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Remake Rates for Single-Unit Crowns in Clinical Practice: Findings from The National Dental Practice-Based Research Network

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Abstract

Purpose: Some crowns returned from the laboratory are clinically unacceptable, and dentists must remake them. The objectives of this study were to: (1) quantify the remake rate of single-unit crowns; and (2) identify factors significantly associated with crown remakes and intraoral fit.

Materials and Methods: Dentists participating in the National Dental Practice-Based Research Network recruited patients needing crowns and documented fabrication techniques, patient characteristics, and outcomes. Crowns were considered clinically acceptable or rejected. Also, various aspects of the clinical fit of the crown were graded and categorized as 'Goodness of Fit (GOF).' Dentist and patient characteristics were tested statistically for associations with crown acceptability and GOF.

Results: More than 200 dentists participated in this study (N = 205) and evaluated 3750 single-unit crowns. The mean age (years) of patients receiving a crown was 55. The remake rate for crowns was 3.8%. The range of rejection rates among individual practitioners was 0% to 42%. Most clinicians (118, or 58%) did not reject any crowns; all rejections came from 42% of the clinicians (n = 87). The most common reasons for rejections were proximal misfit, marginal errors, and esthetic failures. Fewer years in practice was significantly associated with lower crown success rates and lower fit scores. GOF was also associated with practice busyness and patient insurance status, patient gender (dentists reported better fit for female patients), and patient ethnicity.

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The authors deny any conflicts of interest.

Conclusions: The crown remake rate in this study was about 4%. Remakes and crown GOF were associated with certain dentist and practice characteristics.

Keywords

Clinical practice; crowns; fit

Occasionally a dentist will receive, from the laboratory, a crown that is not clinically acceptable, and the crown must be remade. This consumes chair time, increases expenses for the practice, and is frustrating for both the dentist and the patient. While most dentists report a crown remake rate less than 2%, about 17% of dentists report a remake rate of greater than 4%.[1] Reasons for remaking the crowns are diverse, and include marginal misfit, esthetic failures, proximal misfit, and other errors.[1] Interestingly, the remake rate may be associated with dentist factors, such as sex and ethnicity, as well as technique factors such as using a dual-arch tray.[1,2]

Various articles suggest relevant factors when determining crown acceptability. Investigators in one clinical trial considered marginal adaptation, proximal contacts, occlusion, and esthetics as factors relevant to crown success.[3] Reports considering marginal adaptation of crowns abound, as do studies investigating the internal adaptation of the crown.[4–11] One article focused entirely on the clinical evaluation of proximal contacts.[12] Setting patient expectations is presented as a factor in clinical success, as are the esthetic demands of the patient.[13–18] Various articles document the potential success and clinical longevity of crowns, including crowns of various materials, from gold to zirconia, and differing manufacturing techniques, from hand-crafted stacked porcelain to in-office milling.[19–29]

Amidst this wealth of literature is the absence of adequate information regarding remake rates of crowns or why crowns must be remade. Also, as we learn more about the complex interaction of dentist characteristics and practice decisions, it would be interesting to determine if these same characteristics impact crown remake rates. As an example, a questionnaire administered to 1777 dentists suggests that treatment recommendations are related to nonclinical factors, such as type of practice structure and private insurance status of patients. Practice busyness was also associated with the treatment planning process, as was the use of optical scanners.[2] Clinician sex, region of practice, and hours worked per week impacted material choice for single-unit crowns.[30] Clinician race and ethnicity were associated with the likelihood that a clinician would accept an impression and send it to the laboratory for crown fabrication.[1]

In this complex environment of multifactorial decision points, we are just beginning to understand why we as clinicians make certain decisions. The purpose of this study was to document the clinical remake rates for crowns in a population of National Dental Practice-Based Research Network (PBRN) clinicians, and to determine if remake rates are associated with dentist, practice, and patient characteristics.

Materials and methods

This study represents Stage 2 of a 2-part investigation of successful single-unit crowns. Stage 1 was based on data collected from a questionnaire administered to 1777 dentists regarding clinical techniques and practices for making single-unit crowns.[1,2,30,31] All dentists were members of the National Dental PBRN ("network"). The network is a consortium of dental practices and dental organizations focused on improving the scientific basis for clinical decision-making.[32] Detailed information about the network is available at its website.[33] All activities for these investigations were approved by the Institutional Review Boards governing each of the 6 regions encompassing the network.

