2015

Utah Dentist Workforce, 2015

UTAH MEDICAL EDUCATION COUNCIL

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Executive Summary & Recommendations

Driven by the legislative mandate to conduct ongoing healthcare workforce analysis[1], the Utah Medical Education Council (UMEC) conducts periodic surveys of all dentists licensed by the Utah Division of Occupational and Professional Licensing (DOPL). Self-reported dentist workload data indicated a trend of declining dentist-to-100,000 population ratio in Utah between 2002 and 2010. In addition, historically, Utah students exhibited a high affinity towards a career in dental professions through its high ranking in dental school applications per capita to schools across the nation. Driven by the workforce need and the economic opportunity in Utah, two new dental schools were opened between 2011 and 2013. A shift in retirement patterns due to the recent economic downturn based on the 2012 UMEC survey and a projected increase in supply of dentists through the two new schools have alleviated concerns of a workforce under-supply in Utah. A comparison between self-reported income levels, dentist work hours and practice personnel employment (dental hygienists, assistants, office assistants etc.) between 2006 and 2012, however, do not suggest an over-supply. As such, it may be concluded that Utah has an adequate supply of dentists to meet its demand. Future trends will depend heavily on policy changes impacting oral health insurance coverage, practitioner reimbursement levels, policies governing scope and location of practice, and retention rates of the two new schools.

Access to oral health services for the underserved populations in Utah remains lacking despite the numerous efforts in place. Utah's Medicaid and CHIP plans cover pediatric dental care. In addition, the Affordable Care Act's Essential Health Benefits package includes pediatric dental care. Given these provisions, access to underserved children in Utah is possible. Adults and senior citizens, on the other hand, suffer from lack of any significant oral health coverage with the exception of minimal emergency services through Medicaid and medical related dental procedures through Medicare. Major barriers to service for children are parent education and awareness, public school system support and regulations that enable access to oral health care for students, enrollment of children in appropriate health plans, and points of access to care that are sustainable. Provider reimbursement levels, practice scope and location of oral health care providers are challenges that limit sustainable access to care for all underserved populations irrespective of age group and geography. While many organizations and associations in the state are working hand-in-hand with individual oral health providers in giving charity care to overcome these barriers, more is needed.

1 Utah Code Section 63C-8-104 Duties of the Council http://le.utah.gov/~code/TITLE63C/htm/63C05005.htm

Highlights of the Dentist Workforce in Utah

- As of 2012, there are 1,667 active provider dentists in Utah, placing the dentist-to-100,000 population ratio at 58.4 (Utah Population: 2,855,257). In other words, there is one dentist in Utah for 1,723 Utahns, which is an improvement compared to one dentist per 1,760 Utahns in 2006 (dentist-to-population ratio of 56.8).
- Only 1.3% (22) dentists belong to races other than Caucasian compared to 8.3% of the 2012 Utah population estimate. (Utah Governor's Office of Management and Budget, 2013)
- While 13.3% of Utah's 2012 population estimate is of Hispanic ethnicity, only 1.0% (17) of the Utah's dentist workforce is Hispanic. (Utah Governor's Office of Management and Budget, 2013)
- Only 2.5% (42) of Utah's dentist workforce is female; 14.9% of the mountain region is female; 22.2% of the national dentist workforce is female. While this is an improvement compared to the 1.6% in 2006, more efforts are needed to improve the gender balance of the dentist workforce in Utah.
- With an average age of 48 years, the dentist workforce in Utah continues to be younger than its national counterpart (average age 49.8 years).
- The self-reported average planned age of retirement for a Utah dentist is 67, compared to 65 in 2006.
- As a result of planned pre-retirement reduction in practice hours, Utah might lose an additional 78 full time equivalent dentists in the next ten years.
- Of the total 1,667 active provider dentists in Utah, 77.8% (1,296) are general dentists and 21.8% (364) are specialist dentists.
- The average annual gross production and net income of active providers in Utah are $534,149 and $159,141 respectively.
- Utah dentists spend about 34.5 hours per week in patient care.
- About 7.5% of Utah dentists earn more than 20% of their gross production in the form of Medicaid dollars.
- About 76.4% of dentists provide charity. On average, a general dentist provides $16,910 worth of dental care to about 37 patients in a year (~$457/patient) and a specialty dentist provides $23,901 worth of dental care to about 24 patients in a year (~$996/patient).
- Of the 29 counties in Utah, 25 are classified as a full or partial county Health Professions Shortage Areas (HPSA). Of these, 17 counties have full-county low income HPSA designation and two have full-county geographic HPSA designation. Nine of these 25 counties also have a Comprehensive Health Center HPSA designation and five have a Native American Tribal population HPSA designation. (HRSA, 2015)
- Utah does not face a shortage of dentists. However, there is not enough evidence to support the conclusion of an over-supply. Emphasis on leveraging the existing workforce and new supply sources towards meeting dental need and distribution of workforce in the state continues to be an area where Utah can improve.

Recommendations

The UMEC, in conjunction with the Dentist Workforce Advisory Committee (DWAC)[2], makes the following recommendations to effectively manage dental healthcare in Utah:

1. An Oral Health Public Awareness Campaign for Utah

   Organizing a public awareness campaign led by the Utah Oral Health Coalition and the Utah State Department of Health Oral Health Program in partnership with two new dental schools, the Utah Dental Association, the Utah Dental Hygiene Association and the various other oral health champions in Utah is crucial to addressing the oral health access and policy concerns in Utah.

2. Address the racial and ethnic imbalance in Utah dentist workforce

   - Develop and/or strengthen the admissions criteria and cultural competency training in the two dental schools in Utah.
   - Develop scholarship and loan reimbursement programs for students with diverse backgrounds and inform the community.
   - Create a partnership with Area Health Education Centers, State Board of Education, pre-dental programs and dental programs to strengthen the dental education pipeline for diverse students.
   - Dental schools in Utah along with the Utah Oral Health Coalition, Utah Medical Education Council, Utah State Department of Health Oral Health Program, Utah Area Health Education Center system and the Utah State School Board with non-profits like Boys and Girls Club and United Way are some stakeholders that can lead this charge.

