

# 2007 JCO Orthodontic Practice Study

## Part 1 Trends

ROBERT G. KEIM, DDS, EDD, PHD  
EUGENE L. GOTTLIEB, DDS  
ALLEN H. NELSON, PHD  
DAVID S. VOGELS III

This article describes trends in the economics and administration of U.S. orthodontic practices over the quarter-century since the first biennial JCO Orthodontic Practice Study was conducted in 1981. Future installments in this series will cover specific policies and procedures that appear to be related to practice success, as expressed by net income, as well as to practice growth. Subscribers to JCO can access the complete Practice Study tables and questionnaire on our website at [www.jco-online.com](http://www.jco-online.com), using the link from this article in the Online Archive.

### Practice Activity

The orthodontic economy bounced back after two consecutive surveys of slow growth. Compared to the 2005 Study, median gross income was up by about 15% and median net income by nearly 10% (Table 1). Median operating expenses also increased by 14%, however, so that the median overhead rate rose to its highest level since 1997, when it was also at 55%. After four years of declines, the median number of case starts increased by 11% in the current Study, although total active cases were up by only 4%. The percentage of adult cases dropped slightly, demonstrating a rise in the average number of adolescent patients.

The reported increase in child case fees was

the lowest ever—7% over the two years between 2004 and 2006—but the median child fee actually increased by only about 4%. The median adult fee rose by 6% since the 2005 Study. The percentage of practices accepting assignment of benefits returned to the level of its 2001 high after declining in the last two surveys. More than three-quarters of the respondents—the highest percentage ever—reported offering third-party financing such as Orthodontists Fee Plan.

For the first time, more than half the practices surveyed said they billed their patients routinely. The median number of patients per day stayed at 50, as in every Practice Study since 2001, and the number of additional patients that could be handled without increasing the size of staff or facility also stayed at 50, as in every survey to date. As in the 2005 Study, however, respondents said they could accommodate a median of 100 additional patients by hiring more staff members.

### Years in Practice

The median number of years in practice continued to increase, reaching 20 for the first time, but the median age of Practice Study respondents remained at 50 for the third consecutive survey. Practice income dropped off more sharply after 25 years in practice than was noted in the past four

Dr. Keim is Editor, Dr. Gottlieb is Senior Editor, and Mr. Vogels is Managing Editor of the *Journal of Clinical Orthodontics*, 1828 Pearl St., Boulder, CO 80302. Dr. Nelson is Director and Research Consultant, Nelson Associates, Nederland, CO.



Dr. Keim



Dr. Gottlieb



Dr. Nelson



Mr. Vogels

surveys, as overhead increased while numbers of cases declined (Table 2). With the average practice age increasing, peak production now appears to be reached at about 20 years in practice.

Compared to the 2005 Study, median gross and net income declined only among respondents who had been in practice longer than 25 years. Median case starts increased in every practice age category, while median active cases decreased in only the newest and oldest practices. As in previ-

ous surveys, there was no noticeable relationship between the number of years in practice and the child or adult case fees charged.

### Geographic Region

Only the Middle Atlantic and Mountain regions showed declines in median gross income since the 2005 Study, while East South Central practices stayed at the same level (Table 3). Middle

### METHODOLOGY AND LIMITATIONS

The 2007 JCO Orthodontic Practice Study questionnaire was mailed on April 5, 2007, to 9,598 orthodontists—representing virtually every specialty practitioner in the United States. Another questionnaire was mailed as a reminder to the same group on May 2. A total of 661 forms were returned, for a response rate of 7%.

An independent company was used to record data from the questionnaires, and analysis was conducted using the Statistical Package for the Social Sciences.

As in every Practice Study to date, survey forms that were blank or illegible were discarded. In addition, to ensure that only full-time solo practices were included in the tabulations, any respondents with less than one year in practice, with more than one owner, or with gross income of less than \$60,000 and fewer than 50 case starts in 2006 were excluded from the analysis. After those general exclusions, 555 questionnaires remained. Finally, any individual responses that were clearly erroneous or outside the range of possibility were recoded as missing so they would not inappropriately affect the calculations.