Stage 2 was a prospective cohort study focused on the clinical acceptability of crowns (CAC) made in routine clinical practice. Network Regional Coordinators (RCs) were asked to recruit 200 dentists to participate in Stage 2 from among those who completed the Stage 1 questionnaire. Data were collected on each practitioner using the network's enrollment questionnaire, during which practitioners reported information about themselves, their practice(s), and their patient population. This questionnaire is publicly available at http://nationaldentalpbrn.org/study-results/factors-for-successful-crowns.php. Questionnaire items, which had documented test/re-test reliability, were taken from the authors' previous work in a practice-based study of dental care.[34,35] Dentists enrolled in the network were eligible for the Stage 2 study if they met all of these criteria: (1) completed an enrollment questionnaire; (2) were currently practicing and treating patients in the United States; (3) were in the network's "limited" or "full" network participation category; (4) completed the Stage 1 questionnaire; and (5) reported doing at least seven crowns in a typical month. Practitioners were required to complete IRB training required by their region and were asked to secure the participation of at least one dental laboratory for technical evaluation of crown preparations done in the study.

The study was launched on March 1, 2016; clinician training was completed by August 15, 2016; patients were enrolled by December 31, 2016; and patient follow-up was closed on February 28, 2017. Once agreeing to participate in the study, dentists were trained by RCs who visited each office, explained the inclusion and study criteria, and answered questions regarding the study. If the office was remotely located, the training was done by telephone and/or virtually using the computer. The training included role-play scenarios, informed consent education, and review of study forms. Once a clinician began the study, he/she was asked to complete patient enrollment within 3 months. Each clinician was asked to enroll 20 patients. Dentists or their practice were remunerated $50 for obtaining consent, enrolling the patient, and completing the applicable data forms. They also received another $25 for completing the data forms related to the insertion of the crown. All data forms are publicly available at http://nationaldentalpbrn.org/study-results/factors-for-successful-crowns.php.

Study population

Clinicians recruited patients from among their family of patients who needed a single-unit crown. Clinicians were asked to recruit all eligible patients serially, and to record the number of eligible patients recruited for the study and eligible patients who declined to participate, and, if so, the reason for not participating. Eligible patients met the following criteria: (1) 18

years old or older; (2) able to provide informed consent; and (3) in need of a single-unit crown on a natural tooth. Retainers for fixed bridges were not permitted in this study, nor were patients who needed multiple single-unit crowns done in a single appointment. This was done to eliminate the possibility that providing multiple units might affect the impression or ultimate CAC at cementation. Patients were asked to complete a short "Patient Characteristics" form, which documented basic patient demographics. All forms are available for inspection on the Network website at http://nationaldentalpbrn.org/study-results/factors-for-successful-crowns.php. One item of this seven-question form asked for patient ZIP code. To make comparisons between patients enrolled in the study and mean ZIP code household income, census data were used to estimate income. These data were compiled by the University of Michigan Population Studies Center and are based on 2006 to 2010 census data, and can be accessed at https://www.psc.isr.umich.edu/dis/census/Features/tract2zip/.

Patient treatment

Once patients were enrolled in the study, clinicians prepared the tooth for a crown and completed a data form regarding clinical aspects of the procedure, such as tooth number, reason for crown placement, and impression and preparation techniques used. Clinicians were asked to place the crown within 6 weeks of preparation. At the time of insertion, clinicians were asked to inspect the crown on the die (if applicable) and evaluate the crown clinically. Clinicians reported this information on a second data form. RCs maintained contact with clinicians to monitor data quality and compliance with study procedures, and to encourage patient recruitment.

Outcomes

The primary outcome for this study was CAC, as judged by the treating clinician. A secondary outcome was "goodness of fit" score (GOF), as judged by the treating clinician and reported on the data collection form. Of crowns deemed clinically acceptable, clinicians were asked to rank each of the following aspects of the crown fit as Excellent, Good, or Acceptable: overall fit of the crown on the tooth, marginal fit, proximal fit, occlusion, and esthetics. Responses were coded as 0 for Acceptable, 1 for Good, and 2 for Excellent. Dentists were asked to rank 5 areas of crown fabrication: crown fit on the tooth, marginal fit of the crown, proximal fit of the crown, occlusion of the crown, and esthetics of the crown. Each clinician's response for the five questions was summed to give an overall goodness of fit score, the GOF score for each crown, ranging from 0 to 10. The GOF scores for all crowns were stratified for statistical analysis into three categories: Acceptable (score 0–7), Good (score 8–9), or Excellent (score 10).

