



SCHOOL OF DENTISTRY

INDIANA UNIVERSITY

IUPUI



Pre-Doctoral Enrollment Increase Feasibility Study

June 1, 2011

**Indiana University School of Dentistry
2011 Pre-doctoral Enrollment Increase Feasibility Study**

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Executive Summary

Introduction

The Indiana University School of Dentistry (IUSD) has been looking toward remodeling its current facility or building a new facility for at least five years. In fact, just under three years ago a conceptual plan for a new building was developed. Of course, just like any significant building project, funding sources are always a major concern. With the current economy and projections of lacking state support for capital projects in higher education, IUSD must look to its own resources for a significant amount of funding.

Since his arrival in June 2010, Dean John Williams has suggested several proposals for funding a new facility. The one seeming to carry the most optimism for success was to consider increasing the class size of our pre-doctoral DDS program anywhere from 25 to 30 students. Therefore, in February 2011, Dean Williams charged the Chairs Planning Committee to produce a feasibility study on this concept (see the next section). The Chairs Planning Committee accepted this chore and a core group of individuals made up the taskforce to accomplish this.

The following executive summary and comprehensive report respond to this charge from Dean Williams. Each of the taskforce members was assigned a specific topic(s) to research and report on. For the most part they completed their individual sections independently; however, some overlap exists in reporting and data collection. A summary of the report follows.

Workforce

- Future demand for dental services is expected to increase. Baby boomers will require more services because edentulism is not as prevalent as in previous generations and health reform legislation may dramatically increase the number of people eligible for dental coverage beginning in 2014.
- The increase in female dentists impacts the workforce in several ways. The proportion of female dentists is projected to increase nationwide from nine percent in 1991 to 29 percent in 2025. Young female and older male dentists are more likely to work part-time.
- In 2003 the home-state and current location of IUSD graduates from 1994-99 were tracked. After four or more years 72 percent of the graduates were practicing in Indiana, including 78 percent of the in-state students and 29 percent of the out-of-state students.
- A gradual increase is predicted in Indiana's population: 2010 6,483,802 (6.6% increase from 2000); 2015 6,517,631 (0.5% increase from 2010); 2020 6,627,008 (1.7% increase from 2015); 2025 6,721,322 (1.4% increase from 2020).
- Indiana's ratio of dentists to population compares unfavorably with the United States as a whole. The mean ratio of professionally active dentists to population in the USA is 1:1,675; Indiana's ratio is 1:2,055 with wide geographic disparities in distribution. The ratio of dentists to population by county in Indiana on January 1, 2011, ranges from 1:1,038 to 1:14,260. Five counties have a ratio of 1: <1,500; 34 counties = 1:1,501-2,500; 34 counties= 1: 2,501-5,000; 15 counties=1: 5,001-10,000; and 3 counties have >10,000.

Applicant Pool

- Based upon the premise that the positive correlation between dental school application rates and K-12 enrollment continues, dental school applications should remain consistent over the next

seven years, fluctuating between 11,000 and 13,000. Because applications to IUSD reflect the same pattern of increases and declines as the national pool, the applicant pool for the next ten years should support an increase of the IUSD student body by 20-30 students per class.

- Two notes of caution. First, uncertainty exists concerning the number of new dental schools, perhaps as many as twelve, and their impact both on our applicant pool and on our ability to convince out-of-state applicants to matriculate at IUSD. Of bigger concern is the changing demographics of the K-12 population. The number of white students graduating from high school has already fallen 1.5% and is projected to decline 10.6% by 2016. Over the same period of time, Asian and Hispanic high school graduates are projected to increase by 32% and 54% respectively. In the future, our ability to attract Asian and Hispanic applicants, as well as Black students whose graduations rates will rise by 3.1%, and convince them to attend IUSD will hinge upon our ability to establish a reputation for having a welcoming and friendly environment.

Faculty/Staff Demographics

- The student to FTE clinical faculty ratio for IUSD was 5.51, while the national average was 4.78 with a range of 2.92 to 7.69 (range excludes an extreme outlier school, AT Still (Mesa, Arizona), which had a ratio of 23.75), indicating that IUSD already has a slightly higher than average number of students per faculty member. However this variance is fairly minimal.
- Dental schools do not need to recruit large numbers of faculty annually. The total number of full-time dental school faculty is only a few thousand. Clinical faculty represent a subset of those. In the past, dental schools fulfilled most of their faculty needs. However, based on current trending this may be more difficult as faculty and private practice compensation diverges and student debt load increases.
- It is difficult to assign an absolute number of additional full-time faculty needed to accommodate an increase in students. It is estimated that the additional need for full-time faculty will be moderate, while the additional need for part-time faculty will be significant. Most likely part-time faculty increase will meet our instructional needs. To help put an absolute number on this, it may be appropriate to suggest that 5 to 10 additional full-time faculty and 10 to 15 FTE part-time faculty would be needed, but this mix is highly reliant on curriculum changes that may or may not occur. This is without consideration that 48 of the roughly 105 currently employed full-time faculty will reach the age of 65 during this time period from 2015 to 2025.
- With adequate lead time of approximately two months, increased staffing needs can be met from the central Indiana area.

Clinic Patient Pool

- Currently IUSD has an adequate patient population overall; however, in several disciplines we lack enough patients (Endo, Complete Dentures, 3 unit bridges, etc.). A carefully developed and specific marketing program is essential to assure an adequate patient load if the class size is increased. The IUSD demand for patients also will be dependent on how extensively community health clinics are used. Additionally, this increased demand for patients will impact the Dental Hygiene program.
- The radiology module is short (it does not last the whole semester), and we must use clinic areas for teaching technique that are not being used for patient care. As it is, students receive only the bare minimum of experience (one 1-hour sessions and two 3-hour sessions) in radiographic technique prior to providing patient care.

- The scheduling of these activities is very intricate, and any shift means that all the dominos go down! If class size is increased by 30 students, we will be short by about seven 3-hour sessions.
- Prior to marketing IUSD, we must ensure we have all of our internal processes and people (faculty, staff and students) ready. We also need to look at the current patient population to see what our current market is (a good percentage of older patients who have more time and less money). If we plan to attract a different population, we must be prepared to meet their needs. We must watch our low cost competitors to ensure our fees are comparable. A well thought out marketing plan is essential.

Physical Facility Requirements

- In order for our facility to handle a class size of 130, significant changes to existing practices will be required.
 - All DDS courses will need to be scheduled in S116/S117 as only these two rooms can accommodate 130 students. Alternately, we could consider dropping the required lecture attendance policy in favor of using Adobe Breeze-type technology or podcasting to reduce the effective number of students “in class” at any given time.
 - Clinic group meeting schedules would need to be altered so as to further stagger rounds-type meetings.
 - Because the increased enrollment would result in 17 PBL groups, several of the groups will need to meet in single lecture halls.
 - Preclinical laboratory space would require both the basement and S315 laboratory spaces (128 seats) to be fully utilized and units in two instructor stations in the basement preclinical laboratories would have to be used for students as well. This scenario will present significant challenges for DH and DA scheduling of lecture and especially preclinical laboratory space.

Information Technology

- Since we are moving away from the “required” laptops our support for them should diminish. That being said, administration must be aware that students will still come to our department for support.
- Chair-side delivery should not be affected unless we add additional chairs, which would require adding additional devices to connect to the clinical system. The number of devices, the locations that they will be installed, and the type of mounting equipment needed will determine the associated costs.
- Whether adequate power is available must be evaluated and the needed networking capability added.
- Expansion from SB01 and SB10 to S315. This can be done. Additional components will need to be added and will probably need to go out for bid to the AV companies. This could be in the neighborhood from \$50,000 to \$100,000 depending on what functionality is installed.

Financial

If an increase of 30 DDS enrolled students occurs in our predoctoral program, we could realize as much as an additional \$85,000,000 in tuition revenue over a ten year time period. Expense projections, if the recommendations contained in this report are implemented, are to be determined.

Comparison School: University of Louisville Expansion

- Through a comprehensive review of present and future needs to accommodate an increase in student numbers, the university determined that 44.7 million dollars was needed for renovation of the University of Louisville School of Dentistry. Renovation of the facility was to take place with students' classes and patient care taking place.
- "A state of the art" main clinic containing 120 chairs, with appropriate support facilities was completed. Additionally, specialty clinics within the dental school were also renovated. Several lecture halls were renovated to accommodate 120 students.
- All expressed concern with the increase of 40 students (a 50% increase in class size from 80 to 120). Present faculty and staff numbers were often felt to be marginally adequate for a class of 80. There was a shared perception that, as related in many dental institutions, a cadre of present faculty is nearing retirement, and they have been experiencing difficulty in identifying new faculty for several, long vacant, faculty openings.
- Based on the comments of upperclassmen, they are very concerned about the availability to find enough patients/range of procedures to successfully complete ULSD requirements to graduate on time.
- As related by the Associate Dean for Alumni Affairs, the major concern for both Alumni and Organized Dentistry is the potential number of out of state students who may elect to remain and practice within Kentucky after graduation. Both groups, in general, accept that increasing class size was the only viable option available for ULSD to accomplish the renovation.

Conclusion

An overall summary of the reports generated in this feasibility study seem to indicate that some need exists in the state of Indiana for additional dentists and that we would have adequate numbers of competent applicants for the additional positions. However, we must clear significant hurdles to overcome problems with space, numbers of patients, scheduling, and attracting adequate members of faculty. Overall, nonetheless, staff and faculty contacted regarding this project were supportive, if it was decided that this was the best alternative for raising the necessary funds. Individuals suggested other viable alternatives, and indeed at least one other option, the advanced standing program, may deserve attention.

To summarize, increasing the size of the pre-doctoral DDS program appears to be a viable option, although significant hurdles confront us. This is not surprising, but perhaps the most significant finding concludes, 1) the potential exists to expand the class size, and 2) support for the strategy appears to be strong among faculty, staff and students as long as we can answer the concerns about space, faculty to student ratios, and the patient pool.

I would like to Special thanks to the individuals who contributed to this project:

- Dr. Jeffrey Dean
- Mrs. Deborah Ferguson
- Mrs. Nadine Florek
- Dr. Lawrence Garetto
- Mrs. Elizabeth Hatcher
- Dr. Robert Kasberg
- Dr. Jack Schaaf
- Dr. John Williams
- Dr. George Willis
- Dr. Karen Yoder

With additional thanks to Mr. Damon Spight and Mr. Terry Wilson for their publication assistance.



