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We hereby approve the thesis of

CLIFFORD JOSEPH LOWENBACH

Candidate for the degree Master of Science

in Dentistry.

Signed: _____ (Chairperson)

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Date: 12/2/05

PREDICTING ORTHODONTIC TREATMENT DURATION USING PRE-TREATMENT PATIENT VARIABLES

by

CLIFFORD JOSEPH LOWDENBACK

Submitted in partial fulfillment of the requirements for the degree of Master of Science in Dentistry

Thesis Advisor: B. Douglas Amberman, D.D.S., M.S.D.

Department of Orthodontics

School of Dental Medicine

CASE WESTERN RESERVE UNIVERSITY

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Abstract

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After the initial stages of treatment, a patient concern is the appliance removal date. Thus, an accurate prediction of treatment duration could influence patient satisfaction. Several studies have reported on variables that influence treatment time. However, many of the factors were not predictive by nature. The goal of the present retrospective study was to evaluate the influence of pre-treatment variables on treatment duration. Forty-one variables and four treatment outcomes were collected from the records of 261 patients of the Case Western Reserve Orthodontic Department. These variables and outcomes were statistically analyzed to determine which factors were most important as predictors of treatment duration. The analyses showed that 43.0% of the variance of treatment duration was explained by all 41 variables and 31.4% of the variance by six of the 41 variables:

pre-PAR score, number of extractions, start age, lower facial height, maxillary midline deviation, and Angle classification. These six variables were then able to correctly classify treatment duration, with extremes of twenty months and under, or thirty months and over, 80% of the time. Further research is needed on these six key variables but the results obtained by this study are promising and could help orthodontists more accurately predict treatment duration.

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INTRODUCTION

In most orthodontic offices, treatment duration is a variable of interest to both the patient and the practitioner. After the initial stages of treatment, a primary patient concern is when the appliances are to be removed. Thus, an accurate prediction of treatment duration could greatly influence patient satisfaction. In 2000, O'Conner reported on a survey he used to gain insight into patient perceptions of orthodontic treatment. The second most frequent patient recommendation, following reduction in fees, was accurate estimates of treatment time. Precise treatment duration prediction can help build a practice's reputation through patient satisfaction.

From an orthodontist's perspective, accurate prediction could lead to a better estimate of the number of appointments needed to complete the case and, thus, a better way to determine fees appropriate for individual patients. Shia, in 1986, suggested that treatment overruns can amount to 20-30% of active patients in some

offices. These "overruns" increase both overhead and financial liability of the practice (Shia 1986).

The length of treatment for many patients is an estimate of the average time spent in appliances. The most common number of months quoted by orthodontists is twenty-four which can be an underestimate that affects patient perception and office finances negatively. This often quoted number probably stems from an article written by Fink and Smith in 1992 in which they looked at 118 patients from six offices and found the average treatment time was 23.1 months, with a range of 9 to 44 months.

A master's thesis study from Case Western Reserve University also supports the twenty-four months average treatment time (Park 2001). The study obtained data on 25,364 patients from thirteen practices that used the same patient management software program. The overall duration of orthodontic treatment was 25.2 months. When the data were stratified into children and adults, treatment time for children was slightly longer, 25.5 months, than adults, 24.1 months. However, the range for treatment duration in this study was from 17.7 to 30.7

months. More than half of the patients in this sample had their braces on longer than 24 months.

Other studies have reported average treatment times that were much longer than twenty-four months. Vig et al., in 1990, looked at 438 patients from five offices in an effort to evaluate treatment duration between extraction and non-extraction therapy. They found that the mean treatment duration was 31.2 months for non-extraction cases and 31.3 months for extraction cases, with a range for the entire sample of 4 months to 7 years 6 months. In 1999, a study by Beckwith et al. evaluated 140 patients from five offices and found a treatment time average of 28.6 months, with a range from 23.4 to 33.4 months.

Twenty-four months might not be a correct estimate of treatment time in a many orthodontic cases, based on the data of these published studies. At present, an educated guess is the best that a particular orthodontist can do when predicting the length of orthodontic treatment.

The purpose of the present study is to attempt to eliminate some of the guesswork in predicting orthodontic treatment time. This retrospective study will evaluate

pre-treatment patient variables and their effect on treatment duration. Forced-all and stepwise multiple regressions will be used to determine which variables have the most impact on treatment duration. Finally, these key variables will be analyzed to see how predictive they are with regards to treatment length, using a discriminant analysis. The results of this study might allow orthodontists to more accurately predict treatment duration based on several key pre-treatment patient variables that can be evaluated at the initial clinical examination. Treatment duration predictions might be better based on individual patient characteristics rather than published averages.

LITERATURE REVIEW

Factors Affecting Treatment Duration

Variation in orthodontic treatment length can be the result of various elements. Orthodontics is a specialty in which there are numerous ways to treat the same problem and obtain similar results. As a result, each orthodontist uses a particular technique that he/she feels comfortable with and involves a choice of appliances, mechanics, and treatment timing, all of which may lead to variation in treatment duration. Each patient is unique in presentation. Thus, patient variables such as Angle classification, tooth crowding, compliance, and age could influence treatment duration.

One variable involved in orthodontic treatment length is the timing of treatment. In 2002, von Breman and Pancherz evaluated 204 patients with class II division 1 who started treatment at different stages of dental development. The patients were divided into three groups based on the dentition at the time treatment was started; early mixed dentition, late mixed dentition and permanent dentition. The investigators found that

treatment duration decreased as dental development progressed. The early mixed dentition group was, treated on, average 57 months, the late mixed dentition averaged 33 months, and the permanent dentition group 21 months. The conclusion reached based on these findings was that orthodontic treatment for class II division 1 is most efficient if delayed until all permanent teeth are present.

The same sample was also used to look at fixed appliances versus removable appliances, another element that can influence treatment length. The researchers found that treatment duration was shorter when fixed appliances were used compared to functional appliances or a combination of both. The most efficient treatment in the study was the Herbst appliance with an average length of 19 months. Full-fixed brackets followed with an average of 24 months. The longest treatment occurred when removable functional appliances were used, 38 months, or when a combination of fixed and functional was used, 49 months. This study showed large variations based on type of technique employed and concluded that the use of fixed appliances in class II division 1

patients was most efficient (von Breman and Pancherz 2002).

The type of bracket used during treatment is a factor that is chosen by the treating orthodontist. There are two bracket slot sizes available, 0.018" and 0.022". There are advantages and disadvantages to both. Their use is usually based on personal preference and experience. In 2000, Amditis and Smith studied the effects of both slot sizes on treatment duration. The investigators selected sixty-four patients treated by one practitioner; thirty-two with 0.018" brackets and thirty-two with 0.022" brackets. Both sets of patients were treated with the same technique and to the same standard of care so that the only variable involved was the slot size. The duration for both groups was similar with and average of 20.2 months for the 0.018" group and 21.7 months for the 0.022" group. Although, the difference was statistically significant, it was not clinically significant.

Adults make up a growing portion of the orthodontic population. The lack of skeletal growth and specific treatment expectations due to the age of these patients are elements that can affect treatment duration. Robb et

al., in 1998, compared the effectiveness and duration of orthodontic treatment in adults and adolescents. The sample consisted of thirty-two adults and forty adolescents, each who had four premolars extracted as part of their treatment. They found that there was no statistical significant difference for duration or effectiveness between the two groups. They further found that the variability in treatment duration for the entire sample was best explained by the number of broken appointments and appliance repairs.

A treatment decision that can affect treatment length is the timing of extractions. In a severely crowded case in the mixed dentition, a decision between serial extraction or future premolar extraction must be made. There are many factors that weigh into this decision but the choice made does have an impact on the length of orthodontic treatment. Wagner and Berg, in 2000, reported on a study in which they evaluated the treatment duration differences between serial extraction and future premolar extractions. The two groups were comparable in the need for extractions; however, one group had serial extractions in the mixed dentition followed by orthodontic treatment in the permanent

dentition and the second group was treated with extractions and appliances in the permanent dentition. The results showed that the serial extraction group had a shorter time in fixed appliances, more appointments, and a longer duration of total treatment due to observation time.

The variables that affect treatment time are numerous. One of these is impacted teeth and the amount of time needed to bring these teeth into the dental arch. A common presentation of this problem is a patient with unilateral or bilateral impacted maxillary canines. Treatment duration can be lengthened due to these impactions because of the unpredictability in the amount of time it can take to force their eruption after they have been exposed by a surgeon. In 2001, Stewart et al. evaluated the factors associated with treatment duration for patients with palatally impacted maxillary canines. The investigators studied forty-seven adolescent subjects including nine with unilateral impaction, eighteen with bilateral impactions, and twenty without impaction. The results of this study showed an average treatment time of 22.4 months for the control group, 25.8 months for the unilateral-impaction group, and 32.3 months for the

bilateral impaction group. The study also found that the severity of impaction affected treatment time. A canine impacted 14 mm or less from the occlusal plane had an average treatment time of 23.8 months and a canine impacted more then 14 mm averaged 31.1 months in treatment.

These studies are a good indication of the difficulty in explaining orthodontic treatment duration due to the large number of factors that affect its length. These various elements are the result of treatment mechanics, the appliances chosen for treatment, and patient presentation. Orthodontists can control the selection of appliances and mechanics used but patients can not control the severity of their malocclusion. Thus, it would benefit both parties if a precise treatment time could be predicted at the start of treatment.

Predicting Treatment Duration

Several studies have tried to identify accurate predictors of treatment duration. In 1990, Vig et al. specifically evaluated difference in treatment time for extraction and non-extraction therapies. Part of the study included data on gender, age, molar classification,

overbite, overjet, missing teeth, extraction patterns, number of arches, and dates for appliance placement and removal. Their findings showed that the number of arches treated, the number of treatment phases, and the particular practice chosen were the variables that most affected treatment duration. However, when extraction and non-extraction patients were examined as a single group, all other variables were obscured by the effects of the extraction patterns. The stepwise regression statistical analysis used did not allow an analysis of multiple variables simultaneously. This study successfully compared treatment length and extraction pattern.

In 1992, Fink and Smith evaluated variables affecting the length of treatment. They used a multiple regression statistical analysis to determine the amount of treatment time variance attributed to several variables. They included cephalometric measures, dental cast analysis, and patient chart information such as number of appointments, number of broken appointments, and number of extracted teeth. They determined that fifty percent of the treatment duration variation was explained by five variables; the number of premolars

extracted, the number of broken appointments, pre-treatment mandibular plane angle, pre-treatment ANB, and pre-treatment Salzmann Index. Beckwith et al. (1999) pointed out that actually only 24.9% of the variance was shown by this study since the R was 0.499 and the R^2 was 0.249. Other limitations of the Fink and Smith study included the number of variables used since only three cephalometric measurements were examined and all of the cast variables were grouped into one index, the Salzmann Index.

In 1995, O'Brien et al. evaluated 250 class II division 1 patients treated at the University of Pittsburgh. The aim was to identify variables associated with a change in PAR scores and treatment duration. They reported, using a multiple regression analysis, that treatment time was affected by five variables: pre-treatment PAR scores, number of treatment stages, percentage of appointments attended, number of appliance repairs, and the number of extractions. The only variable that influenced a change in PAR scores was the pre-treatment PAR score.

A study in Britain in 1996 showed the importance of pre-treatment PAR scores in predicting both amount of

change and treatment duration. Taylor et al. analyzed 156 completed fixed and removable cases to evaluate the variables with the greatest impact on change in PAR scores and duration. They found that, in the fixed appliance cases, pre-PAR scores were the most influential on change in PAR score and treatment duration. The removable appliance cases were affected by patient compliance, extractions, and anterior crossbite but pre-Par score was still very influential.

Beckwith et al., in 1999, used thirty-one variables to evaluate patient characteristics, diagnostic factors, modality of treatment, and patient cooperation. The majority of these variables came from patient chart entries with five coming from cephalometric measurements. Using a multiple regression model, they were able to explain 46.9% of the variance with five variables; number of missed appointments, number of replaced brackets, number of treatment phases, number of negative chart entries for bad oral hygiene and headgear wear during treatment. This study successfully predicted a large percentage of the variance; however, three of the variables used in this "prediction model" could only be determined at the end of treatment and the fifth was

considered by some to be a practice management decision made by the orthodontist. Thus, this study identified factors that lead to increased treatment time but is not useful for predicting treatment duration prior to the placement of the brackets.