For rejected crowns, clinicians were asked to indicate why the crown was rejected, such as marginal misfit or spinning on the tooth. They were also asked for their opinion as to cause of the rejection, such as distorted impression or inadequate mounting of the casts.

Statistical analysis

Descriptive frequencies were tabulated without adjustment for clustering. Associations of patient and practice characteristics with CAC and GOF category were evaluated using Rao-

Scott cluster-adjusted chi-square tests to adjust for the effect of clustering of patients within dentists. Comparisons of patient age among categories of CAC and GOF were conducted using mixed model ANOVA to account for clustering. A $p \leq 0.05$ was considered significant.

Results

The characteristics of the 205 dentists who participated in this study are presented in Table 1. Most were male (73%), and the owner of a private practice (76%). The dentists represented multiple areas of the country, as demonstrated by Network Region counts. A large majority worked full-time. Thirty-eight reported a race other than white, and seven reported Hispanic ethnicity. Only two dentists were prosthodontists, with the majority being general practitioners and in practice for over 20 years. Twenty-eight clinicians (14%) reported practicing less than 10 years. Only seven dentists in the study reported a private insurance level in their patient population of less than 40%.

The study enrolled 3847 patients (Table 2), with more females than males (56% vs. 44%); the majority of patients were white (87%). Most had some form of dental insurance, although 20% reported no insurance. Over 80% of patients receiving crowns had some college education. The average age of the patients was 55 ± 15 years old, with a range of 18 to 100 years; the median age was 56 with a lower quartile of 45 and an upper quartile of 66. Based on ZIP code data, the median household income for patients was $61,175 ± $21,982. The median income for the entire ZIP code data set was $50,938 ± $20,356.

Several patients (n = 126) withdrew or did not complete the study after enrollment, for a variety of reasons, leaving 3721 patients for full data analysis. Discontinuation reasons included: did not or could not return within the 42-day insertion window (n = 16); patient needed a second crown (n = 16); change of treatment plan for the study tooth (n = 13); extraction of tooth (n = 13); tooth required endodontic therapy or became sensitive (n = 19); patient was lost to follow-up (n = 25); patient withdrew from study (n = 11); or other reasons (n = 13).

Network dentists prepared 3828 teeth for crowns, a mean (standard deviation) of 18.7 ± 4 preparations. Of these, 3750 crowns remained in the study until completion. Nineteen crowns were rejected before clinical try-in due to laboratory errors, such as not fitting the die, open margins on the die, and occlusion errors. The remaining 3731 crowns proceeded to the patient try-in appointment. Of these, 3590 were clinically acceptable. At try-in, 141 crowns were rejected. The primary reasons for crown rejection are provided in Table 3, as well as possible causes of the misfits (the top seven in each category are presented). The leading reason the crown was rejected was proximal misfit, followed by marginal errors, and esthetic failures. The most common opinion as to the underlying cause of the failed crown was suspected laboratory error, followed by a distorted impression and color mismatch.

The failure rate (rejection of crowns at try-in appointment) was 3.8% with a standard deviation of 5.8. The range of rejection rates was 0% to 42%. Most clinicians (118, or 58%) did not reject any crowns, with all of the rejections coming from 42% (n = 87) of the clinicians.

Years since dental school graduation was statistically significant when considering successful crowns and associations with dentist characteristics (Table 4). Dentists with fewer than 10 years in practice rejected more crowns than other dentists ($p = 0.04$). Considering GOF, other factors were statistically significant as well (Table 5). Years since dental school graduation ($p = 0.02$), practice busyness ($p = 0.001$), and private insurance status ($p = 0.04$) were all significantly associated with GOF. Clinicians who had been in practice fewer than 10 years tended to have a lower GOF score than more-experienced clinicians. Clinicians with a mixed insurance patient base (40–79% privately insured) scored GOF higher than clinicians who were primarily insurance based. Clinicians who reported being not busy scored very high for crown fit, with 63% of their crowns scored as excellent, compared to only 32% of crowns for clinicians who reported feeling overburdened or too busy.

