

Utah Family Physician Workforce Supply Projections: 2003-2020

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Introduction

Primary care is vital for an effective and affordable health care system.^{1- 10} In US healthcare, family physicians are integral to the provision of primary care.¹¹ In the wake of recent warnings about upcoming physician shortages¹² and especially about approaching primary care physician shortages,^{13 -16} the American Academy of Family Physicians (AAFP) developed the “Family Medicine Workforce Reform” in 2006. The recommendations of the reform report were founded on a needs-based national workforce study developed by a team of consultants from the University of Utah (U of U) and the Utah Medical Education Council (UMEC).¹⁷

One of the major recommendations of the reform report, and a current policy of the AAFP, is to continuously assess the family physician workforce in the nation, including its geographic distribution. As a first step of implementation of this policy, the team of consultants from the U of U and the UMEC has begun to develop state and regional level family physician workforce data. The current report, “Utah Family Physician Workforce Supply Projections: 2003-2020” is the first step in this process, quantifying the current family physician workforce supply in Utah and estimating the future availability of the workforce.

The results of this Utah family physician supply study indicate a steady decline in the family physician workforce availability through 2020. In the best case scenario, Utah will be 247 family physicians less in 2020 than in 2003. The 2003 family physician cohort in Utah, according to the UMEC data, results 26.5 physician per 100,000 Utah citizens¹⁸, while the AAFP recommends a ratio of 41.6 family physicians per 100,000 United States (U.S.) citizens.

The 2003 UMEC physician workforce report indicates that Utah will need at least 35 new family physicians per year in order to maintain its 2003 service capacity.¹⁹ This gap between the national and state workforce to population ratios is too big to be offset by the fact that Utah is consistently ranked among the top 10 healthiest states in the U.S. The growing and aging population in Utah and the globally increasing emphasis on disease prevention and reduction of health care costs will further increase the demand for family physicians and other primary care providers in the state and the impending primary care workforce shortage in the nation will serve to exacerbate this challenge in Utah.

Methodology

We developed a supply model to project the number of family practitioners entering the Utah Physician workforce through 2020 which is operationalized through the following formula:

$$P_{x+1} = P_x + I_{x+1} - (R_{x+1} + D_{x+1} + E_{x+1}) \text{ where,}$$

- P_x = Family physician cohort in the year x . The baseline family practitioner cohort for the year 2003 (P_{2003}) is 641. These data are obtained from the UMEC 2003 physician workforce study. The UMEC estimates that in 2003, 14.3% physicians of the Utah physician workforce were family physicians.
- I_{x+1} = Number of family physicians immigrating into Utah in the year $x+1$. These data are obtained from Utah Department of Occupational and Professional Licensing (DOPL) for the years 2003-2006. The UMEC 2003 physician workforce study data indicate that only about 60.6% of the Utah DOPL licensed physicians provide services in Utah. Also, the Utah DOPL data do not include specialty details in the physician licensing data. To adjust these physician population license data for family physicians practicing in Utah, correction factors of 0.6059 and 0.143 are applied. The average number of immigrants entering the states during 2003-2006 is applied to the 2007-2020 period.

The family practice residency programs in Utah graduated about 27.3 students per year during 2003-2006. The retention rate of these programs is about 50-60%. Since these students are licensed by the Utah DOPL to provide patient care during residency, they are not counted separately.

- R_{x+1} = Number of family physicians retiring in the year $x+1$. These data, the physician self-reported retirement data, are obtained for the years 2003-2020 from the UMEC 2003 physician workforce study.
- D_{x+1} = Number of family physician deaths in the year $x+1$. These data are estimated based on the physician deaths reported by Utah DOPL. To adjust these physician population license data for family physicians practicing in Utah, correction factors of 0.6059 and 0.143 are applied.
- E_{x+1} = Number of family physicians emigrating from Utah workforce in the year $x+1$. Emigration of family physicians from Utah during 2003-2006, period for which data are available, is computed using the following formulae:

$$E_{x+1} = e_{x+1} + s_{x+1} - R_{x+1} + rcf, \text{ if } x+1 \text{ is even (even year)}$$

and

$$E_{x+1} = e_{x+1} + s_{x+1} - R_{x+1}, \text{ if } x+1 \text{ is odd (odd year).}$$