In 2000, Kim et al. reported on the predictive nature of cephalometric variables. The study looked at forty-one cephalometric measurements and their ability to predict post-treatment malocclusion severity, relative improvement, and treatment duration. Cephalograms and casts were evaluated on 223 treated class II patients. With regards to treatment duration, 20% of the variance could be explained by the cephalometric variables. Two of the forty-one variables were statistically significant in predicting duration; the upper incisor angulation to the NA line and the lower incisor angulation to the NB line.

Chew and Sandham, in 2000, evaluated the effectiveness and duration of full fixed appliance therapy. They collected data on 177 consecutively completed cases at a government clinic in Singapore. The information was obtained from model analyzes, patient chart entries, and treatment plans. Multiple regression techniques revealed that 22% of treatment effectiveness

was explained by pre-PAR scores, start age, the number of appointments, and the number of extractions. Treatment duration variation was affected by the number of appointments, pre-PAR scores, and the use of extractions or headgear during treatment.

In 2004, Jarvinen et al. collected data from treatment records, radiographs, and casts on 93 patients to evaluate the factors that affect treatment time. Fifteen variables were evaluated including start age, gender, the progress of treatment, occlusal status, skeletal deviations, and Angle classification. A multiple regression analysis explained 41% of the variation of treatment time. This study also was able to show that treatment duration was prolonged by treatments that included both fixed and removable appliances, early start age, high number of appliances used, and high number of missed appointments.

Popowich et al., in 2005, evaluated 237 patients from three offices that represented three groups; class I non-extraction, class II division 1 extraction and class II division 1 non-extraction patients. Model, patient, and cephalogram variables were used to evaluate treatment duration for all patients. Separate regressions for each

category were performed and found little correlation with any of the variables. Age was the only significant patient factor explaining just 2.9% of the variance regarding treatment duration. Overjet was the only significant model variable and accounted for 10.6% of the variance. The cephalometric variables in this study showed that the ANB angle explained 6% of the variance. The other portion of the study evaluated predictors for class II duration. The investigators found that 56.7% of the variance could be explained by six variables; type of class II appliance, number of months of class II appliance wear, number of months of elastic wear, maxillary expansion, number of debonds, and average time between appointments. The results for the class II duration were very significant; however, the variables used are non-predictive in nature.

Private Practice Versus University Programs

A research project evaluating treatment duration, based solely on graduate clinic records could pose possible limitations. A practicing orthodontist may feel that treatment duration in a graduate school setting are not indicative of those in private practice. In a school setting, the cases are treated by a resident under the

guidance of a faculty member and thus one might assume that treatment times could be longer due to the teaching involved with the cases.

McGuiness and McDonald, in 1998, reported that treatment duration in a postgraduate teaching environment can be longer if the patient was passed on to a new resident during treatment. They examined the finished cases by a resident over a one year period, with a group of 36 patients entirely treated by a single student and a second group of 147 patients finished after being transfered to a second resident. The authors found that the post-PAR scores where very similar for the two groups but the transfered patients had a treatment time on average of eight months longer. The treatment duration means were 17.67 ± 4.15 months for one resident therapy and 26.1 ± 6.78 months for transfered therapy. This study reported that post-PAR scores were similar but failed to stress the fact that the pre-PAR scores for the transfered patients were greater. Thus, the transferred cases were more complex which could explain the greater length of treatment time.

In 2002, Mascarenhas and Vig published a study comparing treatment outcomes in educational and private

practice settings. The design for the study was to compare chart information, PAR scores, and treatment duration for 143 private practice patients and 165 graduate clinic patients. These cases were treated over the same time period from 1997 to 2001. They found that patients started in private practice began treatment at an earlier age, required fewer extractions, and had longer treatment times then those treated in the graduate clinic. The mean treatment length in private practice was 33.0 ± 18.5 months as compared to 27.5 ± 11.8 months for the student clinic. They also found that the post-PAR scores where very similar for both groups. This study contradicts the supposition that teaching cases take longer, which may be explained by the private practitioner starting cases at an earlier age before all the permanent dentition have erupted.

In 2005, Cook et al. compared treatment outcomes from private practices and university programs using the American Board of Orthodontics grading system. The investigators randomly selected seventy-seven subjects from three postgraduate orthodontic clinics and sixty-two subjects from three private orthodontic practices. All of the subjects had class II division 1 malocclusions, an

ANB angle equal to or greater then 4 degrees, and were treated with premolar extractions. The post-treatment casts were measured and scored using the ABO grading system. The results show that there is no significant difference in the overall quality of treatment outcome between private practices and university programs.

These previous studies show the difficulty of predicting treatment duration. Several studies have shown that treatment decisions and patient variables have a significant impact on the length of orthodontic treatment. The quest for finding predictors of treatment duration has produced conflicting results; however, this may be the result of patient and variable selection. The most recent studies have shown that treatment time and quality of results were unaffected by the location of treatment. Thus, the current study will take into account the information obtained by these previous studies, while avoiding their shortcomings.

STATEMENT OF HYPOTHESIS

The objective of this study is to predict treatment duration using data that is commonly collected by orthodontists as part of the pre-treatment evaluation. This data will come from patient histories, model analysis, cephalometric analysis, and the clinical examination. In addition, variables will also come from the panoramic radiograph and the treatment plan. In total, forty-nine variables will be compared to one primary treatment outcome, treatment duration, and three secondary outcomes; number of appointments, number of broken appointments, and post-PAR scores. The goal of this study is to evaluate the predictive nature of many common pre-treatment variables with regards to treatment duration.

Null Hypothesis

There is no group of pretreatment variables that predict treatment duration for orthodontic patients. If rejected, there would be a group of pretreatment variables that predict treatment duration.

Predicting Treatment Duration Using Pre-treatment Patient Variables

Authors: Clifford Lowdenback, DMD[a]

Mark Hans, DDS, MSD[b]

Doug Amberman, DDS, MSD[c]

Martin Palomo, DDS, MSD[d]

Suchitra Nelson, MS, PhD[e]

Yumi Abei, DDS, MSD[f]

a- Resident, Department of Orthodontics, Case Western Reserve University, Cleveland, OH

b- Professor and Chairman of Orthodontic Department at Case Western Reserve University in Cleveland, OH

c- Professor, Department of Orthodontics, Case Western Reserve University, Cleveland, OH

d- Assistant Professor, Department of Orthodontics, Case Western Reserve University, Cleveland, OH

e- Assistant Professor, Department of Community Dentistry, Case Western Reserve University, Cleveland, OH

f- Part-time Faculty, Department of Orthodontics, Case Western Reserve University, Cleveland, OH

Reprint requests to: Mark Hans, DDS, MSD, the Department of Orthodontics, Case Western Reserve University, 10900 Euclid Ave., Cleveland, OH, 44106-4905.

Abstract:

Although two years is the most common estimate for orthodontic treatment duration a review of the literature shows that mean treatment times vary between 18 and 31 months. To address the need for more accurate estimates of treatment duration the present study used forty-nine pre-treatment variables abstracted from the treatment charts of 261 consecutively finished patients. All patients were treated in the graduate orthodontic clinic at Case Western Reserve University. Forced-all multiple regression showed 43.0% of the variance explained by all forty-nine variables. Stepwise multiple regression identified the six most important variables. They were pre-treatment PAR score, number of extractions, start age, lower facial height, maxillary midline deviation, and Angle classification. These six variables explained 31.4% of the variation in treatment duration. A discriminant function based on these six variables correctly identified 80% of the patients whose treatment lasted less than 20 months and 80% of the patients whose treatment lasted longer than 30 months. Therefore, we conclude that this discriminant model could be useful to improve treatment duration estimates in the orthodontic office.

Introduction:

For the most part, orthodontic treatment has been thought of by both patients and practitioners as a two year investment. Although most patients accept some uncertainty as to when their braces will be removed, an accurate prediction of treatment duration would give the orthodontist and the patient a reachable target. In 2000, O'Conner[4] published a survey used to gain insight into patient's perceptions of orthodontic treatment. The second most frequent patient recommendation, following reduction in fees, was true and accurate time estimates. From an orthodontist's perspective, accurate predictions could lead to better assessment of the number of appointments needed for treatment and more efficient office management. Shia[7], in 1986, suggested that treatment overruns can amount to 20-30 percent of active patients in some offices, with these "overruns" increasing both the overhead and financial liability of the practice.

Fink and Smith[2] reported on 118 patients from six offices and found the average treatment time to be 23.1 months, with a range of 9 to 44 months. A master thesis study from Case Western Reserve University in 2001[5] also supported the twenty-four months estimate. The study obtained data on 25,364 patients from thirteen practices using the same patient management software program, with the average overall duration of orthodontic treatment being 25.2 months, with a range from 17.7 to 30.7 months.

Other studies have shown treatment durations longer then twenty-four months. Vig et al.[8] reported on 438 patients from five offices in an effort to evaluate treatment duration between extraction and non-extraction therapy and found that the mean

treatment duration was 31.2 months for non-extraction cases and 31. 3 months for extraction cases, with a range for the entire sample of 4 months to 7 years 6 months. A more recent study by Beckwith et al.[1] in 1999 looked at 140 patients from five offices and found a treatment time average of 28.6 months, with a range from 23.4 to 33.4 months.

Multiple variables contribute to the length of orthodontic treatment. Orthodontists use mechanics and appliances they feel comfortable with and each patient presents with unique malocclusions. A more accurate prediction of treatment time could be achieved if pre-treatment patient variables that contribute to treatment length were known.

Several studies have looked for predictors of treatment duration. In 1990, Vig et al.[8] evaluated the difference in treatment times between extraction and non-extraction therapies. Their findings showed that the number of arches treated, the number of treatment phases, and the particular practice chosen were the variables that affected treatment duration.

In 1992, Fink and Smith[2] also evaluated variables affecting the length of treatment. Their results using a multiple regression statistical analysis showed 24.9% of the variance of treatment duration being explained by five variables: number of premolars extracted, the number of broken appointments, pre-treatment mandibular plane angle, pre-treatment ANB, and pre-treatment Salzmann Index.

Beckwith et al.[1], also using a multiple regression model, explained 46.9% of the variance with five variables: number of missed appointments, number of replaced brackets, number of treatment phases, number of negative chart entries for bad oral

hygiene, and headgear wear during treatment. Three of the five variables were non-predictive because they can only be calculated at the end of treatment.

In 2000, Kim et al.[3] evaluated forty-one cephalometric measurements and their ability to predict post-PAR scores, relative improvement, and treatment duration. With regards to treatment duration, 20% of the variance was explained by the cephalometric variables. Two of the forty-one were statistically significant; the upper incisor angulation to the NA line and the lower incisor angulation to the NB line.

Popowich et al.[6], in 2005, evaluated 237 patients from three offices that representing three groups: Class I non-extraction, Class II div I extraction and Class II div I non-extraction patients. Age was the only significant patient factor explaining 2.9% of the variance of treatment duration. Overjet was the only significant model variable and accounted for 10.6% of the variance. The cephalometric variables in this study showed that the ANB angle explained only 6% of the variance. The other portion of the study was to evaluate predictors for Class II treatment duration. The investigators found that 56.7% of the variance could be shown by six variables: type of Class II appliance, number of months of Class II appliance wear, number of months of elastic wear, maxillary expansion, number of debonds, and average time between appointments. The results for the Class II treatment duration were very significant; however, the variables used were non-predictive.

The goal of this study is to predict treatment duration using data that is commonly collected by orthodontists as part of the pre-treatment evaluation.

Materials and Methods:

This study was approved by the Institutional Review Board at Case Western Reserve University and used 261 consecutively finished patients treated by eight residents in the graduate orthodontic clinic from 2004 to 2005. All patients had complete pre-treatment records, were under the age of 18, and were treated with full fixed appliances. Data were abstracted from multiple sources including clinical exam forms, patient histories, panoramic radiographs, cephalometric analysis sheets, treatment plans, patient models, and appointment chart entries. In total, forty-nine pre-treatment variables and four treatment outcomes were collected by one investigator (CL) and are listed in Table I. PAR scores were calculated, by a calibrated examiner (YA).

To reduce the number of variables, a Pearson correlation test was performed to find variables that were highly correlated ($p > 0.70$). Six pairs of variables were highly correlated and one of the two variables in each pair was eliminated based on this finding. The eliminated variables were upper one to NA (degrees), lower one to NB (degrees), Po to NB, lower one to mandibular plane, convexity, and A-B plane. Two other variables were eliminated; the number of supernumerary teeth due to the small number of affected patients and the medical history variable because patient responses were too subjective. Thus, there were forty-one pre-treatment variables to evaluate the treatment outcomes.