Charge to the Chairs Planning Committee

– Dr. John Williams, Dean

The IUSD Community is in a critical need to construct a new building to support its educational and research missions. The existing four buildings which make up the dental campus particularly the original dental building constructed in 1933 are outdated and in critical need of replacement. The Chair's Planning Committee is asked to conduct a comprehensive feasibility study of an increase in DDS enrollment for the expressed purpose of providing cash flow to pay off the construction of new facilities.

The total projected costs of the planned new dental sciences building is \$60 million (facility and related casework/dental equipment) with a proposed allocation of funding sources as follows: 10% state support; 10% alumni contributions and 80% IUSD school support. The majority of IUSD support would come in the form of additional tuition revenue derived from the proposed marginal increase in out of state students as well as some clinical revenue. The projected payoff term is 10 years from the completion date of the building.

The Chair's Planning Committee is asked to fully explore the following areas in making its recommendation and responding to a go/no go decision on increasing out of state dds class size to finance the new dental sciences building project.

At a minimum, the Committee should consider:

- Applicant pool and past applicant trends to enroll educationally qualified DDS students
- Faculty and staff resources required to provide didactic and clinical instruction
- Faculty workforce & potential retirements (assume retirement at 65) years 2015 to 2025
- State of Indiana dental workforce profile years 2015 to 2025
- Classroom, pre-clinical labs and clinical space required (The Committee is asked to think creatively about handling additional students using non-IUSD facilities if indicated)
- Adequacy of Patient Load to support additional DDS students
- Information technology considerations
- Patient screening & radiology support
- Community based educational opportunities
- Marketing strategies for additional patients
- Opportunities for expanded service learning experience
- Other areas
 - Finance Review of Models
 - Classroom space required (The Committee is asked to think creatively about handling additional students using non-IUSD facilities if indicated)

Indiana Dental Workforce Profile: Years 2015 to 2025

– Dr. Karen Yoder

Determining dental workforce needs for the years 2015 to 2025 begins by examining the current composition of the workforce in Indiana and nationally. Data obtained from several sources reflect strengths and limitations in the source's information and reveal critical voids in available information. Assessing the dental workforce in Indiana requires examining several related issues; the total number of providers, geographic distribution, full or part-time status of the providers, population growth, and retirement patterns.

Historical Data

- Of the 3,343 DDS graduates tracked by IU Alumni Association between 1970 and 2010, 2,389 (72%) list their preferred address as Indiana. The years 1970 to 2010 approximate the active years of practice from graduation to age 65 years which is frequently considered retirement age.
- 1980 to 2010 Indiana University School of Dentistry (IUSD) DDS graduates (N=2966)
 - 2132 (72%) male; 834 (28%) female
 - Asian 235 (8%); Hispanic 55 (2%); Black/African American 46 (2%); White 2466 (85%); other or refused 164 (6%)
- 1980 to 2010 IUSD DDS graduates with an Indiana mailing address (N=1789 60%)
 - 1277 (71%) male; 512 (29%) female
 - Asian 76 (4%); Hispanic 55 (3%); Black/African American 41 (2.3%); White 1,601 (89%); Other or refused 16 (2%)

American Dental Association data for 2006; however, reports that of the 2881 professionally active dentists in their database, which includes member and non-member dentists 2357 (82%) are male and 524 (18%) are female.¹

Trends and Factors Related to Dental Workforce

Future demand for dental services is expected to increase. Baby boomers will require more services because edentulism is not as prevalent as in previous generations and health reform legislation may dramatically increase the number of people eligible for dental coverage beginning in 2014. Health reform legislation is also slated to accelerate growth of federally qualified health clinics with dental services, thereby enabling more low-income adults to receive care.

The increase in female dentists is impacting the workforce in several ways. The proportion of female dentists is projected to increase nationwide from nine percent in 1991 to 29 percent in 2025.² Female dentists are less likely to practice in non-metropolitan areas² and are more likely to practice part-time (male=12%; female 20.5%).¹ Young female and older male dentists are more likely to work part-time.² Younger dentists and female dentists are somewhat more likely to practice in metropolitan areas and as dentists age, they are somewhat more likely to move to nonmetropolitan areas.³

Indiana's dental workforce is influenced by the retention of graduates of IUSD. In 2003 the home-state and current location of IUSD graduates from 1994-99 were tracked. A lag-time of four or more years was allowed to accommodate time spent in residencies or military service. After four or more years 72 percent of the graduates were practicing in Indiana including 78 percent of the in-

state students and 29 percent of the out-of-state students.⁴ Because no computerized data tracking of the home-state of graduates exists, this project was labor intensive and has not been repeated.

The only current measure of retirement status in Indiana is trends in non-renewal of licensure. In Indiana since 1980 there has been a steep increase in non-renewals; 1980-1990 there were 692 non-renewals; 1990-2000= 997; 2000-2010=1,001.⁵

A gradual increase is predicted in Indiana's population: 2010 6,483,802 (6.6% increase from 2000); 2015 6,517,631 (0.5% from 2010); 2020 6,627,008 (1.7% from 2015); 2025 6,721,322 (1.4% from 2020). During this timeframe, there is a projected decline in the dentist to population ratio nationally from .54 active private practitioners per 1,000 in 2000 to .50 in 2025.²

Measuring Workforce Adequacy

Indiana's ratio of dentists to population compares unfavorably with the United States as a whole. The mean ratio of professionally active dentists to population in the USA is 1:1,675; Indiana's ratio is 1:2,055 with wide geographic disparities in distribution.¹

How is adequacy of the dental workforce measured? The ideal ratio of dentists to population is not defined by the American Dental Association and varies among other organizations. The Oral Health America National Grading Project assigns a grade of A to a ratio of 1 dentist to 1,500 people; F is earned for a ratio of 1:2,601.⁷ The only measure defined by a governmental source approaches the topic by defining what is inadequate. The ratio of 1 dentist to 5,000 or more people in a geographic area is the measure used to determine dental health professions shortage areas. If the population is determined to be low-income the ratio drops to 1:4,000. HRSA gives the only clue to what is considered adequate coverage by indicating how many practitioners are needed to achieve a ratio of 1:3,000.⁸

Using the more conservative HRSA estimates of what constitutes an adequate workforce (1:3,000), 38 of Indiana's 92 counties have an unfavorable ratio. The ratio of dentists to population by county in Indiana on January 1, 2011 ranges from 1:1,038 to 1:14,260. Five counties have a ratio of 1: <1,500; 34 counties = 1:1,501-2,500; 34 counties= 1: 2,501-5,000; 15 counties=1: 5,001-10,000; and 3 counties have >10,000. HRSA reported that there are currently 186,258 people in Indiana living in dentally underserved areas, and it would take 55 additional full time dentists to achieve the 1:3,000 ratio.⁸ These data are highly underestimated because HRSA reports data only from officially designated dental HPSA areas. Indiana has documented very few of the 18 counties and unknown number of geographic locations in the state that are likely to qualify for this designation if agencies or individuals would take the initiative to collect the necessary data. By 2010 census data there are 1,009,971 people living in the 38 counties that have more than 3,000 residents per dentist. To achieve the recommended 1:3,000 ratio would require 336 additional full time dentists. This shortfall in available dentists for underserved counties is likely to increase proportionately as the population increases through 2015 and 2025.

Half of Indiana's counties are officially designated as rural counties; predominantly those with ratios of one dentist to 4,000 or more residents are rural counties. There is evidence that students are more likely to practice in the community from which they came than would dentists with no ties to the community; therefore, recruitment of potential dental students should continue to focus on underserved rural counties.⁹

Potential Approaches to Improving Indiana's Dental Workforce Effectiveness:

- Recruit students with a history of civic engagement and public health interest in order to staff the projected increase in FQHC dental clinics and maximize student loan repayment options.

- Adopt admissions policies that will increase the ratio of dentists to population in underserved areas of Indiana
- Adopt admissions policies that compensate for female graduates more frequently practicing part-time.
- Adopt admissions policies that include added value for applicants from underserved communities and using the dentist to population ratios of counties, which is a more meaningful measure of availability of dental services than are officially designated DHPSA areas which have not been actively pursued in Indiana.
- Promote legislative action, if necessary, to assign the Indiana Professional Licensing Agency with collecting demographic data including practice location, home state, dental school attended, birth date, gender, race/ethnicity and retirement status to enable tracking crucial workforce data. This would enable identifying counties and geographic areas for dental health professions shortage designations and would qualify Indiana for more federal funding for student loan repayment for new graduates practicing in underserved areas, ultimately improving access to dental services.

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DDS Applicant Pool

– Dr. Robert Kasberg

In order to project whether or not the dental school applicant pool over the next ten years will support an annual increase in the IUSD class size by thirty students, we must consider the following factors:

- What is the impact of the economy on the applicant pool?
- Do dental school applications reflect college graduation rates?
- Does a relationship exist between the number of applicants to dental school and the number of students attending and graduating from K-12 schools?

Although admissions officers relate compelling incidents of advising pre-dental students who have experienced job loss in economic downturns, the data clearly override such anecdotal evidence and clearly demonstrate that the economy plays little if any role in influencing dental school application numbers. From 1958-1976, the number of applicants to dentistry programs steadily rose without interruption from just over 5,700 applicants to well over 15,000 despite several boom and bust periods (IUSD peaked at 334 resident applicants).

Over the next fourteen years, the number fell precipitously in the face of one of the country's most severe recessions (1979-1983). Bottoming out at just under 5,500 applications in 1991 (IUSD fell to 94 resident and 398 non-resident applicants), the pool experienced six years of growth to about 7,000 (IUSD rose to 154 resident and 1,219 non-resident applicants) before experiencing another downturn that lasted through 2003. This period roughly coincides with the recession in the early 1990s and the recovery of the middle and later years of the decade.

The decline continued through the economic hardships of 2000-03 and began to improve dramatically as the country recovered during the millennium's first decade, peaking at 13,000+ in 2007 (IUSD rose to 259 resident and 1,869 non-resident applicants). For the past four years, the number of dental school applicants has hovered around 12,000 (IUSD hovers around 200 resident and 1,500 non-resident applicants).

It seems counterintuitive, but the number of college graduates also appears not to be a factor in predicting the number of dental school applicants. From 1970 to 2008, the number of students graduating with a bachelor's degree has experienced continuous growth every decade, increasing from 840,000 in 1970 to 1,560,000 in 2008. The pattern of growth does not reflect the sharp and sustained declines and increases in applications to dental school.