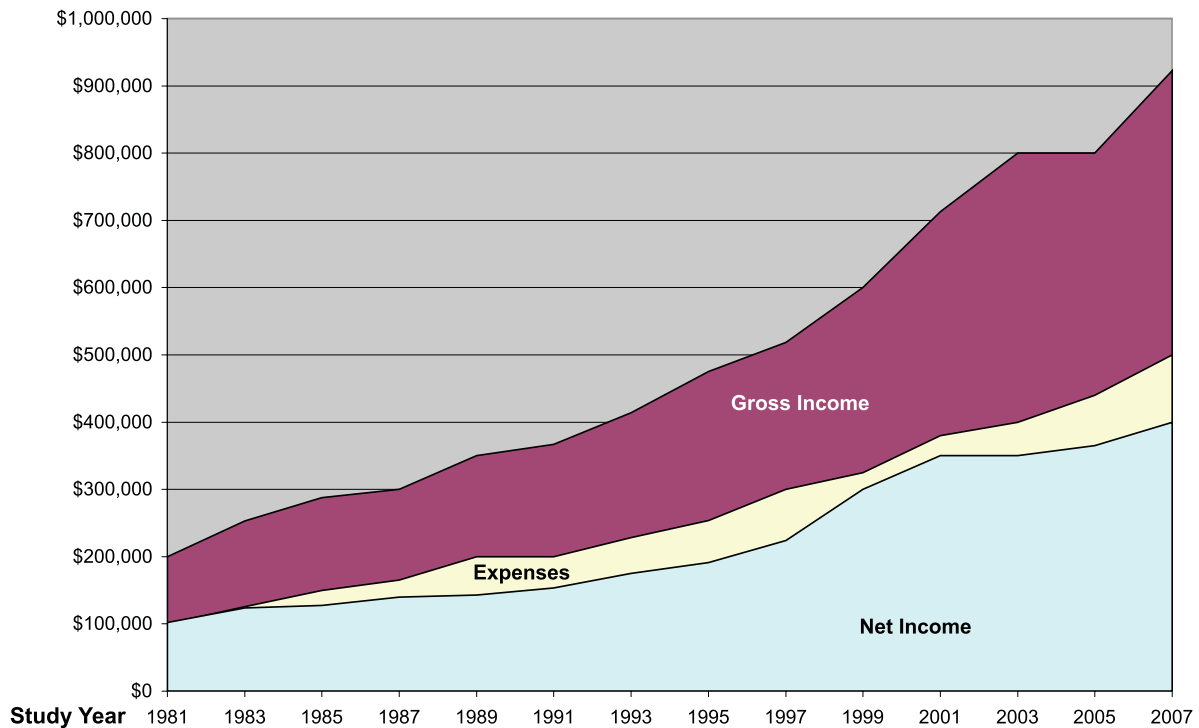
To improve the clarity and readability of the tables of trends in this article, some of the biennial Practice Study results contained in previously published reports are omitted. In general, however, the trends have been fairly uniform from one survey to the next. Annual amounts such as income and numbers of cases refer to the preceding calendar year, which, in this article, is 2006.

We generally prefer to report the median—the middle response when all responses are sorted from highest to lowest—instead of the mean—the arithmetic average. This is because the median is less likely than the mean to be affected by extremely high or low responses. Because each median is calculated independently, however, the amounts reported for certain categories, such as net income and expenses, may not add up to the expected total, such as gross income.

Mean figures must be used instead of medians for calculations of statistical significance. We have established the significance level in this Study at “p” = .01, rather than the more common level of .05, because the large number of variables on the questionnaire increases the possibility that the data could be affected by chance.

It should be remembered that a statistical relationship does not prove a causal relationship. For example, if respondents who used a particular management method are shown to have significantly greater numbers of case starts than those who did not use the method, it cannot be concluded that the management method was entirely responsible for the increase in case starts.