Statistical analysis:

Both forced all and step-wise multiple regressions were performed using the forty-one independent pre-treatment variables to predict treatment duration, number

of appointments, number of broken appointments and post-PAR scores. Variables selected using the stepwise method were then used in a discriminant analyses to predict treatment durations below 20 months and over 30 months. The discriminant analysis was performed on the sample as a whole and then the sample minus one, allowing for cross-validation.

After the initial results were known, exploratory analyses were run on the data using different combinations of variables. The same statistics were used on the data set after removing pre-PAR as one of the variables. The data was further evaluated with the elimination of all variables that may be included in the pre-Par score: maxillary crowding, mandibular crowding, angle classification, overbite, overjet, maxillary midline deviation, and mandibular midline deviation.

Results:

The results for the multiple regressions are listed in Table II and Table III. The forced-all regression with treatment duration as the outcome showed an $R^2 = 0.430$. Thus, 43% of the variance was explained by the forty-one pre-treatment variables in the model. The stepwise regression for this outcome showed that six of the forty-one variables were able to explain 31.4% of the variance: pre-PAR score, number of extractions, start age, lower facial height, maxillary midline deviation, and Angle classification. Thus, the majority of the variance with regards to treatment duration can be explained by these six variables.

The regression results with post-PAR as the outcome were not as significant. The R^2 for the forced-all regression was 0.231 or 23% of the explained variance. When the 41 variables were placed in a stepwise regression, 13% of the variance

related to post-PAR was explained by 4 variables; pre-PAR scores, number of missing teeth, patient's pubertal status, and the treating resident.

The third outcome to be evaluated was number of broken appointments. The forced-all regression for this outcome showed an R^2 =0.289 (or 28.9%). Six variables from the stepwise regression explained 17.9% of the variance for number of broken appointments. These variables were pre-PAR scores, number of extractions, lower facial height, patient habits, upper one to NA, and FMA.

The final outcome to be placed into the regression equations was the number of appointments. The forty-one variables were able to explain 36.4% (R^2 = 0.364) of the variance with this outcome. The stepwise regression then showed six variables factoring together to produce 25.8% of the variance. These variables were pre-PAR scores, amount of mandibular crowding, Angle classification, number of extractions, lower facial height, and start age.

The discriminant analysis was used to evaluate how effective these same six variables were in predicting treatment time extremes. Only the patients that were treated for 20 months and under and 30 months and over were included in this sample. The results produced a correct classification 80.7% of the time in the original sample and 79.3% of the time in the cross-validated sample.

Although pre-Par was found to be a significant predictor, it is not a routine measurement made at most offices during the initial exam. Therefore, all statistics were performed on the data after excluding Pre-Par scores as a treatment variable. The remaining forty variables were able to explain 37.3% of the variance of treatment duration. The stepwise multiple regression produced eight variables that accounted

for 28.1% of the variance. These elements were extractions, angle class, lower facial height, FH-NA, overbite, upper one to NA (mm), habits, and posterior crossbite. A discriminant analysis was performed with these eight variables to evaluate their predictability with regards to treatment duration extremes. They were able to correctly classify 80.0% of the original sample and 77.3% of the cross-validated sample. These results and how they compare to the results of the other two analyses can be viewed in Table IV.

The data was also analyzed after removing seven variables that could be considered being a part of the pre-Par score. The forced-all multiple regression was able to explain 37.2% of the variance of treatment duration. The stepwise multiple regression produced four variables that explained 27.4% of the variance. These variables were pre-PAR scores, extractions, lower facial height, and start age. A discriminant analysis was also performed with these four variables to see how predictable they were with regards to the treatment time extremes defined above. They were able to correctly classify the original sample 78.75 of the time and the cross-validated sample 78.0% of the time. These results are also displayed in Table IV.

Discussion:

The 43.0% of variance explained with treatment duration as the dependent variable was comparable to previous studies[1,2,3,6]. However, the three secondary outcomes produced R^2 values that were not as statistically significant. The same forty-one variables were used in all of the equations and explained differing amounts of variance for each outcome; 36.4% of the variance was explained with the number

of appointments, 28.9% was seen with the number of broken appointments as the outcome, and 23.1% was shown using post-PAR scores as the dependent variable. These varying results may be due to the pre-treatment variables used in the study. Compliance was not a variable but would be expected to play a large role in predicting the number of broken appointments. Post-PAR scores is a measure of the quality of treatment and thus predictors of how well an orthodontist finishes a case would have had to been included.

The variables that were shown to be significant ($p < 0.05$) with each of the outcomes are listed in Table II. Treatment duration had six variables that were significant; number of extractions, pre-PAR score, start age, Angle classification, amount of mandibular crowding, and patient profile. Five of the six variables were also significant with the number of appointments as the treatment, patient habits replaced patient profile as the sixth variable. The same variables would be expected to be seen in both forced-all multiple regression equations because as treatment duration increases so too does the number of appointments.

The other two secondary outcomes, number of broken appointments and post-PAR scores, showed five variables that were significant. The number of broken appointments is a difficult outcome to predict unless an investigator is able to include psychological and social variables into the analysis. In the current study, the five significant variables would not seem to be predictive of the tendency for a patient to keep an appointment. The last outcome, post-PAR scores, showed three variables, pre-Par score, the treating resident and the number of missing teeth, which would seem to have a direct effect on the post-PAR score. However, the variables of

whether the patient has reached puberty and their profile would not appear to greatly affect the post-PAR score.

The variability in the results of the forced-all multiple regressions may be due to the large number of variables that were included in this study. Since no previous study had included only pre-treatment variables it was felt that all available variables needed to be studied so that statistics could lead us to those that were relevant. If we had only selected variables that were felt to be the most important then a selection bias would have been introduced into the study that may have affected the results.

As seen in Table III, the stepwise multiple regressions were limited in their results when the three secondary outcomes were used as the dependent variables for the same reasons as previously discussed. Thus, the discussion on the stepwise multiple regressions will be limited to the results with treatment duration as the outcome. Six variables were able to explain 31.4% of the variance. Two factors, pre-PAR scores and the number of extractions, explained 23.6% of the overall variance. The other 8.2% of the variance was explained by the angle classification, the lower facial height, the maxillary midline deviation, and the patient's start age. As the pre-Par score, the number of extractions, the amount of maxillary midline deviation, and patient convexity increases so too does treatment time. When the Angle classification changes from Class I to Class III the treatment duration also increases, while the patient's start age has an inverse relationship in that as age increases the treatment length decreases.

The most surprising result may be the cephalometric elements that were not shown to greatly affect the length of treatment. Past studies[2,3,6] had shown overjet,

ANB, FMA, upper one to NA and lower one to NB to play a role in predicting treatment duration but none of these variables factored into the current study's statistical results. In fact, 22 cephalometric measurements were used as variables and not one appeared as a major contributor in explaining the variance of treatment time. The large data set and sample size used in the current study, as compared to past studies, may have decreased the importance of cephalometric measures in the results..

The discriminant analysis focused on treatment duration extremes. Thus, only patients who had treatments 20 months and under and 30 months and over were included in this sample. The results of this analysis showed a higher predictability of the six key variables. They were able to correctly classify 80.7% of the original sample and 79.3% of the cross-validated group. These variables were very efficient in predicting extremes with four-fifths of the sample correctly classified. This analysis shows the usefulness of the results of this study. These six variables could allow an orthodontist to more accurately determine those patients that will have shorter or longer treatments on average.

The elimination of pre-Par scores as a variable was an exploratory statistical analysis performed since it was the only variable of the significant six that is difficult to evaluate at an initial exam. However, the results of the statistics showed a drop in the amount of variance that was able to be explained as well as an increase in the number of variables that were needed to explain a large portion of this variance, as shown by the stepwise regression results. An orthodontist would have to evaluate eight variables in order to explain only 28.1% of treatment duration variance. In

addition, the ease of obtaining these eight variables as compared to the original six may not be as easy at the initial exam.

Another data set was created and analyzed to eliminate the possibility of repeating variables between pre-PAR scores and its components. Seven variables were eliminated. The 34 remaining variables, using a forced-all multiple regression, were able to explain 37.2% of the variance of treatment duration which is a decrease from the 43.0% explained by the original 41 variables. The stepwise multiple regression showed the same variables as the original stepwise regression minus the two eliminated due to possible conflict, angle classification and maxillary midline deviation. Thus, the elimination of PAR score components did not increase the significance of the remaining variables nor did it enhance the significant variables since the four stepwise variables accounted for 27.4% of the variance. These four elements were then placed in a discriminant analysis to evaluate how predictive they were with regards to the treatment duration extremes. They correctly classified 78.7% of the original group and 78.0% of the cross-validated group.

The PAR components were not eliminated as repeating variables because they did not show a high correlation ($p > 0.70$) with pre-PAR scores through the Pearson correlation test. This may be explained by the fact that each individual component was used in its un-weighted form. The PAR index is made up of six components that are multiplied by a number based on their importance in the make-up of the index. Thus, the un-weighted components do not correlate with the composite score of the entire Par index and should be included as individual variables in this study.

One of the limitations of this study was the variables selected were those used by the Case Western Reserve Department of Orthodontics. Many of these variables are common in diagnosing but it is unrealistic to think that all orthodontists use the same clinical exam forms and cephalometric analysis sheets. However, the six key variables, with the exception of the pre-Par score, are all elements that can be easily observed at the time of the patient's clinical exam and should be a part of most exam forms.

Another limitation is the fact that all of the data was recorded in its original form and not re-measured or re-evaluated. Thus, it may be felt that error in these observations and measurements may have affected the results of the study. However, it was felt that by recording the original findings of each resident the study was more representative of a private practice setting in which each orthodontist uses his/her clinical judgment. The large sample size (261 patients) and the number of residents (8) should reduce the amount of random error in the study that may result from using the original findings.

Conclusions:

Based on this study of 261 patients finished by the last two graduating classes of the CWRU Orthodontic Department, the following can be concluded:

1. All forty-one variables explained 43.0% of the variation in treatment duration.
2. These same variables explained a smaller percentage of the variance for the other three secondary outcomes: number of appointments (36.4%), number of broken appointments (28.9%), and post-PAR scores (23.1%).

3. Six variables explained 31.4% of the variance. These variables were pre-PAR score, number of extractions, Angle classification, lower facial height, maxillary midline deviation, and patient's start age.
4. These six variables were also able to correctly classify the treatment duration of 80% of the patients whose treatment lasted 20 months or shorter and those whose treatment lasted 30 months and longer.

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Table I.--Pre-treatment Variables, Treatment Outcomes, and Their Sources

Pre-Treatment Variable	**Source**	**Variable Type**
Resident	Treatment plan	Categorical
Gender	Patient histories	Categorical
# of Extractions	Treatment plan	Continuous
Start Age (months)	Patient histories	Continuous
Marital Status of parents	Patient histories	Categorical
School Grades	Patient histories	Categorical
Family with ortho experience	Patient histories	Categorical
Reached Puberty	Patient histories	Categorical
Medical History	Patient histories	Categorical
# of congenitally missing teeth	Panoramic radiograph	Continuous
# of supernumerary teeth	Panoramic radiograph	Continuous
# of impacted teeth	Panoramic radiograph	Continuous
Angle Class (molars)	Clinical exam form	Categorical
Overjet (mm)	Clinical exam form	Continuous
Overbite (mm)	Clinical exam form	Continuous
Maxillary arch form	Clinical exam form	Categorical
Mandibular arch form	Clinical exam form	Categorical
Maxillary crowding	Clinical exam form	Continuous
Mandibular crowding	Clinical exam form	Continuous
Presence of Posterior Crossbite	Clinical exam form	Categorical
Habits	Patient histories	Categorical
Lip Competence	Clinical exam form	Categorical
Maxillary midline	Clinical exam form	Categorical
Mandibular midline	Clinical exam form	Categorical
Pt profile	Clinical exam form	Categorical
Lower facial height	Clinical exam form	Categorical
Facial plane	Cephalometric analysis	Continuous
Convexity	Cephalometric analysis	Continuous
A-B plane	Cephalometric analysis	Continuous
Y-axis	Cephalometric analysis	Continuous
Occlusal plane	Cephalometric analysis	Continuous
Interincisal angle	Cephalometric analysis	Continuous

