

The Impact of Gender and Sociodemographic Characteristics on Dentists' Practice Patterns, Employment Status, and Workforce Participation

Presented by: Margaret Langelier, MSHSA
Co-Deputy Director,
Oral Health Workforce Research Center
Center for Health Workforce Studies
School of Public Health | University at Albany, SUNY
mlangelier@albany.edu

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The Oral Health Workforce Research Center (OHWRC) at CHWS

- The [Center for Health Workforce Studies \(CHWS\)](#) has more than 20 years' experience studying all aspects of the health workforce:
 - Established in 1996, based at the University at Albany School of Public Health
 - Committed to collecting and analyzing data to understand workforce dynamics and trends
 - Goal to inform public policies, the health and education sectors, and the public
 - Broad array of funders in support of health workforce research
- [Oral Health Workforce Research Center \(OHWRC\)](#) is based at CHWS and funded under a cooperative agreement with the US Health Resources and Services Administration (HRSA) in the US Department of Health and Human Services
 - Partnership with the [Healthforce Center](#) at University of California San Francisco
 - Entering 7th year of an 8-year agreement
 - Diverse topics for research including the education and training pipeline, workforce and system innovation, and patients and consumers
 - Reports available at <http://www.oralhealthworkforce.com>

Why Is This Study Important?

- Ongoing gender diversification in dental profession
- Differences in practice preferences reported
- Interest in understanding any impacts on the delivery system
 - Practice configurations
 - Employment vs ownership
 - Part-time vs Full-time
 - Geography
- Objectives
 - Evaluate variation in practice by gender
 - Assess potential associations between practice choices and socioeconomic and family characteristics

Methods

- Data from the [American Community Survey \(ACS\)](#), US Census Bureau
- Five-year Public Use Microdata Sample (2014-18)
- Person level data
- Analytical sample drawn from dentists described in the ACS
 - 9,993 dentists (unweighted)
 - Weighted to 186,771
 - 27,099 people in households with at least one dentist (unweighted)
 - 520,925 people in households with at least one dentist (weighted)
 - Active dentists – defined as working at least 350 hours in “past 12 months”
 - Weighted [analytical sample 157,023 dentists](#)

Dentists in the Analytic Sample Resembled Those in the Original Sample

- Our study used a subset of dentists described in the ACS
- Dentists working at least 350 hours/year were included in the analysis
- The analytic sample resembled the total sample in gender, age, and race/ethnicity

Dentists Characteristics ^a	Original sample		Analytic Sample (active dentists)	
	n	%	n	%
Gender				
Female	56,966	30.5	49,294	31.4
Male	129,805	69.5	107,729	68.6
Total	186,771	100.0%	157,023	100.0%
Age (years)				
<35	30,929	16.6	26,556	16.9
35-44	40,733	21.8	36,885	23.5
45-54	37,039	19.8	33,038	21.0
55-64	44,295	23.7	37,974	24.2
≥65	33,775	18.1	22,570	14.4
Total	186,771	100.0%	157,023	100.0%
Race/ethnicity				
White Non-Hispanic	135,106	72.3	112,542	71.7
Black Non-Hispanic	5,825	3.1	5,134	3.3
Asian	30,585	16.4	26,518	16.9
All Other Non-Hispanic	3,991	2.1	3,414	2.2
Hispanic	11,264	6.0	9,415	6.0
Total	186,771	100.0%	157,023	100.0%

Female Dentists Were Younger than Male Dentists

- Among active dentists, the mean age of female dentists was 43 years while the mean age for male dentists was 52.3 years
- Average age of all dentists was 49.4 years
- Gender differences in age were statistically significant at $P < 0.001$ for the continuous variable and at $P < 0.001$ for the categorical variable

Distribution of Active Dentists by Age and Gender 2014-18

Age (years) ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Age groups						
<35	13,735	27.9	12,821	11.9	26,556	16.9
35-44	15,192	30.8	21,693	20.1	36,885	23.5
45-54	11,358	23.0	21,680	20.1	33,038	21.0
55-64	7,801	15.8	30,173	28.0	37,974	24.2
≥65	1,208	2.5	21,362	19.8	22,570	14.4
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%

Source: ACS data, 2014-2018.

Female Dentists Were More Racially/Ethnically Diverse

- Almost one quarter of female dentists reported race/ethnicity as Asian/non-Hispanic
- Gender difference in race/ethnicity was statistically significant at $P < 0.001$

Distribution of Active Dentists by Race/Ethnicity 2014-18

Race/Ethnicity ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
White, non-Hispanic	29,120	59.1	83,422	77.4	112,542	71.7
Asian, non-Hispanic	12,161	24.7	14,357	13.3	26,518	16.9
Hispanic	3,947	8.0	5,468	5.1	9,415	6.0
Black or African American, non-Hispanic	2,628	5.3	2,506	2.3	5,134	3.3
Other non-Hispanic*	1,438	2.9	1,976	1.8	3,414	2.2
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%

*Other non-Hispanic includes American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, Other, Two or More Races.

Source: ACS data, 2014-18.

