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Research Brief

Estimating the Impact of Medicaid Expansions on Dentist Supply

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Key Messages

- *Dentists' practice location decisions can affect access to dental care services for vulnerable populations. Despite its importance, little is known about how Medicaid expansions influence these decisions.*
- *Expanding adult Medicaid dental benefits increased the number of dentists per capita in poor counties relative to non-poor counties by an estimated 13 percent. The increase was mainly concentrated in poor and densely populated counties where the expansions generated large financial incentives for dentists.*

Introduction

It is well known that dental health influences overall health and quality of life.[1,2] Poor dental health can result in adverse individual productivity and labor market outcomes.[3,4] The regular use of dental care services is crucial, but the high cost of services prevents many people from accessing services. One study shows that over 40 percent of non-elderly U.S. adults with dental problems did not seek care due to the lack of insurance coverage or high out-of-pocket costs.[5]

Medicaid is the main source of dental insurance for low-income populations in the U.S. Dental care coverage and provider availability are frequently affected by Medicaid policies. Prior research shows that expansion of Medicaid dental benefits can increase dentists' potential customer base and income.[6] Financial incentives play an important role in determining practice location decisions of dentists.[7,8] This research brief summarizes findings from a recent study examining how dentists' practice locations may be influenced by expansions in adult Medicaid dental benefits.[9] The data help address whether and to what extent Medicaid expansions created incentives to alter dentists' practice location decisions.

These decisions can have an important impact on the geographic distribution of and access to dental care.

Results

Dental benefits are classified as extensive, limited, emergency, or none (Table 1). Figure 1 shows an overview of changes in adult Medicaid dental benefits in every state from 2006 to 2013. There were 12 states that expanded and 5 states that reduced benefits, 25 states that had constant benefits levels, and 8 states that changed benefits multiple times during the time period.

Table 2 provides pre-expansion descriptive statistics of the outcome variable and county characteristics for the 12 states that expanded adult Medicaid dental benefits and the 25 control states that kept constant benefits levels from 2006 to 2013. Based on the Census Bureau's definition of a poverty area (a poverty rate of 20 percent or greater)[10], Table 2 divides counties into poor and non-poor counties within states. Poor counties have higher unemployment, lower income per capita, a higher percentage of Black residents, and fewer dentists.

Figure 2 shows trends in county-level dentist supply by poverty status in expansion states versus control states. For all groups of counties and states, there is a pattern of increasing dentist supply over time. Interestingly, the gap between poor and non-poor counties decreased over time in expansion states compared to control states. This is largely due to poor counties in expansion states gaining dentists from 2011 to 2013. These observed patterns in dentist supply were examined using a triple difference approach and were attributed to adult Medicaid dental expansions.

Table 3 presents the main results, where the log of the number of dentists per 100,000 population is the outcome variable. The first set of estimates shows that adult Medicaid dental expansions increased the relative supply of dentists in poor counties by 13 percent (= $exp(0.124) - 1$) and that the effects are driven by general practitioner and private practice dentists. This increase could be capturing both new practices opening and existing practices hiring more dentists in response to the expansions.

The remainder of Table 3 examines heterogeneous effects by population density. Dentist supply in poor counties with above-median density increased by 18 percent (= $exp(0.163) - 1$) following the expansions. These poor and densely populated counties likely experienced a greater exposure to the expansions relative to other counties, generating large Medicaid incentives for dentists. In contrast, changes in dentist supply in poor counties with below-median density were minimal. The impact of adult Medicaid dental expansions on dentist supply showed heterogeneity along several dimensions at the aggregate level (e.g., Medicaid eligibility rates) and at the dentist level (e.g., tenure). These are all relevant factors that determine the size of Medicaid incentives for dentists in location decision-making.