Table I (cont.).--Pre-treatment Variables, Treatment Outcomes, and Their Sources

Pre-Treatment Variable	**Source**	**Variable Type**
Lower one to occlusal plane	Cephalometric analysis	Continuous
Lower one to mandibular plane	Cephalometric analysis	Continuous
Lower one to AP plane	Cephalometric analysis	Continuous
SNA	Cephalometric analysis	Continuous
SNB	Cephalometric analysis	Continuous
ANB	Cephalometric analysis	Continuous
Upper one to FH	Cephalometric analysis	Continuous
FH-NA	Cephalometric analysis	Continuous
FMA	Cephalometric analysis	Continuous
IMPA	Cephalometric analysis	Continuous
FMIA	Cephalometric analysis	Continuous
Upper one to NA (mm)	Cephalometric analysis	Continuous
Upper one to NA (degrees)	Cephalometric analysis	Continuous
Lower one to NB (mm)	Cephalometric analysis	Continuous
Lower one to NB (degrees)	Cephalometric analysis	Continuous
PO to NB	Cephalometric analysis	Continuous
Pre-PAR score	Patient Models	Continuous
Treatment Outcomes	**Source**	**Variable Type**
Post-PAR score	Patient Models	Continuous
# of broken appointments	Appointment chart entries	Continuous
# of appointments	Appointment chart entries	Continuous
Treatment duration (months)	Appointment chart entries	Continuous

Table II. -- Results of Multiple Regressions (forced-all) with 41 Pre-treatment Variables and 4 Separate Treatment Outcomes. $p \leq 0.05$

Outcome	**Tx. Duration**	**Post-Par**	**# of broken appts**	**#of appts**
R^2	0.430	0.231	0.289	0.364
Significant Variables (p-value)	Extractions (0.000)	Pre-PAR (0.001)	Extractions (0.001)	Pre-PAR (0.001)
	Pre-PAR (0.000)	Resident (0.006)	Pre-PAR (0.004)	Extractions (0.001)
	Start age (0.011)	# of missing teeth (0.034)	FMA (0.009)	Start age (0.011)
	Angle Class (0.016)	Reached Puberty (0.037)	ANB (0.018)	Angle Class (0.013)
	Mand. crowding (0.026)	Pt. profile (0.042)	Pt. profile (0.021)	Mand. crowding (0.022)
	Pt. profile (0.046)			Habits (0.027)

Table III. -- Results of Multiple Regressions (stepwise) with 41 Pre-treatment Variables and 4 Separate Treatment Outcomes.

Outcomes	**Tx. duration**	**Post-PAR**	**# of broken appts**	**# of appts**
Significant Variables (R^2 with variable)	Pre-PAR (0.178)	Pre-PAR (0.058)	Pre-PAR (0.071)	Pre-PAR (0.106)
	Extractions (0.236)	#of missing teeth (0.086)	Extractions (0.112)	Mand. crowding (0.163)
	Angle class (0.268)	Reached puberty (0.109)	Lower facial height (0.134)	Angle class (0.195)
	Lower facial height (0.289)	Resident (0.131)	Habits (0.151)	Extractions (0.218)
	Maxillary midline (0.302)		Upper one to NA (0.166)	Lower facial height (0.239)
	Start age (0.314)		FMA (0.179)	Start age (0.258)

Table IV: Summary of Statistics performed on Three Different Data Sets

	41 variables	**40 variables (no Pre-Par scores)**	**34 variables (no Par components)**
R^2	0.430	0.373	0.372
Stepwise multiple regression (R^2 with variable)	Pre-Par score (0.178)	Extractions (0.107)	Pre-PAR score (0.178)
	Extractions (0.236)	Angle class (0.184)	Extractions (0.236)
	Angle class (0.268)	Lower facial height (0.212)	Lower facial height (0.262)
	Lower facial height (0.289)	FH-NA (0.226)	Start age (0.274)
	Maxillary midline (0.302)	Overbite (0.240)	
	Start age (0.314)	Upper one to NA (mm) (0.257)	
		Habits (0.264)	
		Posterior crossbite (0.281)	
Discriminant Analysis with treatment time extremes	Original groups 80.7%	Original groups 80.0%	Original groups 78.7%
	Cross-validated groups 79.3%	Cross-validated groups 77.3%	Cross-validated groups 78.0%

APPENDIX I

Raw Data

Pt #	Gender	Extractions	Start Age	Marital Status	School grades	Family with ortho experience	Reached puberty	# of missing teeth	# of Impactions
1002	Female	0	11 years 2 months	Married	A/B	Yes	No	0	#11
1003	Male	0	11 years 8 months	Divorced	B	Yes		0	0
1004	Female	0	12 years 9 months	Married	A	Yes	No	0	0
1005	Male	#5, #12, #21, #28	15 years 2 months	Married	B	Yes	Yes	0	0
1006	Female	#5, #12, #20, #28	12 years 4 months	Married	A	No	Yes	0	#4, #20
1007	Female	0	13 years 9 months	Married	B	No	Yes	0	0
1008	Male	0	12 years 10 months	Married	A/B	Yes	Yes	0	#13
1009	Female	0	13 years 6 months	Married	A	Yes	No	0	0
1010	Male	#4, #13, #20, #29	13 years 9 months	Divorced	B	No	No	0	#6, #11
1011	Female	#5, #12, #21, #28	14 years 7 months	Divorced	B	Yes	Yes	0	0
1012	Female	0	13 years 0 months	Married	C	Yes		0	0
1013	Female	#11	13 years 5 months	Married	A/B/C	No	Yes	0	0
1014	Male	0	16 years 0 months	Widowed	B	No	Yes	0	0
1015	Female	0	14 years 2 months		A	No	Yes	0	0
1016	Male	0	15 years 7 months		D	No	Yes	0	0
1017	Male	0	13 years 2 months	Married	A	Yes	No	0	#11
1018	Female	#5, #12	16 years 3 months	Married	A	No	Yes	#20, #29	0
1019	Female	0	11 years 7 months	Widowed	B	Yes	No	0	0
1020	Male	#5, #12, #21, #28	14 years 3 months	Married	B	Yes	Yes	#1, #32	0
1021	Female	0	13 years 8 months	Married	A	No	Yes	0	0
1023	Male	0	14 years 1 month	Divorced			Yes	0	0
1025	Female	0	12 years 9 months	Married	A	No	Yes	0	0
1026	Male	0	15 years 3 months	Divorced	A	Yes	Yes	#17, #32	0
1027	Female	0	13 years 9 months	Divorced	B	No	Yes	0	0
1029	Female	0	14 years 5 months	Married	A	Yes	Yes	0	0
1030	Male	#4, #13, #21, #28	14 years 2 months	Married	B	Yes	No	0	0
1031	Female	0	11 years 7 months	Widowed	A	No	No	0	0
1032	Female	#13	16 years 9 months		B	Yes	Yes	0	0
1033	Male	0	14 years 2 months	Widowed	B	Yes	Yes	0	0
1034	Male	0	12 years 10 months	Married	A	Yes	No	0	0
1035	Female	0	12 years 11 months	Married	B	Yes	Yes	0	0
1036	Female	0	14 years 11 months	Married	A	No	Yes	0	0
1037	Female	#5, #12, #21, #28	10 years 11 months	Divorced	A	Yes	No	0	#20, #13
1038	Female	0	15 years 1 month	Married	A/B	No	Yes	0	0
1039	Female	0	13 years 10 months	Married	A	Yes	No	0	0
1041	Female	0	12 years 0 months	Married	B	Yes	Yes	0	#4
1042	Female	0	13 years 3 months		A	No	No	#7, #10	0
1043	Female	0	13 years 1 month	Widowed	B	Yes	Yes	0	0
1044	Female	0	12 years 11 months	Married	A/B	Yes	Yes	0	0
1046	Male	0	14years 4 months			Yes	Yes	0	0
1047	Male	0	12 years 7 months	Divorced	C	No	No	0	0
1048	Female	0	15 years 6 months	Married	A	No	Yes	0	0
1049	Female	0	13 years 0 months	Married	C	Yes	No	0	0
1050	Female	0	13 years 8 months	Married	B	Yes	No	0	0
1052	Male	0	13 years 0 months	Married	A	Yes	No	0	0
1053	Male	0	13 years 2 months	Married	A/B	No	Yes	0	0
1054	Female	0	12 years 0 months		B	Yes	No	0	0
1055	Female	0	12 years 10 months	Divorced	A	No	No	0	#6
1057	Female	0	13 years 0 months	Married	A	Yes	Yes	0	0
1058	Female	#5, #12, #21, #28	12 years 6 months	Married	B	Yes	No	0	0
1059	Male	#5, #12, #21, #28	13 years 6 months	Married	A	Yes	No	0	0
1060	Female	#5, #12, #20, #29	11 years 9 months	Married	A	No	No	0	0
1061	Male	#5, #12, #20, #29	13 years 1 month	Married	A	Yes	No	0	#6, #11
1062	Female	0	12 years 2 months	Married	A	No	Yes	0	0
1063	Male	0	17 years 6 months	Married	A/B	No	Yes	0	0
1064	Female	#5, #12, #21, #28	11 years 7 months	Married	C	No	Yes	0	0
1065	Female	0	13 years 11 months	Married	A	Yes	Yes	0	0
1066	Male	#5, #12, #21, #28	13 years 11 months	Married	B	Yes	Yes	0	0
1069	Female	#4, #13, #20, #29	13 years 9 months	Married	B	Yes	Yes	0	0
1070	Male	0	13 years 6 months	Married	C	Yes	Yes	0	0
1071	Male	#4, #13, #20, #29	11 years 1 month	Married	B	Yes	No	0	0
1073	Female	0	13 years 1 month	Married	B	Yes	Yes	0	0
1076	Female	#5, #12	11 years 1 month	Married	B	No	No	0	0
1077	Female	0	12 years 1 month	Married	B	Yes		0	0
1078	Male	#5, #12, #21, #29	13 years 4 months	Divorced		No	No	0	0
1079	Male	0	13 years 6 months	Married	A	Yes	No	0	0
1080	Male	0	13 years 0 months	Married	C	No	No	0	#6, #11
1081	Female	0	14 years 4 months	Married	B	No	Yes	0	0
1083	Female	0	15 years 11 months	Married	B	Yes	Yes	#1, #11, #16	0
1084	Female	0	14 years 4 months		A	Yes	Yes	0	0
1085	Female	#4, #13	15 years 8 months	Married	A	No	Yes	#25	0
1088	Female	0	12 years 7 months	Married	A	No		#7	0
1089	Female	35, #12, #21, #28	13 years 7 months	Married	A/B	No	No	0	0
1090	Male	0	14 years 3 months	Married	B	Yes	Yes	#15	0
1091	Female	0	14 years 10 months	Divorced	B	Yes	Yes	0	0
1092	Female	0	14 years 5 months	Married	A	Yes	Yes	0	0
1093	Female	0	13 years 3 months	Married	A	Yes	Yes	0	0
1096	Male	0	13 years 5 months	Divorced	A	Yes	No	0	0
1097	Female	#5, #12, #21, #28	14 years 11 months		A/B	No		0	0
1098	Male	0	16 years 3 months	Divorced	A	Yes	Yes	0	0
1099	Female	0	14 years 6 months	Married	A	No	No	0	0
1100	Female	0	12 years 9 months	Married	A	Yes	No	#1, #16, #17, #32	0
1101	Female	0	11 years 4 months	Married	B	No	No	0	0
1102	Female	0	14 years 10 months	Married	A/B	Yes		0	0
1103	Male	0	14 years 0 months	Widowed	D	No	Yes	0	0
1105	Female	#12	12 years 5 months			No	Yes	#24	#11
1106	Female	0	14 years 8 months	Divorced	A	No	Yes	0	0
1107	Female	#5, #12, #21, #28	11 years 7 months	Married	a	Yes		#26	0
1108	Female	#4, #13, #21, #28	12 years 4 months	Married	A	Yes	No	0	0
1109	Female	0	12 years 8 months		B	No	Yes	0	0