3. Address the gender imbalance in Utah dentist workforce

   - Consider changes to admission criteria of the two dental schools in Utah.
   - Increase efforts to recruit and retain more female dentists in Utah.
   - Understand why there are so few female dentists in Utah and address the identified causes through combined efforts of the Utah Medical Education Council and the Utah State Department of Health Oral Health Program.
   - Create a partnership with Area Health Education Centers, State Board of Education, pre-dental programs and dental programs to strengthen the dental education pipeline for female dental students.
   - Dental schools in Utah along with the Utah Oral Health Coalition, Utah Medical Education Council, Utah State Department of Health Oral Health Program, Utah Area Health Education

2 A workforce advisory committee comprising of practitioners from a variety of settings, professional association representatives, public health interest representatives, representatives of academic interests, insurance representatives (coverage and liability) and data specialists.

Center system and the Utah State School Board with non-profits like Boys and Girls Club and United Way are some stakeholders that can lead this charge.

4. Assess and meet changing workforce needs

    - Demand study – Develop a system that periodically assesses demand and need for dental services in Utah. This system could include need for services, service availability and its utilization, quality, outcomes and sustainability in the state.

    - Supply study – Retention rates of the dental school graduates in Utah should be closely monitored along with practice location choices to measure their impact on Utah's workforce supply and distribution.

5. Improve access to dental care for the underserved

    - Strengthen and promote loan reimbursement programs that encourage dentists to practice in rural areas to encompass underserved areas and populations.

    - Increase provider capacity to provide care through improved Medicaid reimbursement rates and inclusion of preventative and restorative oral health services for adults, senior citizens and children in Medicaid and Medicare programs. In addition, these services should be included in the Essential Health Benefits package defined by the Affordable Care Act.

    - Encourage portable and mobile service programs like the Family Dental Plan, student and resident subsidized rotations, other charity care drives, and provide incentives to dentists participating in these programs.

    - Create a partnership with Area Health Education Centers, Utah Center for Rural Health, State Board of Education, pre-dental programs and dental programs to strengthen the dental education pipeline for rural dental students that are oriented towards underserved and rural practice.

Introduction & Background

In December 2002, the Utah Medical Education Council (UMEC) compiled and published a dentist workforce profile. The profile was developed based on data collected from various existing sources. According to this profile, Utah had a dentist-to-100,000 population ratio of 61.4 in 2002 and projected a decline in dentist supply by the year 2009.

In 2009, the UMEC published another report based on a survey of all dentists licensed in Utah. The report indicated a declining dentist to population ratio, along with a maldistribution of dentists in the state. In particular, the report highlighted the limited dental access to underserved populations in the state and the high demand for dental school applications from Utah's population. While Utah was geared for a large population increase and a thinning of dentist workforce availability, the state, along with the nation, faced an unprecedented economic downturn. As a result, dentists set to retire have delayed retirement, practicing dentists had to face dwindling patients, and the state eliminated funding towards all dental benefits for adults, thereby exacerbating the underserved access issue.

Since the last report, there are two new dental schools in Utah. In addition, the state and the nation are recovering from an economic downturn, underscoring the importance of assessing Utah's dentist workforce status.

Methodology

The Utah dentist workforce data used for this report has been collected using a survey designed and conducted by the UMEC. It is referred to as the "UMEC 2012 Dentist Workforce Survey". The survey instrument was a questionnaire with pre-structured response categories. Microsoft (MS) Access, MS Excel and SPSS (formerly Statistical Package for the Social Sciences) software were used to process and analyze the data.

Based on information from the Utah Division of Occupational and Professional Licensing (DOPL) (Utah DOPL), there were 2,528 dentists with an active license in Utah as of May 1, 2012. Of these, 67 licensees could not be reached due to bad addresses. A net of 2,461 dentists with an active license in Utah as of May 1, 2012 received the survey instrument. The United States Postal Service (USPS) forwarded surveys to those dentists who had moved but whose addresses were not updated with the Utah DOPL. A follow-up questionnaire was mailed to non-respondents after a three-month interval. A total of 1,526 dentists responded to the survey, giving a 62% response rate. Data have been weighted to account for the missing respondents (using a weighting factor of 1.6127). All data presented in the report are weighted unless otherwise specified. The number or proportion of the item non-respondents (survey respondents who did not answer a particular item in the survey) has been reported where applicable.

Scope and Limitations of the Report

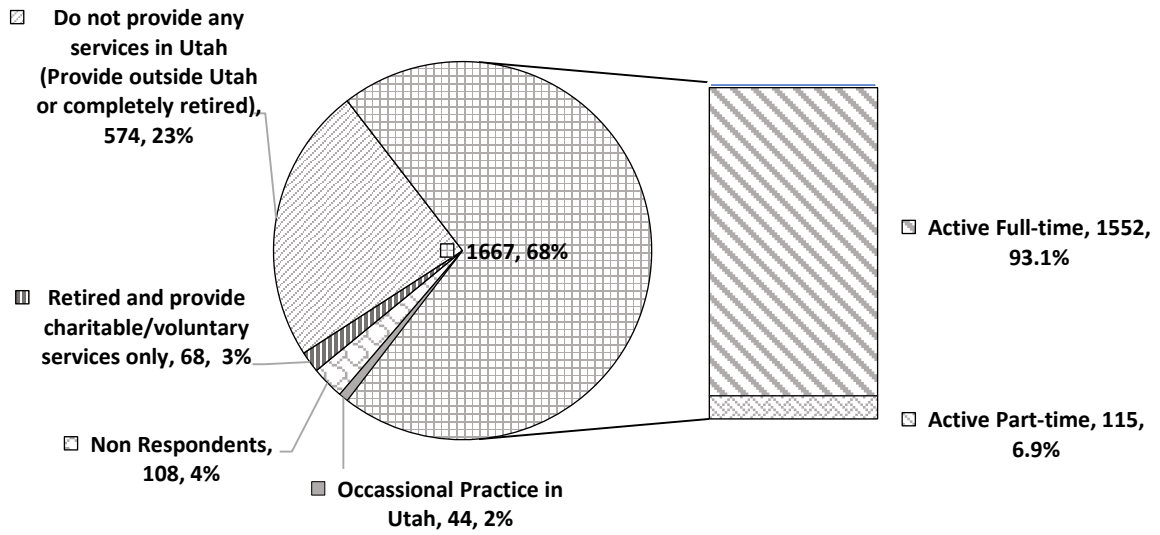
Data collected from the survey specifically address the make-up of the dentist workforce in Utah – its distribution and characteristics. The UMEC projects future trends of the dentist workforce in Utah using demand and supply models based on information provided by dentists in response to the survey, Utah DOPL, Utah's Indicator-Based Information Systems for Public Health (IBIS PH), Utah Governor's Office of Management and Budget's Demographic and Economic Analysis and scientific literature that addresses dental utilization rates in the United States. Two major limitations of this report are a lack of gender based and race/ethnicity based analysis of dental characteristics. This is due to the fact that in both cases, the proportion of dentists was too small to report.