Year	Dental Applicants	Pre-K-8 Enrollment	9-12 Enrollment	Bachelor 's Degree Confirmed
1970	9,000	36,500,000	14,500,000	840,000
1976	15,000			925,000
1980 R	9,000	31,500,000	14,500,000	935,000
1985	6,000	31,000,000	13,500,000	988,000
1990	5,500	33,500,000	12,500,000	1,100,000
1995 R	6,600	37,000,000	13,500,000	1,200,000
2000	9,000	38,500,000	14,500,000	1,250,000
2002 R	6,500	39,000,000	15,500,000	1,290,000
2005	9,000	39,000,000	16,500,000	1,440,000
2008	12,200	39,000,000	16,500,000	1,560,000
2010 R	12,000	40,000,000	16,000,000	
2015*		41,500,000	16,000,000	
2017*		**	***	

- * Total increase for K-12 in Indiana 3%
College graduates projected to raise 9-16% (19.4-23.6 million)
- ** 12% increase in graduates
- *** 8% Increase in public schools
7% Increase private schools
- R Recession

Interestingly enough, declines and increases in K-12 public school enrollments closely reflect the declines and increases in the number of applications to dental schools. These patterns hold true consistently from 1970-2010. K-12 enrollments both in public school and private school are projected to increase by about 8% over the next seven years. The increase, however, is not uniform across the country as several regions and states will experience sharp declines in K-12 enrollments. This is especially true for all of the states in the northeast and several of the states in the Mid-Atlantic as well as Michigan and Ohio. Indiana is predicted to experience a 3% growth in K-12 enrollments.

Based upon the premise that the positive correlation between dental school application rates and K-12 enrollment continues, dental school applications should remain consistent over the next seven years, fluctuating between 11,000 and 13,000. Because applications to IUSD reflect the same pattern of increases and declines as the national pool, I believe the applicant pool for the next ten years will support an increase of the IUSD student body by 20-30 students per class. Most of the states from which we admit the majority of our non-resident students are projected to experience significant growth in their K-12 enrollments. With the exception of Michigan, none of the states projected to experience declines are significant feeders into our DDS program.

Two notes of caution must be noted. First, uncertainty exists concerning the number of new dental schools, perhaps as many as twelve, and their impact both on our applicant pool and on our ability to convince out-of-state applicants to matriculate at IUSD. The northeast, the southeast, Missouri, and New Mexico are not big feeders into our school, but states close to them are. Private schools like Midwestern in Chicago may hurt our ability to draw residents from Illinois. We

absolutely must keep our non-resident tuition at competitive levels; otherwise, we risk losing them to schools located closer to their homes.

Of bigger concern is the changing demographics of the K-12 population. The number of white students graduating from high school has already fallen 1.5% and is projected to decline 10.6% by 2016. Over the same period of time, Asian and Hispanic high school graduates are projected to increase by 32% and 54% respectively. In the future, our ability to attract Asian and Hispanic applicants, as well as Black students whose graduations rates will rise by 3.1%, and convince them to attend IUSD will hinge upon our ability to establish a reputation for having a welcoming and friendly environment. We can accomplish this only if we establish cultural competencies for our current faculty and staff and if hire new faculty who reflect the changing ethnic and racial composition of the changing population of our country.



White Coat Ceremony 2010

Faculty and Staff Demographics

– Dr. Jeffrey Dean and Mrs. Elizabeth Hatcher

The purpose of this section is to review considerations for adding additional faculty and staff as needed to manage an increased enrollment in pre doctoral education. While there will be definite challenges in recruiting competent staff, with the current state of the economy, including job scarcity, staff recruitment should be less of a problem than faculty recruitment.

In looking at data from the ADA 2007-2008 Survey of Dental Education Volume 3 Faculty and Support Staff some trends related to IUSD and national statistics for dental schools can provide insight:

1. The total FTE number of clinical faculty at IUSD was listed as 88 vs. the national mean of 86, and the total number of FTE support staff for IUSD was listed at 269 vs. the national mean of 155.
2. The student to FTE clinical faculty ratio for IUSD was 5.51, while the national average was 4.78 with a range of 2.92 to 7.69 (range excludes an extreme outlier school, AT Still, which had a ratio of 23.75), indicating that IUSD already has a slightly higher than average number of students per faculty member. However this slight increase is fairly minimal.
3. The ratio of support staff to faculty at IUSD is 1.45 and the national mean is 1.31, with a range of 0.04 to 3.46. The increased ratio of support staff to faculty for IUSD vs. the national mean may help make up for our current additional student to faculty ratio.
4. The ratio of part-time to full time FTE faculty for IUSD was 1.37 vs. the national mean of 1.35.

The 2005 ADA Dental Economics Advisory Group report on The Economics of Dental Education provides some interesting insights in its chapter entitled Rate of Return from a Career as Dental School Faculty by Nash and Brown:

1. Dental schools have and are likely to continue to encounter rather severe financial constraints. Public funds to dental education have been diminishing as a percentage of total revenue.
2. Dental schools do not need to recruit large numbers of faculty each year. The total number of full-time dental school faculty is only a few thousand. Clinical faculty represent a subset of those. In the past, dental schools have been able to fulfill most of their faculty needs. However, this may be more difficult as faculty and private practice compensation has diverged and student debt load continues to increase.
3. While there will always be dentists who are attracted to a career in teaching and research because of its intrinsic characteristics, it is likely to become more difficult to attract young dentists or establish practitioners in their prime earning years without adjustments in dental faculty compensation.

With this information in mind, the following considerations are presented as we look to the feasibility of increasing pre doctoral student enrollment at IUSD. There are several main areas of the faculty needs for instruction that need to be considered.

- A. Lecture style classroom instruction in general will not require an additional amount of faculty to manage additional students. There is little additional problem with lecturing to a class of 100 students vs. a class of 130.
- B. Preclinical laboratory instruction will require additional faculty. There is an optimal ratio of faculty to students in the laboratory, so a significant impact will occur here and need to be addressed.
- C. Small group learning - it is anticipated with curriculum reform that the possibility for a decrease in small group learning at IUSD will occur for D1 and D2 years. Small group learning for D3 and D4 years, however, would increase. Therefore, the need for additional faculty may not be lessened by the decrease in D1 and D2 small group learning.
- D. To manage both the additional need for clinical space and clinical faculty, the school will need to be creative in finding additional clinical avenues for student instruction. This may be best accomplished by looking for outside comprehensive care clinical experiences in environments such as Community Health Centers. If successful partnering can occur here, managing additional faculty needs within IUSD proper will be easier.
- E. Of the roughly 105 currently filled, full time faculty positions at IUSD, 48 of the incumbents will reach the retirement age of 65 years between the years of 2015 and 2025.

It seems clear that our current total number of faculty for our current number of students may be adequate; however, the proportionate distribution of faculty within categories of need may need adjusting. It is difficult to assign an absolute number of additional full-time faculty that may be needed to accommodate the increase in students. At this time, it is estimated that the additional need for full-time faculty will be moderate, while the additional need for part-time faculty will be significant. Most likely the increase in part-time faculty will be able to manage our instructional needs. **To help put an absolute number on this, it may be appropriate to suggest that 5 to 10 additional full-time faculty and 10 to 15 FTE part-time faculty would be needed, but this mix is highly reliant on curriculum changes that may or may not take place.**

There are a lot of suppositions in this recommendation, one of which is that most areas have the ability to increase efficiencies to meet the demands of additional students. Some areas that provide support to students directly or provide administrative support may be impacted.

- **Administrative Support** – not likely to have an impact on this group; e-processes such as Oncourse should be used as much as possible to improve efficiencies. There should be a process review to ensure we are working smart.
- **Bench and Simulator Lab Support** – additional students may be required to help maintain and staff the lab during extended hours.
- **Billing and Collection** – This area requires more review. Data should be collected about standards for other dental schools to help assess the level of staffing required.

- **Building Services and Repairs** –flex schedules may be required to meet the expanded hours of operation. If a technician is required to be on call at times the clinics operate, it may be necessary to increase technicians and if additional off-site clinics are opened, a maintenance and repair plan will need to be implemented either with additional staff or a contract with a dental repair service. Additionally, if other facilities need to be maintained, repaired, renovated that could require the addition of staff in this area.
- **Central Services and Infection Control** - should be able to meet the increased demands of more students and patient appointments and a goal would be to increase their services to the school to continue to remove this type of responsibilities from dental assistants.
- **Clinical Affairs** – processes in this area require assessment with our current student numbers and this will help prepare for an increase and help determine the required staffing levels. There are already struggles with patient intake, patient advocacy, and development of student assignments. I would recommend an outside assessment of this area to improve operations now and in the future.
- **Clinical Staff** – the present dental assisting staff is more than adequate to meet the present needs. However, if additional clinics are opened or the hours and days of operation increased, an assessment will be needed as to whether additional staff are required. The initial effort should be to creatively assess complete utilization of our current staff.
- **Dental Education (Academic Affairs)** – this area will need to be evaluated with a new Associate Dean. There is one vacant position in this department currently. If that position is filled, it is hoped that needs of a larger class can be met with that staffing.
- **Financial Aid** – the .8 FTE currently employed for financial aid should increase to 1 FTE and the work load evaluated as the student numbers increase with each year.
- **IT support** – the required support for IT has been evaluated and the suggested level should be followed. Staff may need to be put on alternative schedules to meet expanded work hours. If additional clinical locations are identified, it will be necessary to provide support at those locations.
- **Library** – there may be a need to increase hours of operation which could require additional student hires. However, an assessment of the physical library’s use should be performed to determine if the greatest needs are met electronically. If so, then additional hours may not be necessary.
- **Student Affairs Office** – additional staff may be needed for maintenance of the students once they are admitted; this would include registration, compliance and graduation requirements.

With adequate lead time of approximately two months, increased staffing needs can be met from the central Indiana area.

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Clinic Patient Pool

– Dr. George Willis

Patient Pool

With an active patient pool of 29,038 and 110,249 patient visits last year, currently IUSD has an adequate patient population *overall*. There are several disciplines, however, that do not currently have enough patients (Endo, Complete Dentures, fixed prosthodontics, etc.). A carefully developed and specific marketing program is essential to assure an adequate patient load if the class size is increased. The IUSD's demand for patients also will be dependent on how extensively the school utilizes community health clinics. An increased demand for patients also will have an impact on the Dental Hygiene program.

