Incomplete Dental Care in the Emergency Room," *Journal of Public Health Dentistry* (Spring 2010): 1–6.

15 Centers for Disease Control and Prevention, Division of Oral Health, "Oral Health for Adults" (December 2006), http://www.cdc.gov/OralHealth/publications/factsheets/adult.htm (accessed November 18, 2009).

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18 D. Nash, et al. "Dental Therapists: A Global Perspective," *International Dental Journal* 58 (2008): 61–70.

19 *See* Bureau of Labor Statistics, Employment Projections, "Education Pays…," (updated May 27, 2010), http://www.bls.gov/emp/ep_chart_001.htm (accessed August 17, 2010).

20 The calculator assumes new allied providers will be paid a fixed salary plus benefits as opposed to a percentage of the revenues they produce. Associate dentists' compensation is assumed to be 30 percent of the fees from the services they produce.

21 The scopes of services presented here are drawn from B. Edelstein, "Training New Dental Providers in the U.S." (W.K. Kellogg Foundation, 2009), http://ww2.wkkf.org/DesktopModules/WKF.00_DmaSupport/ViewDoc.aspx?LanguageID=0&CID=6&ListID=28&ItemID=5000636&fld=PDFFile (accessed August 18, 2010).

22 Pew Center on the States, "The Minnesota Story: How Advocates Secured the First State Law of Its Kind Expanding Children's Access to Dental Care" (The Pew Charitable Trusts, 2010), 3, http://www.pewcenteronthestates.org/uploadedFiles/Minnesota_Story_brief.pdf?n=8376 (accessed September 20, 2010).

23 Agency for Healthcare Research and Quality, "Innovation Profile: Alaska Dental Health Aide Program Improves Access to Oral Health Care for Rural Alaska Native People" (November 2009), http://www.innovations.ahrq.gov/content.aspx?id=1840 (accessed August 9, 2010).

24 On average, government programs constituted about 6 percent of private dentists' gross billings in 2007. *See* American Dental Association, "Income from the Private Practice of Dentistry" (2008), 94.

25 American Dental Association, "2008 Survey of Dental Practice: Characteristics of Dentists in Private Practice and Their Patients," Table 27 (September 2009), 28.

26 American Dental Association, "2005–06 Survey of Dental Practices Rendered" (2007), 28. *See also* Table 32, "General Practitioners" and "Pediatric Dentists."

27 Pew has found that states reimburse, on average, 60.5 percent of dentists' median fees for five common procedures. Twenty-four states met or exceeded this benchmark. The worst-performing state has a reimbursement rate of 30.5 percent. *See* Pew Center on the States, "The Cost of Delay," 40.

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29 Borchgrevink, Snyder and Gehshan, "The Effects of Medicaid Reimbursement Rates on Access to Dental Care."

30 American Dental Association, "Oral Health Topics: Access to Dental Health/Oral Health Care" (updated January 25, 2010), http://www.ada.org/2961.aspx (accessed August 11, 2010).

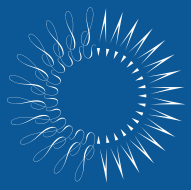
31 The model uses the average national fee for each procedure, rounded to the nearest $5. For procedure categories that represent multiple procedures (e.g., denture services), a composite fee is used. *See* American Dental Association, "2009 Survey of Dental Fees" (2009).

32 Pew Center on the States, "The Cost of Delay," 40.

33 The assumption that care is similar across Medicaid and non-Medicaid populations is supported by an Agency for Healthcare Research and Quality study, which found that, "In 2004, approximately 128 million people with at least one dental visit received about 572 million dental procedures in the United States. Approximately 86% of the population with at least one dental visit had at least one diagnostic procedure (examination or X-ray), and about 79% of the population had at least one preventive procedure (cleaning, fluoride, or sealant) during the year. Together, approximately 73% of all procedures were diagnostic (42.5%) or preventive (30.4%) during 2004." R. J. Manski and E. Brown, "Dental Use, Expenses, Private Dental Coverage, and Changes, 1996 and 2004" *MEPS Chartbook No.17* (Agency for Healthcare Research and Quality, 2007), 5, http://www.meps.ahrq.gov/mepsweb/data_files/publications/cb17/cb17.pdf (accessed August 20, 2010).

34 Edelstein, "Training New Dental Providers in the U.S." (2009).

35 For dental hygienist and dental assistant salary information, see Bureau of Labor Statistics, Occupational Employment Statistics, "20-2921, Dental Hygienists" (2010), http://www.bls.gov/oes/current/oes292021.htm; and "31-9091, Dental Assistants" (2010), http://www.bls.gov/oes/current/oes319091.htm (accessed August 9, 2010). Values for salaries for dentists, dental therapists, and hygienist-therapists were generated using input from expert advisors. For equipment costs, *see* Den-Med-Pro Web site, http://www.denmedpro.com/ (accessed August 17, 2010); and Health Care Equipment Specialty, Inc. Web site, http://www.buydentalequipment.com/ (accessed August 17, 2010). For tenant improvement costs, *see* M. Unthank, "Dental Office Planning," *Journal of the American Dental Association* 130 (1999), http://jada.ada.org/cgi/reprint/ 130/11/1579 (accessed August 17, 2010). Note the article quotes $75–$135 improvement cost per square foot, approximately 10 years ago. The model uses $150 per square foot to create a national average, updating these prices. *See also* A. Guay, "Dental Practice: Prices, Production and Profits," *Journal of the American Dental Association* 136 (2005): 360, http://jada.ada.org/cgi/reprint/136/3/357?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=office+costs&and orexactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT (accessed August 17, 2010). This article indicates total practice costs of $295,890 in 2000, but does not break down the costs by equipment, lease improvement, supplies and staff.



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