GOF was significantly associated with patient gender and ethnicity. Female patients had ‘Excellent’ crown fit 46% of the time, compared to 41% for males. Hispanic patients had ‘Excellent’ crown fit 33% of the time, which was less than non-Hispanics (45%). GOF was not associated with patient education level.

Discussion

The remake rate of 3.8% reported in this study seems to be in line with anecdotal laboratory expectations, but published data on this topic are scarce. Earlier work in this protocol, a questionnaire study of 1777 dentists, found that about 60% of dentists reported a remake rate of less than 2%, and only 17% reported a remake rate of 4% or more.[1] The current set of 205 clinicians is a subset of the 1777 questionnaire clinicians, and the data seen clinically reflect the questionnaire report. Over half of the clinicians in this clinical study reported no remakes, and the other clinicians had higher remake rates. Other results on remake rates include an article detailing one US dental school that implemented a quality assurance program to reduce remakes.[36] Of cases sent to the laboratory, 8% were considered remakes; after the quality assurance program was implemented, this dropped to 3.4%. However, this latter study included all laboratory work, such as removable dentures and fixed partial dentures, as well as single-unit crowns. Another study, a clinical trial involving 5 practitioners, reported differences between complete-arch and dual-arch impression techniques; none of the 50 crowns had to be remade.[3] These results are lower than the results in the current study, which documented a 3.8% remake rate. This difference may be due to the small number of clinicians participating in that study, or the lower number of observations. Clearly, many clinicians enjoy a remake rate near zero, so it is easy to imagine selecting such clinicians for a clinical trial by random chance.

The skewed nature of the remake rates was of note in this study. All the remakes in this study came from 40% of the clinicians. Stated differently, the majority of crown remakes are generated by a minority of clinicians. Some clinicians are rejecting more than 20% of their crowns. It is unclear why this might occur. Clinicians might be exceptionally demanding and reject crowns that other clinicians might deem clinically acceptable. Alternatively, some clinicians might be using techniques that compromise crown fit and outcomes. Future analysis of this data set will examine different material and technique factors to identify any

predictors for crown success, including patient factors such as endodontic status of the crowned tooth and position in the arch.

Patients in this study, limited to people receiving single-unit crowns, not surprisingly do not seem to be representative of the US population as a whole, especially in regard to education level. Only 2% of patients in this study had less than a high school education, compared to 12% of the US population.[37] Patients in this study tended to have advanced education, with 21% of patients having a graduate degree, compared to 10% of the US population. Associated with higher education levels is higher income. While extrapolating household income from ZIP code data can be problematic, the patients in this study tended to come from more-affluent ZIP codes than average. Patients represented in this study tended to be nonminorities. Seven percent reported Hispanic ethnicity, compared to a national average of 16%, and 7% black, compared to a national average of 13%.[38] The vast majority had some form of dental insurance. Taken together, these data suggest that patients receiving crowns have, as a whole, reasonable access to dental services. Higher education and socioeconomic status have been shown to impact health utilization and health education.[39–44] It is also possible that dental offices are more commonly located in affluent areas, as it is noted that dentists are not randomly distributed, but concentrated in cities and other areas of dense population.[45] The mean age of patients receiving crowns, 55 years old, may not be surprising to dentists. It makes sense that young adults would not need as many single-unit crowns, given the natural history of oral disease leading to the need for crowns.

Clinicians suggested possible reasons for the remakes noted in the study, and they were diverse, with the most common cause being laboratory error. Frequently, this represents a breakdown in communication between the dental practitioner and the dental laboratory, and represents up to 50% of errors.[46–49] Even when prescriptions are correctly written, dental laboratories sometimes fail to use prescribed materials and techniques as requested by the dentist.[50] Other reported reasons for crown failures echo our findings, such as inaccurate impressions, poor shade selection, and inadequate die fabrication.[36,51,52] These deficiencies manifest clinically as unacceptable crowns, with problems such as proximal misfit and marginal misfit.

Successful crowns were significantly associated with more-experienced clinicians. This could suggest that clinicians gain experience and reduce mistakes leading to remakes. Alternatively, dentists coming recently from a learning environment might be more critical of fit and more likely to reject a crown that is mediocre or borderline in clinical fit. These findings were reflected in the GOF evaluation, with recent graduates scoring crowns lower than clinicians with more years of experience. Conversely, clinicians who report being not busy in practice scored their crowns very high, in fact twice as high as their busier colleagues. This could suggest that clinicians who take more time with crown procedures have more satisfactory fit of the final crown. It is unclear why practice insurance status was associated with GOF of crowns.