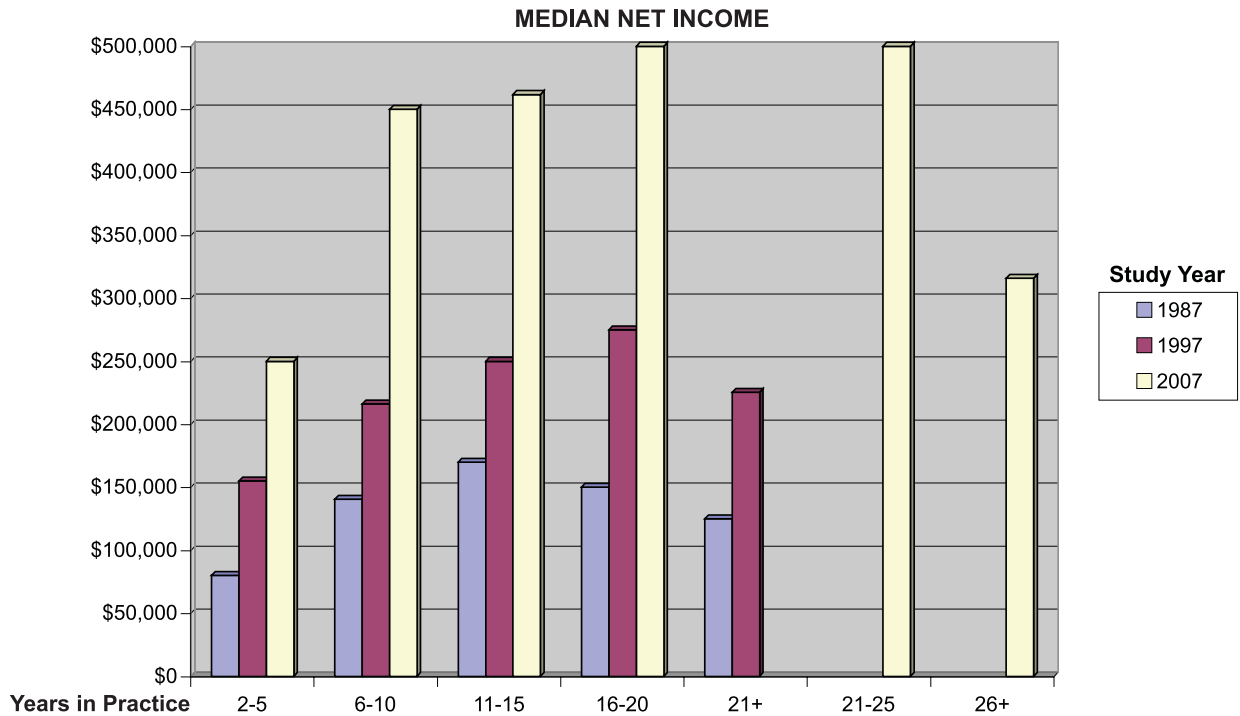
In addition, it would be impossible for us to verify the accuracy of every individual answer. We believe these Practice Study results to be valid, however, based on the consistency of the respondents’ geographic distribution and the overall trends since the first Study was conducted in 1981.



**TABLE 1  
PRACTICE ACTIVITY (MEDIANS)**

	Year of Study*					
	1981	1987	1993	1999	2005	2007
Age	42	44	47	49	50	50
Years in Practice	12	15	16	19	19	20
Gross Income	\$200,003	\$300,010	\$414,000	\$600,000	\$800,000	\$922,500
Expenses	\$100,003	\$184,984	\$228,400	\$325,000	\$440,000	\$500,000
Net Income	\$102,000	\$139,993	\$175,000	\$300,000	\$365,000	\$400,000
Overhead Rate	49%	53%	56%	53%	53%	55%
Case Starts	150	150	160	200	200	222
Adult Case Starts	15.4%	23.8%	20.2%	18.8%	22.2%	20.0%
Active Treatment Cases	300	350	366	450	460	480
Female Active Cases	NA	NA	60.0%	60.0%	58.9%	58.5%
Adult Active Cases	15.2%	24.0%	18.2%	15.5%	19.0%	18.5%
Adult Female/Adult Active Cases	NA	NA	70.6%	69.8%	67.3%	66.7%
Child Fee (permanent dentition)	\$1,900	\$2,500	\$3,200	\$3,880	\$4,700	\$4,900
Adult Fee	\$2,100	\$2,700	\$3,500	\$4,200	\$5,000	\$5,300
Two-Year Fee Increase (reported)	15.5%	10.3%	10.0%	8.0%	8.0%	7.0%
Initial Payment	25%	25%	25%	25%	25%	25%
Payment Period (months)	24	24	24	24	22	22
Patients Routinely Billed	30.9%	28.3%	38.5%	47.2%	49.7%	51.5%
Patients per Day	38.4	40.2	40.0	45.0	50.0	50.0
Additional Cases That Could Have Been Handled	49.9	50.0	50.0	50.0	50.0	50.0
Patients Covered by Third Party	35.3%	38.7%	45.0%	40.0%	50.0%	45.0%
% Gross Attributed to Third Party	20.0%	20.1%	25.0%	25.0%	20.0%	25.0%
Accept Assignment of Benefits	37.5%	49.5%	68.2%	76.4%	73.7%	77.2%