Aggregate Supply

Of the 2,461 licensed dentists, 1,667 provide services in Utah[3]. Of these, 1,552 (93.1%) dentists identify themselves as active full-time providers[4] and 115 (6.9%) as active part-time providers.

Of the remaining 794 licensed dentists, 574 (72.3%) dentists do not provide any services in Utah, 68 (8.6%) are retired and provide voluntary/charitable services only, 44 (5.5%) provide occasional services in Utah. The remaining 86 (10.8%) include dentists who reported their practice status as 'other' in the questionnaire and item non-respondents.

Figure 1: Practice Status of Licensed Dentists in Utah



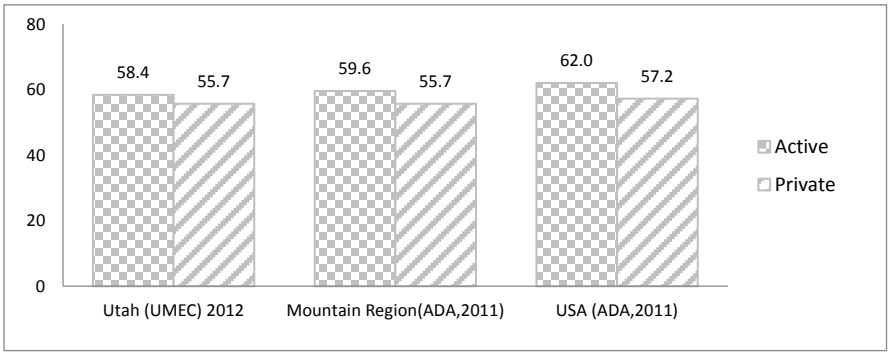
3 Original estimates were 1,689 practicing dentists. However, 22 dentists who self-identified as "Actively Practicing in Utah" reported an out-of-state practice location. All numbers are adjusted to reflect this change.

4 These dentists self-reported their activity as full-time. Typical Full Time Equivalent is 40 hours per week.

Dentist-to-100,000 Population Ratio

Utah has an active dentist-to-100,000 population ratio of **58.4** (1,667 dentists; population of Utah as on July 1, 2012: 2,855,287) (Utah Governor's Office of Management and Budget, 2013). This also translates to Utah has a similar active dentist-to-100,000 population ratio to the mountain[5] region (59.6 dentists per 100,000 population) and a lower ratio than the nation (62 dentists per 100,000 population). (American Dental Association, 2012). Utah also has an active private practicing dentist-100,000 population ratio of **55.7**, which is the same as the mountain region, and similar to the national level of 57.2.

Figure 2: Active and Private Dentist to 100,000 Population Ratio



Private dentists are those whose primary or secondary occupation is private practice, while active dentists are all dentists who said that they provide services of some kind. This includes dental school faculty, armed forces, other federal service, hospital staff dentists, graduate students, interns or residents, and other dental organization staff members.

Workforce Demographics

Race and Ethnicity

The dentist workforce in Utah does not reflect the diversity of Utah's population. Only 1.3% (22) dentists belong to races other than Caucasian compared to 8.3% of the 2012 Utah population estimate. (Utah Governor's Office of Management and Budget, 2013) The ethnic mix of the Utah population is also different from the Utah dentist workforce. While 13.3% of Utah's 2012 population estimate is of Hispanic ethnicity, only 1.0% (17) of the Utah's dentist workforce is Hispanic. (Utah Governor's Office of Management and Budget, 2013) It is important to strengthen the diversity of our workforce in order to improve the cultural competency of our workforce. Research indicates that minority patients tend to receive better interpersonal care, greater medical comprehension and exhibit a greater likelihood of keeping follow-up appointments when served by a practitioner of their own race or ethnicity. Furthermore,

5 Utah, Colorado, Wyoming, North and South Dakota and Montana make up the Rocky Mountain ADA region

minority health professionals disproportionately serve minority and other medically underserved populations. (U.S. Department of Health and Human Services, 2006) These conclusions are backed by research specific to dentists. (Mofidi, 2002) Diversity in the workforce is a national concern. Utah is far behind the national averages. In 2013, only 13.7% of the applicants to dental school were from underrepresented minorities. (American Dental Education Association, 2013) (Garrison, 2013) Admissions criteria and cultural competency training in the two dental schools in Utah are critical in addressing this imbalance. In addition, promoting dentistry as a career among minority junior high/middle school students, promoting awareness of the dental education and loan reimbursement programs available in Utah among the minority populations and creating coalitions between high school counselors and Utah pre-dental and dental program directors are some ways to address this issue.

Gender

Utah has a disproportionately small percentage of females in its dentist workforce. About 2.5% (42) of Utah's dentist workforce is female compared to the 14.9% of the mountain region dentist workforce and 22.2% of the national dentist workforce. While Utah has seen an improvement since 2006 (from 1.6% to 2.5%), we are far below the national and regional gender distributions and the gender distribution in dental schools. As of 2012, 47.8% of the national dental student enrollees are women. (Garrison, 2013) One way to address the gender imbalance would be to consider changes to the admission criteria of the two dental schools in Utah. A second approach might be increased efforts by the Utah Dental Association to attract and retain more women dentists in Utah. And third, UMEC and the Utah State Department of Health Oral Health Program could combine efforts to understand why there are so few female dentists in Utah and address the identified causes.

Age

Based on self-reported data, the average age of dentists in Utah is 48 years (median age: 46.0). The average age has gone up from 46.5 years in 2006. According to the ADA, the average age of dentists in Utah is 47.9 years, Mountain Region is 48.3 years, and the nation is 49.8 years. About 26.3% of Utah's workforce is over the age of 54.

Retirement

Self-reported planned age of retirement of dentists in Utah is 66.7 years. Based on this, about 25.5% of Utah workforce is planning to retire over the next ten years (2013-2023). This translates to about 42.5 dentists retiring each year.

About 57% of dentists reported plans to reduce their hours before retirement. An estimated average reduction of 12.4 hours per dentist resulting in average working hours of about 23.1 hours per week have been reported for these dentists. Based on these self-reported data, Utah might lose 7.8 FTE per year over the next ten years.