Limitations exist in this study. The primary outcome measure, clinical acceptability of the crown, is subjective and depends on each clinician’s personal evaluation of that crown, which can lead to bias. This is somewhat accounted for by considering the clustering present

in this study design. Although network practitioners have much in common with dentists at large,[53,54] their crown procedures may not be representative of a wider representation of dentists. Network members are not recruited randomly, so factors associated with network participation (e.g., an interest in clinical research) may make network dentists unrepresentative of dentists at large. While we cannot assert that network dentists are entirely representative, we can state that they have much in common with dentists at large, while also offering substantial diversity in these characteristics. This assertion is warranted because: (1) substantial percentages of network general dentists are represented in the various response categories of the characteristics in the enrollment questionnaire; (2) findings from several network studies document that network general dentists report patterns of diagnosis and treatment similar to patterns determined from non-network general dentists; [55–58] and 3) the similarity of network dentists to non-network dentists using the 2010 ADA Survey of Dental Practice.[59]

Conclusions

1. The remake rate for single-unit crowns in this study was 3.8%.
2. Both remake rates and clinical evaluation of the fit of crowns were associated with certain dentist and practice characteristics, as well as patient characteristics.
3. Dentists with more years of experience reported lower remake rates.
4. Patients receiving crowns tended to be educated, and had a mean age of 55 years old.

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Table 1

Characteristics of dentists participating in the study

Characteristics	Number[1] (n = 205)	Percent (%)
Gender		
Male	148	73
Female	54	27
Years since dental school graduation		
<10	28	14
10–19	54	26
20–29	42	21
30+	80	39
Type of practice		
Owner of private practice	153	76
Associate in private practice	22	11
Health Partners[2]	8	4
Permanente[2]	8	4
Other	9	5
Network Region[3]		
Western	28	14
Midwest	34	17
Southwest	39	19
South Central	46	23
South Atlantic	32	16
Northeast	25	12
Time commitment		
Full time	179	89
Part time (<32 hours)	23	11
Race		
White	165	81
Black/African-American	11	5
Asian	19	9
Other	8	4
Ethnicity		
Hispanic	7	4
Non-Hispanic	192	96
Private insurance status of patient population in the practice		
<40% Private insurance	7	4
40–79% Private insurance	131	67
80%+ Private insurance	58	30
Practice location type		
Urban/Inner city	27	13

Characteristics	Number[1] (n = 205)	Percent (%)
Urban (not inner city)	55	27
Suburban	96	47
Rural	25	12

[1] Due to missing values and rounding, not all columns add to 100%.

[2] Either HealthPartners Dental Group in greater Minneapolis, MN or Permanente Dental Associates in greater Portland, OR.

[3] Reported on enrollment questionnaire as the state, subsequently categorized into 1 of the 6 regions of the network.

Table 2

Characteristics of patients participating in the study

Characteristics	Number[1] (n = 3847)	Percent (%)
Gender		
Male	1704	44
Female	2143	56
Ethnicity		
Hispanic	257	7
Non-Hispanic	3402	93
Race		
White	3239	87
Black/African-American	270	7
Asian	111	3
American Indian or Alaska Native	36	1
Native Hawaiian or Pacific Islander	14	0.4
Multiple	45	1
Dental insurance status		
No dental insurance	776	20
Private insurance	2724	71
Public insurance	210	5
Other insurance	129	3
Education level		
Graduate degree	804	21
Bachelor's degree	1116	29
Some college or Associate degree	1222	32
High school graduate	568	15
Less than high school	71	2
Decline to answer	60	2

[1]Due to missing values and rounding, not all columns add to 100%.

Table 3

Reasons clinicians rejected crowns clinically at the insertion appointment and possible causes of the crown failure; the top seven responses in each category are listed

Characteristics	Number[1] (n = 141)
Reason crown was rejected	
Proximal misfit, open proximal contact	37
Marginal misfit, open margin	34
Esthetic failure	28
Porcelain chipping or fracture	23
Crown does not fit tooth, or rocks	14
Occlusal errors	13
Poor crown contours	5
Suspected cause of crown rejection	
Laboratory error	46
Distorted impression	24
Color mismatch	21
Die trimmed improperly	14
Inadequate mounting	8
Preparation errors	8
Impression error at margin	8

[1] Due to missing values, and because only the top seven reasons are reported, not all columns sum to 141.