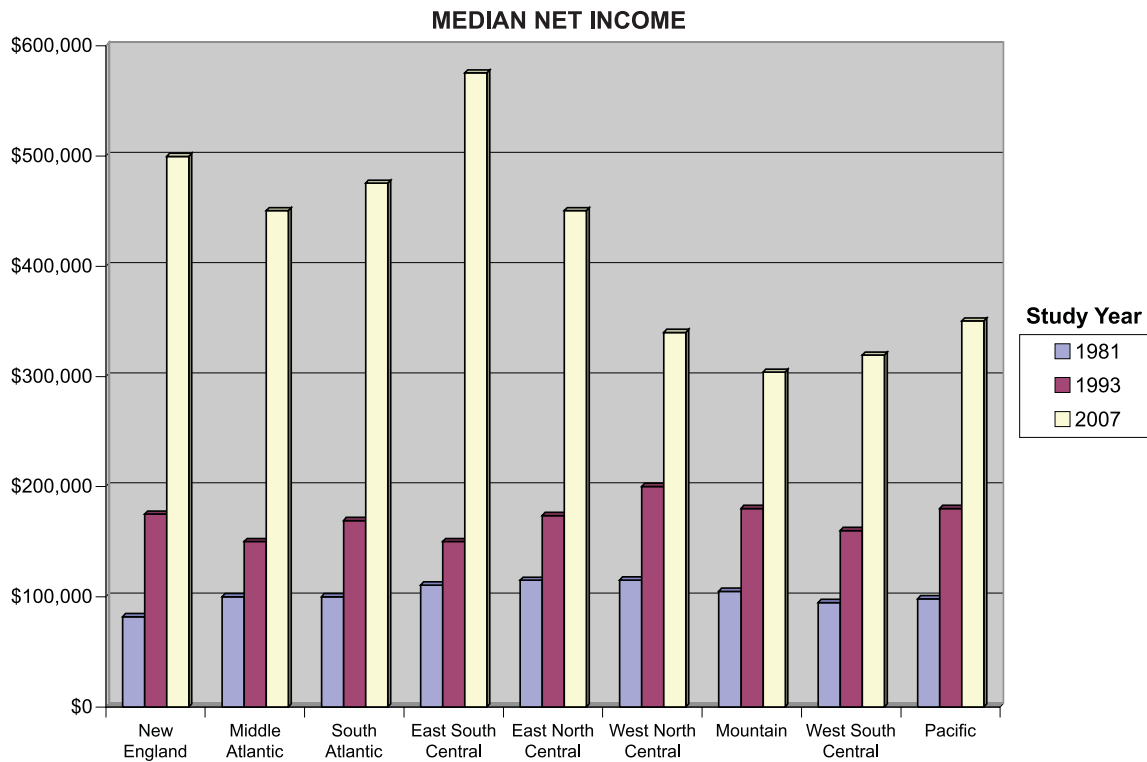
\*Dollar amounts and numbers of patients refer to preceding calendar year.