Practice Characteristics

Type and Location of Practice

Number of Practices

Of the 1,667 dentists practicing in Utah, 79.7% (1,328) work in one practice setting and about 17.6% (294) of Utah dentists practice in more than one location. Respondents to the UMEC survey classified their practice locations as primary and secondary based on the number of hours they spend in each practice location. About 95.5% (1,592) of all active dentists reported some form of private practice as their primary practice. They reported three types of private practice settings - private solo practice (74.8% or 1,248), group practice (18.4% or 306), and affiliated practice (2.1% or 35).

Table 1: Practice by Setting and Location

Type of Practice/ Setting	Primary	Secondary[6]
Solo Private Practice	74.8%	6.7%
Group Private Practice	18.4%	6.6%
Affiliated Private Practice	2.1%	1.0%
Low Income Practice	0.9%	1.6%
Faculty	0.1%	1.0%
Government	0.3%	1.0%
Research	0.1%	0.7%
Other	0.6%	0.9%
Missing/No Reported Secondary Practice	2.5%	80.6%

Low Income, Non-Traditional Hour, Multi-Lingual & Extended Hours Practice

About 2.5% (42) dentists reported practice in low-income settings. Of these, less than 1% (15) of dentists reported a low-income setting as their primary practice location. 3.9% of all dentists provide American Sign Language (ASL) services and about 58% of dentists provide services in more than one language. 35% of the dentists provide services in non-traditional hours. Of these, 6.3% provide ASL services and 65.8% provide multi-lingual services.

Health Professions Shortage Areas (HPSAs)

Of the 29 counties in Utah, 25 are classified as a full or partial county HPSA. Of these, 17 counties have full-county low income HPSA designation and two have full-county geographic HPSA designation. Nine of these 25 counties also have a Comprehensive Health Center HPSA designation and five have a Native American Tribal population HPSA designation. (HRSA, 2015) Of the five Native American Tribal population HPSA counties, four counties also classified as low income HPSAs (Iron, Salt Lake, Uintah and Washington). Of the nine Comprehensive Health Care Center HPSA designated counties, Emery, Rich, Salt Lake, San Juan, Utah, Washington, Wayne and Weber have dual designations as either low income or geographic high need HPSA

6 Total does not equal sum of Primary and Secondary practice columns as some dentists reported a particular type of practice as both their primary and secondary practice setting. For example, a dentist might work in a solo practice type in two different locations – primary and secondary.

designations. Salt Lake and Sanpete qualify for both low-income and prison population HPSAs. The four counties that do not have a HPSA designation in Utah are Box Elder, Morgan, Summit and Wasatch.

Practice Specialty

About 77.8% (1,296) of all dentists in Utah practice general dentistry and 364 (21.8%) are specialists. The following is a distribution of specialties practiced by dentists in Utah compared to the Mountain Region and the United States:

Table 2: Practice Specialty – Utah, Mountain Region and US

Specialty	Utah (UMEC, 2012)	Mountain Region (ADA, 2012)	US (ADA, 2012)
General Dentistry	77.8% (1,296)	79.2%	78.8%
Specialized Dentistry	21.8% (364)	20.6%	21.0%
Endodontics	13.7% (50)	13.0%	12.7%
Oral Surgery	11.7% (40)	15.6%	18.4%
Orthodontics	32.7% (119)	30.9%	26.6%
Pediatrics	26.5% (97)	17.7%	15.7%
Periodontics	7.1% (26)	11.4%	13.5%
Prosthodontics	3.5% (13)	5.8%	8.6%
Public Health	0% (0)	5.2%	3.3%
Other	5.3% (19)	0.5%	1.2%

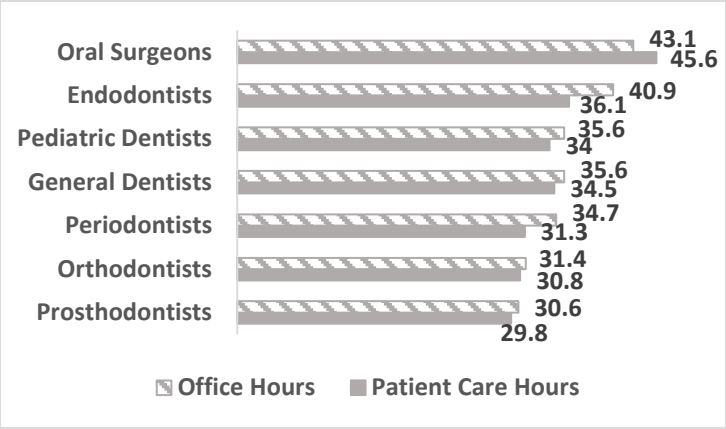
Practice Hours

An average dentist in Utah practices 35.6 hours per week. Of these, 34.5 hours are reported towards patient care. There is no significant variance from these statistics for an average general dentist and an average specialist. However, differences in hours appear when specialists are compared by the specialty they practice (see Figure 3 below).

Self-reported data indicate that since 2006, there was no significant change in patient care hours worked for general dentists, pediatric dentists and a majority of the other specialties. Periodontics is the only specialty that saw a significant decline in patient care hours reported (-18% between 2006 and 2012) while oral surgery saw a significant increase in patient care hours (19% between 2006 and 2012).

Of all the actively practicing dentists in Utah, 93% identified themselves as practicing “full-time”. However, only 37% report 40 or more hours a week in patient care. The number increases to 62% when you decrease the number of hours to 35 a week, and 89% when the number of hours is at 30.

Figure 2: Office and Patient Care Hours by Specialty



Patient Wait Times

General dentists reported about 4-5 days of wait times for new and established patients respectively. Endodontists have the lowest wait times for appointments to both new and established patients while orthodontists have the longest wait time for new patients and periodontists for patients of record or established patients. An average general dentist in Utah reported seeing about 252 patient visits per month while an average specialist in Utah reported seeing about 341 patient visits per month. Average appointment time for Utah dentists by practice specialty was not collected in the survey. This information was available through ADA's Characteristics of Private Practices report which places the average appointment time for general dentists at about 51 minutes and that of specialists at about 42 minutes. (American Dental Association, 2011)

A dentist in Utah sees an average of 274 patient visits per month. For general dentists, this number is 252 and for specialists this number is 341. Nationally, an average dentist sees 292 patient visits per month, 279 for a general dentist and 355 for a specialist. (American Dental Association, 2011) Patient wait time has significantly decreased since 2006.