Patient Screening and Radiology Support

In the current curriculum, radiographic technique is taught in the fall to second year dental students. The radiology module is short (it does not last the whole semester), and we must use clinic areas for teaching technique that are not being used for patient care. As it is, students receive only the bare minimum of experience (one 1-hour session and two 3-hour sessions) in radiographic technique prior to providing patient care.

One teaching area is room 280, where there are 6 intraoral radiographic units. This area is used for some DS2 student labs in July and early August prior to the time the dental hygiene and dental assisting students begin their classes. After the DH and DA students begin, that area is utilized for their experiences and for patient radiology services by appointment.

The other area is the Screening Clinic. Screening runs all but three half days, which means the x-ray units are available only three times per week; of those three half days, the DS2 students are available for radiology instruction on only two of them. Even then, we can accommodate a maximum of 12-13 students at a time (that's how many units and manikins there are). We utilize every possible opportunity to conduct labs and we can rotate 100 students through with our current configuration. When the labs are running, the radiographic units are not available for patient radiology services. The scheduling of these activities is very intricate, and any shift means that all the dominos go down!

If class size is increased by 30 students, we will be short by about seven 3-hour sessions.

- Possible solution: Utilize the Screening Clinic area for an extra seven half days at the beginning of the fall semester (until early October).
 - Consequence: Reduces available screening appointments which affects the patient pool for the upperclassmen; and reduces available radiology services for patients of record if all the units are being used for DS2 teaching.
- Possible solution: Utilize the Oral Surgery (OS) portion of the Surgery/Screening suite as well as the Screening area when holding DS2 radiology labs and increase the number of sessions by four half days (rather than seven).
 - Consequences: Will still impact Screening Clinic intake and radiology services; will impact Oral Surgery services available to patients of record and teaching experiences in OS for the predoc students; will require purchase of a minimum of five more teaching manikins at \$6000 each and 10 additional digital sensors once we switch to digital imaging; will also require assignment of at least three faculty members to the radiology labs (two in the OS/Screening suite and one in S109).

- Other possibilities may need to be considered if the curriculum is changed to increase the time available in the module to a whole semester and/or shift the teaching of this technique to another semester or even another year (i.e., DS1).

Marketing Strategy

Prior to marketing IUSD, we must make sure we have all of our internal processes and people (faculty, staff and students) ready to go. We also need to look at the current patient population to see what our current market is (a good percentage of older patients that have more time and less money). If we plan to attract a different population, we must be prepared to meet their needs. We have to watch our low cost competitors to ensure our fees are comparable. A well thought out marketing plan is essential. Adoption of some of the IUPUI Master's in Health Administration (Prof Steven Reed, May 2011) IUSD Marketing Capstone Project recommendations will be of value to us as we move forward.



Physical Facility Requirements

Educational Space

– Dr. Lawrence Garetto

This report is divided into sections describing existing capacity of current room resources and the issues we would face should we need to boost our capacity to handle a class size of 130 students. For each of these sections, the descriptions are further subdivided into lecture, laboratory, clinic group size and small-group resource needs. This report does NOT address clinical chair utilization, or the manner in which students are placed into comprehensive care clinic environments. In brief summary, assuming a normal 8 AM to 5 PM schedule:

- Our existing facility can handle a class size of 104 students in single discreet spaces because of a limitation of the preclinical laboratory seating capacity.
- Our existing facility could handle a class size of 110 students if the S315 preclinical laboratory space was used to expand the seating capacity for laboratory courses, and we used only small group room space in our existing facility. The small group space becomes the limiting factor that allows us to matriculate up to 110 students as our existing room resources will not handle a larger class size IF single groups are housed in individual rooms
- In order for our facility to handle a class size of 130, significant changes to existing practices will be required.
 - All DDS courses will have to be scheduled in S116/S117 as these are the two only rooms capable of supporting this large of a load. Alternately, we could consider dropping the required lecture attendance policy in favor of using Adobe Breeze-type technology or podcasting to reduce the effective number of students “in class” at any given time.
 - Clinic group meeting schedules would need to be altered so as to further stagger rounds-type meetings.
 - Multiple small groups would have to meet in single lecture halls (17 small groups would be required even with an expansion of the #students/group).
 - Preclinical laboratory space would require both the basement and S315 laboratory spaces (128 seats) to be fully utilized and units in two instructor stations in the basement preclinical laboratories would have to be used for students as well. This scenario will present significant challenges for DH and DA scheduling of lecture and especially preclinical laboratory space.

Existing Capacity

Lecture Room Space

Our lecture room capacity in all major lecture spaces (S116, S117, 114, 115) is adequate for a class size of up to ~110 students as long as all seats are functional and non-fixed seating in the back of rooms 114 and 115 are present.

Preclinical Laboratory Space

Our basement preclinical laboratory spaces were designed for 104 students as a maximum capacity. We could expand our class size up to 128 if the preclinical laboratory in S315 is also used. To do this, electronic connection of A/V equipment would be required to link the basement and 3rd floor spaces. As well, at least 2-3 more bench instructors would need to be identified to staff the S315 space.

Clinical Group Meeting Space

Our existing utilization of rooms would likely enable an expansion of class size up to the 110 students.

Small Group Space

With existing availability of room resources in the dental school and OHRI buildings, we believe that we could manage up to 110 students/class. The small group space becomes the limiting factor that determines the maximum class size if we maintain the existing model where no more than one small group is located in a discreet room resource (i.e. there is only one group/room). The following table shows how our existing small-group resource space would need to be altered in order to house 110 students.



PBL Room Scheduling					
Existing Capacity Analysis	Current Small Group Capacity	Used for D1 PBL (M & R a.m.)	Used for D2 PBL (T & F p.m.)	Existing Capacity Allows for Class size of up to 110	Changes Required to Accommodate Larger Group Size
S105	6	6	6	8	Larger (wider) table to seat more students
S118	8	8	8	8	Have bldg services maintain chairs in room on daily basis
S119	8	8	8	8	Have bldg services maintain chairs in room on daily basis
Library Basement	6	6	6	8	One long table (instead of two pushed together with table legs that require people to straddle)
Computer Lab	6	6	6	8	Move front left white table out of room to allow for more space at the head of the room; place round table and chairs to seat more students for small groups
Lecture Hall (1 per semester)	8	8	8	8	Tables and chairs are not reliably located in lecture rooms; sometimes there are no chairs available for use in a given lecture room; need tables and chairs reliably placed at front of each lecture room on a daily basis
421	8	8	8	8	
401	8		8	8	
245	8	8	8	8	
B29	8	8	8	8	
B28	6	6	6	8	Wider, longer rectangular table to seat more students
B31	8	8	8	8	
OH110	8	8	8	8	
Gorman Room (1/2 room used)	8		8	8	
	104	88	104	112	D2 under current schedule
				96	D1 under current schedule (cannot use 401 or Gorman)
KEY:					
	Not available for use at PBL times				
	Currently used for small groups				
	VERY short of the capacity goal; Not enough capacity for new class size under current conditions				
	Not enough capacity for new class size under current conditions				
	Capacity meets requirements for new class size				

Expansion of DDS Class to 130 Students

Lecture Space

To expand the DDS class to 130, significant alterations in lecture room resource utilization will be required. However, the major impact will not be felt until the 2nd year of implementation when two classes of 130 are in residence. During the first year of implementation, the large class would have to be scheduled only in S116/S117. This would necessitate alterations of the existing scheduling given that there is at least one D1 DDS course (Molecular Cell Biology) that would have to be moved from 114 to either S116/S117.

Beyond the first year of implementation, the scheduling becomes progressively more challenging. In the 2nd year of implementation, it is likely that only D1 and D2 DDS classes would

be scheduled in S116/S117. All other program courses would need to be scheduled in the 114/115 lecture rooms.

In the 3rd and 4th year of implementation, significant schedule changes would be required because some D3 and D4 courses currently meet at 12:30-1:30. This would no longer be possible given the requirement to use only S116/S117 and the concomitant needs of the D1 and D2 classes for these same spaces (routinely a 1 PM start). The noon hour D3-D4 courses would likely need to meet from 12-1 and impact on available morning clinic time should be expected in order to allow the noontime start. Alternately, some course scheduling could potentially move to a 5-6 pm slot (please note that evening classes are a normal part of the IUPUI environment outside of the dental school).

As well, an assessment of the complete schedule of all programs must be completed (it is not complete at this point in time) to determine the impact on non-DDS programs. It is clear that the DH and DA programs would be the most significantly impacted. Courses in these programs would likely have to be limited to only 114/115 during the 8-5 time period. Alternately, the room resource schedule tightness would be less severe with scheduling after 5 pm.

An alternate strategy that would diminish the impact on the lecture halls would be to drop our existing policy of requiring student attendance at lectures. This would be possible by using Adobe Breezetype technology or podcasting to reduce the effective number of students “in class” at any given time. That would also likely enable us to continue to use all four lecture halls for the DDS program.

Preclinical Laboratory Space

Preclinical laboratory space for a class of 130 students would require both the basement and S315 laboratory spaces (128 seats) to be fully utilized. In addition, the two instructor units in the SB05 Simulation Laboratory and two instructor stations in the SB10 Bench Laboratory would have to be used for students. Because of the need to use both the basement laboratories and S315 at the same time for a single class for bench or simulation work, this precludes the ability to schedule the SB10 Bench Lab and the SB05 Simulation Laboratory individually. As was the case with the lecture halls above, expanding the DDS program to 130 students will present significant challenges for DH and DA scheduling preclinical laboratory instruction. It is likely that evening classes will be necessary to meet the needs of these programs.

Clinic Group Meeting Space

There will be clear challenges to house 130 students for the clinical group meetings. First of all, a decision will need to be made if existing clinics will be expanded in size or if additional comprehensive care clinics will be established (beyond the scope of this report). Some of the meeting spaces currently used for clinical rounds and GLA-type sessions would support greater numbers of students, but others will not. An example is Room 245. This room will not be functional if existing clinical groups are increased in size. As such, there will be a need to stagger clinical rounds more than they are currently staggered so as to allow for use of room resources outside of the 8-9 AM time period. In other clinical environments outside of IUSD, rounds occur prior to 8 AM. To do so would significantly alleviate the scheduling problems for the clinical groups. A similar result would be achieved for meetings scheduled after 5 PM.