**TABLE 2  
PRACTICE ACTIVITY (MEDIANS) BY YEARS IN PRACTICE**

	2007 Study					
	2-5	6-10	11-15	16-20	21-25	26 or more
Gross Income	\$700,000	\$960,000	\$1,000,000	\$1,150,000	\$1,200,000	\$696,625
Expenses	\$356,000	\$500,000	\$520,000	\$600,000	\$600,000	\$427,000
Net Income	\$250,000	\$450,500	\$461,735	\$500,000	\$500,000	\$316,000
Overhead Rate	57%	52%	58%	54%	54%	57%
Case Starts	180	240	262	281	245	184
Active Cases	368	500	530	628	500	377
Child Fee	\$4,800	\$4,900	\$4,800	\$4,952	\$4,950	\$4,980
Adult Fee	\$5,200	\$5,200	\$5,200	\$5,490	\$5,350	\$5,350

	2005 Study					
	2-5	6-10	11-15	16-20	21-25	26 or more
Gross Income	\$617,000	\$799,000	\$895,000	\$892,500	\$900,000	\$720,000
Expenses	\$325,000	\$420,000	\$500,000	\$500,000	\$414,797	\$400,000
Net Income	\$250,000	\$357,500	\$400,000	\$408,500	\$400,000	\$345,000
Overhead Rate	54%	52%	54%	58%	51%	54%
Case Starts	150	210	250	231	191	180
Active Cases	380	350	521	594	495	410
Child Fee	\$4,500	\$4,695	\$4,550	\$4,700	\$4,720	\$4,783
Adult Fee	\$4,900	\$5,000	\$4,995	\$5,117	\$4,998	\$5,200



**TABLE 3  
PRACTICE ACTIVITY (MEDIAN) BY GEOGRAPHIC REGION**

	Gross Income	Net Income	Overhead Rate	Case Starts	Child Fee
New England (CT,ME,MA,NH,RI,VT)	\$1,050,000	\$499,209	51%	250	\$5,200
Middle Atlantic (NJ,NY,PA)	975,000	450,000	53%	250	4,823
South Atlantic (DE,DC,FL,GA,MD,NC,SC,VA,WV)	1,000,000	475,000	54%	244	5,000
East South Central (AL,KY,MS,TN)	1,200,000	575,000	47%	303	4,500
East North Central (IL,IN,MI,OH,WI)	1,000,000	450,000	56%	220	4,980
West North Central (IA,KS,MN,MO,NE,ND,SD)	1,026,138	339,537	56%	278	5,050
Mountain (AZ,CO,ID,MT,NV,NM,UT,WY)	700,000	303,500	60%	185	4,600
West South Central (AR,LA,OK,TX)	837,000	319,000	55%	200	4,794
Pacific (AK,CA,HI,OR,WA)	900,000	350,000	56%	195	5,150

Atlantic and Mountain orthodontists also reported lower median net income, as did those in the West North Central region. On the other hand, median overhead rates dropped only in the South Atlantic, East South Central, and West North Central regions.

Median numbers of case starts increased in all five Eastern regions since the previous Study, but generally declined in the West. Median child case fees were more variable than in past surveys, ranging from \$4,500 in the East South Central region to \$5,200 in New England.

### Use of Management Methods

Most of the 26 management methods surveyed were used by higher percentages of respondents in 2007 than in 2005 (Table 4). The only exceptions were written practice plan, office procedure manual, written job descriptions, treatment flow control system, and cases beyond estimate report. Methods that were used by more practices than ever before were written philosophy of practice, written practice budget, office policy manu-

**TABLE 4  
USE OF MANAGEMENT METHODS**

	Year of Study					
	1981	1987	1993	1999	2005	2007
Written philosophy of practice	22.1%	34.2%	44.5%	48.5%	50.7%	53.3%
Written practice objectives	15.0	24.6	32.0	30.6	30.1	33.1
Written practice plan	NA	12.6	20.4	19.1	22.8	21.2
Written practice budget	6.5	11.7	15.2	17.0	17.5	19.1
Office policy manual	54.7	59.7	69.7	72.9	77.2	79.6
Office procedure manual	NA	48.0	54.4	51.6	53.9	53.3
Written job descriptions	38.2	42.7	53.2	55.7	59.7	58.2
Written staff training program	NA	18.0	34.2	29.2	28.8	29.3
Staff meetings	67.7	78.5	83.0	80.6	80.4	83.7
Individual performance appraisals	32.3	48.9	54.0	59.3	63.5	66.4
Measurement of staff productivity	NA	11.8	16.4	15.8	16.7	17.4
In-depth analysis of practice activity	24.3	31.5	34.2	32.3	31.5	31.9
Practice promotion plan	NA	25.3	27.2	35.1	33.0	34.6
Dental management consultant	16.2	17.3	20.8	19.1	18.4	18.9
Patient satisfaction surveys	12.6	26.1	28.6	29.0	29.0	34.2
Employee with primary responsibility as communications supervisor	NA	25.8	29.7	25.9	23.6	25.3
Progress reports	NA	45.0	49.6	44.0	37.2	40.3
Post-treatment consultations	NA	44.3	41.6	36.6	31.5	31.6
Pretreatment flow control system	NA	48.4	50.9	48.4	44.3	46.1
Treatment flow control system	NA	18.6	22.7	25.1	23.8	23.4
Cases beyond estimate report	NA	18.7	22.6	25.1	30.5	28.7
Profit and loss statement	NA	65.6	70.3	73.6	70.1	75.8
Delinquent account register	NA	65.7	71.1	77.8	76.2	80.7
Monthly accounts-receivable reports	NA	62.3	72.9	79.4	78.1	78.8
Monthly contracts-written reports	NA	39.3	47.4	54.8	51.6	54.3
Measurement of case acceptance	NA	NA	43.4	46.7	49.5	50.5