Table 3: Patient Wait Time and Visits by Specialty

Specialty	Number of Providers	New Patient Wait Time in Days	Established Patient Wait Time in Days	Patient Visits per Month
Endodontists	50	1.0	1.0	97
General Dentists	1,296	4.1	4.5	252
Oral Surgeons	40	5.2	5.3	216
Orthodontists	119	7.8	5.4	500
Pediatric Dentists	97	6	4.7	439
Periodontists	26	4.4	7.1	148
Prosthodontists	13	3.7	1.8	155

Gross Production and Net Income

Since the 2006 survey, dentists reported reduced average annual gross production. This is in line with the income trend of the healthcare industry given the recession of 2007-2009 (Bureau of Labor Statistics, 2012) and with the national dentist income trend which was at its peak in 2005 and has not recovered with economic growth post-recession. (Munson & Vujicic, 2014)

Table 4: Gross Production and Net Income, 2012 vs. 2006

Category	2006	2012	% Change
Avg. Annual gross production	$591,899	$534,149	-9.8%
Avg. Annual net income	$158,271	$159,141	0.5%
Avg. Annual Net Income of Private Practitioners	$160,022	$159,835	-0.1%

The following is a similar comparison of incomes between general and specialist dentists:

Table 5: Gross Production and Net Income by Hours and Specialty

	Avg. Annual Gross Production	Avg. Annual Net Income	Avg. Patient Care Hrs/Wk	Avg. Office Hrs/Wk
Endodontics	$535,755	$234,200	36.0	40.5
Pediatrics	$635,205	$204,429	33.7	35.3
Periodontics	$694,000	$195,297	31.3	34.7
Prosthodontics	$608,625	$153,246	29.8	30.6
Orthodontics	$704,120	$200,838	31.1	31.4
Oral surgery	$981,995	$258,623	45.6	40.8
Other	$531,851	$145,210	-	-

Allied Dental Workforce

A clear majority of dentists practicing in Utah employ a dental and administrative assistant. About 96.3% (1,598) of the active dentists in Utah reported employing one or more dental assistants and about 91.6% (1,526) reported employing one or more administrative assistants. About 65.5% (1,091) reported employing one or more dental hygienists. This percentage has grown from 57.8% (848) in 2006. A majority of the allied dental workforce are employed as part-time employees.

Table 6: Dental Practice Personnel

DENTAL ASSISTANTS	
Percent of Active Dentists with Employees	96.3%
Average Number of Employees Per Location	3.1
Average Hours per Employee per Week	19.9
DENTAL HYGIENISTS	
Percent of Active Dentists with Employees	65.5%
Average Number of Employees Per Location	1.8
Average Hours per Employee per Week	19.8
ADMINISTRATIVE ASSISTANTS	
Percent of Active Dentists with Employees	91.6%
Average Number of Employees Per Location	2.1
Average Hours per Employee per Week	24.0

Patient Demographics

Patient Age Groups

In terms of patient age group, oral health for patients younger than one year and older than 60 years is a public health concern in Utah.

Patients Younger than 1 Year

The American Association of Pediatric Dentists (AAPD) and the Utah Department of Health recommend that a child be taken for his or her first dental visit before age one. About a fifth of Utah dentists (20.5% or 342 dentists) see kids who are one year old or younger. Of these, 258 are general dentists and 84 are pediatric dentists (86% of all pediatric dentists). Pediatric dentists who see patients younger than a year old also reported that these patients comprised are about 7.9% of their average patient panel size. Awareness and acceptance among dentists and the general populations to provide dental care to children younger than a year old is important. The State Oral Health Program has been supporting this effort by providing education to Head Start, Office of Home Visiting, WIC, and other groups to encourage parents to get their children to the dentist by age one.

Utah's Medicaid and CHIP plans cover pediatric dental care. In addition, the Affordable Care Act's Essential Health Benefits package includes pediatric dental care. Given these provisions, access to underserved children in Utah is possible. Major barriers to service are parent education and awareness, enrollment of children in appropriate health plans, and points of access to care that are sustainable. Provider reimbursement levels and practice scope of oral health care providers are challenges that limit sustainable access to care for all underserved populations irrespective of age group. Many organizations and associations in the state are working hand-in-hand through the Utah Oral Health Coalition to overcome these barriers.

Patients 65 Years or Older

According to the Census Bureau, 9.8% of Utah's population is aged 65 or older as of 2013. The 2005[7] Oral Health Resources Synopses by State published by the CDC, only 13.6% of the population aged 65 or more have lost all their teeth or are "edentulous". However, according to the American College of Prosthodontists, "Edentulism affects our most vulnerable populations – the aging and the economically disadvantaged…Partial edentulism affects the majority of adult Americans." (American College of Prosthodontics, 2013)

Although 65.6% of Utah dentists reported seeing geriatric patients, about 12.5% dentists reported patient panels with more than 20% geriatric patients. Dentists who reported over 20% of their patient panel as geriatric also reported an average of 45.2% of their AGP from self-pay compared to 27.6% reported by dentists who reported 20% or less of their patient panel as geriatric. As to private insurance as a proportion of their AGP, these percentages are 38.4% and 60.1% respectively.

Patients who are 65 years or older typically rely on Medicare for their health insurance coverage. Medicare however, does not cover any dental codes that are not medical procedure related. As such this patient group has to procure private dental insurance or pay out of pocket for their oral health services. If they are low-income individuals and qualify for Utah Medicaid, they receive limited emergent care coverage for oral health services. This population typically needs more restorative dental care than most other populations.

Utah's infrastructure to provide oral health care for the underserved populations in this age group is weak at best. Of the 12 local health departments in Utah, only one offers preventative dental care services and none offers restorative. There is one state-run mobile dental care program in Utah, the Family Dental Plan, which offers restorative services for the underserved.