Small Group Space

Given the data presented in the small group table above, it is clear that scheduling of small group space will be very challenging. We will need to identify 17 small group spaces. That is not currently possible outside of using office environments (even more so because the AD Dental

Education's office has always been a small group meeting space, something that cannot be planned on with the conversion to the AD Academic Affairs). It also is not feasible to continue planning to use space on the IUPUI campus outside of the dental school. We are already facing the loss of existing non dental school space we used since early on in the program, and that loss will continue as IUPUI continues to grow. While not likely successful, one potential strategy to address this issue is for the Dean to attempt to negotiate use of Campus Center meeting rooms, something currently against campus policy (scheduling Campus Center space for regularly occurring classes). Another strategy would be to continue to use the temporary trailer space (with required build out to partition for small groups (this strategy will likely not be acceptable to the university). The most likely solution to this problem is to place more than one small group in multiple lecture halls (one in front, one in back). This would require at least two lecture halls and would -potentially conflict with DH/DA scheduling in those spaces, necessitating a rescheduling of some of these program's classes.

Clinical Space

– Dr. George Willis

Clinic space seems to be less challenging to deal with. Several ideas were discussed including: Clinics in Community Health Centers (faculty and calibration issue), Evening clinics at an IUSD facility, an IUSD 8th Comprehensive care 15-20 chair clinic outside the building (self contained) and having three clinic sessions per day instead of two.

Having additional students would impact the specialty clinics that DDS students rotate through. Increased clinic utilization would have an impact also on support areas such as central sterilization and cash operations.

Community-based Educational Opportunities

– Dr. Karen Yoder

Increasingly dental schools are creating community based educational opportunities for clinical experience. The five year (2002-2007) national demonstration program, Pipeline, Profession & Practice: Community-Based Dental Education gave dental educators a vision of the potential impact of such programs on students' clinical skills and their abilities to work effectively in diverse settings with diverse populations. The program funded eleven of the fifty-six accredited dental schools in 2002. The following year The California Endowment funded four additional schools. The program resulted in fourth-year dental students' time in community clinics increasing, on average, from 10 to 50 days, and all schools developed courses in cultural competency and public health. A second and related goal of the Pipeline program was to increase the enrollment of underrepresented minority (URM) students which resulted in an increase of 54.4 percent (excluding two of the schools) in contrast with an increase of 16 percent in non-Dental Pipeline schools.¹

Evaluation of the program, which may provide guidance to IUSD's planning, included questions such as, (1) How do dental schools revise their curricula to better prepare dental students for community-based dental practice and provision of care to diverse groups of patients, and (2) What are the financial implications of training dental students in community-based practices versus the main school clinic, and how sustainable are these partnerships.² A separate survey of fourth-year

dental students in 2003 found that a greater number of weeks students spent in extramural clinical rotations was significantly correlated with their self-rated ability to provide care to diverse groups.³

There is evidence that students' clinical skills benefit from extramural clinical assignments. A study compared students in traditional programs with those who participated in community-based assignments and found those with significant community-based experience were more likely to be confident, clinically prepared to become entry-level dentists, and achieve higher national board scores.^{4,5} Another study found students' confidence in handling clinical situations was higher after rotating in primary care clinics compared with traditional dental school clinics.⁶

What Resources Exist in Indiana for Community-Based Clinical Assignments

Pipeline schools' choices for extramural facilities ranged from community clinics to Indian Health Service clinics and prisons. A 2009 survey of Indiana safety-net clinics was conducted by IUSD's Oral Health Solutions Program for the purpose of filling a void in this information and creating an inventory for use as a referral tool. Data were collected on location, ages of patients treated, types of dental services offered, types of payment accepted, sources of funding, number of dental chairs, number of patient visits in the previous year, number of dentists and staff's full time equivalents and information about volunteer dentists. A second section of the questionnaire was designed to elicit information about the treatment of individuals with developmental disabilities. The working definition of a safety-net clinic was: a broad range of dental clinics operated by local non-profit organizations, government agencies, and individual providers who share the common mission of delivering health care to persons who experience barriers to accessing the health care services they need. Safety-net dental clinic services are typically offered at low or no cost.

Sixty dental safety-net clinics were identified that were located in 24 of Indiana's 92 counties. The largest concentration (22 clinics) was located in Marion County. Respondents included 16 federally qualified health centers, nine county health departments, seven all volunteer clinics, and seven educational institution clinics. Of those responding, 47% reported providing basic services, 20% provided complete comprehensive services, 10% provided pain relief, 12% provided only preventive services, and 11% responded "other." Payment mechanisms varied including no charge, set fee, voluntary contribution, sliding scale and acceptance of Medicaid and private insurance.

From this information about Indiana safety-net clinics, several criteria are proposed to identify those sites that may provide appropriate locations for IUSD dental student community-based extended rotations. The criteria include the following: full time operation, comprehensive services, minimum of five dental chairs, employed dentist(s), and a large volume of patient visits the previous year.

Proposed Potential Sites for Community-based Clinical Experiences (#chairs/# pt visits 2008):

* indicates the clinic administration has previously requested, in writing, dental student rotations in their clinic(s), **IUSD students currently rotate there.

County Funded Health Centers

- Marion County Health Department
- Cleo Blackburn Health Center; 2700 Dr. Martin Luther King Drive, Indpls (6/declined to report)
- Forest Manor Community Health Center; 3840 North Sherman Dr. , Indpls (6/declined to report)
- Marott Pecar Health Center; 6940 North Michigan Road, Indianapolis (6/declined to report)

Federally Qualified Health Centers

- **Healthnet Clinics
 - People's Health Center; 2340 E. 10th Street, Indpls (8/xxx)
 - Southwest Health Center, 901 Shelby Street, Indianapolis, Indiana 46218
- *HealthLinc Clinics
 - Valparaiso; Porter County (designated as serving a rural population) (5/ 6,396)
 - Michigan City; LaPorte County (6/3,843) Note: Dr. Caswell Evans, Associate Dean for Preventive and Public Health Sciences, University of Illinois at Chicago (UIC) has expressed interest in having UIC dental students work with IUSD dental students in the Michigan City site
- *Neighborhood Health Center, Inc. Fort Wayne, Allen County (10 / 9,740)
- Indiana Health Centers,
 - South Bend, St. Joseph County (6/3,403)
 - Kokomo, Howard (6/2917)

State and Private Funding

- *Community Dental Clinic of LaGrange County; near Shipshewana; serving a rural population, primarily the Amish community (7/3,950)

Foundation and Private Funding

- *Matthew 25 Health and Dental Clinic; Fort Wayne (8/6,592)

Indiana Prison System The Indiana Prison System may provide appropriate sites with low potential for patient failure rate; however, currently, a private company, Correctional Medical Services, provides dental services for 27 prison locations in Indiana. Some have dental clinics and they take a mobile unit to the smaller prisons.

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Expanded Service-Learning Experiences

– Dr. Karen Yoder

Initiation of an Office for Civic Engagement creates the capacity for IUSD to become the first IUPUI graduate school to align itself with the IUPUI RISE campaign by systematically developing student service-learning experiences and promoting other RISE components. IUPUI administrators are challenging students to include at least two of the four RISE experiences - Research,

International, Service-learning, and Experiential learning - into their degree programs. To date, the program has focused on IUPUI undergraduate education; however, Dr. Mary Fisher, Associate Vice Chancellor for Academic Affairs and Associate Dean of the Faculties, stated that the administration would strongly encourage IUSD to show leadership in bringing graduate schools into the RISE initiative. IUSD is currently offering many of the recommended experiences and a high percentage of dental students are participating but, a central office has not previously existed which could coordinate these experiences, assure broad preparation and reflection, quantify student participation, as well as provide assessment, evaluation, improvement and dissemination of reports. IUSD already has a platform from which to develop rich, documentable programs including student research, hospital and clinical rotations, international service-learning, the Seal Indiana rotation, the homeless shelter sealant program, the developing student managed clinic at People's Health Center, Schweitzer Scholars' projects and various community-based activities of the Kids' Club and the American Association of Public Health Dentistry Student Chapter. The Office for Civic Engagement can also respond to community requests and inform legislators' about IUSD's role in contributing to the health of their constituents.

IUPUI states these requirements for RISE: *To qualify students must engage in directed, first-hand immersive experiences in the "real world," laboratory, or studio that are appropriate to the educational goals of the course and that occur beyond a normal classroom or online framework. The purposes of these external experiences are: 1) to apply and practice concepts, methods, and skills learned in the classroom; and 2) to develop new knowledge through original research and/or dialogue with individuals and groups beyond the university. In this process students will discern how contextual nuances change the dynamics of a learning situation and recast abstract theory. They will also gain knowledge of how to learn from experience and appreciate multiple sources of wisdom.*

Most IUSD dental students come from relatively privileged backgrounds; it is unlikely that many have been enrolled in Head Start, received dental care as a Medicaid recipient or spent nights in a homeless shelter. IUSD students are young, and predominantly healthy; thus they may have voids in their experience with old age and disability. Without such experiences it is easy to have a narrow lens through which to view the complexities of issues related to health and access to healthcare services. Creating community-based educational opportunities enables IUSD to put values and ethics into action, to foster students working in teams and to promote critical thinking.

Selection of sites for service-learning should focus on areas where there are voids in educational experiences. For example, students' current experience working with individuals with intellectual/developmental disabilities is sometimes limited to a three-day rotation at University Hospital during which the patients may be under general anesthetic for the majority of time; thus disallowing much interaction. Developing educational and screening programs at group homes and/or shelters would not only promote interaction and increase students' comfort level, but would also recruit potential patients for the students to treat and further interact with at IUSD.

Rather than screening only at Special Olympics State Games annually, IUSD students and faculty could provide screening, education and mouth guards for this population year round at regional games.^{1,2} This activity would also enable students to refer underfunded potential patients, who are disabled, to Indiana Donated Dental Services, thus acquainting the students with this program in which they may become active following graduation. Service-learning activities could place students in context with day centers for the frail elderly, long-term care facilities for the disabled and aged, health and events for various cultural and ethnic groups. In cooperation with other professional schools, dental students could work side by side with medical, nursing, pharmacy, and social work students in service-learning programs.

When possible, the Indiana model of service-learning will be used as a framework for experiential learning.³ There will be an academic link as well as written service and learning objectives for the activities. Sustained community partnerships will be the goal, with community partners supplying mentors for the students and participating in creating service-learning objectives as well as providing evaluation. The students will receive broad preparation to enhance their understanding of the context in which they will be working. When possible, the community-based activities will be of substantial duration. Students will be encouraged to learn from their community mentors, and will be guided in evaluation and reflection related to their experiences.