al, staff meetings, individual performance appraisals, patient satisfaction surveys, profit and loss statement, and delinquent account register.

**Computer Usage**

Routine computer usage continued to increase to all-time-high levels in every category (Table 5). More than 80% of all respondents had computerized their patient accounting/billing, patient recall, insurance forms, appointment scheduling, practice analysis reports, word processing/correspondence, and e-mail/Internet access. Other tasks that were routinely computerized by more than half the practices were payroll/expense records, cephalometric analysis, diagnostic imaging/storage, and practice website.

**Delegation**

The routine delegation of tasks to staff members, which had dropped off slightly in the 2005

Study, reached its highest level in nearly every category (Table 6). The only exceptions were cephalometric tracings, removal of residual adhesive, fabrication of bands and archwires, adjustment of archwires and removable appliances, case presentation, post-treatment conferences, and patient education. All of these tasks except cephalometric tracings, removal of residual adhesive, and adjustment of archwires were still routinely delegated by more practices in 2007 than in 2005.

**Use of Practice-Building Methods**

While most of the practice-building methods surveyed were used by higher percentages of respondents than in the previous survey, the only methods used by more orthodontists than ever before were gifts to general dentists and to patients and parents, entertainment of patients and parents, Invisalign treatment, no-charge initial visit, personal publicity in local media, every form of

**TABLE 5  
ROUTINE COMPUTER USAGE**

	Year of Study					
	1981	1987	1993	1999	2005	2007
Patient accounting/billing	68.0%	74.1%	87.9%	92.2%	91.1%	93.5%
Patient recall	NA	52.0	71.7	82.3	81.6	84.2
Payroll/expense records	45.0	41.5	51.2	47.8	60.0	65.0
Inventory control	NA	NA	NA	11.7	16.5	17.7
Insurance forms	27.0	29.9	47.9	69.3	75.8	81.9
Appointment scheduling	14.0	22.1	46.0	71.1	83.7	89.4
Practice analysis reports	45.0	65.0	73.7	79.6	74.4	80.8
Word processing/correspondence	64.0	77.9	90.2	95.4	94.7	96.3
Treatment records	16.0	9.2	13.6	23.7	34.5	48.3
Cephalometric analysis	NA	NA	19.4	29.5	44.7	54.4
Diagnostic imaging/storage	11.0	9.2	9.8	38.3	48.5	52.7
Monitor treatment progress	18.0	9.2	13.1	17.0	22.0	30.8
Practice newsletter	NA	NA	8.9	11.7	13.6	18.8
E-mail/Internet	NA	NA	NA	42.5	76.7	83.5
Website service	NA	NA	NA	NA	41.9	57.5
Patient access to account and schedule	NA	NA	NA	NA	NA	29.4
Patient access to records	NA	NA	NA	NA	14.0	14.4
Referring dentist access to records	NA	NA	NA	NA	NA	9.6



external advertising, and direct-mail promotion (Table 7). Functional appliances, lingual orthodontics, and surgical orthodontics, which had declined in usage in every Practice Study to date, showed slight increases between the 2005 and 2007 surveys.

The only practice-building methods that were used by the lowest percentages of respondents ever were open one or more Saturdays per month, letters of appreciation to patients and parents, and expand services with TMJ treatment.