Populations aged 65 or above are also typically concentrated in nursing homes and long term care centers. Utah does not have any policies designed to increase access for nursing home residents or developmentally disabled residents. (2010 CDC Oral Health Resources Synapses for Utah) Access to care for these populations is a concern at the national level and the ADA has

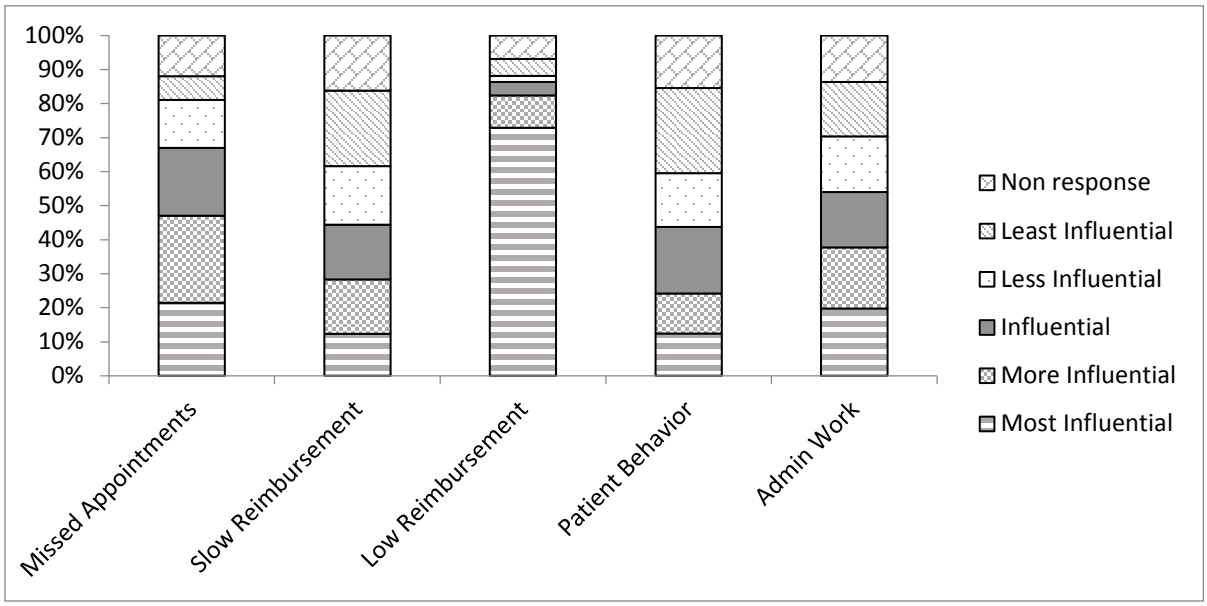
7 2010 Synapses report places 9% of the State's population above 65 years of age. However, it does not include an edentulous population estimate.

recently launched a Long-term Dental Campaign to address this issue. The impact of this campaign on Utah needs to be observed closely.

Dentists and Medicaid/CHIP Patients

Medicaid covers emergency dental care for adults while children's oral health care is covered by the Children's Health Insurance Program (CHIP). About 28.7% reported Medicaid as part of their Aggregate Gross Production (AGP). Less than 5% of dentists provide services that contribute to more than 10% of their average AGP from CHIP. While Medicaid does not cover adult oral health services other than some emergency procedures, dentists continue to see minimal percentages of CHIP patients. Low reimbursement and missed appointments are the reasons dentists have reported as the two most influential reasons. Administrative work was selected to be the third most influential reason for not accepting Medicaid/CHIP patients.

Figure 4: Factors influencing Medicaid/CHIP Patient Non-Acceptance

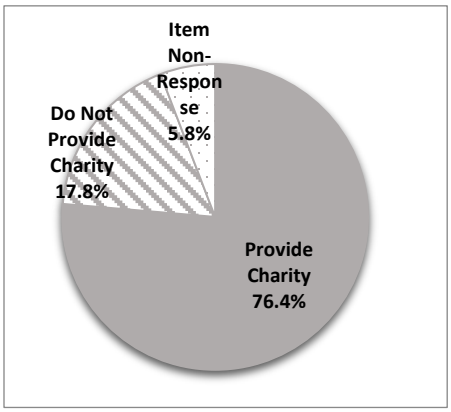


Access to under-served populations continues to be a problem due to various challenges including but not limited to low Medicaid-reimbursement rates, limited oral health awareness and its impact on overall health, limited public understanding of available resources and enrollment processes, providers' ability to practice to the top of their license, and the geographic challenges to a sustainable rural/frontier dental practice.

Charity Care

While the infrastructure to promote underserved oral health care access in Utah needs significant improvement, much needed care is provided in the form of charity. 76.4% dentists reported providing charity care to patients in need. Charity does not include write-offs. Of the dentists who reported providing charity care, a general dentist provided an average of $16,910 worth of dental care to about 37 patients in a year (~$457/patient). A specialist provided an average of $23,901 worth of dental care to about 24 patients in a year (~$996/patient).

Figure 5: Charity Care



Workforce Supply

Utah Upbringing & Education

About 78.6% of Utah dentists reported spending a majority of their upbringing in Utah. Family located in Utah, recreational opportunities, educational opportunities, climate and the cost of living in Utah are factors that influenced dentists' choice to practice in the state. About 83% of Utahns reported family as the 'most' or a 'very' influential factor.

About 88% of Utah dentists have completed their undergraduate education in Utah and 6.3% outside Utah. The table below represents the number of Utah dentists graduating from dental school between 2000 and 2011 and the proportion of them who have reported a Utah background – either upbringing or undergraduate education in Utah.

Table 7: Dentists by Year of Graduation and Ties to Utah

Year of Graduation	All Dentists	Utah Background
2000	56	55
2001	43	42
2002	74	74
2003	63	58
2004	48	48
2005	56	55
2006	71	71
2007	63	56
2008	48	47
2009	53	50
2010	24	24
2011	27	24

Utah did not have a full-fledged dental school until 2011. As such, all dentists in Utah have completed dental school outside the state. The top five states that provided trained dentists to Utah are:

Table 8: Top 5 States Our Dentists Completed Dental School From

State	Total
NE	14.1%
CA	11.0%
IL	7.7%
OH	7.3%
VA	7.1%

About 14.1% of our dentist workforce was trained in Nebraska. Although Utah did not have a dental school until recently, its University of Utah Regional Dental Education Programs helped provide dental education to twenty Utah resident students each year through contracts with the Creighton University School of Dentistry in Nebraska. Many of these students returned to Utah for practice.

Utah Dental Schools

There are two new dental schools in Utah: (1) Roseman University College of Dental Medicine in South Jordan enrolled 64 students in the inaugural Class of 2015 in August 2011, expanding to 80 students per year in 2012 and (2) University of Utah School of Dentistry (UUSoD) enrolled

20 students in the inaugural Class of 2017 in August 2013, expanding to 23 students in 2014. The full capacity of this school is 50 students per year but it has been reported that the school will hold off on its expansion plans.