Indiana Model for Dental Service-Learning

The selection of sites and activities for service-learning should be planned strategically. Particular emphasis should be placed on experiences which cannot be accomplished within a classroom or in the IUSD clinics. Students come to IUSD with varying backgrounds, strengths and weaknesses; therefore, it may be advantageous to offer an array of experiences from which students may choose, and assign a minimum number of hours or days that a student must complete prior to graduation.

Occasionally there is speculation that service-learning should be a voluntary activity; however, the risk of solely recruiting volunteers is that those who self-select for community-based programs are likely to be those who are comfortable in these settings and may be the ones who least need the experience of working in diverse settings with diverse populations. Fourth-year IUSD dental students complete a survey prior to their three-day required rotation with Seal Indiana working in schools in low-income neighborhoods, Head Start programs, community health centers and homeless shelters. In pre-and post-rotation surveys the students are asked if the Seal Indiana rotation should be voluntary or required. Overwhelmingly in the pre-rotation survey students respond that it should be voluntary; in the post-rotation survey they overwhelmingly respond it should be required. Evidence suggests that community-based education is beneficial and should unapologetically be required as an educational experience. IUSD has a pivotal role to play in preparing a dental workforce that is responsive to community need(s); service-learning will play a critical role in fulfilling that goal.

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Information Technology Considerations

– Mrs. Nadine Florek

1. Since we are moving away from the “required” laptops our support for them should diminish. That being said, administration must be aware that students will still come to our department for support. New policies and procedures must be developed and implemented and backed by the administration. Exceptions should remain that – exceptions – and not become the normal day to day functions, which happens in many cases.
2. Chair side delivery once it is completely decided upon as to what model we will be using should not be affected unless we add additional chairs and then the only issue will be adding additional devices to connect to the clinical system. Cost associated with this will be determined by the number of devices, the locations that they will be installed and the type of mounting equipment needed. If we are looking at our current facility to renovate office space, we should keep in mind the cost for abatement should it be necessary in that particular area. There is also the issue of whether or not we have the appropriate power available and then we will need to add networking capability.
3. Expansion from SB01 and SB10 to S315. This can be done. Additional components will need to be added and will probably need to go out for bid to the AV companies. This could be in the neighborhood from \$50,000 to \$100,000 depending on what functionality is installed. A configuration would need to be done by UITTS to have it sent out to bid similar to what was performed in the SB05 project.
4. Support Staff – if we implement an extended day format, we will need to look at IT expansion to meet the need for support for the extra hours. Our current staff is working beyond the max capacity, and we could not support the additional hours without increasing the number of technicians we have.
5. We are looking to tag onto the University licensing agreement for Citrix. If this is approved, we would not need additional licenses for the increased capacity. I have requests in to the University and I am trying to get written confirmation that we can start immediately utilizing their agreement. This will actually save us several thousand dollars (\$10,000 +).



Financial

- Condensed table below adapted from Mrs. Deborah Ferguson

Income: Projected total tuition income for a 14 year cycle of enrollment increase by 30 students per year.

New Income Potential – NR DDS Student Increase (excludes Campus General Fee of \$630.00) - IU School of Dentistry Feb. 2011

FY	Baseline															
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
# Tears		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
# new NR students		30	60	90	120	120	120	120	120	120	120	120	120	120	120	120
Est Rate Increase		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NR Rate (incremental rate/student)	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K	\$57K
Annual "New" Income	Count	\$2M	\$3M	\$5M	\$7M											
	Rate	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
	Total	\$2M	\$3M	\$5M	\$7M											
		\$1M	\$3M	\$5M	\$7M											
Cumulative "New" Income		\$2M	\$5M	\$10M	\$17M	\$24M	\$31M	\$38M	\$44M	\$51M	\$58M	\$65M	\$72M	\$79M	\$85M	\$92M

Expense projections to be determined.

Comparison School Report – University of Louisville – Dr. James Jones

Financial Affairs

Through a comprehensive review of present and future needs to accommodate an increase in student numbers, the University determined that 44.7 million dollars was needed for renovation of the University of Louisville School of Dentistry. Renovation of the facility was to take place with student's classes and patient care taking place. No disruption / movement of classes / patient care was to take place. It is not the scope of this report to detail renovation of the School. Basically, "a state of the art" main clinic containing 120 chairs, with appropriate support facilities were completed. Additionally, Specialty Clinics within the School were also renovated. Several lecture halls were renovated to accommodate 120 students.

The first action was to convince university administration to allow the Dental School to retain the increased tuition received. It is university policy that all tuition reverts to central administration.

Increase in class size was to be 120 incoming students per year from the present class size of 80. All new 40 students were to be out of state applicants. The School of Dentistry receives approximately 2,300 applications per year. Tuition for these students was to be approximately \$51,000.00 per year for the 2010-2011 entering freshman class.

The estimated increase in tuition for the increased 40 students, over the next four years, was estimated to be:

Year	Number of Increased Students	Approximate additional Tuition Increase to be retained by School
One (2010-2011)	40	\$2,040,000
Two (2011-2012)	80	\$4,080,000
Three (2012-2013)	120	\$6,120,000
Four (2013-2014)	160	\$8,160,000
Total	160	\$20,400,000

Bond Issue for Renovation

The Dental School was able to obtain a bond, after paying a 6 million dollar down payment, for a total amount borrowed of approximately \$38,700,000. The bond was at 4% interest, over a 20-year period, with two payments per year. A payment in March, of interest only on the debt, was followed in October by a payment of principal and interest. The total amount of principal and interest, over the 20-year repayment period, was approximately \$44,845,000. The yearly dollar amount to reduce the loan was approximately \$2,242,000 per year. The ADFA / CFA for the School related that they additionally saved the first three payments on the loan prior to obtaining the bond. This amounted to approximately 4.5 million dollars and

allowed a “safety net” in that the increase in tuition would not realistically reach the levels required for repayment until the middle of year two.

Allocation of Increased Tuition for Renovation and Faculty/Staff needs

The Dental School administration determined that approximately 40% of the increased revenue from tuition would be allocated for debt reduction of the bond with the remaining 60% allocated to increasing faculty and staff to meet the needs of students. Faculty and staff concerns are discussed later in this report.

It was determined that, by the end of year four (2013-2014), increased income from 120 out-of-state students would amount to approximately 8 million dollars per year (recurring), and would adequately allow reduction of the bond with adequate funds available to address increased faculty and staff needs. In this report, no allocation for yearly increments of tuition was made.

Clinical Affairs

I had the opportunity of having an extended conversation with the Interim Associate Dean of Clinical Affairs concerning the increase in class size. She was more than open in discussing the challenges of the class increase. The following is a synopsis of her perceptions:

1. Scheduling, when both classes of students (240 total students) are available for clinical patient care, is going to be challenging. Close communication between clinical directors and her office will be essential. Scheduling and clinic flow will be a challenge.
2. Unless additional faculty / support staff are hired, it is going to be difficult to manage all available students in clinic in a timely manner. Support staff are going to be much easier to hire than faculty. The dental school has had a positive history of hiring support staff.
3. Identifying and establishing a significant number of income-producing external clinics are essential in identifying and meeting student needs. Again, faculty and staff requirements will present a challenge.
4. Relying less on a specific number of specific procedure requirements, and relying more on competencies.
5. Consider developing portfolios demonstrating student procedures for operative credit while in off-campus facilities.
6. Allowing discounts for medical / health science faculty, students and staff in an effort to increase patient flow for the school.
7. Expediting accepting dental insurance plans for the dental school.
8. Concentrate on aggressive measures to maintain accounts receivables at an acceptable level.

Faculty Affairs

The major concern related to faculty centered on retaining current and identifying new faculty for the School of Dentistry. This is especially important related to the 50% increase (from 320 to 480 D.M.D. students) in student numbers over the next 4 years. I was informed that University Central Administration have approved that 50% of **full time faculty appointments** could be clinical track, rather than tenured / tenure track appointments. A traditional tenure track appointment is available with a 4-day teaching / 1-day private practice. Faculty choosing this track must also practice in the faculty practice program. Only “grandfathered” faculty may practice off campus.

Present option for **part-time faculty appointments** are listed below (no limits on number / total % of faculty).

Part-Time Faculty Options	Days per Week Teaching	Benefits	Private Practice Options
Clinical Assistant Professor	4	100% Health 80% TIAA/CREF	Off Campus Only
Clinical Associate Professor	4	100% Health 80% TIAA/CREF	Off Campus Only
Clinical Professor	4	100% Health 80% TIAA/CREF	Off Campus Only
Clinical Assistant Professor	<4	None	Off Campus Only
Clinical Associate Professor	<4	None	Off Campus Only
Clinical Professor	<4	None	Off Campus Only

In an effort to recruit new, highly qualified and experienced faculty, the School has been evaluating an option of a 3-day teaching / 2-day private practice clinical track appointment. Significant student observation / interaction, both at the pre-and post-doctoral levels are encouraged in this faculty option. This allocation must be agreed to by the respective Departmental Chair and Dean prior to beginning the contract. Faculty choosing this option must practice on campus through the School's faculty practice program.

Faculty Conversations

I had the opportunity to meet with five full-time faculty during my brief visit to the School of Dentistry. Three faculty were general practice educators and two faculty were dental specialists. Four were tenured faculty and one was tenure track. The following were their general perceptions / concerns about the increase in class size:

1. All understood the need for physical renovation of the school and realized that the most expedient way to raise funding for the renovation was to increase class size.
2. All expressed concern with the increase of 40 students (a 50% increase in class size from 80 to 120). Present faculty and staff numbers were often felt to be marginally adequate for a class of 80. There was a shared perception that, as related in many dental institutions, a cadre

of present faculty is nearing retirement, and they have been experiencing difficulty in identifying new faculty for several, long vacant, faculty openings.

3. Although faculty have been told that additional faculty would be hired for the first incoming class of 120 students (2010-2011), no faculty hires have been completed as of the date of my visit. Several searches were “in progress.”
4. Although the new clinical facilities are of the highest quality, the total number of chairs available (120) will be stressed once two classes of 120 students are available for patient care. Class scheduling during the Fall 2012-2013 semester will help address this concern during that semester. During the 2012-2013 spring semester, there will be 240 students available for patient care during most regularly scheduled clinic time. Some students will be assigned to Specialty Clinics within the school, while others will provide care in off campus dental facilities / AHEC rotations. The increase in the number of off campus facilities is a major challenge to be addressed by the schools’ administration and is considered essential to the success of increasing class size.