Pt #	Gender	Extractions	Start Age	Marital Status	School grades	Family with ortho experience	Reached puberty	# of missing teeth	# of impactions
1110	Male	0	11 years 10 months	Married	B	Yes	No	0	#6, #11, #22, #27
1111	Male	0	14 years 11 months	Divorced	B/C	Yes	Yes	0	0
1112	Male	0	13 years 8 months	Married	A			#17	0
1114	Male	#5, #12	13 years 6 months	Married	A	Yes	Yes	0	#20, #6
1115	Female	0	15 years 7 months	Married	A	Yes	Yes	0	0
1121	Female	0	15 years 11 months	Widowed	C	No	Yes	#17	#20
1122	Female	0	12 years 6 months	Married	A	Yes	No	0	0
1123	Female	0	14 years 4 months	Married	A	Yes	Yes	0	0
1125	Female	0	12 years 4 months		C	Yes	Yes	0	0
1126	Female	0	13 years 3 months		A	No	Yes	#17, #32	0
1128	Male	#5, #12	15 years 10 months	Divorced	B	No	Yes	0	0
1129	Female	#5, #12, #21, #28	16 years 0 months	Married	A	Yes	Yes	0	0
1130	Female	0	13 years 8 months	Married	B	Yes	Yes	0	0
1131	Male	0	17 years 10 months	Married	B	Yes	Yes	#7, #10	#4, #20
1132	Female	#5, #12, #21, #28	17 years 10 months		A	No	Yes	0	0
1134	Male	0	13 years 8 months	Married	A	No	Yes	0	0
1135	Male	#4, #13	11 years 6 months	Married	B	Yes	No	0	0
1138	Male	#5, #12	13 years 5 months	Married	A/B	Yes	Yes	0	0
1139	Female	#4, #13	12 years 6 months	Married	A/B	No	Yes	#20, #29	0
1140	Female	#5, #12	17 years 0 months	Married	A	No	Yes	0	0
1142	Male	#5, #12, #20, #29	16 years 1 month	Married	A	No	Yes	0	0
1143	Female	0	12 years 9 months	Married	A/B	Yes	Yes	0	0
1144	Female	0	15 years 7 months	Married	A		No	0	0
1145	Male	#4, #13. #20, #29	16 years 2 months		B	Yes	Yes	0	0
1148	Male	0	12 years 7 months	Married	A	No	Yes	0	0
1149	Female	#4, #13, #20, #29	15 years 2 months	Married	A	Yes	Yes	0	0
1151	Male	0	15 years 9 months		B	Yes	Yes	0	0
1152	Female	#10, #20, #29	11 years 6 months	Married	A	No	Yes	#7	0
1154	Female	#5, #12	12 years 2 months	Married	B/C	Yes	No	#24, #25	0
1156	Female	0	11 years 11 months	Divorced	A	No	No	0	0
1157	Male	0	12 years 3 months	Married	A/B	Yes	No	0	0
1158	Female	0	12 years 5 months	Married	B	Yes	Yes	0	0
1159	Female	#5, #12, #21, #28	10 years 5 months		A	No	No	0	0
1160	Male	0	14 years 0 months	Married	C	No	No	#9	0
1161	Female	0	13 years 0 months		B	Yes	Yes	0	0
1163	Male	#4, #13, #20, #29	12 years 5 months	Married	A/B	Yes	No	0	0
1164	Female	#4, #21, #29	12 years 5 months		D	No	No	#4, #12	0
1165	Female	#5, #12, #21, #28	14 years 0 months	Divorced	B	Yes	Yes	0	#6
1166	Male	0	12 years 2 months	Married	A	No	Yes	0	0
1167	Male	0	13 years 9 months	Married	A/B	Yes	Yes	0	0
1169	Male	#4, #13, #20, #29	13 years 10 months	Married		Yes	Yes	0	0
1170	Male	#5, #12	14 years 8 months	Married	A	Yes	Yes	0	0
1171	Female	0	11 years 11 months	Married	B	Yes	Yes	0	0
1172	Male	0	15 years 7 months	Married	A	Yes	Yes	0	0
1173	Female	#5, #12, #20, #29	14 years 1 month	Divorced	A	Yes	Yes	0	0
1174	Female	#5, #12, #21, #28	13 years 7 months	Separated	A	No	Yes	0	0
1176	Female	0	11 years 2 months	Married	A	Yes	Yes	0	0
1177	Male	0	15 years 2 months	Married	A	Yes	Yes	0	0
1178	Female	0	15 years 0 months	Divorced	B	Yes	Yes	0	#11
1179	Female	0	14 years 8 months		B	Yes	Yes	0	0
1182	Male	0	13 years 4 months	Married	A/B	Yes	No	0	0
1183	Female	0	12 years 2 months	Married	A	Yes	No	0	#6, #11
1184	Male	0	14 years 6 months	Married	A	Yes	Yes	0	0
1186	Male	#4, #13, #21, #28	13 years 10 months	Married	A	No	Yes	0	0
1187	Female	0	10 years 7 months		B	No	Yes	0	0
1188	Female	0	14 years 2 months	Married	A	No	Yes	0	0
1189	Male	0	13 years 5 months	Married	A	Yes	No	0	0
1190	Female	0	11 years 1 month	Married	A	No	No	0	0
1191	Male	0	12 years 5 months	Married	C	Yes	Yes	0	0
1192	Female	0	11 years 1 month	Married	A	Yes	No	0	0
1193	Female	0	11 years 11 months		C	No	No	0	0
1194	Female	#5, #12, #21, #28	12 years 2 months		B	Yes	Yes	0	0
1195	Male	0	13 years 7 months	Married	A	Yes	No	0	0
1196	Male	#5, #20, #29	14 years 11 months	Married	A	Yes	Yes	#10	0
1197	Male	0	14 years 10 months	Married	A/B	No	Yes	0	0
1198	Male	0	16 years 3 months	Married	B	Yes	Yes	0	0
1200	Female	0	12 years 1 month	Married	A	Yes	No	#17	0
1201	Male	0	13 years 11 months		C	No	No	0	0
1202	Male	#5, #12	11 years 4 months	Married	A	No	No	0	0
1203	Female	0	11 years 9 months		B	Yes	No	0	0
1204	Male	#5, #12, #21, #28	12 years 2 months	Married	B	Yes	No	0	0
1205	Female	0	10 years 2 months		C	No	No	0	#18
1206	Female	0	13 years 1 month	Married		No	No	0	0
1207	Female	0	11 years 11 months		A	Yes	No	0	0
1208	Male	#5, #12, #21, #28	11 years 10 months	Married	A	Yes	No	0	0
1209	Female	#5, #12. #21, #28	13 years 7 months	Married	C	Yes	Yes	0	0
1210	Male	#5, #12, #21, #28	13 years 5 months	Divorced	B	Yes	No	0	0
1211	Female	#21, #28	15 years 5 months		A/B	Yes	Yes	0	0
1212	Female	#5, #13	11 years 3 months	Married	B	Yes	No	0	0
1213	Female	0	16 years 5 months	Married	B	No	Yes	#32	0
1214	Female	0	17 years 0 months	Married	A	No	Yes	0	0
1216	Female	0	13 years 11 months	Divorced	A	No	Yes	0	0
1217	Male	#4, #13, #20, #29	12 years 6 months	Married	B	Yes	No	0	0
1218	Female	#5, #12, #21, #28	13 years 7 months	Married	C	Yes	Yes	0	0
1219	Male	0	14 years 8 months	Divorced	C	Yes	Yes	0	0
1220	Female	#5, #12, #21, #28	14 years 3 months	Married	B	Yes	Yes	0	0
1222	Male	#23	15 years 4 months		C	Yes	No	0	0
1223	Female	0	13 years 1 month		A	Yes	No	0	0
1224	Male	#5, #12, #21, #28	12 years 4 months	Married	C	No	No	0	0
1225	Female	0	11 years 11 months		A	No	No	#17, #32	0

Pt #	Gender	Extractions	Start Age	Marital Status	School grades	Family with ortho experience	Reached puberty	# of missing teeth	# of impactions
1226	Female	0	14 years 2 months	Married	B	Yes	Yes	#10	0
1227	Male	0	12 years 2 months	Married	B	No	Yes	0	0
1229	Female	0	11 years 7 months	Married	B	No	Yes	0	0
1230	Female	#4, #13, #21, #28	15 years 0 months	Married	A	Yes	Yes	0	#18,#31
1232	Female	0	12 years 9 months	Married	A	No	No	0	0
1234	Female	#4, #13	17 years 11 months	Divorced	B	No	Yes	0	0
1236	Female	#5, #12	13 years 9 months		A	No	No	0	0
1237	Female	0	11 years 2 months	Married	B	Yes	No	0	0
1238	Female	0	12 years 10 months	Married	A	Yes	Yes	0	0
1239	Female	0	15 years 10 months		A/B	Yes	Yes	#21, #29	0
1240	Female	0	13 years 11 months	Married	A/B	Yes	Yes	0	0
1241	Female	0	15 years 2 months	Married	B	No	Yes	0	#4
1242	Male	0	12 years 5 months			No	No	0	0
1244	Female	0	14 years 0 months	Married	A	Yes	No	#4, #13	0
1245	Male	0	14 years 8 months	Married	B	No	Yes	0	0
1246	Female	0	15 years 3 months	Married	B	No	Yes	0	0
1247	Female	0	13 years 8 months	Married	A	Yes	Yes	0	0
1248	Female	0	15 years 9 months	Married	A	Yes	Yes	0	#6, #11
1249	Female	0	13 years 0 months	Married	B	Yes	Yes	0	0
1250	Female	0	11 years 9 months	Divorced	C	No	Yes	0	0
1253	Female	0	12 years 3 months	Married	B	No	Yes	0	0
1254	Male	0	14 years 4 months	Married	A	Yes	Yes	0	0
1255	Female	0	12 years 8 months	Married	A/B	Yes	No	0	0
1256	Male	#6, #12, #20, #29	11years 11 months	Separated	B/C	No	Yes	0	#6
1257	Male	0	14 years 4 months		B	No	No	0	0
1258	Male	0	13 years 7 months	Divorced	A	Yes	Yes	0	0
1262	Female	0	15 years 0 months	Married		No	Yes	#32	0
1263	Male	#5, #12, #21, #28	10 years 8 months	Married	A	Yes	No	0	0
1264	Male	#5, #12, #21, #28	11 years 5 months		C	Yes	No	0	0
1265	Male	0	15 years 10 months	Divorced	B	No	Yes	0	0
1266	Female	#5, #12, #20, #29	10 years 10 months		B/C	Yes	No	0	0
1267	Male	0	12 years 9 months	Married				0	0
1269	Female	0	16 years 8 months	Married	B/C	No	Yes	0	0
1270	Male	0	12 years 4 months		A/B	No	Yes	0	0
1271	Female	0	11 years 2 months	Married	A	No	No	0	0
1273	Female	#5, #12	14 years 2 months	Divorced	A	Yes	Yes	0	0
1274	Female	#5, #12, #21, #28	12 years 9 months		B	Yes	No	0	0
1275	Female	0	14 years 0 months		A	Yes	Yes	0	0
1277	Male	0	14 years 7 months	Married	B	No		0	0
1278	Female	0	11 years 6 months	Divorced	B	Yes	No	0	0
1280	Male	#4, #13, #21, #28	16 years 5 months	Married	B	No	Yes	0	#22, #27
1281	Female	0	11 years 2 months			No	No	0	0
1282	Male	0	14 years 8 months	Married	A	Yes	Yes	0	0
1283	Female	0	15years 5 months	Married	B	No	Yes	0	0
1284	Male	0	12 years 6 months	Divorced	C/D	No	No	0	0
1285	Male	0	13 years 2 months	Married	A/B	Yes	No	0	0
1286	Female	#5, #12, #21, #28	16 years 0 months	Married	B	Yes	Yes	0	0
1287	Female	0	13 years 7 months	Divorced	B	No	Yes	0	0
1288	Male	0	13 years 10 months	Married	B/C	Yes	Yes	0	0
1289	Female	0	13 years 6 months	Divorced	A	No	No	0	0
1291	Female	0	13 years 7 months	Married	B	Yes	Yes	0	0
1293	Female	0	14 years 2 months	Divorced	B	No		0	0
1294	Female	0	11 years 11 months	Married	A	Yes	No	0	0
1296	Male	0	14 years 2 months		A	Yes	No	0	0
1297	Female	#5, #12, #20, #29	12 years 8 months	Married		Yes	No	0	0
1299	Female	0	12 years 8 months	Married	A	Yes		0	0
1300	Male	0	15 years 1 month	Married	A	Yes	Yes	0	0
1301	Female	0	12 years 9 months	Married	A/B	Yes	No	0	#6
1302	Female	0	12 years 5 months			Yes	No	0	0
1303	Female	0	14 years 4 months	Married	A	Yes	Yes	0	0
1304	Female	0	13 years 0 months		B	Yes	Yes	0	0
1305	Female	0	13 years 11 months	Married	A	Yes	Yes	0	0
1306	Male	#5, #12	13 years 2 months	Divorced	C	Yes	Yes	0	0
1307	Female	0	13 years 10 months	Married	B	No	Yes	0	0
1308	Female	0	15 years 0 months	Divorced	B	Yes	No	0	0
1309	Female	#4, #13, #20, #29	12 years 0 months	Married	B	No	No	0	0
1310	Male	#5, #12, #21, #28	13 years 11 months	Married	C	No	Yes	0	0
1311	Female	0	12 years 8 months	Married	B	No	Yes	0	0
1312	Female	0	11 years 6 months	Married	A	No	Yes	0	0
1313	Male	0	13 years 6 months	Married	B	Yes	No	0	0
1314	Female	#4, #12, #20, #28	12 years 2 months	Married	A	Yes	Yes	0	0
1316	Female	#4, #13, #20, #29	15 years 9 months	Divorced	B	Yes	Yes	0	#31
1317	Female	0	14 years 1 month	Married	B	No	Yes	0	0
1318	Male	0	11 years 9 months	Divorced	C	No	No	0	#4
1319	Male	0	11 years 6 months	Married	C	Yes	No	0	0
1320	Female	0	12 years 6 months	Married	B	Yes	Yes	0	0
1321	Male	#5, #12, #20, #29	12 years 1 month	Married	B	Yes	No	0	0
1322	Female	0	11 years 3 months	Married	C	Yes	Yes	0	0
1324	Female	#5, #12, #21, #28	12 years 8 months	Married	B	Yes	No	0	0
1326	Male	0	14 years 11 months	Married	A	Yes	Yes	0	#6
1327	Female	#5, #12, #21, #28	14 years 7 months	Married	A	Yes		0	0