Both schools have reported a strong level of interest from aspiring dental students despite the drop in applications from Utahns as a percent of all applications to dental schools across the nation. Since 2005, the number of applicants to dental schools across the nation from Utah has decreased in line with the national reduction in the growth rate of applications to dental schools. See table below for more details:

Table 9: Number of Applicants and Enrollees to Dental Schools in USA – Utah vs. USA, 2000-2010
(American Dental Education Association, 2013)

	From Utah			From USA			Utah as a Percent of U.S.		
	2000	2005	2010	2000	2005	2010	2000	2005	2010
Number of applicants to dental school	191	329	216	7,770	10,731	12,001	2.5%	3.1%	1.8%
Percent Change	--	7.2%	(34.3%)	--	38.1%	11.8%	--	--	--
Number of enrollees to dental school	122	177	112	4,234	4,558	4,947	2.9%	3.9%	2.3%
Percent Change	--	45.1%	(36.7%)	--	7.7%	8.5%	--	--	--

Projections

Future trends of the dentist workforce in Utah are projected using demand and supply models based on information provided by dentists in response to the UMEC survey, Utah DOPL (Utah DOPL), Utah's Indicator-Based Information Systems for Public Health (IBIS PH) (Utah Center for Health Data and Information Systems, UDOH, 2014), Utah Governor's Office of Management and Budget's Demographic and Economic Analysis (Utah Governor's Office of Management and Budget, 2014) and scientific literature that addresses dental utilization rates by population age group and insurance status (Vujicic and Nasseh, 2014) (Brennan and Spencer, 2002).

Supply: Two supply models were considered given the changing dental workforce landscape in Utah. One uses the DOPL license database information along with self-reported UMEC survey data. The other uses policy information provided by the Professional Insurance Exchange (PIE), a self-insured organization which has been providing malpractice insurance to Utah dentists since 1978.

Licensure Based Supply Model (Supply Model 1):

The licensure model uses information on new licenses issued, licenses expired, dentist retirement plans, and graduates from the Roseman University of Health Sciences College of Dental Medicine (beginning in 2016) and the University of Utah School of Dentistry (beginning in 2017).

Using DOPL data, the average number of new licenses over the last five years was calculated and this number was reduced by the average number of expired licenses. With two new dental schools in the state, retention of graduates is a future workforce supply source. The University of Utah School of Dentistry has a maximum capacity of 50 students, but currently has enrolled 20, 23, and 26 students in its first three years. Given that this program essentially replaces the University of Utah Regional Dental Education Program (20 in-state students), the impact of the first 20 students is already accounted for in our state licensing trends. This leaves another 30 students graduating from the UUSoD annually over time, with about two-thirds of them out-of-state.

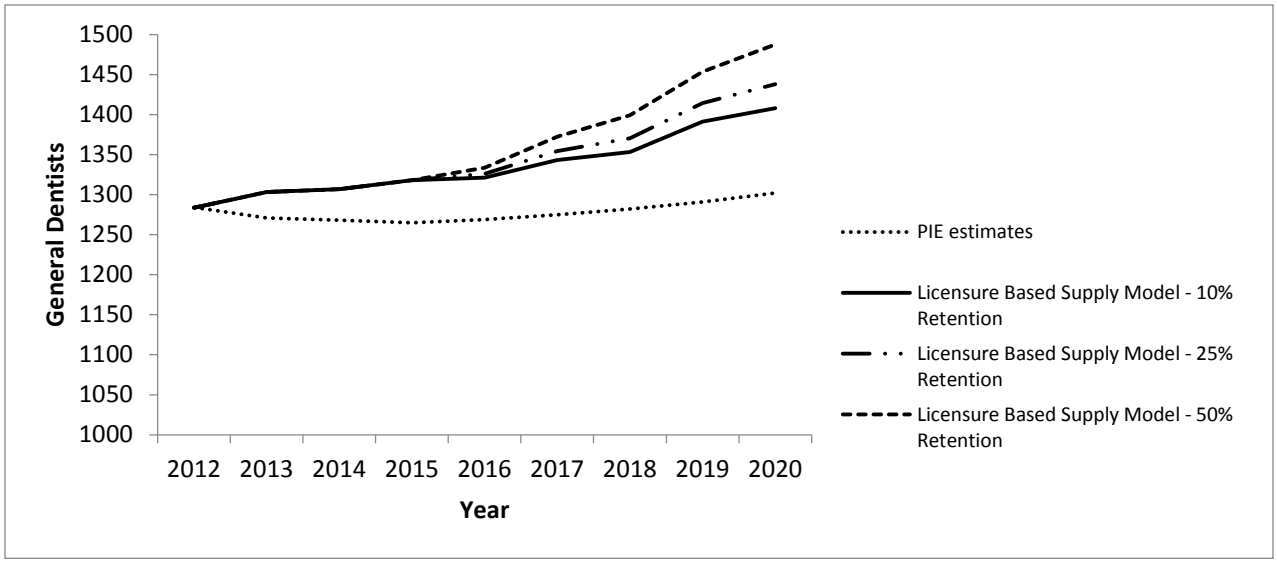
Roseman University College on Dental Medicine has reported about 20% in-state students and less than five from their first cohort (fourth year dental students) of 60 students have plans to stay in Utah. Their first through third year classes have 80 students each with about 20% of in-state students.

An assumption was made that in-state students would follow the general population of dentists and have 67.7% retention based on historic license trends. For out-of-state students, three variations of the model were measured using 10%, 25%, and 50% retention in the state. Also, since the demand models are based on general dentist needs in the state, the supply models were adjusted with the assumption that about 77% of the workforce will continue to opt general dentistry based on self-reported survey data.

PIE Based Supply Model (Supply Model 2):

Professional Insurance Exchange (PIE) is a self-insured organization which has been providing malpractice insurance to Utah dentists since 1978. PIE insures more than 80% of all Utah dentists and more than 90% of general dentists. The PIE based supply model uses 5-year averages of policy issuance, renewal, migration, and cancellation information. This data is weighted to represent all general dentists in Utah. This model also assumes a 25% retention rate of new out-of-state graduates from dental schools and 66.7% retention rate of new in-state graduates to arrive at the general dentist supply projections for the state (~77% of the workforce).

