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# By the Numbers

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**S**ome concern has been expressed about whether there will be enough orthodontists in the future to treat the number of potential orthodontic patients. This so-called "manpower" problem is based on an assumption that the number of orthodontists will decrease as the population continues to increase.

Although the past may not be prologue, past data on orthodontic graduations, retirements, and deaths, supplemented by a survey of retirement expectations and pertinent population projections and forecasts, may provide some insight. For so serious a question, it is unfortunate that most of the supporting data is imprecise—yet the specialty deserves the best approximations we can make.

## Number of Orthodontists

There is no perfect way to determine the present number of practicing orthodontists in the United States, because there is no perfect registry. The AAO reported 8,200 active members in 1997, but not all orthodontists are members. The ADA, which accepts self-classification, reported 8,869 practicing orthodontists in 1995 (the latest figure available). The number of other dentists who may perform orthodontic treatment is impossible to estimate.

With those caveats in mind, it seems likely that there are approximately 9,000 full-time practicing orthodontists in the United States at the present time.

## Number of Orthodontic Graduates

Table 1 shows the number of orthodontic students and graduates from 1968 to 1996 (the available data). From 1977 on, graduations have been stable, averaging 276 a year. Unfortunately, there are no data on the number of foreign graduates who return to their home countries. Nor do we know the number of U.S. graduates who do not go into private practice, but instead enter the

military, teaching, or other professions.

If an arbitrary allowance of 20% is made for the number of graduates who do not enter private U.S. practice, the net number of new U.S. orthodontists has averaged 218 a year over the last 20 years.

## Numbers of Retirements and Deaths

Table 2 lists the number of practicing orthodontists who retired or died from 1974 to 1998. During the past three years, an average of 128 retired and 13 died. If the average number of U.S. orthodontic graduates is 218 a year, and if the average number of practicing orthodontists who retire or die is 141, that still leaves a positive annual growth of 77 orthodontists per year.

According to the JCO Practice Studies, the median age of orthodontists increased by only six years from 1981 to 1997, reaching 48 in 1997. It seems unlikely that the percentage of annual deaths will increase significantly in the foreseeable future. Therefore, the balance will likely hinge on the future numbers of retirees and future population growth.

## Retirement Projections

In the recent JCO Orthodontic Retirement Survey (April 1999), the number of orthodontists who expect to retire in each calendar year is erratic, but evens out remarkably when five-year intervals are considered (Table 3). Only an unusually high number of projected retirements for the year 2008 prevents the percentage of retirees in each five-year interval for the next 20 years from being approximately 19%. Thus, the survey suggests that orthodontic retirements will occur fairly evenly over the next two decades.

The responses indicate that an average of 359 orthodontists plan to retire each year between 1999 and 2008, and an average of 273 a year between 2009 and 2018. This means that retirements could triple in the next decade over



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the 125 a year reported in recent years by the AAO. That is conceivable, considering that most of the respondents to the JCO Retirement Survey have planned, saved, and invested for retirement during a period of unprecedented gains in the

stock market, and considering that the average projected retirement age in the survey is 62.

Of course, a stock market decline or other economic circumstances could alter these plans. In addition, selling a practice, which is problem-

**TABLE 1  
NUMBERS OF ORTHODONTIC STUDENTS AND GRADUATES**

Year	Total Enrollment			First-Year Enrollment			Graduates		
	Dent.	Non-Dent.	Total	Dent.	Non-Dent.	Total	Dent.	Non-Dent.	Total
1968	554		554				238		238
1969	621		621	309		309	286		286
1970	591		591	291		291	295		295
1971	644	8	652	317	3	320	334	4	338
1972	658	62	720	324	28	352	323	29	352
1973	656	47	703	317	28	345	316	32	348
1974	629	56	685	304	26	330	336	24	360
1975	584	51	635	290	24	314	328	28	356
1976	547	54	601	259	27	286	288	25	313
1977	544	52	596	272	24	296	261	26	287
1978	544	53	597	259	25	284	256	24	280
1979	524	53	577	259	24	283	250	27	277
1980	517	51	568	260	23	283	234	22	256
1981	528	49	577	264	24	288	261	23	284
1982	541	49	590	262	22	284	266	17	283
1983	542	53	595	271	26	297	261	20	281
1984	542	50	592	259	22	281	269	20	289
1985	561	59	620	263	31	294	251	21	272
1986	557	69	626	266	35	301	259	30	289
1987	578	78	656	265	37	302	250	28	278
1988	576	73	649	261	33	294	252	39	291
1989	539	85	624	252	43	295	267	36	303
1990	549	78	627	243	37	280	217	40	257
1991	554	78	632	249	36	285	235	35	270
1992	553	70	623	246	33	279	233	40	273
1993	545	76	621	232	34	266	235	32	267
1994	536	70	606	235	28	263	225	34	259
1995	571	71	642	244	32	276	215	32	247
1996	572	82	654	245	28	273	245	32	277

Source: ADA Survey Center.