Pt #	Angle Class	Overjet	Overbite	Maxillary Arch form	Mandibular Arch Form	Maxillary Spacing	Maxillary Crowding	Mandibular Spacing	Mandibular Crowding	Posterior Crossbite	Habits	Lip Competence
1002	Class II div I	7mm	50%	tapering	tapering	0mm	6mm	0mm	4mm	no	no	no
1003	Class II div I	11mm	100%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	no	no
1004	Class I	2mm	30%	ovoid	ovoid	0mm	4mm	0mm	4mm	yes	no	yes
1005	Class I	9mm	0%	tapering	tapering	0mm	6mm	0mm	7mm	no	no	no
1006	Class III	6mm	40%	ovoid	ovoid	0mm	0mm	0mm	6mm	no	no	no
1007	Class I	2mm	50%	tapering	tapering	0mm	2mm	0mm	2mm	no	no	yes
1008	Class III	2mm	30%	tapering	tapering	0mm	4mm	0mm	4mm	yes	no	no
1009	Class II div II	3mm	100%	ovoid	ovoid	0mm	15mm	0mm	16mm	no	no	yes
1010	Class I	2mm	25%	tapering	ovoid	0mm	5mm	0mm	7mm	no	no	no
1011	Class I	2mm	10%	tapering	tapering	0mm	14mm	0mm	10mm	yes	no	yes
1012	Class II div II	2mm	100%	tapering	tapering	0mm	14mm	0mm	14mm	no	lip	yes
1013	Class II div I	3mm	20%	tapering	tapering	0mm	4mm	0mm	0mm	no	no	no
1014	Class I	5mm	0%	tapering	ovoid	0mm	3mm	0mm	3mm	no	no	yes
1015	Class I	4mm	100%	tapering	tapering	0mm	10mm	0mm	15mm	no	no	no
1016	Class II div I	2mm	80%	ovoid	ovoid	0mm	0mm	0mm	0mm	yes	no	yes
1017	Class II div I	6mm	70%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	no	yes
1018	Class II div II	5mm	100%	square	square	0mm	9mm	0mm	9mm	no	no	yes
1019	Class III	0mm	0%	ovoid	square	0mm	3mm	0mm	3mm	no	thumb and tongue	yes
1020	Class II div I	2mm	20%	ovoid	ovoid	0mm	4mm	0mm	0mm	yes	no	yes
1021	Class III	1mm	10%	tapering	tapering	0mm	0mm	0mm	0mm	yes	no	yes
1023	Class I	2mm	20%	ovoid	ovoid	0mm	9mm	0mm	13mm	no	no	yes
1025	Class II div I	5mm	25%	tapering	tapering	0mm	1mm	0mm	3mm	no	no	yes
1026	Class I	3mm	20%	tapering	tapering	0mm	3mm	0mm	1mm	yes	tongue	yes
1027	Class I	2mm	60%	ovoid	ovoid	0mm	6mm	0mm	6mm	no	no	yes
1029	Class I	2mm	70%	ovoid	ovoid	0mm	4mm	0mm	4mm	no	no	yes
1030	Class I	3mm	25%	tapering	ovoid	0mm	15mm	0mm	10mm	yes	no	yes
1031	Class I	3mm	20%	tapering	tapering	0mm	9mm	0mm	9mm	no	no	no
1032	Class I	5mm	20%	tapering	tapering	0mm	3mm	0mm	2mm	no	bite nails	yes
1033	Class I	2mm	40%	ovoid	ovoid	6mm	0mm	5mm	0mm	no	no	yes
1034	Class I	6mm	50%	ovoid	tapering	2mm	0mm	0mm	6mm	no	no	no
1035	Class III	-4mm	100%	tapering	tapering	0mm	13mm	0mm	10mm	yes	no	yes
1036	Class I	0mm	0%	tapering	tapering	0mm	5mm	0mm	3mm	no	no	yes
1037	Class I	6mm	40%	tapering	square	0mm	5mm	0mm	7mm	no	no	yes
1038	Class I	7mm	50%	tapering	tapering	0mm	4mm	0mm	5mm	yes	no	yes
1039	Class I	2mm	50%	tapering	tapering	0mm	2mm	0mm	2mm	no	bite nails	yes
1041	Class II div I	6mm	70%	ovoid	ovoid	0mm	1mm	0mm	0mm	yes	no	yes
1042	Class I	2mm	40%	ovoid	ovoid	14mm	0mm	0mm	4mm	no	no	yes
1043	Class I	3mm	40%	ovoid	ovoid	0mm	1mm	0mm	2mm	no	thumb	no
1044	Class I	4mm	50%	ovoid	ovoid	3mm	0mm	4mm	0mm	no	no	yes
1046	Class I	5mm	25%	tapering	tapering	0mm	3mm	0mm	1mm	no	no	yes
1047	Class II div II	5mm	80%	ovoid	ovoid	2mm	0mm	0mm	0mm	no	no	no
1048	Class II div II	4mm	100%	square	square	0mm	14mm	0mm	15mm	no	no	no
1049	Class II div II	6mm	100%	tapering	tapering	0mm	3mm	0mm	3mm	no	bruxism	yes
1050	Class I	8mm	30%	square	tapering	0mm	12mm	0mm	12mm	no	no	yes
1052	Class II div I	2mm	55%	ovoid	ovoid	0mm	5mm	0mm	5mm	no	no	yes
1053	Class II div I	6mm	75%	tapering	tapering	0mm	4mm	0mm	4mm	yes	no	no
1054	Class I	4mm	100%	tapering	tapering	0mm	0mm	1mm	0mm	no	no	yes
1055	Class I	2mm	30%	ovoid	ovoid	1mm	0mm	0mm	1mm	no	no	yes
1057	Class I	3mm	20%	tapering	tapering	0mm	10mm	0mm	10mm	yes	finger	yes
1058	Class I	5mm	80%	tapering	tapering	0mm	2mm	0mm	6mm	no	no	yes
1059	Class II div I	6mm	100%	tapering	tapering	0mm	10mm	0mm	10mm	no	no	yes
1060	class II div I	6mm	100%	tapering	tapering	0mm	8mm	0mm	11mm	no	no	yes
1061	Class II div 1	5mm	70%	tapering	tapering	0mm	8mm	0mm	7mm	no	no	no
1062	Class II div I	8mm	25%	tapering	tapering	0mm	20mm	0mm	19mm	no	no	no
1063	Class III	2mm	10%	tapering	tapering	0mm	5mm	0mm	5mm	yes	no	yes
1064	Class I	2mm	10%	square	square	3mm	0mm	2mm	0mm	no	no	no
1065	Class I	2mm	50%	ovoid	ovoid	0mm	1mm	0mm	2mm	no	no	yes
1066	Class I	0mm	0%	ovoid	ovoid	0mm	5mm	0mm	3mm	no	no	yes
1069	Class I	3mm	50%	ovoid	ovoid	0mm	5mm	0mm	9mm	no	no	yes
1070	Class II div I	4mm	40%	tapering	tapering	0mm	4mm	0mm	2mm	no	finger	yes
1071	Class I	7mm	100%	ovoid	ovoid	0mm	0mm	0mm	6mm	no	no	no
1073	Class I	3mm	60%	ovoid	ovoid	3mm	0mm	0mm	0mm	no	no	yes
1076	Class II div II	5mm	60%	tapering	tapering	0mm	7mm	0mm	1mm	no	finger	no
1077	Class II div II	4mm	100%	ovoid	ovoid	0mm	12mm	0mm	14mm	no	no	no
1078	Class II div I	13mm	90%	ovoid	ovoid	0mm	6mm	0mm	13mm	no	no	yes
1079	Class II div I	0mm	0%	ovoid	ovoid	0mm	0mm	0mm	2mm	no	no	yes
1080	Class I	3mm	80%	tapering	tapering	0mm	0mm	0mm	2mm	no	no	yes
1081	Class I	2mm	40%	tapering	ovoid	0mm	0mm	0mm	0mm	yes	no	no
1083	Class I	3mm	75%	tapering	tapering	3mm	0mm	0mm	0mm	no	no	yes
1084	Class I	2mm	50%	ovoid	ovoid	5mm	0mm	1mm	0mm	no	no	yes
1085	Class I	2mm	30%	tapering	tapering	0mm	4mm	0mm	0mm	no	no	yes
1088	Class I	4mm	60%	tapering	tapering	9mm	0mm	1mm	0mm	no	no	yes
1089	Class I	3mm	80%	tapering	tapering	0mm	10mm	0mm	12mm	no	no	no
1090	Class I	3mm	25%	ovoid	ovoid	0mm	6mm	0mm	7mm	no	no	yes
1091	Class I	2mm	30%	tapering	tapering	0mm	5mm	0mm	5mm	no	no	yes
1092	Class I	2mm	75%	ovoid	ovoid	0mm	0mm	0mm	4mm	yes	no	yes
1093	Class I	3mm	0%	tapering	tapering	0mm	4mm	0mm	1mm	no	no	yes
1096	Class II div II	4mm	80%	square	square	0mm	2mm	0mm	5mm	no	no	yes
1097	Class I	4mm	20%	square	square	0mm	4mm	0mm	5mm	no	no	no
1098	Class II div I	4mm	50%	tapering	tapering	0mm	3mm	0mm	3mm	no	no	yes
1099	Class I	4mm	40%	square	square	0mm	0mm	0mm	0mm	no	no	yes
1100	Class II div I	6mm	100%	tapering	tapering	0mm	1mm	0mm	4mm	no	no	no
1101	Class I	1mm	50%	tapering	tapering	0mm	2mm	0mm	0mm	no	no	yes
1102	Class II div II	4mm	100%	ovoid	ovoid	0mm	4mm	0mm	2mm	no	no	yes
1103	Class II div I	7mm	70%	tapering	tapering	0mm	2mm	0mm	5mm	no	no	yes
1105	Class div II	2mm	100%	ovoid	ovoid	0mm	4mm	2mm	0mm	no	no	yes
1106	Class I	1mm	10%	tapering	tapering	0mm	3mm	0mm	3mm	no	bite nails	yes
1107	Class II div I	8mm	40%	tapering	tapering	0mm	6mm	0mm	1mm	no	no	yes
1108	Class II div I	2mm	10%	tapering	ovoid	0mm	6mm	0mm	5mm	yes	no	yes
1109	Class I	4mm	50%	square	tapering	0mm	3mm	0mm	0mm	no	no	yes