Here, e_{x+1} is the number of Utah family physician licenses expired in the year $x+1$; s_{x+1} is the number of Utah family physician licenses surrendered in the year $x+1$; and R_{x+1} is the number of family physicians retiring in the year $x+1$. The number of retirements is subtracted from the emigration count to avoid double counting.

rcf - Resident Correction Factor. Utah physician licenses are renewed every even year. In a full cycle of renewal, using a conversion factor of one resident is equivalent to 0.15 Full Time Equivalents (FTE), about 4.13 FTE family physician residency training program graduates leave the workforce. This loss is not captured because of the active licenses held by these graduates until the end of the next renewal cycle. To adjust for this, the *rcf* is applied in every even year.

From 2007, the emigration is projected using two different models:

- **Emigration Model 1:** For the years 2007-2020, emigration data are projected as follows:
 - Emigration data for even years are assumed to be the average emigration in the even years, 2004 and 2006, for which data are available.
 - Emigration data for odd years are assumed to be the average emigration in the odd years, 2003 and 2005, for which data are available.
- **Emigration Model 2:** For the years 2007-2020, emigration data are projected as follows:
 - Emigration data for even years are assumed to be the average emigration in the even years, 2004 and 2006, for which data are available.
 - The average emigration in odd years, based on data available for 2003 and 2005 (50 physicians per year), is 7.9% of the average family physician cohort size during 2003 and 2005 (633). Using this percentage, emigration data for odd years are projected as 7.9% of the previous year's cohort.

Results

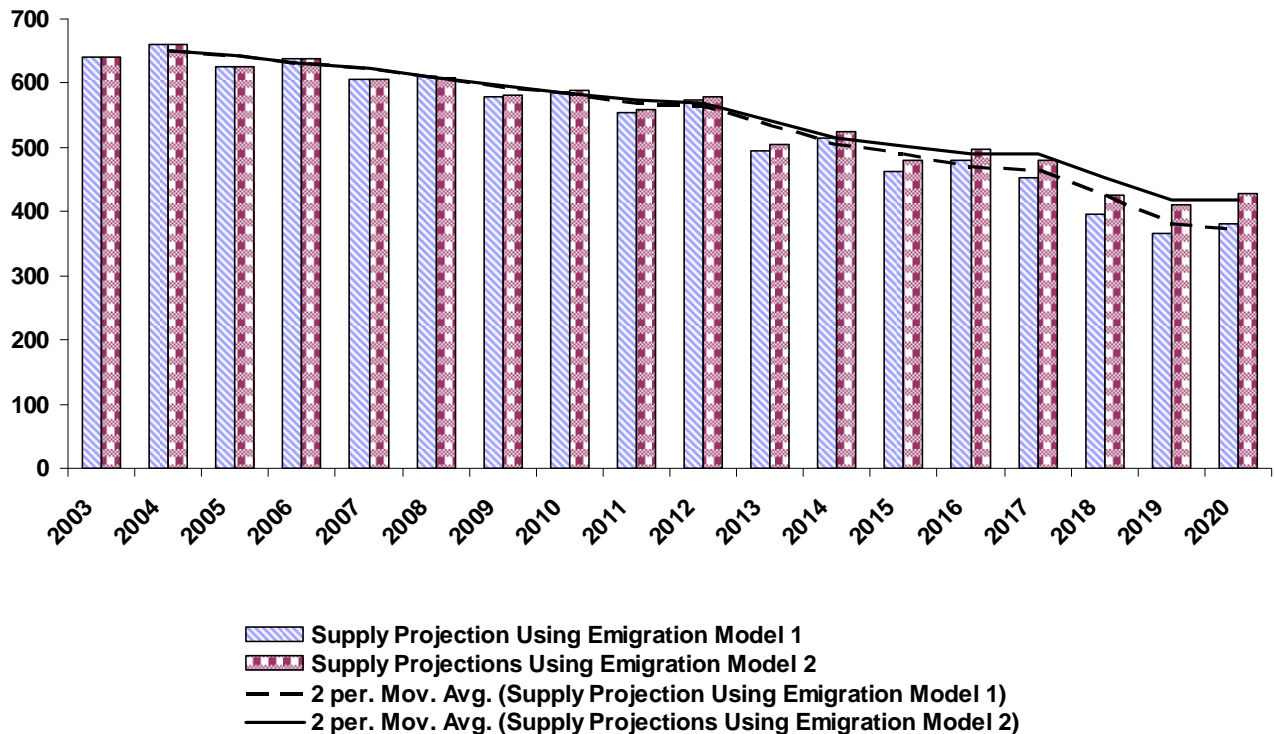
Both the supply models indicate a steady decline in the number of family physicians. According to the projections, in 2020, the family physician workforce in Utah might see a 33.4%-40.4% reduction in its current size.

