An Interactive Website to Facilitate In-State Retention of New Dentists and Recruitment to Underserved Areas

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Abstract: Some U.S. states have more difficulty than others in recruiting or retaining dentists. Part of the problem is that often dental students are not aware of opportunities across geographic regions of either their home state or the state where they were educated. With student input, the University of Iowa College of Dentistry and Dental Clinics designed and launched an interactive website that provides basic demographic, economic, and other meaningful information to help dental students locate potential practice locations and identify current employment opportunities in Iowa. Although this website is not a recruitment or retention panacea, it provides an easy method for dental students to explore all or parts of the state as they go about making one of the most important decisions of their careers. The website also provides a showcase for current practitioners and communities to demonstrate what they have to offer as practice opportunities.

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The University of Iowa College of Dentistry and Dental Clinics is the sole dental school in the state. In 2013, 78% of the 1,557 dentists in Iowa had attended dental school or completed a dental residency at the University of Iowa. Despite the high proportion of Iowa’s dentists who are educated in-state, the University of Iowa has a history of being an exporter of dentists, with only 50 being retained for every 100 graduates. The state also faces an aging dentist workforce and increasing numbers of federally designated dental shortage areas. Iowa is not unique in its concern about its number of dentists or their distribution throughout the state. Nationally, the population to dentist ratio has disproportionately worsened for rural communities. There has been a similar decline in the number of physicians, pharmacists, and mental health providers who serve rural counties. States and the federal government thus continue to explore mechanisms to recruit and retain health care providers for such underserved areas.

The University of Iowa College of Dentistry and Dental Clinics’ Office of Iowa Practice Opportunities (OIFO) was founded in 2006 with a mission of promoting dental practice opportunities in Iowa to dental students and new dentists, with special emphasis on smaller communities and other underserved populations. While the OIFO has maintained a presence on the college’s website (www.dentistry.uiowa.edu/oipo) for several years, it offered little functionality that would draw students to explore this site except for a listing of employment opportunities. The website is maintained by the OIFO coordinator, who also facilitates matches between dental graduates and communities. Through June 2012, the office had coordinated placements for 128 graduates in 63 communities.

Dental schools typically provide limited education in business management and other non-clinical professional skills and offer minimal assistance with job counseling and placement. However, as graduation approaches, business skills become more relevant and important for dental students. The evolution of dentistry from a solo practice model, with the associated flexibility in choosing a practice
location, combined with rising educational debt and other changes in the dental delivery system have the profession reconsidering how to guide dental students in career decisions.7

In 2013, the University of Iowa College of Dentistry and Dental Clinics began a project to develop activities of the OIPO that foster collaborations with state stakeholders (e.g., Iowa Area Development Group and Delta Dental of Iowa) in order to facilitate dentist recruitment for underserved areas. One objective of that project was to update the existing OIPO website and develop a new interactive map to help students explore communities and expand their knowledge about available practice opportunities in Iowa. In this article, we describe the design and distinctive features of this interactive website, which serves as a resource for dental students, dentists seeking new practice opportunities, dentists selling practices or searching for a new associate, and communities seeking to attract a dentist.

Designing the Interactive Practice Opportunities Website

The college’s administration, in conjunction with the OIPO coordinator and several faculty members, served as a steering committee to guide website design and development. The basic format for the website would include modified versions of existing OIPO resources for job seekers and recruiters along with a new interactive state map. The interactive map was designed to display basic county level information with links to full county profiles and available job opportunities.

A database of county-level variables that could be used to conduct a community needs assessment for oral health had been recently assembled by the faculty. Data were collected from several online sources, including the U.S. Census Bureau and the U.S. Department of Health and Human Services. Variables also included dental health professional shortage area information from the Health Resources and Services Administration, community water fluoridation information from the Centers for Disease Control and Prevention, and health workforce data from several state sources. With the collected county-level data, a temporary functional version of the interactive website was developed. The design goal was to create a website targeted to dental students (the primary user group) that would allow users to rapidly seek information from a map-based interface.

Before finalizing website design, we solicited student feedback about website content and features. Two group interviews of dental students were conducted by one of the authors (RK). Two students from each of the four predoctoral classes were invited to participate in these discussions. Students were informed that the questions asked had no right or wrong answers since there is wide variability in how users search for information online.8 Students were also informed that the college was exploring the career decision making process for dental students and developing various means to assist them with selecting a practice location. The students were provided lunch for participating in the interviews. The activity was considered exempt from review by the University of Iowa Institutional Review Board.

Students in the groups were asked open-ended questions, such as the following: What information do you look for when searching for a suitable practice location? How do you conduct this search? What national, federal, and local sources would you use for this search? What have you heard from other students about resources that they used in their searches? How would you use information once you collect it? Follow-up questions were asked to probe students for additional information.