Pt #	Angle Class	Overjet	Overbite	Maxillary Arch form	Mandibular Arch Form	Maxillary Spacing	Maxillary Crowding	Mandibular Spacing	Mandibular Crowding	Posterior Crossbite	Habits	Lip Competence
1110	Class II div I	5mm	100%	ovoid	ovoid	0mm	5mm	0mm	6mm	no	no	yes
1111	Class II div I	9mm	20%	tapering	tapering	0mm	0mm	0mm	0mm	no	no	no
1112	Class II div I	10mm	50%	tapering	square	0mm	0mm	0mm	0mm	no	no	yes
1114	Class II div I	8mm	20%	tapering	tapering	0mm	3mm	0mm	0mm	no	no	yes
1115	Class I	2mm	40%	ovoid	ovoid	0mm	3mm	0mm	1mm	no	no	yes
1121	Class I	5mm	40%	tapering	tapering	0mm	2mm	0mm	3mm	no	no	yes
1122	Class I	4mm	0%	ovoid	square	0mm	0mm	0mm	3mm	no	thumb	no
1123	Class I	4mm	40%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	no	yes
1125	Class I	3mm	40%	ovoid	ovoid	0mm	4mm	0mm	2mm	no	no	yes
1126	Class I	3mm	60%	ovoid	tapering	0mm	3mm	0mm	1mm	yes	no	yes
1128	Class II div II	6mm	20%	tapering	tapering	0mm	8mm	0mm	4mm	no	no	no
1129	Class I	3mm	80%	square	square	0mm	6mm	0mm	8mm	no	no	yes
1130	Class I	4mm	100%	square	square	0mm	1mm	0mm	5mm	yes	no	yes
1131	Class II div I	6mm	100%	tapering	ovoid	0mm	0mm	0mm	0mm	no	no	yes
1132	Class I	4mm	30%	tapering	tapering	0mm	8mm	0mm	8mm	yes	no	yes
1134	Class I	4mm	20%	ovoid	ovoid	0mm	4mm	0mm	6mm	no	no	yes
1135	Class II div I	2mm	80%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	no	yes
1138	Class II div I	7mm	70%	tapering	tapering	0mm	0mm	0mm	0mm	no	no	yes
1139	Class I	3mm	20%	ovoid	ovoid	3mm	0mm	1mm	0mm	no	no	yes
1140	Class II div II	4mm	50%	ovoid	ovoid	0mm	7mm	0mm	7mm	no	no	yes
1142	Class II div I	6mm	100%	tapering	ovoid	0mm	5mm	0mm	5mm	yes	no	no
1143	Class I	2mm	60%	ovoid	ovoid	0mm	4mm	0mm	1mm	no	no	yes
1144	Class II div II	6mm	80%	tapering	tapering	0mm	6mm	0mm	6mm	yes	no	yes
1145	Class I	2mm	40%	tapering	tapering	0mm	0mm	0mm	10mm	yes	no	yes
1148	Class I	5mm	0%	ovoid	ovoid	0mm	4mm	0mm	0mm	yes	tongue	no
1149	Class I	2mm	20%	tapering	ovoid	0mm	2mm	0mm	5mm	no	no	yes
1151	Class I	6mm	70%	ovoid	tapering	7mm	0mm	0mm	4mm	yes	no	no
1152	Class II div II	4mm	33%	tapering	tapering	0mm	10mm	0mm	12mm	no	no	yes
1154	Class II div I	5mm	100%	tapering	tapering	0mm	7mm	4mm	0mm	no	no	no
1156	Class I	3mm	60%	tapering	tapering	0mm	3mm	0mm	1mm	no	no	yes
1157	Class I	6mm	45%	ovoid	tapering	0mm	3mm	0mm	4mm	yes	bite nails	no
1158	Class I	2mm	80%	tapering	tapering	0mm	7mm	0mm	8mm	no	no	yes
1159	Class I	4mm	40%	tapering	tapering	0mm	0mm	0mm	0mm	no	no	yes
1160	Class I	3mm	10%	ovoid	ovoid	0mm	0mm	0mm	3mm	no	no	yes
1161	Class II div II	1mm	100%	tapering	tapering	0mm	7mm	0mm	7mm	no	no	yes
1163	Class I	3mm	75%	tapering	tapering	0mm	2mm	0mm	2mm	no	no	yes
1164	Class II div I	4mm	20%	tapering	square	2mm	0mm	0mm	4mm	yes	no	no
1165	Class I	2mm	60%	tapering	tapering	0mm	14mm	0mm	6mm	no	no	yes
1166	Class III	5mm	60%	ovoid	ovoid	0mm	0mm	0mm	2mm	no	bite nails	yes
1167	Class I	4mm	35%	tapering	tapering	0mm	0mm	0mm	0mm	yes	no	no
1169	Class I	4mm	40%	square	square	0mm	4mm	0mm	6mm	no	no	no
1170	Class II div I	4mm	50%	square	ovoid	0mm	4mm	0mm	4mm	no	no	no
1171	Class I	2mm	20%	tapering	square	0mm	7mm	0mm	7mm	yes	no	no
1172	Class I	3mm	50%	tapering	ovoid	0mm	4mm	0mm	4mm	yes	no	no
1173	Class II div II	3mm	60%	ovoid	ovoid	0mm	5mm	0mm	5mm	yes	no	no
1174	Class I	9mm	0%	ovoid	ovoid	0mm	8mm	0mm	9mm	no	no	no
1176	Class II div I	3mm	50%	ovoid	ovoid	2mm	0mm	0mm	3mm	no	no	yes
1177	Class I	6mm	100%	tapering	tapering	0mm	2mm	0mm	2mm	no	no	yes
1178	Class I	2mm	100%	ovoid	ovoid	0mm	8mm	0mm	9mm	no	no	yes
1179	Class I	5mm	60%	tapering	tapering	0mm	1mm	0mm	4mm	no	no	yes
1182	Class I	2mm	15%	ovoid	ovoid	0mm	3mm	0mm	2mm	no	no	yes
1183	Class I	4mm	10%	ovoid	ovoid	0mm	5mm	0mm	2mm	yes	no	no
1184	Class I	3mm	15%	tapering	tapering	0mm	4mm	0mm	2mm	no	no	yes
1186	Class II div II	2mm	80%	square	square	0mm	5mm	0mm	2mm	no	no	no
1187	Class I	5mm	10%	tapering	tapering	0mm	5mm	0mm	3mm	no	thumb	yes
1188	Class I	2mm	100%	tapering	tapering	3mm	0mm	0mm	2mm	no	no	no
1189	Class I	4mm	50%	ovoid	ovoid	0mm	4mm	0mm	6mm	no	no	no
1190	Class II div I	6mm	90%	ovoid	ovoid	0mm	1mm	0mm	2mm	no	no	no
1191	Class I	4mm	40%	ovoid	ovoid	0mm	5mm	0mm	3mm	yes	no	yes
1192	Class I	6mm	50%	tapering	tapering	0mm	3mm	0mm	5mm	no	no	yes
1193	Class III	0mm	100%	square	square	0mm	0mm	0mm	0mm	no	no	yes
1194	Class II div I	9mm	0%	ovoid	ovoid	7mm	0mm	0mm	3mm	no	no	yes
1195	Class I	2mm	90%	ovoid	ovoid	1mm	0mm	0mm	3mm	no	no	yes
1196	Class II div II	5mm	80%	ovoid	ovoid	0mm	3mm	0mm	2mm	no	bruxism	no
1197	Class I	0mm	10%	ovoid	square	0mm	0mm	2mm	0mm	no	bite nails	yes
1198	Class II div I	5mm	70%	ovoid	ovoid	0mm	0mm	0mm	4mm	no	no	no
1200	Class II div I	5mm	60%	ovoid	ovoid	4mm	0mm	2mm	0mm	no	no	yes
1201	Class I	3mm	50%	ovoid	ovoid	2mm	0mm	0mm	5mm	yes	no	no
1202	Class II div I	6mm	25%	ovoid	ovoid	0mm	2mm	0mm	2mm	no	no	no
1203	Class II div I	3mm	0%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	finger	yes
1204	Class I	8mm	60%	tapering	ovoid	0mm	2mm	0mm	8mm	no	no	no
1205	Class I	4mm	0%	ovoid	ovoid	0mm	5mm	0mm	8mm	no	finger	yes
1206	Class II div II	4mm	70%	ovoid	ovoid	0mm	4mm	0mm	3mm	no	no	no
1207	Class I	4mm	20%	ovoid	ovoid	0mm	6mm	0mm	5mm	no	no	yes
1208	Class I	5mm	30%	tapering	square	0mm	1mm	0mm	5mm	no	bite nails	no
1209	Class I	0mm	70%	square	square	0mm	0mm	0mm	3mm	yes	no	yes
1210	Class II div I	4mm	70%	tapering	ovoid	0mm	2mm	0mm	2mm	yes	no	no
1211	Class III	1mm	0%	ovoid	ovoid	0mm	2mm	0mm	6mm	yes	no	yes
1212	Class II div I	4mm	60%	ovoid	ovoid	0mm	3mm	0mm	6mm	no	no	yes
1213	Class II div I	2mm	50%	ovoid	ovoid	0mm	3mm	0mm	3mm	no	no	yes
1214	Class I	3mm	60%	square	square	0mm	5mm	0mm	7mm	no	no	yes
1216	Class I	4mm	5%	ovoid	ovoid	7mm	0mm	7mm	0mm	no	no	no
1217	Class II div I	9mm	90%	tapering	ovoid	0mm	3mm	0mm	3mm	no	no	no
1218	Class I	5mm	30%	tapering	ovoid	0mm	0mm	0mm	2mm	no	no	no
1219	Class I	7mm	60%	tapering	tapering	0mm	2mm	0mm	2mm	no	no	yes
1220	Class II div I	4mm	10%	ovoid	ovoid	0mm	3mm	0mm	5mm	no	no	no
1222	Class I	4mm	100%	ovoid	square	0mm	3mm	0mm	7mm	no	no	no
1223	Class I	1mm	90%	square	ovoid	0mm	5mm	1mm	0mm	no	no	yes
1224	Class I	6mm	10%	tapering	square	0mm	0mm	0mm	0mm	no	no	no
1225	Class II div I	4mm	40%	ovoid	ovoid	0mm	3mm	0mm	2mm	no	no	no