A major plunge in the workforce occurs in the year 2013 and continues through 2018 due to a large number of family physicians planning to retire in this period. A comparative analysis of the UMEC physician self-reported retirement data from 1998 to 2003 showed that most physicians retired within a year of their planned/reported retirement year.

The 2003 UMEC physician workforce study reports the average retirement age as 65 years. Based on the age distribution of family physicians in 2003, anywhere between 34-51% of family physicians should leave the workforce in the next two decades. This translates to an estimated loss of 218-327 physicians, or 11-16 family physicians per year for the next twenty years. Assuming that only about 187 family physicians (11/year for 17 years) will retire by the year 2020, the resulting number of family physicians in 2020 will still be about 148-183 physicians less than its 2003 cohort.

The model uses a constant number of family physicians - the average family physician immigration from 2003 to 2006 - immigrating into the workforce each year through 2020. A sensitivity analysis was conducted to show what will happen if the immigrant data for 2003-2006 were repeatedly applied to the years 2007-2020 was done. This resulted in a further drop in the number of family physicians by the year 2020 projected by both the supply models.

Figure 1: Utah Family Physician Workforce Supply – 2003-2020



Sensitivity analyses were also performed by substituting two simple linear-regression based immigration data models - one regression model with time as an independent variable and the other regression model with Utah population projections made by the Governor's Office of Planning and Budget (GOPB) as the independent variable. Both the regression models resulted in a much worse attrition in the workforce by 2020 than that projected by the models discussed in this report. Given these results, assuming that family physicians will continue to immigrate into Utah at the current rate seems to be a more viable and conservative approach.

Limitations

Like any other projection, certain limitations apply to this supply model. The model neither differentiates between part-time physicians and full-time physicians nor considers the life-style adjustments of the practicing physicians. These adjustments will further reduce the FTE count in the current and future family physician workforce. The model does not address the efficiency of physician practice – the Eighth Center on Graduate Medical Education (COGME) Report projected a 20% increase in physician efficiency (productivity) by the year 2020. This improved efficiency will translate 1.0 FTE in 2000 to be equivalent to 1.2 FTE in 2020 and will add more FTEs per physician body, when considered in the model. The model does not address the prevalent physician maldistribution issue in the state and does not consider the effects of a reduced class size in the family physician residency program.

Conclusion

Given the fact that a health care system driven by family physicians has reduced health care costs, better patient care, more emphasis on preventive care, and above all, reduced health care disparities, it is essential to maintain an adequate level of family physician workforce to meet the growing needs of the population. This supply study indicates that Utah will lose at least a third of its family physician workforce by the year 2020. Efforts to replace this loss, to improve the efficiency of the existing workforce and to attract more family physicians into the state to meet the increasing demand should be in place already. Given a national shortage of primary care physicians, it is essential the necessary steps are taken in a timely manner to ensure an adequate family physician workforce to address the needs of Utahns.