Discussion

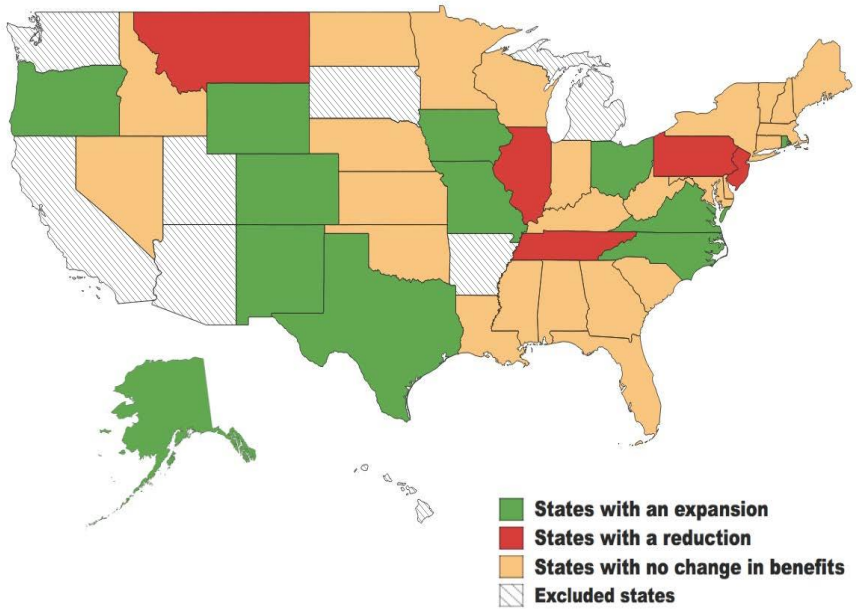
The results of this research brief indicate that dentists respond to Medicaid incentives by altering their practice location decisions, particularly when incentives are larger. These results can help policymakers understand how Medicaid expansions affect practice location choices of providers and the resulting geographic distribution and accessibility of dentists for vulnerable populations.

Table 1: Levels of Dental Benefits

Dental Benefit Type	
Extensive	A comprehensive mix of services, including many diagnostic, preventive, and minor and major restorative procedures. Includes a per-person annual expenditure cap of at least $1,000.
Limited	A limited mix of services, including some diagnostic, preventive, and minor restorative procedures. Includes a per-person annual expenditure cap of $1,000 or less.
Emergency	Relief from pain and infection. While many services might be available, care may only be delivered under defined emergency situations.
None	No dental benefits.

Source: Center for Health Care Strategies, Inc. Medicaid adult dental benefits: an overview. September 2019. Available from: https://www.chcs.org/media/Adult-Oral-Health-Fact-Sheet_091519.pdf. Updated with author analysis.

Figure 1: Changes in Adult Dental Benefits, 2006 to 2013



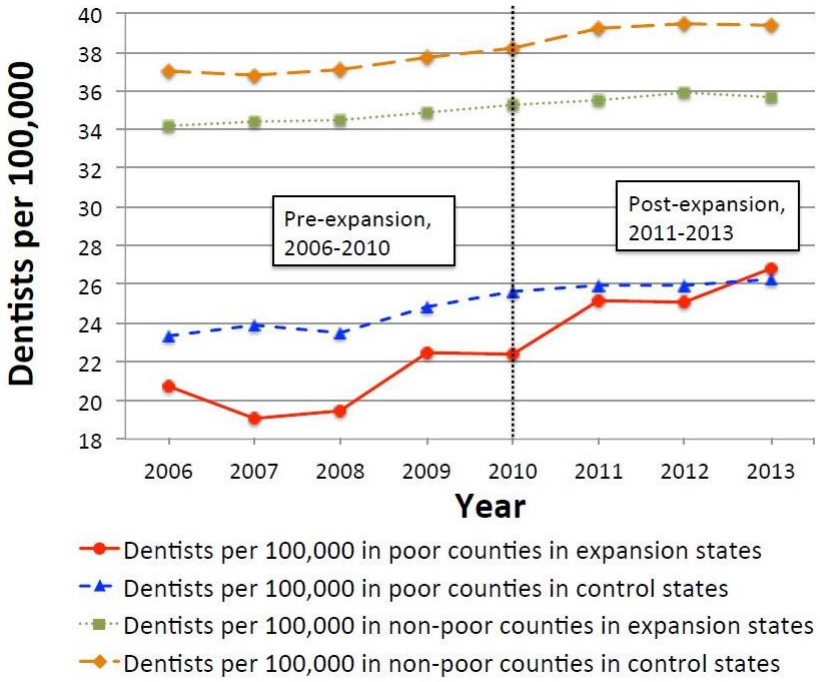
Source: American Dental Association. **Notes:** States that changed adult Medicaid dental benefits multiple times are not ideal in a triple difference framework and they are excluded from the analysis.