After this general discussion, students were shown examples of the available county-level data. The interviewer solicited feedback about content preferences for the interactive website. Students made suggestions about deleting non-relevant information to limit “information overload” and requested that other variables be more prominently displayed on the website. In addition to the previously collected county data, students suggested that additional information be included on the website, such as proximity to airports, shopping malls, etc. The students provided substantial feedback and strongly supported the concept of an interactive method to explore various areas of the state, particularly in context with contiguous counties. However, they indicated that such an endeavor would not be appropriate for mobile devices or social networking services such as Facebook.

After the student interviews, the steering committee and information technology staff met to discuss modifications to the website. Once modifications were made based on student recommendations, a second round of group interviews was conducted to seek additional comments about the website design.
Final suggestions included a request to highlight counties with available job opportunities on the interactive map and to list the three largest communities in the full county profiles.

**Features of the Interactive State Map**

The base map (Figure 1) displays county population-to-dentist ratio, total county population, or percent of county dentists over age 60 (www.dentistry.uiowa.edu/oipo-map). Hovering the user’s cursor over a county will display an inset table comparing limited county information and state figures (Delaware County inset on Figure 1). The base map can then be customized by activating any of four overlays: 1) available practice opportunities, 2) locations of the ten largest cities in Iowa, 3) major interstate systems in Iowa, and 4) number of private practice dentists per county. The map can be further customized by applying two additional criteria: slide bars filter counties by distance to the nearest regional airport or distance to a large city (>50,000 population).

From the base map, users can click on a specific county to view its full profile (Figure 2). County profiles include dentist workforce information (e.g., number of general dentists and number of dental specialists), other available health care providers, socioeconomic indicators (e.g., population density and median income), and other community resources.

Counties with available practice opportunities can be accessed several ways. From the statewide base map, activating the practice opportunities overlay highlights counties that have active practice listings. When the user’s cursor hovers over a county with an active practice opportunity, the inset table will announce that “opportunities are available in this county.” Finally, in each county’s full profile, opportunities are prominently displayed at the top of the page and linked to detailed information about each listing, including addresses and contact information.

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**Figure 1. Image of interactive state map with links to county information: example of Delaware County**
To address concerns about an aging dentist workforce and dentally underserved rural areas, Iowa’s interactive map highlights counties with high proportions of dentists over age 60 and high population-to-dentist ratios, two items that were of interest to the students we interviewed. Other dental schools interested in facilitating placement of graduates may have different high need areas of concern to address.

Usage Metrics and Future Directions

From its inception in 2014 through July 2015, the new interactive state map was accessed 17,227 times by 3,464 unique users. Of these users, 90%...
were from U.S. sites. Of the 1,928 unique users in the United States, 59.2% were located in Iowa. The Iowa users viewed a total of 11,312 webpages, spending an average of one minute and 12 seconds at each webpage. The next five highest users (N=647) were from the contiguous states of Illinois, Wisconsin, Minnesota, Nebraska, and Missouri. There were at least two unique users from 45 states and the District of Columbia. Of the 66 designated health professional shortage areas in Iowa, 58 were viewed by one or more users.

Plans are in place to update base demographic and workforce data annually, and practice listings are updated on a routine basis as additional opportunities become available or are filled. Since the interactive map was launched, the OIPO coordinator has given several presentations to state and national audiences about the interactive state map. The coordinator also gave a presentation to dental students who used the website as a resource for a course assignment to conduct research about a community in Iowa where they would consider practicing. During these presentations, students are also made aware of two major state stakeholders that work with the OIPO in recruiting, especially in rural areas: Delta Dental of Iowa Foundation, which provides loan repayment funds through its FIND (Fulfilling Iowa’s Need for Dentists) program; and the Iowa Area Development Group, which has been instrumental in assisting new dentists in rural areas with introductions to local community leaders and providing contacts for innovative financial packaging for their dental practices.

Conclusion

Although various approaches exist by which individuals can find a suitable job opportunity or practice location, this interactive map gives dental students, dentists, and community leaders an authoritative and easy-to-use method for exploring the job horizon. It is conveniently available for preliminary inquiries about a geographic area, and it provides information about multiple demographic and economic variables that may help job seekers focus on a geographic area for their practice search. This resource also offers flexibility in its design for more focused inquiries. Unlike static document searches, the interactive design allows individuals to easily explore nearby counties simultaneously. Our hope is that the establishment of this website not only assists graduates, practitioners, and communities in making successful professional matches, but that the resource will ultimately help reduce dentist shortages in underserved areas.

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REFERENCES