**TABLE 2  
NUMBER OF ORTHODONTISTS  
RETIRED AND DIED**

Year	Retired	Died
1974	35	20
1975	19	21
1976	32	15
1977	31	12
1978	37	17
1979	16	11
1980	NA	9
1981	68	19
1982	40	12
1983	34	10
1984	36	18
1985	64	15
1986	72	26
1987	128	16
1988	59	24
1989	120	31
1990	85	32
1991	130	24
1992	219	66
1993	112	24
1994	87	13
1995	76	11
1996	131	14
1997	124	11
1998	129	15

Source: AAO (active members).

atic even at the present level of retirement, could become impossible for many orthodontists in the future. Phase-out would still be an option for those not relying on the sale of the practice as a significant part of retirement capital.

If the net annual number of orthodontic graduates remained the same, the annual number of deaths increased by one-third, and the number of retirements projected in the JCO Retirement Survey turned out to be accurate, there would still be nearly 7,500 orthodontists in 10 years and more than 6,700 orthodontists in 20 years. The only remaining major variable needed to determine the ability of the specialty to meet the future demand for orthodontic services is population growth, with emphasis on the potential orthodontic population.

**TABLE 3  
PROJECTED RETIREMENTS**

Year	Pct. Retiring	Cumulative Pct.
1999	1.9	
2000	4.9	
2001	3.0	
2002	4.9	
2003	3.8	18.5
2004	1.5	
2005	3.8	
2006	5.7	
2007	4.5	
2008	8.3	23.8
2009	4.5	
2010	2.6	
2011	4.5	
2012	3.8	
2013	3.8	19.2
2014	4.9	
2015	4.2	
2016	4.5	
2017	2.3	
2018	3.4	19.3
2019	2.3	
2020	3.0	
2021	2.3	
2022	2.6	
2023	2.3	12.5
2024	1.5	
2025	1.0	
2026	1.9	
2027	0.4	
2028	1.0	5.8
2029	0.4	
2030	0.0	
2031	0.0	
2032	0.0	
2033	0.4	0.8

Source: JCO Retirement Survey.

**Population Growth**

Children 9-17 years of age will undoubtedly continue to constitute the bulk of potential orthodontic patients. Within certain limits, it is possible to predict what the 9-17 population will be a number of years down the road. For example, children who were less than 9 years old in

**TABLE 4**  
**PROJECTION OF POPULATION AGE 9-17 (IN THOUSANDS)**

Under 9 in year:	1990	1992	1994	1996	1997
	36,901	37,780	38,465	38,727	38,804
9-17 in year:	1998	2000	2002	2004	2005

Source: U.S. Census Bureau, Current Population Reports, Series PPL 57.

1990 were 9-17 years old in 1998 (Table 4).

It is somewhat inaccurate to translate 1990 births into 1998 9-year-olds, because the numbers are altered by deaths and immigration. In general, however, it can be assumed that the orthodontic child population will increase as far into the future as we can see, but that the increase will be small—5% over the next seven years. Beyond 2005, the birth rate in the United States is likely to continue to be cyclical, within a range of roughly 3.5-4 million annual births.

It is questionable whether there is any need or advantage to using theoretical data to project population growth far into the future. The Census Bureau makes low, median, and high estimates, but these are only ranges of possibilities, based on assumptions about births, deaths, and migration. The median projections currently indicate a gradual increase of 10% in the next 10 years and 20% in the next 20 years, with a slightly disproportionate amount of those increases being attributable to the African-American and Hispanic-American populations. The disparity becomes wider in the Census Bureau projections between 2020 and 2050. In reality, however, growth in the Hispanic population from births and from legal and illegal immigration is very difficult to predict.

Adults represent a vast population of potential orthodontic patients, and the present adult population seems to be more conscious of appearance than ever before. Nevertheless, the percentage of adult patients has been declining in recent JCO Practice Studies, and it seems unlikely that it will increase substantially in the near future, barring some technological or biological breakthrough in the delivery of orthodontic treatment.

### Summary

Any statement about the ability of the specialty to meet the future demand for orthodontic care based merely on a ratio of the projected

number of orthodontists to the projected population is an oversimplification. Still, some inferences can be drawn from the data presented in this article. To be as prudent as possible, we will limit the scope of the discussion to the next 10 years.

1. It seems likely that the annual number of orthodontic graduates will remain about the same.
2. Considering the slow increase in the average age of orthodontists, the death rate will increase slightly, but not significantly.
3. The average annual number of retirees will be somewhere between 125 (the current rate) and 359 (the maximum projected by the JCO Retirement Survey).
4. The above assumptions would leave no less than 7,500 practicing orthodontists in the United States in 10 years.
5. The number of children age 9-17 will increase by 5-10%.

In a worst-case scenario, could 7,500 orthodontists meet the orthodontic demand 10 years from now? The 1997 JCO Orthodontic Practice Study reported the annual median number of case starts to be 180. Multiplied by 9,000 orthodontists, that would equal 1,620,000 case starts. If we project a 10% increase in demand, there could be 1,782,000 case starts 10 years from now—an average of 238 starts per year for 7,500 orthodontists. Respondents to the Practice Studies have consistently indicated that they could handle 50 additional case starts with no increase in staff or facilities, which would mean current orthodontists could accommodate an average of 230 case starts. Moreover, orthodontic productivity is likely to increase due to delegation and improved technology.

In conclusion, even if the sharp increase in the number of annual retirements anticipated in the JCO Retirement Survey turns out to be correct, it seems unlikely that it will affect the ability of the specialty to accomplish its mission in the foreseeable future. □