**TABLE 6  
ROUTINE DELEGATION**

	Year of Study					
	1981	1987	1993	1999	2005	2007
<i>Record-Taking</i>						
Impressions for study models	59.2%	72.3%	80.8%	88.0%	90.1%	93.6%
X-rays	84.4	88.9	89.1	91.8	92.8	96.1
Cephalometric tracings	57.3	54.3	45.0	40.8	40.0	40.0
<i>Clinical</i>						
Impressions for appliances	47.3	62.6	66.7	72.3	79.3	83.7
Removal of residual adhesive	74.6	75.4	67.5	39.3	34.8	33.0
Fabrication of:						
Bands	37.5	45.6	53.4	53.7	55.3	55.6
Archwires	20.4	25.0	29.9	30.1	27.2	31.8
Removable appliances	46.1	43.0	42.1	45.0	42.9	47.9
Insertion of:						
Bands	7.0	12.0	14.3	18.9	26.6	32.0
Bonds	9.3	8.5	7.8	9.9	10.6	11.8
Archwires	26.2	34.6	43.2	47.7	53.8	61.6
Removable appliances	9.6	12.8	15.2	16.2	18.5	22.8
Adjustment of:						
Archwires	3.4	6.4	8.7	9.7	11.6	11.3
Removable appliances	2.3	4.5	5.1	7.6	8.1	9.2
Removal of:						
Bands	28.2	41.2	45.7	50.3	52.0	58.9
Bonds	24.8	40.3	42.6	48.7	48.9	54.2
Archwires	66.0	73.1	74.6	75.2	77.2	82.9
<i>Administrative</i>						
Case presentation	3.6	10.2	13.7	19.6	21.4	23.7
Fee presentation	15.9	24.0	39.9	60.8	70.6	73.4
Financial arrangements	50.3	61.0	70.9	80.0	86.8	88.1
Progress reports	9.0	17.7	18.2	21.9	24.1	28.4
Post-treatment conferences	3.9	12.5	11.9	16.0	15.2	16.2
Patient instruction and education	73.8	83.3	82.7	85.1	87.7	89.2



**TABLE 7  
USE OF PRACTICE-BUILDING METHODS**

	Year of Study					
	1981	1987	1993	1999	2005	2007
Change practice location	20.1%	28.1%	31.9%	29.3%	26.6%	31.2%
Expand practice hours:						
Open one or more evenings/week	NA	24.0	31.5	24.8	13.8	16.0
Open one or more Saturdays/month	NA	21.4	22.4	16.7	11.8	9.5
Open a satellite office	39.9	45.2	41.9	36.4	29.6	34.5
Participate in community activities	61.5	57.3	60.1	56.2	52.7	53.8
Participate in dental society activities	67.0	63.1	62.6	57.0	55.9	57.4
Seek referrals from general dentists:						
Letters of appreciation	81.9	85.7	80.5	77.7	73.1	72.5
Entertainment	61.6	59.2	62.5	56.2	54.4	54.9
Gifts	45.2	65.4	64.2	68.2	67.8	76.5
Education of GPs	41.2	40.5	37.9	35.9	29.8	36.3
Reports to GPs	64.5	70.4	72.2	73.1	69.3	69.7
Seek referrals from patients and parents:						
Letters of appreciation	62.8	78.1	71.0	66.1	59.1	58.7
Follow-up calls after difficult appts.	NA	62.5	67.4	65.7	61.8	66.8
Entertainment	17.1	10.4	12.9	16.4	21.6	22.4
Gifts	16.3	22.0	25.3	32.6	35.0	41.3
Seek referrals from staff members	NA	52.1	51.1	49.3	49.3	55.8
Seek referrals from other professionals (non-dentists)	NA	32.6	32.0	23.1	27.8	24.2
Treat adult patients	51.0	91.0	84.5	85.9	78.8	83.1
Improve scheduling:						
On time for appointments	47.4	68.2	72.8	74.4	69.4	69.7
On-time case finishing	NA	57.8	60.1	63.3	60.8	59.8
Improve case presentation	44.4	42.9	48.6	53.1	47.3	48.6
Improve staff management	47.5	45.0	46.8	45.2	42.2	42.6
Improve patient education	27.7	37.0	40.3	45.1	44.6	42.4
Expand services:						
TMJ	NA	55.1	42.8	29.5	23.6	22.2
Functional appliances	NA	64.8	47.2	34.6	26.1	26.2
Lingual orthodontics	NA	32.4	15.6	11.0	6.4	7.3
Surgical orthodontics	NA	73.0	58.9	45.9	36.2	38.0
Invisalign treatment	NA	NA	NA	NA	56.2	60.2
Patient motivation techniques	NA	30.5	34.9	41.6	33.5	40.4
No-charge initial visit	42.6	56.4	65.9	68.7	74.4	76.7
No-charge diagnostic records	NA	NA	NA	NA	18.9	21.8
No initial payment	NA	NA	NA	NA	14.5	15.2
Extended payment period	NA	NA	NA	NA	35.7	35.4
Practice newsletter	NA	20.0	16.6	13.9	12.6	18.7
Personal publicity in local media	NA	14.2	12.3	14.9	14.3	18.2
Advertising:						
Telephone yellow pages	35.5	NA	NA	NA	NA	NA
Boldface listing	NA	38.9	49.4	47.9	54.6	63.1
Display listing	NA	10.3	16.2	21.0	23.4	30.5
Local newspapers	2.4	8.8	9.2	16.4	20.4	24.0
Local TV and/or radio	0.5	1.3	1.4	NA	NA	NA
TV	NA	NA	NA	3.0	3.9	6.4
Radio	NA	NA	NA	4.8	5.6	7.9
Direct-mail promotion	1.0	5.8	6.6	8.2	13.1	21.3
Managed care	NA	NA	NA	16.1	13.5	13.2
Affiliation with mgt. service organization	NA	NA	NA	7.7	1.7	3.3