Female Dentists Bring Additional Diversity to the Workforce

- Female dentists were significantly more likely to be foreign born
 - Suggests deeper dimensions of diversification including culture and language

Distribution of Dentists by Nativity and Gender, 2014-2018

Nativity Status ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Native born	32,870	66.7	87,843	81.5	120,713	76.9
Foreign born ^b	16,424	33.3	19,886	18.5	36,310	23.1
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%

a Gender difference in nativity status was statistically significant at $P < 0.001$.

b Native born – Anyone who was a US citizen at birth; Foreign born – Anyone who was *not* a US citizen at birth.

Source: ACS data, 2014-2018.

Female Dentists Were Significantly More Likely to Be Employees vs Owners of Dental Practices

Distribution of Dentists by Employment Status and Work Hours by Gender, 2014-18

Employment Status and Work Hours ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Employment Status						
Employee ^b	27,402	55.6	37,383	34.7	64,785	41.3
Owner ^b	21,892	44.4	70,346	65.3	92,238	58.7
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%
Work Hours/Week						
Mean	36.2		37.4		37.0	
Work Hours/Week						
<30 hours/week	7,208	14.6	10,887	10.1	18,805	11.5
>30 hours/week	42,086	85.4	96,852	89.9	138,938	88.5
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%
Work Hours/Year						
Mean	1769		1835.7		1814.9	
Part-Time/Full-Time Status						
Part-time (350-1299 hours/year) ^c	7,738	15.7	12,339	11.4	20,077	12.8
Full-time (1300-2550 hours/year) ^c	41,556	84.3	95,390	88.6	136,946	87.2
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%

^a Gender differences were statistically significant at $P < 0.001$ for employment status and at $P < 0.001$ for work hours/week as continuous variables and at $P < 0.001$ for work hours/year and at $P < 0.001$ for part-time/full-time status as categorical variables.

^b "Employee" was defined as: employee of a private for-profit company or business, or employee of a private not-for-profit; employee of a private not-for-profit or charitable; local government employee; state government employee; federal government employee; "owner" was defined as: self-employed in own not incorporated business, professional practice; self-employed in own incorporated business professional practice; working without pay in family business [n=15 unweighted and weighted n=200.].

^c "Part-time" was defined as 350 to 1299 hours/year and "full-time" was defined as 1300 to 2,550 hours/year work (43.5 weeks per year)

Source: ACS data, 2014-2018.

Distribution by Geography of Practice Was Similar on a Divisional Basis

- Although geographic distribution by gender was similar, gender difference by US Census Regions and Divisions were significant

Distribution of Dentists by Gender by Census Region and Division, 2014-18

US Census Division ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Northeast Region^b	9,985	20.3	20,851	19.4	30,836	19.6
New England	3,434	7.0	5,830	5.4	9,264	5.9
Middle Atlantic	6,551	13.3	15,021	13.9	21,572	13.7
Midwest Region^b	8,938	18.1	21,847	20.3	30,785	19.6
East North Central	6,453	13.1	15,164	14.1	21,617	13.8
West North Central	2,485	5.0	6,683	6.2	9,168	5.8
South Region^b	16,491	33.5	35,203	32.7	51,694	32.9
South Atlantic	9,343	19.0	18,493	17.2	27,836	17.7
East South Central	2,030	4.1	5,745	5.3	7,775	5.0
West South Central	5,118	10.4	10,965	10.2	16,083	10.2
West Region^b	13,880	28.2	29,828	27.7	43,708	27.8
Mountain	2,685	5.4	9,279	8.6	11,964	7.6
Pacific	11,195	22.7	20,549	19.1	31,744	20.2
Total	49,249	100.0%	107,729	100.0%	157,023	100.0%

^a Gender difference by division was statistically significant at $P < 0.001$.

^b Gender difference by region was statistically significant at $P = 0.001$

Source: ACS data, 2014-2018.

Female Dentists' Commuting Time Was Significantly Higher

- Female dentists spend significantly more time (mean 26.0 minutes) commuting to work than male dentists (mean 23.4 minutes) ($P=0.001$ for the continuous variable and $P<0.001$ for the categorical variable)
 - Employment status may contribute to commuting distance

Distribution of Commuting Times to Work by Gender

Travel Time to Work (minutes) ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Commuting Time						
≤15 minutes	17,861	38.4	48,422	47.1	66,283	44.4
16-30 minutes	17,572	37.7	34,611	33.7	52,183	34.9
31-45 minutes	6,382	13.7	11,435	11.1	17,817	11.9
>45 minutes	4,758	10.2	8,363	8.1	13,121	8.8
Total	46,573	100.0%	102,831	100.0%	149,404	100.0%

Source: ACS 2014-18.