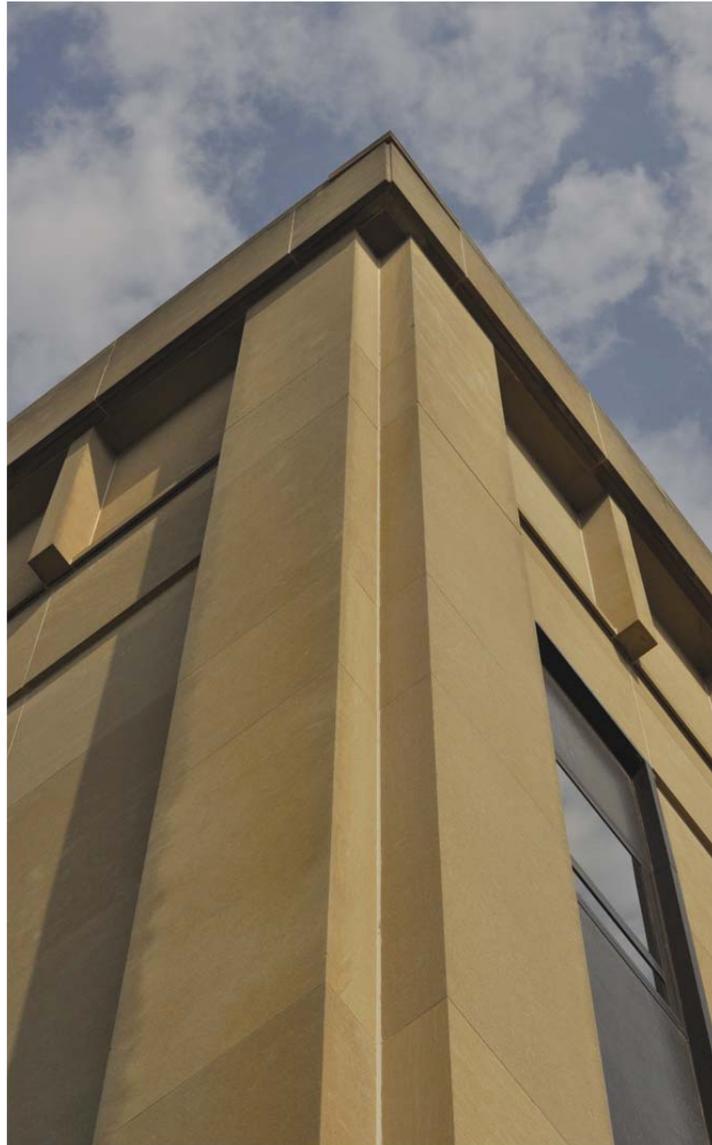
Student Conversations

I had the opportunity have lunch with three D1 students to inquire about their experiences as members of the first class of 120 students. These were three very intelligent and articulate individuals. One student was “in-state” and two were “out-of-state” students. I enjoyed our candid discussion concerning this topic. General consensus concerning their observations included the following:

1. They enjoyed the diversity of their class. Individuals from varied academic and experiential backgrounds provided a good blend of many types of students (mid 20’ to 40’s, married/single/divorced, no bachelor’s degree/BS or BA degree/graduate degree).
2. There was definitely increased competition for resources, especially related to laboratory supplies during scheduled labs and faculty appointments for individual student “one on one” faculty contact. Several class lectures and lab periods divide the class into two areas, one in the dental school and one in the medical school (across the street). Faculty availability was related as a particular problem, especially around test / practical examination periods. All three students related a sense of “loss of individuality” when all students are together in lecture and/or lab.
3. Students related that they were aware of the difficulty of attracting new faculty to the school. They expressed concern in the quality of new faculty in the present environment.
4. Based on the comments of upperclassmen, they are very concerned about the availability to find enough patients / range of procedures to successfully complete ULSD requirements to graduate on time. D4 students essentially “cannibalize” D3 students’ patients in an effort to graduate on time.
5. Students related that they understood this was a time of transition and that they were willing to accommodate the needs of the faculty and administration.

Alumni and Organized Dentistry Response

As related by the Associate Dean for Alumni Affairs, the major concern for both Alumni and Organized Dentistry is the potential number of out of state students who may elect to remain and practice within the State of Kentucky after graduation. Both groups, in general, accept the fact that increasing class size was the only viable option available for ULSD to accomplish the renovation. This is especially evident by the drastic reduction for state financial support to the School of Dentistry over yearly state funding cycles (almost every year for the last 20+ years). Further complicating the matter is the presence of the University of Kentucky College Of Dentistry in Lexington, Kentucky that competes for state dollars for dental education.



Appendices:

Appendix A: Chair Planning Committee Presentation – Dr. Jack Schaaf

Computers cannot replace clinical oversight so increased students with the same number of dental chairs translates into less clinical experience per student. The exception would be greater utilization of existing chairs by having additional clinic sessions (evenings/Saturday). Faculty and even student acceptance of this may be unfeasibly low. (I would have to concur unless there was a financial reimbursement for the extra time OR more faculty members were hired to staff the evening and Saturday clinics ..Schaaf). Enhanced software might better show all seven clinic coordinators when a chair is available and where.

In the dissemination of information to students, IUSD should aggressively pursue podcasting and searchable IUSD documents, manuals, etc. Lectures truly are becoming old fashioned and needlessly expensive. Faculty that divide their time between lecture and clinic can free up more time for the latter. (But what about faculty who only lecture?...Would they be required to work in the clinic?...Schaaf)

Fourth year student teaching assistants may be an economical way to address increased numbers in the technique courses, but my bias here is that to my observation they are poorly guided to instruct well.

There is a lot of sloppiness in our systems and my fear is that a greater number of students pushed through will only make everything worse.

A survey of the Comprehensive Care Clinics revealed the following:

Number of Chairs Seniors/Junior Students in the Clinic

- A. 16 17/13
- B. 14 16/14
- C. 13 15/14
- D. 12 13/15
- E. 12 14/14
- F. 15 18/14
- G. 15 16/16

Adding 30 students to a class would result in the addition of approximately 4 new students to each clinic. While this does not seem like many, it must be remembered that when the next class enters the clinic, the additional number would now be 8. During the regular school year, this might not be the problem that it would become at the end of the year when seniors are trying to get credits to graduate and third year students are trying to accumulate points for an acceptable grade in the clinical courses.

Additionally, the increased number of students would stretch the ability of the school to attract and admit the number of patients necessary to provide appropriate instruction for the students. A recent check of the number of patients assigned to senior students in one clinic revealed that this number ranged from ~ 35- 65 patients. Extrapolating, this would indicate that we would need an **ADDITIONAL** (35 X 30) to (65 X 30) or 1050 – 1850 patients per class. At an average of 13 patients admitted per screening session, this would result in the need for an additional 160 -280 screening sessions to supply the patients for both junior and senior classes.

The increased number of patients described above would require that a larger number of additional patients be admitted to the school, and unless the current process is changed, this would

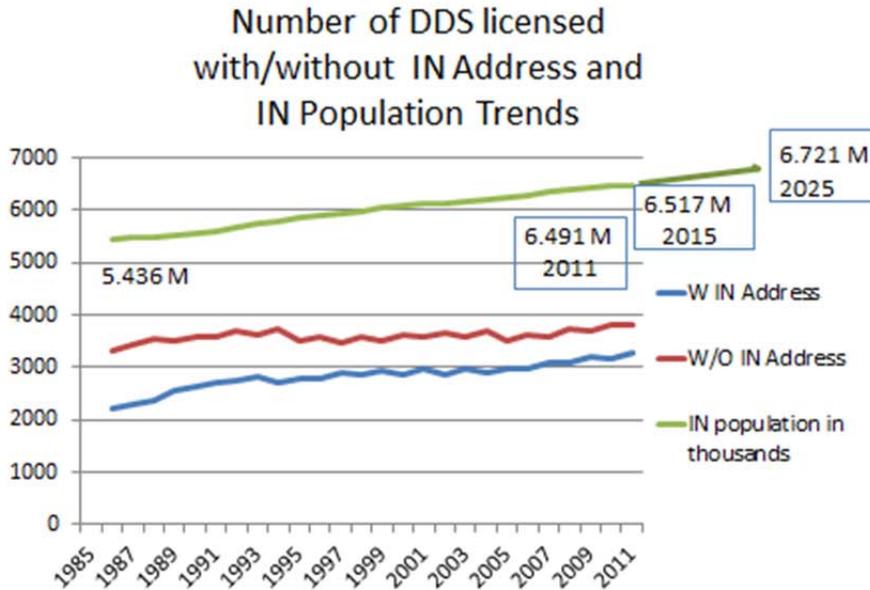
require that these patients be processed through the Screening Clinic. At this time, we are currently appointing a greater number of patients than there are chairs available (13). Additionally, during times of elevated patient need (e.g. boards) up to 28 patients have been appointed per half-day. This is also at least twice the number of students assigned to the clinic.

If it would be expected that the Screening Clinic increase its output, then the number of students working in the clinic would be expected to increase, along with the number of assigned faculty and the amount of space. This would require that non-conventional, more —specialized□ faculty members work in this clinic to perform Screenings. Additionally, extra space would have to be identified for Screening so that the other uses of the clinic (technique, OSCEs by Dr. Stuart Schrader, and Radiology) could be maintained. These are now managed in the Screening area during periods when there is no Screening.

*Dr. Schaaf presented this report to the Chairs Planning Committee Re Increased DDS enrollment Subcommittee 4-7-2011 The first 4 points were those that were sent to Dr. Schaaf when he surveyed several of the Comprehensive Care clinicians and the remainder (5, 6 and 7) are developed by Dr. Schaaf as Director, IUSD Screening Clinic.