**TABLE 8**  
**SOURCES OF REFERRALS**

	% of Practices Using Source					Median % of Referrals (All Practices)				
	1983	1989	1997	2003	2007	1983	1989	1997	2003	2007
Other Dentists (GPs)	98.0	99.2	98.7	98.9	99.4	50.2	50.0	50.0	50.0	48.0
Other Dentists (specialists)	68.4	71.7	65.9	68.7	69.4	2.4	2.0	2.0	2.0	2.0
Patients	97.8	98.8	97.6	98.2	99.2	30.7	30.0	30.0	30.0	30.0
Personal Contacts	NA	66.6	65.5	62.5	64.6	NA	2.0	2.0	2.0	2.0
Transfers	NA	74.2	67.6	64.4	64.2	NA	1.0	1.0	1.0	1.0
Staff	54.0	51.5	51.2	49.4	52.5	0.8	1.0	1.0	1.0	1.0
Other Professionals	41.2	32.9	23.8	23.2	18.9	0.3	0.0	0.0	0.0	0.0
Dental Franchises	NA	0.7	1.5	0.4	1.4	NA	0.0	0.0	0.0	0.0
Dental Referral Service	3.8	2.9	2.3	1.3	1.8	0.0	0.0	0.0	0.0	0.0
Direct-Mail Advertising	1.2	2.6	3.6	4.9	9.9	0.0	0.0	0.0	0.0	0.0
Yellow Pages	47.2	45.8	43.8	43.3	45.9	0.4	0.0	0.0	0.0	0.0
Commercial Advertising	1.8	4.2	7.7	11.5	15.1	0.0	0.0	0.0	0.0	0.0
Drive-By Signage	NA	NA	NA	23.0	28.8	NA	NA	NA	0.0	0.0
Managed Care (Capitation/Closed Panel)	3.7	6.9	18.1	12.4	9.3	0.0	0.0	0.0	0.0	0.0

### Sources of Referrals

This is the first Practice Study in which GPs did not account for a median of 50% of all referrals—dropping to 48%—although virtually every practice used general dentists as a referral source (Table 8). Patients continued to provide a median of 30%, and other dentists and personal contacts a median of 2% each, of respondents' referrals (the percentages do not add up to 100% because medians are reported instead of means). Transfers and staff accounted for a median of 1% each. Direct-mail advertising, commercial advertising, and drive-by signage were used by higher percentages of respondents than in any previous Study.

(TO BE CONTINUED)