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Table 4

Associations between dentist characteristics and percentage of rejected crowns

Characteristics	Rejected crowns	Total crowns (n)	Percent	*p* Value
Gender				
Male	100	2730	3.7	0.51
Female	39	941	4.1	
Years since dental school graduation				
<10	29	487	5.9	**0.04**
10–19	25	979	2.5	
20–29	22	788	2.8	
30+	64	1457	4.4	
Type of practice				
Owner of private practice	98	2852	3.4	0.29
Associate in private practice	17	355	4.8	
Health Partners[2]	7	153	4.6	
Permanente[2]	9	158	5.7	
Other	9	127	7.1	
Network Region[3]				
Western	12	532	2.3	0.30
Midwest	26	628	4.1	
Southwest	27	702	3.8	
South Central	31	862	3.6	
South Atlantic	28	557	5.0	
Northeast	16	430	3.7	
Time commitment				
Full time	121	3315	3.6	0.19
Part time (<32 hours)	18	336	4.9	
Race				
White	122	3017	4.0	0.25
Black/African-American	4	186	2.1	
Asian	7	329	2.1	

Table 5

Associations between dentist evaluation of acceptable crowns (goodness of fit, GOF), and dentist and patient characteristics, N (%)

Characteristics	Excellent	Good	Acceptable	*p* Value
Total crowns evaluated	1557 (44)	1007 (28)	1009 (28)	
Dentist characteristics				
Gender of dentist				
Male	1187 (45)	714 (27)	715 (27)	0.16
Female	337 (37)	284 (32)	279 (31)	
Years since dental school graduation				
<10	131 (29)	143 (31)	184 (40)	**0.02**
10–19	389 (41)	287 (30)	269 (28)	
20–29	371 (49)	171 (22)	222 (29)	
30+	653 (47)	402 (29)	333 (24)	
Type of practice				
Owner of private practice	1250 (46)	775 (28)	722 (26)	0.38
Associate in private practice	125 (37)	87 (26)	126 (37)	
Health Partners[2]	61 (42)	47 (32)	38 (26)	
Permanente[2]	43 (29)	44 (30)	62 (42)	
Other	45 (38)	36 (31)	37 (31)	
Network Region[3]				
Western	210 (41)	155 (30)	152 (29)	0.69
Midwest	208 (35)	198 (33)	196 (33)	
Southwest	326 (49)	151 (23)	193 (29)	
South Central	365 (44)	236 (28)	231 (28)	
South Atlantic	243 (47)	149 (29)	128 (25)	
Northeast	192 (46)	114 (28)	108 (26)	
Time commitment				
Full time	1421 (45)	890 (28)	866 (27)	0.08
Part time (<32 hrs)	117 (34)	103 (30)	129 (40)	
Race of dentist				

Characteristics	Excellent	Good	Acceptable	*p* Value
White	1269 (44)	821 (28)	801 (28)	0.40
Black/African-American	96 (55)	37 (21)	40 (23)	
Asian	9 (45)	5 (25)	6 (30)	
Other	167 (37)	133 (29)	152 (34)	
Ethnicity of dentist				
Hispanic	50 (42)	34 (29)	34 (29)	0.97
Non-Hispanic	1475 (44)	942 (28)	927 (28)	
Private insurance status of patient population in the practice				
<40% Private insurance	38 (35)	33 (30)	38 (35)	**0.04**
40–79% Private insurance	1090 (47)	642 (28)	565 (25)	
80%+ Private insurance	374 (37)	281 (28)	356 (35)	
Busyness				
Too busy	54 (32)	68 (40)	46 (27)	**0.001**
Overburdened	226 (32)	199 (28)	275 (39)	
Not overburdened	896 (43)	610 (29)	599 (28)	
Not busy	368 (63)	126 (22)	88 (15)	
Patient characteristics				
Gender of patient				
Male	645 (41)	472 (30)	465 (29)	**0.01**
Female	912 (46)	535 (27)	544 (27)	
Ethnicity of patient				
Hispanic	78 (33)	78 (33)	82 (34)	**0.01**
Not Hispanic	1414 (45)	876 (28)	869 (28)	

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