Female Dentists Were Significantly More Likely to Have Children in Their Households

- Female dentists were significantly less likely to be married than male dentists, perhaps due to their overall younger age ($P < 0.001$)
- Female dentists were also significantly more likely to have children under 18 in their households ($P < 0.001$ for number of children as a continuous variable, and at $P < 0.001$ for number of children grouped)

Distribution of Dentists by Marital Status and Presence of Children in the Household, 2014-18

Marital Status and Number of Children	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Marital Status						
Married	35,716	72.5	89,637	83.2	125,353	79.8
Not Married (Single, Separated, Divorced, Widowed)	13,578	27.5	18,092	16.8	31,670	20.2
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%
Number of Children ^a						
No children	24,988	50.7	67,787	62.9	92,775	59.1
1 child	8,806	17.9	11,526	10.8	20,332	13.0
2 children	11,490	23.3	17,164	15.9	28,654	18.2
3 or more children	4,010	8.1	11,252	10.4	15,262	9.7
Total	49,294	100.0%	107,729	100.0%	157,023	100.0%

^a Number of children <18 years in the household including biological children, adopted children, step children, and foster children.

Source: ACS data, 2014-2018.

Female Dentists Reported Lower Personal Annual Incomes Than Male Dentists

- Income included wages from employment and self employment income for actively practicing dentists
- Female dentists reported lower personal annual incomes (mean \$151,622) than male dentists (mean \$204,227)
- The differences were statistically significant for both continuous ($P<0.001$) and categorical variables ($P=0.001$)

Distribution of Personal Income by Gender of Dentist, 2014-18

Personal Annual Income (Adjusted to constant dollars) ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Total Income Groups						
≤\$100,000	19,718	40.0	29,989	27.8	49,707	31.6
\$100,001-\$150,000	12,121	24.65	20,529	19.1	32,650	20.8
\$150,001-\$200,000	7,271	14.8	14,523	13.5	21,794	13.9
\$200,001-\$250,000	3,058	6.2	9,429	8.8	12,487	8.0
>\$250,000	7,126	14.5	33,259	30.9	40,385	25.7
Total	49,294	100.00%	107,729	100.00%	157,023	100.00%

These Differences Persist for Full-time Personal Annual Income

- Income differences remain significant when adjusted for full time status at $P < 0.001$ for the continuous variable and at $P = 0.001$ for the categorical variable
- On average, female dentists working full time (1,300-2,550 hours/year) earned \$163,866 and full time male dentists earned on average \$217,210
- Average full time annual income for dentists was \$201,022

Distribution of Full-time Dentists' Annual Income by Gender, 2014-18

Personal Annual Income (Adjusted to constant dollars) ^a	Female Dentists		Male Dentists		All Dentists	
	n	%	n	%	n	%
Total Income Groups						
≤\$100,000	14,317	34.5	21,684	22.7	36,001	26.3
\$100,001-\$150,000	10,834	26.1	18,913	19.8	29,747	21.7
\$150,001-\$200,000	6,772	16.3	13,729	14.4	20,501	15.0
\$200,001-\$250,000	2,885	6.9	9,024	9.5	11,909	8.7
>\$250,000	6,748	16.2	32,040	33.6	38,788	28.3
Total	41,556	100.00%	95,390	100.00%	136,946	100.00%

^a Income includes earned wages and self-employment income; it does not include unearned income such as retirement income, investment income, etc.
Source: ACS 2014-18.

Differences in Practice by Gender Are Significant

- Female dentists were significantly more likely to be employed, work part time, and have lower annual personal incomes than male dentists controlling for demographics, geography and familial status

Adjusted Odds Ratios for Dentists' Practice Patterns in Association With Gender, 2014–2018

Female versus Male Dentists	Odds Ratio	95% Confidence Interval		P-Value
		Lower Limit	Upper Limit	
Employment Status				
Employed (reference: practice owner)	1.58	1.37	1.83	0.0001
Work Hours				
Part-time (reference: full time)	2.66	2.15	3.28	0.0001
Annual Income				
≤ \$100,000 (reference: > \$100,000)	2.32	1.94	2.78	0.0001

Source: ACS data, 2014-2018.

Note: The multivariable logistic regression model estimated dentists' practice patterns in association with gender (female versus male), adjusting for dentists' personal characteristics such as age (<35 years, 35-44 years, 45-54 years, ≥65 years), race/ethnicity (white, black or Africa-American, Asian, Hispanic, other), nativity status (native born, foreign born), disability status (yes, no), practice location (US Census region), employment status (employee, owner), work hours (part-time, full-time), commuting time (≤15 min, 16-30 min, 31-45 min, >45 min) as well as family characteristics such as marital status (yes, no), number of children (none, 1 child, 2 children, 3+ children), and annual household income (≤\$200,000, \$200,001-\$250,000, \$250,001-\$300,000, \$300,001-\$350,000, >\$350,000).

Policy Implications

- Part-time workforce participation could result in constrained supply – but:
 - Employment status may improve clinical efficiencies by reducing administrative burdens
 - Supply needs change with efficient use of other workforce and by types of patients served
- Concerns about geographic location preferences among dentists
 - Issues of sustainability
 - Location preferences may be generational not gender based
- Concerns about access to services among traditionally underserved patients
 - Literature suggests that female dentists are more likely to serve patients eligible for Medicaid and children
 - Female dentists are themselves more diverse – literature suggests that dentists from diverse backgrounds are more likely to serve diverse patients
- Important to continually track workforce
- Future practice choices may be driven by structural changes in dental service delivery
 - Difficult to anticipate workforce needs based on movement to dental management organizations and value-based payment policies

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