Table 2: Pre-Expansion Descriptive Statistics of Expansion and Control States by County Type

	Expansion States		Control States	
County Type	**Poor**	**Non-poor**	**Poor**	**Non-poor**
Dentists per 100,000	21.01	34.64	24.33	37.34
Population density (per sq. mi.)	63.08	116.89	168.67	167.51
Unemployment rate (%)	7.75	6.10	8.75	5.99
Per capita income	$26,737	$33,688	$25,517	$33,316
Black population (%)	11.67	6.34	29.05	6.48
Population age 19-64 (%)	57.26	58.17	58.59	57.75

Source: American Dental Association and Area Health Resources Files. **Notes:** Expansion states are the 12 states that expanded adult dental benefits in their Medicaid programs in the 2006 to 2013 timeframe. Control states are the 25 states whose adult dental benefits under Medicaid were constant in the 2006 to 2013 timeframe. County classification by poor and non-poor is based on the U.S. Census Bureau's definition of a poverty area (a poverty rate of 20 percent or greater).

Figure 2: Supply of Dentists by County Poverty Status, Expansion and Control States



Source: American Dental Association and Area Health Resources Files. **Notes:** Vertical line indicates 2010 and separates the pre- and post-expansion periods.

Table 3: Changes in Dentists per 100,000 Population after Medicaid Expansion

	Dentist Type		Practice Type	
	Generalist	Specialist	Private	Public
Effect Overall	0.124 ***	0.132 ***	0.035	0.115 ***	0.077
	(0.026)	(0.028)	(0.062)	(0.030)	(0.078)
Effect in High Density Areas	0.163 ***	0.166 ***	0.064	0.153 ***	0.098
	(0.039)	(0.039)	(0.051)	(0.038)	(0.096)
Effect in Low Density Areas	0.009	0.022	0.054	0.000	0.078
	(0.092)	(0.074)	(0.212)	(0.082)	(0.159)

Source: American Dental Association and Area Health Resources Files. **Notes:** Estimates are measured in the log of the outcome variable. Standard errors are reported in parentheses. *** denotes statistical significance at the 1 percent level.

Data & Methods

I utilized data on the number of county-level dentists working in dentistry from the American Dental Association's Dentist masterfile for the years 2006 to 2013. Dentists were grouped by dentist type (generalist or specialist) and practice type (private or public health). County-level control variables were obtained from the Area Health Resources Files: population size by race and age, population density, unemployment rate, poverty rate, and per capita income.

My empirical strategy used the variation in adult Medicaid dental benefits across states and over time. I also allowed for differential effects of the expansions on dentist supply between poor (a poverty rate of at least 20 percent) and non-poor (a poverty rate below 20 percent) counties. Specifically, I employed a triple difference approach that compared dentist supply in poor counties relative to non-poor counties in expansion states to those in control states, before and after the expansions. The analysis is done at the county-year level.

Using quasi-experimental policy variation, this setup allowed the comparison of changes in dentist counts between poor and non-poor counties within the same states due to adult Medicaid dental expansions.

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