Figure 6: Supply Models for General Dentists in Utah



Demand: Two attempts were made to estimate the demand for dentists in Utah – one to maintain the current provider to population ratio, assuming what we have now is adequate and another based on the patient utilization driven need for general practitioner visits in Utah. The following were used in the model calculations: the number of dentists expected to retire (44/yr); number of dental FTEs that need replacing due to planned pre-retirement reduction in hours (7.8 FTE/yr); the number of dentists needed to meet the estimated dental visits based on dental utilization; patient characteristics information gathered from various sources. (Vujicic and Nasseh, 2014) (Utah Governor's Office of Management and Budget, 2014) (Utah Center for Health Data and Information Systems, UDOH, 2014) (Brennan and Spencer, 2002)

Provider to Population Ratio Demand Model: In 2012, Utah had an estimated 1,667 dentists with a population of 2.855 million. This equates to a ratio of dentists-to-100,000 population ratio of 58.4. With the estimated population growth of 1.7% (Governor's Office of Planning and Budget, 2014), the number of dentists required to maintain this ratio was calculated. The model was then adjusted to reflect the general dentist population in Utah with the assumption that about 77% of the workforce will continue to opt general dentistry based on self-reported survey data. Based on this model, Utah will need an average of 20 new general dentists each year.

General Dentist Visit Based Demand Model:

IBIS-PH (Utah Center for Health Data and Information Systems, UDOH, 2014) and UMEC survey data were utilized to arrive at the total number of visits to general dentists (3.95M visits/yr). The visit rates were then adjusted for people with private insurance and those without it based

on self-reported survey data (patient payment type).[8] The Governor's estimated population growth rate (Utah Governor's Office of Management and Budget, 2014) was then used to get total projected visits for each year. This model assumes that general dentists will continue to see the same amount of patients as they currently are in the near future. Based on these estimates and assumptions, the number of dentists needed to meet the number of visits was projected.

Table 10: Number of General Dentists Needed based on Population Visits and Provider-to-100,000, 2013-2020

Year	General Dentists Based on Visits Needed by Popn.	General Dentists to Maintain Current Ratio
2013	1326	1303
2014	1346	1323
2015	1367	1343
2016	1387	1363
2017	1408	1383
2018	1430	1404
2019	1451	1425
2020	1473	1447

Summary: Compared to 2006, the Utah dental workforce has grown both in numbers and potential supply sources. The recent recession period has kept dentists who were otherwise planning to retire in the workforce. Patient wait times have declined since 2006. Average patient care hours, on the other hand, remained the same for most specialties other than periodontics, which saw a significant decline, while oral surgery saw a significant increase in patient care hours since 2006. There was a slight decline in gross production and net income levels. However, this decline is in line with the income trend of the healthcare industry given the recession of 2007-2009 (Bureau of Labor Statistics, 2012) and with the national dentist income trend which was at its peak in 2005 and has not recovered growth with the economic growth post-recession. (Munson & Vujicic, 2014)

Access to under-served populations continues to be a problem due to various challenges. These challenges include: low Medicaid-reimbursement rates, limited oral health awareness and its impact on overall health; limited public understanding of available resources and enrollment processes, providers' ability to practice to the top of their license, the geographic challenges to developing a sustainable rural/frontier dental practice.

[8] 83% of insured and 64% of uninsured Utahns will continue to seek basic oral health services at a rate of a minimum of one dental visit and an average of 1.89 dental visits per year to generate about 3.95 million visits per year

Given this information, it is safe to assume that Utah does not face a shortage of dentists. Also, emphasis on leveraging the existing workforce and new supply sources towards meeting dental need and distribution of workforce in the state continues to be an area where Utah can improve.

Recommendations

The UMEC, in conjunction with the Dentist Workforce Advisory Committee (DWAC)[9], makes the following recommendations to effectively manage dental healthcare in Utah:

1. An Oral Health Public Awareness Campaign for Utah
   Organizing a public awareness campaign led by the Utah Oral Health Coalition and the Utah State Department of Health Oral Health Program in partnership with two new dental schools, the Utah Dental Association, the Utah Dental Hygiene Association and the various other oral health champions in Utah is crucial to addressing the oral health access and policy concerns in Utah.

2. Address the racial and ethnic imbalance in Utah dentist workforce
   - Develop and/or strengthen the admissions criteria and cultural competency training in the two dental schools in Utah.
   - Develop scholarship and loan reimbursement programs for students with diverse backgrounds and inform the community.
   - Create a partnership with Area Health Education Centers, State Board of Education, pre-dental programs and dental programs to strengthen the dental education pipeline for diverse students.
   - Dental schools in Utah along with the Utah Oral Health Coalition, Utah Medical Education Council, Utah State Department of Health Oral Health Program, Utah Area Health Education Center system and the Utah State School Board with non-profits like Boys and Girls Club and United Way are some stakeholders that can lead this charge.

3. Address the gender imbalance in Utah dentist workforce
   - Consider changes to admission criteria of the two dental schools in Utah.
   - Increase efforts to recruit and retain more female dentists in Utah.
   - Understand why there are so few female dentists in Utah and address the identified causes through combined efforts of the Utah Medical Education Council and the Utah State Department of Health Oral Health Program.

9 A workforce advisory committee comprising of practitioners from a variety of settings, professional association representatives, public health interest representatives, representatives of academic interests, insurance representatives (coverage and liability) and data specialists.

- Create a partnership with Area Health Education Centers, State Board of Education, pre-dental programs and dental programs to strengthen the dental education pipeline for female dental students.
- Dental schools in Utah along with the Utah Oral Health Coalition, Utah Medical Education Council, Utah State Department of Health Oral Health Program, Utah Area Health Education Center system and the Utah State School Board with non-profits like Boys and Girls Club and United Way are some stakeholders that can lead this charge.

4. Assess and meet changing workforce needs
    - Demand study – Develop a system that periodically assesses demand and need for dental services in Utah. This system could include need for services, service availability and its utilization, quality, outcomes and sustainability in the state.
    - Supply study – Retention rates of the dental school graduates in Utah should be closely monitored along with practice location choices to measure their impact on Utah's workforce supply and distribution.

5. Improve access to dental care for the underserved
    - Strengthen and promote loan reimbursement programs that encourage dentists to practice in rural areas to encompass underserved areas and populations.
    - Increase provider capacity to provide care through improved Medicaid reimbursement rates and inclusion of preventative and restorative oral health services for adults, senior citizens and children in Medicaid and Medicare programs. In addition, these services should be included in the Essential Health Benefits package defined by the Affordable Care Act.
    - Encourage portable and mobile service programs like the Family Dental Plan, student and resident subsidized rotations, other charity care drives, and provide incentives to dentists participating in these programs.
    - Create a partnership with Area Health Education Centers, Utah Center for Rural Health, State Board of Education, pre-dental programs and dental programs to strengthen the dental education pipeline for rural dental students that are oriented towards underserved and rural practice.

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