Final Points of Consideration

1. To meet the AAFP recommended national family physician to 100,000 population ratio of 41.6, Utah will need an additional 78.7 family physicians per year for the next 13 years. Does Utah need to maintain the 41.6 family physician to population ratio? How would this be affected if universal health coverage comes into effect?
2. The New Model of Family Medicine recommended by the AAFP will affect the quality and efficiency of family practice in the state.^{20,21} Such an improvement might boost the morale of family physicians and rejuvenate the dying interest in family medicine, thus attracting more physicians to family practice. Can this model be implemented in Utah within a reasonable time frame?
3. How does the mid-level provider workforce affect the productivity of and the demand for family physicians in Utah?
4. How will future improvements in technology impact the capacity of family practice in Utah?
5. Family physicians have a track record of providing services to the rural communities and to the community health centers more than any other primary care specialty.^{22,23} What is the impact of a shortage on the rural pockets of Utah compared to the urban areas? Can more family physicians be diverted to the rural pockets of the state by increasing the amount of procedural work undertaken by the family practitioners in the urban areas?

APPENDIX A: Bibliography

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APPENDIX C: Data for Supply Model Components

Family Physician Immigration Data

<i>Year</i>	<i>No. of Licenses Endorsed by DOPL</i>	<i>60.59% Utah Correction Factor</i>	<i>14.3% Family Physician Correction Factor</i>
2000	136	82	12
2001	206	125	18
2002	181	110	16
2003	277	168	24
2004	286	173	25
2005	315	191	27
2006	218	132	19

Source: No. of Licenses Endorsed – Department of Occupational and Professional Licensing
 Correction Factor for physicians practicing in Utah – Utah Medical Education Council
 Correction Factor for Family Physicians in Utah – Utah Medical Education Council

Family Physician Retirement Data:

<i>Year</i>	<i>No. of Family Physicians Retiring</i>
2003	9
2004	3
2005	1
2006	7
2007	5
2008	20
2009	3
2010	17
2011	5
2012	4
2013	51
2014	3
2015	25
2016	7
2017	0
2018	79
2019	4
2020	7

Source: Utah Medical Education Council

Family Physician Death Data:

<i>Year</i>	<i>Deceased - DOPL</i>	<i>60.59% Utah Correction Factor</i>	<i>14.3% Family Physician Correction Factor</i>
2000	1	1	0
2001	12	7	1
2002	5	3	0
2003	37	22	3
2004	10	6	1
2005	14	8	1
2006	5	3	0

Average deaths per year 1

Source: No. of Licensees Deceased – Department of Occupational and Professional Licensing
 Correction Factor for physicians practicing in Utah – Utah Medical Education Council
 Correction Factor for Family Physicians in Utah – Utah Medical Education Council

Family Emigration Data:

<i>Year</i>	<i>No. of Licenses Expired -DOPL</i>	<i>No. of Licenses Surrendered -DOPL</i>	<i>Expired+ Surrendered</i>	<i>60.59% Utah Correction Factor</i>	<i>14.3% Family Physician Correction Factor</i>	<i>Retired</i>	<i>Adj(Expired+ Surrendered)- Retired</i>	<i>rcf</i>	<i>Emigration</i>
2003	550	2	552	333	48	9	39	0	39
2004	0	4	4	0	0	3	-3	11	8
2005	711	3	714	431	62	1	60	0	60
2006	0	3	3	0	0	7	-7	11	4

Source: No. of Licenses Expired – Department of Occupational and Professional Licensing
 No. of Licenses Surrendered – Department of Occupational and Professional Licensing
 No. of Retirements – Utah Medical Education Council
 Correction Factor for physicians practicing in Utah – Utah Medical Education Council
 Correction Factor for Family Physicians in Utah – Utah Medical Education Council