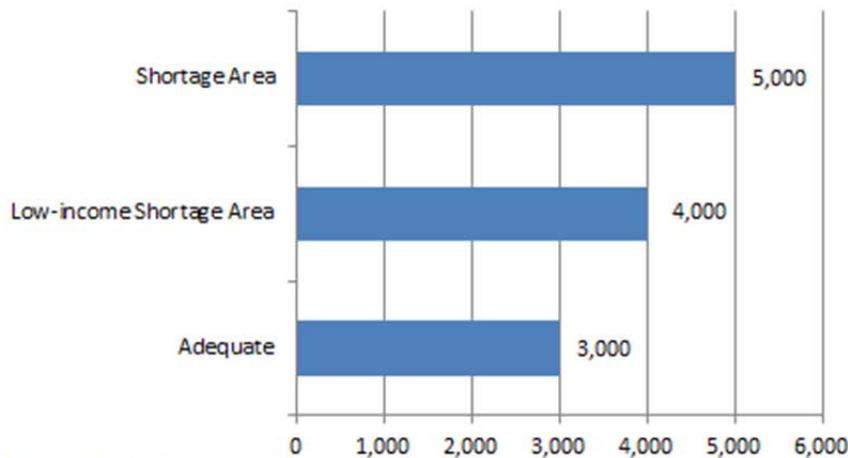
Appendix B: Indiana Dental Workforce Profile: Years 2015 to 2025

– Dr. Karen Yoder



Sources: Indiana Professional Licensing Agency and U.S. Census Bureau

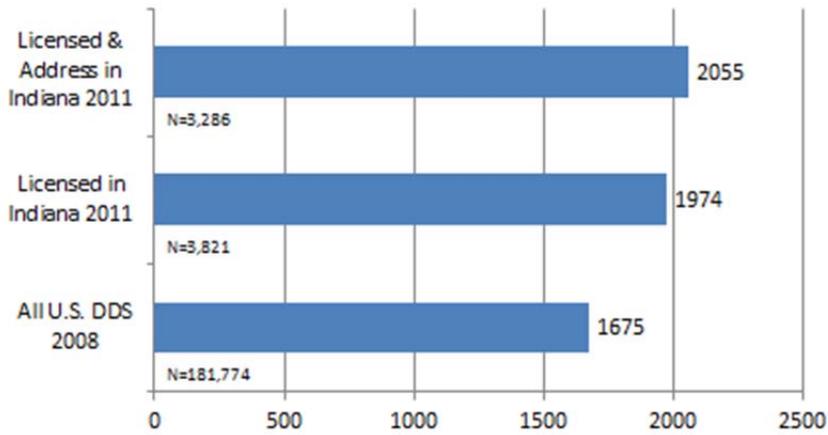
Ratios Required for Federal Dental Health Professions Shortage Area Designation and Adequacy 1:x (dentist: population) by County or Geographic Area



Source: Health Resources and Services Administration

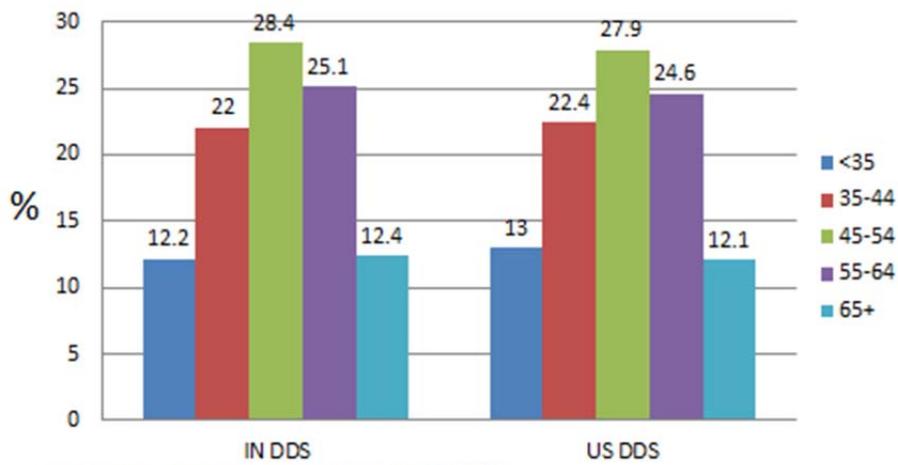
Appendix C: Indiana Dental Workforce Profile: Years 2015 to 2025
 – Dr. Karen Yoder

Ratio of Professionally Active Dentists to Population (1:x)



Sources: Indiana Professional Licensing Agency and ADA Survey Center Report 2008

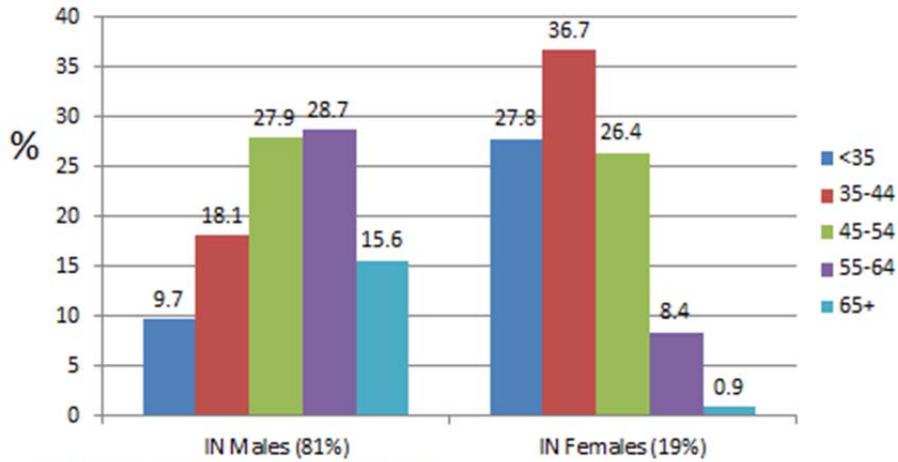
% Distribution of US and IN Dentists By Age



Source: Distribution of Dentists in the US, 2008. ADA Survey Center

Appendix D: Indiana Dental Workforce Profile: Years 2015 to 2025
 – Dr. Karen Yoder

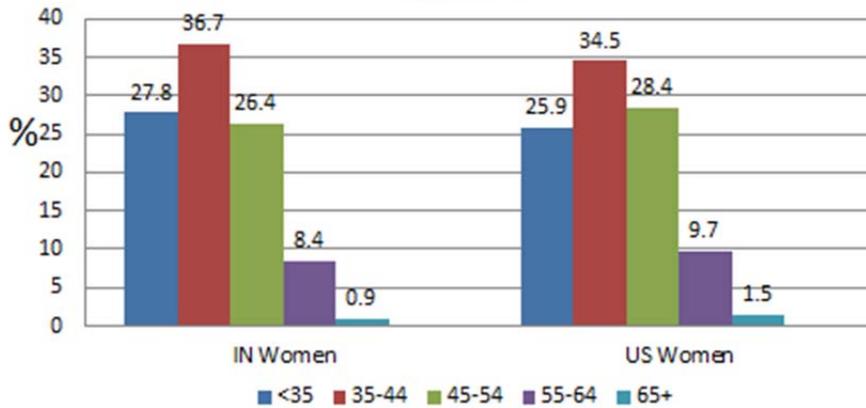
% Distribution of Indiana Male and Female Dentists by Age



Source: Distribution of Dentists in the US, 2008. ADA Survey Center

% Distribution of US and IN Female Dentists by Age

Chart Title



Source: Distribution of Dentists in the US, 2008. ADA Survey Center

Appendix F:

IUSD Strategic Plan 2010 – 2013

MISSION STATEMENT - The mission of the Indiana University School of Dentistry (IUSD) is to advance the oral health and general overall health of the people of the State of Indiana and others worldwide through excellence in teaching and learning, research and creative activities, patient care, civic engagement and service.

VISION - To be one of the best Dental Schools (in the U.S.) for the 21st Century.

VALUES

- **EXCELLENCE**
Striving to achieve the highest standards of performance.
- **INTEGRITY**
Adhering to the ethical principles in all activities and relationships.
- **SCHOLARSHIP**
Pursuing, developing, applying and disseminating new knowledge and skills.
- **PATIENT-CENTERED CARE**
Providing quality comprehensive care and service to each patient.
- **COLLABORATION**
Working with others in a spirit of mutual trust, respect, and collegiality.
- **DIVERSITY**
Acknowledging the enrichment of our environment through the diverse backgrounds and views of students, faculty, staff and patients.
- **STEWARDSHIP**
Utilizing all human, material and financial resources efficiently and wisely.

STRATEGIC GOALS

Education: Define and implement the best curricula to graduate highly competent oral health professionals in the State of Indiana for the 21st Century.

- Objective 1 - Change the structure of how curriculum is developed and implemented.
- Objective 2 - Create and implement an assessment strategy to document educational excellence.

Research: Increase the overall research and scholarly productivity

- Objective - Increase research productivity by 50% mainly by increasing federal grants by \$4 million over the next five years.

Transformational: Design, renovate, expand and build appropriate educational, research and patient care facilities in order to realize the vision.

- Objective 1 - Re-define the organization of Indiana University School of Dentistry readiness and preparation for maximizing the potential of the facilities.
- Objective 2 - Creation of overall facilities plan.

Patient Care: Provide comprehensive clinical experiences with evidence-based technologies to produce the most competent practitioners.

- Objective – Develop school-wide comprehensive marketing plan

Community Service: Serve the oral health needs of residents of Indiana and beyond, throughout the stages of life, including individuals with special needs and those in diverse settings.

- Objective – Prepare a dental workforce that will educate, advocate and provide appropriate clinical oral health services in varied circumstances for all populations.

Appendix G:

Pre-clinical and Clinical Space Required

Being a very specialize resource, the Pre-clinic bench and simulator lab will be one of the most challenging areas to deal with. Currently the pre-clinic lab is utilized 8 half days per week. If the lab size remains the same, and courses were offer twice, there aren't enough half days available even utilizing evenings sessions.

The idea of utilizing S315 as a 25 bench “extension “ of the preclinical and simulator lab was not supported by the Pre-clinic lab group of instructors. Issues sited were that this set of remote students would feel isolated from the class, not have direct access to the Module Director, not have wet lab facilities (casting machines, etc.), would need newer simulators, and require additional faculty to maintain the same faculty / student ratio. Using S315 would also have a significant impact on both Dental Hygiene and Dental assisting which currently utilize this lab.

The Pre-clinic lab group suggested that they would consider giving up the 10 instructor benches giving a total of 114 benches in SB10. They then suggested that 16 benches could be built in part of the lounge area (but would prefer to put all 30 benches in the lounge and not lose the instructor benches). They also felt that there was probably enough room to add 26 simulators in the new Simulator lab. This number still does not address the potential for repeating D1 and D2 students or equipment breakdown.

The group was asked to explore whether they thought that their individual courses could be structured to have half of the class in the bench lab while the other half of the class could be in the Simulator lab.



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