Pt #	Angle Class	Overjet	Overbite	Maxillary Arch form	Mandibular Arch Form	Maxillary Spacing	Maxillary Crowding	Mandibular Spacing	Mandibular Crowding	Posterior Crossbite	Habits	Lip Competence
1226	Class I	2mm	20%	ovoid	ovoid	0mm	2mm	0mm	0mm	no	no	yes
1227	Class I	1mm	20%	ovoid	ovoid	0mm	7mm	0mm	0mm	no	no	no
1229	Class I	2mm	10%	tapering	ovoid	0mm	0mm	0mm	0mm	no	bites nails	yes
1230	Class I	0mm	50%	ovoid	ovoid	0mm	12mm	0mm	10mm	yes	no	yes
1232	Class II div I	2mm	50%	tapering	tapering	0mm	0mm	0mm	1mm	no	no	no
1234	Class II div I	6mm	10%	tapering	tapering	0mm	0mm	0mm	0mm	yes	no	no
1236	Class II div I	8mm	50%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	no	yes
1237	Class II div I	5mm	30%	tapering	tapering	0mm	7mm	0mm	5mm	no	no	no
1238	Class I	3mm	100%	tapering	tapering	0mm	0mm	0mm	0mm	no	no	yes
1239	Class II div I	2mm	30%	tapering	tapering	13mm	0mm	7mm	0mm	no	no	yes
1240	Class I	2mm	90%	ovoid	ovoid	0mm	4mm	0mm	6mm	yes	no	yes
1241	Class I	2mm	15%	tapering	tapering	0mm	0mm	0mm	5mm	no	no	yes
1242	Class I	9mm	0%	tapering	ovoid	3mm	0mm	0mm	0mm	no	thumb	no
1244	Class II div I	2mm	35%	ovoid	ovoid	0mm	1mm	0mm	4mm	no	no	yes
1245	Class I	3mm	20%	tapering	square	1mm	0mm	0mm	4mm	no	no	yes
1246	Class I	4mm	50%	ovoid	ovoid	0mm	0mm	0mm	4mm	no	no	yes
1247	Class I	5mm	20%	ovoid	ovoid	0mm	8mm	0mm	4mm	no	bites nails	yes
1248	Class I	1mm	20%	tapering	ovoid	0mm	0mm	0mm	0mm	no	tongue	yes
1249	Class I	2mm	25%	ovoid	ovoid	0mm	6mm	0mm	0mm	yes	no	yes
1250	Class II div I	5mm	70%	tapering	tapering	0mm	0mm	0mm	0mm	yes	bruxism	yes
1253	Class II div I	2mm	20%	tapering	tapering	0mm	8mm	0mm	11mm	yes	bites nails	yes
1254	Class I	2mm	20%	tapering	square	0mm	0mm	0mm	0mm	no	no	yes
1255	Class II div I	6mm	0%	tapering	tapering	0mm	6mm	0mm	9mm	yes	thumb	yes
1256	Class II div I	10mm	80%	tapering	ovoid	0mm	6mm	0mm	8mm	no	no	no
1257	Class II div II	8mm	100%	tapering	ovoid	0mm	0mm	0mm	2mm	no	no	yes
1258	Class I	4mm	75%	tapering	tapering	0mm	4mm	0mm	1mm	no	no	no
1262	Class III	2mm	20%	ovoid	ovoid	0mm	4mm	0mm	6mm	yes	no	no
1263	Class I	2mm	20%	tapering	tapering	0mm	12mm	0mm	6mm	no	no	no
1264	Class I	5mm	15%	ovoid	square	0mm	4mm	0mm	4mm	no	no	yes
1265	Class II div I	6mm	50%	tapering	ovoid	0mm	2mm	0mm	5mm	no	no	yes
1266	Class II div I	4mm	30%	ovoid	ovoid	0mm	4mm	0mm	5mm	no	no	no
1267	Class II div I	7mm	80%	tapering	tapering	0mm	0mm	0mm	2mm	no	no	no
1269	Class I	4mm	15%	square	square	0mm	0mm	0mm	0mm	yes	no	yes
1270	Class I	4mm	50%	ovoid	ovoid	0mm	0mm	0mm	5mm	no	no	no
1271	Class II div I	3mm	60%	ovoid	ovoid	0mm	0mm	0mm	3mm	no	no	no
1273	Class II div I	7mm	50%	tapering	ovoid	0mm	2mm	0mm	0mm	no	no	no
1274	Class II div I	9mm	100%	ovoid	ovoid	2mm	0mm	0mm	0mm	no	no	yes
1275	Class I	1mm	60%	square	ovoid	0mm	2mm	0mm	5mm	no	no	no
1277	Class II div I	8mm	60%	tapering	ovoid	3mm	0mm	0mm	1mm	no	no	no
1278	Class I	2mm	20%	tapering	tapering	0mm	0mm	0mm	0mm	no	no	no
1280	Class II div I	2mm	10%	tapering	ovoid	0mm	5mm	0mm	7mm	yes	no	yes
1281	Class I	5mm	50%	tapering	ovoid	0mm	0mm	0mm	1mm	yes	no	no
1282	Class II div I	4mm	60%	tapering	tapering	0mm	1mm	0mm	2mm	no	no	no
1283	Class II div I	5mm	0%	ovoid	square	0mm	2mm	0mm	0mm	yes	thumb	no
1284	Class I	6mm	50%	tapering	square	0mm	5mm	0mm	5mm	no	no	no
1285	Class II div I	3mm	25%	tapering	square	0mm	0mm	0mm	0mm	no	no	no
1286	Class II div I	2mm	0%	tapering	ovoid	0mm	3mm	0mm	7mm	no	no	no
1287	Class II div II	5mm	65%	square	ovoid	0mm	5mm	0mm	3mm	no	no	no
1288	Class I	3mm	50%	ovoid	ovoid	2mm	0mm	0mm	0mm	no	no	yes
1289	Class I	1mm	30%	ovoid	ovoid	0mm	2mm	0mm	2mm	no	no	yes
1291	Class I	2mm	50%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	no	yes
1293	Class II div II	2mm	0%	ovoid	ovoid	0mm	1mm	2mm	0mm	no	thumb	no
1294	Class I	5mm	90%	ovoid	ovoid	0mm	3mm	0mm	3mm	no	no	no
1296	Class I	1mm	40%	ovoid	square	0mm	2mm	0mm	2mm	no	no	yes
1297	Class II div I	8mm	50%	tapering	tapering	0mm	5mm	0mm	5mm	no	no	yes
1299	Class II div I	2mm	100%	ovoid	ovoid	0mm	2mm	0mm	2mm	no	no	no
1300	Class I	2mm	70%	tapering	tapering	0mm	2mm	0mm	3mm	no	no	yes
1301	Class II div I	2mm	70%	tapering	tapering	0mm	3mm	0mm	0mm	no	no	yes
1302	Class I	2mm	0%	ovoid	ovoid	0mm	0mm	0mm	2mm	no	thumb	yes
1303	Class I	2mm	50%	ovoid	ovoid	0mm	2mm	0mm	1mm	no	no	yes
1304	Class I	2mm	50%	ovoid	ovoid	0mm	1mm	0mm	4mm	no	no	yes
1305	Class I	2mm	50%	tapering	tapering	0mm	0mm	0mm	0mm	no	tongue	yes
1306	Class II div I	10mm	100%	square	square	3mm	0mm	1mm	0mm	no	thumb	no
1307	Class I	2mm	20%	ovoid	ovoid	0mm	2mm	0mm	0mm	no	no	yes
1308	Class III	3mm	60%	ovoid	ovoid	0mm	0mm	0mm	4mm	yes	no	yes
1309	Class I	5mm	90%	ovoid	ovoid	0mm	5mm	0mm	6mm	no	no	yes
1310	Class II div I	2mm	80%	square	ovoid	0mm	12mm	0mm	10mm	no	no	yes
1311	Class II div I	2mm	20%	ovoid	ovoid	0mm	4mm	0mm	2mm	no	no	yes
1312	Class II div I	0mm	0%	tapering	tapering	0mm	1mm	0mm	0mm	yes	no	yes
1313	Class II div I	2mm	0%	tapering	ovoid	0mm	4mm	0mm	0mm	yes	no	no
1314	Class II div II	3mm	100%	tapering	ovoid	0mm	8mm	0mm	9mm	no	no	yes
1316	Class I	0mm	0%	ovoid	ovoid	0mm	8mm	0mm	7mm	no	no	yes
1317	Class I	3mm	100%	ovoid	ovoid	3mm	0mm	3mm	0mm	no	no	yes
1318	Class II div I	10mm	100%	square	square	0mm	0mm	0mm	0mm	no	thumb	yes
1319	Class I	3mm	90%	ovoid	ovoid	0mm	0mm	0mm	2mm	no	no	yes
1320	Class I	3mm	40%	ovoid	ovoid	2mm	0mm	0mm	4mm	yes	no	yes
1321	Class II div II	7mm	100%	ovoid	ovoid	0mm	5mm	0mm	5mm	no	no	yes
1322	Class I	5mm	40%	tapering	tapering	0mm	0mm	0mm	0mm	no	no	yes
1324	Class I	5mm	80%	ovoid	ovoid	0mm	0mm	0mm	0mm	no	no	no
1326	Class II div I	2mm	40%	ovoid	ovoid	0mm	4mm	0mm	7mm	no	no	yes
1327	Class I	3mm	40%	square	square	0mm	4mm	0mm	3mm	yes	no	yes

Pt #	Maxillary Midline	Mandibular Midline	Pt profile	Lower Face Height	Facial Plane	Y Axis	Occlusal plane	Interincisal	Lower one to occlusal plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA	FMA
1002	on	left	convex	normal	86	60	7	114	26	9	82	79	3	123	88	26
1003	on	on	convex	reduced	85	58	4	105	35	17	77	77	0	127	85	22
1004	left	on	convex	normal	84	64	14	135	14	5	81	79	2	108	85	31
1005	right	on	convex	increased	85	64	4	106	36	13	80	77	3	122	88	34
1006	on	left	convex	normal	86	64	6	103	32	12	89	83	6	128	92	27
1007	on	left	concave	normal	80	58	9	126	20	6	80	78	2	115	87	23
1008	on	left	flat	normal	92	58	3	129	22	6	83	81	2	119	93	28
1009	left	on	convex	reduced	89	52	2	156	14	3	81	75	6	94	90	19
1010	on	left	convex	normal	87	58	10	123	22	5	79	76	3	117	89	24
1011	on	right	concave	normal	90	61	5	134	20	5	84	81	3	110	90	35
1012	on	right	convex	reduced	81	56	13	145	12	1	82	76	6	109	89	20
1013	on	on	convex	reduced	92	60	5	130	16	11	80	77	3	115	90	25
1014	on	left	convex	increased	90	61	10	135	15	8	85	78	7	111	97	32
1015	on	left	convex	increased	84	66	7	135	20	13	81	80	1	103	91	35
1016	left	left	convex	normal	89	59	7	132	23	7	85	79	6	110	93	21
1017	right	right	convex	reduced	84	61	8	126	26	8	82	77	5	108	88	26
1018	on	right	convex	reduced	86	61	12	125	22	6	76	68	8	104	96	23
1019	on	on	convex	normal	88	67	15	90	10	4	87	86	1	122	86	35
1020	right	left	convex	normal	92	60	6	116	33	11	87	80	7	115	93	27
1021	on	on	concave	reduced	95	60	2	118	26	8	88	87	1	116	91	22
1023	left	right	convex	reduced	87	65	9	128	16	7	81	78	3	107	90	27
1025	on	left	convex	increased	87	62	14	129	24	8	84	77	7	110	95	31
1026	on	on	flat	normal	93	55	0	142	14	-1	81	83	-2	114	87	17
1027	on	right	convex	normal	92	53	2	135	15	2	80	78	2	117	89	20
1029	on	on	flat	normal	89	58	10	135	14	5	76	75	1	111	89	25
1030	on	right	flat	normal	87	60	7	129	20	7	82	82	0	115	87	22
1031	on	on	convex	normal	89	58	3	130	26	5	83	80	3	104	86	26
1032	right	left	convex	normal	87	58	5	126	22	6	74	73	1	115	84	24
1033	on	left	convex	normal	83	55	10	115	30	6	85	82	3	116	92	20
1034	on	right	convex	normal	86	57	11	131	13	8	78	76	2	114	87	22
1035	on	on	concave	reduced	98	52	0	140	10	-5	88	95	-7	124	90	78
1036	on	left	flat	normal	90	57	7	116	32	8	84	78	6	118	94	21
1037	on	left	convex	normal	87	59	9	119	25	9	83	78	5	117	97	27
1038	on	left	flat	normal	91	57	4	123	25	11	85	83	2	120	93	24
1039	left	on	flat	normal	89	60	10	124	20	7	83	79	4	116	93	28
1041	on	right	convex	normal	92	60	6	130	24	4	81	79	2	111	85	20
1042	right	right	flat	increased	88	59	5	127	24	7	74	75	-1	115	90	26
1043	on	on	convex	normal	87	57	8	126	18	5	87	85	2	119	91	24
1044	on	on	convex	normal	92	54	6	124	24	2	87	83	4	116	96	19
1046	on	left	convex	increased	91	58	5	125	23	6	87	83	4	118	93	26
1047	on	left	convex	increased	86	58	11	133	16	7	84	78	6	110	89	23
1048	on	on	convex	reduced	89	53	7	133	17	5	81	76	5	122	95	16
1049	on	on	convex	reduced	80	59	5	131	24	8	85	80	5	110	90	27
1050	on	right	convex	reduced	89	58	8	127	10	8	84	84	0	122	91	23
1052	on	left	convex	increased	85	58	5	136	23	4	74	70	4	115	84	24
1053	on	on	convex	reduced	85	58	9	119	32	10	84	77	7	105	85	20
1054	on	left	convex	reduced	95	50	2	130	20	4	86	82	4	116	99	17
1055	right	on	convex	normal	86	58	9	124	23	7	77	75	2	115	87	27
1057	on	on	convex	increased	84	62	12	138	18	4	81	78	3	109	93	25
1058	right	right	convex	increased	83	68	13	105	34	9	94	82	12	119	97	33
1059	on	on	concave	normal	89	64	8	122	26	6	82	76	6	115	89	20
1060	on	on	convex	increased	87	59	7	137	23	7	78	72	6	108	90	27
1061	on	left	concave	increased	80	64	15	123	22	10	78	72	6	111	85	35
1062	on	left	convex	reduced	90	54	5	112	23	13	79	75	4	102	89	27
1063	right	right	convex	normal	87	58	10	129	20	6	82	79	3	112	89	20
1064	on	right	convex	increased	86	61	9	110	23	13	83	77	6	118	93	30
1065	on	right	flat	normal	92	56	7	133	20	6	82	80	2	111	88	25
1066	on	on	convex	normal	87	60	10	124	23	6	80	77	3	111	88	29
1069	on	right	convex	reduced	88	61	7	134	18	8	79	75	4	117	93	28
1070	on	right	convex	normal	86	58	9	132	26	4	79	75	4	105	94	25
1071	on	left	convex	normal	74	56	10	131	16	10	75	74	1	114	84	18
1073	right	on	convex	normal	98	47	-1	129	17	4	81	81	0	127	97	11
1076	left	on	convex	normal	88	56	8	133	24	6	79	73	6	106	94	18
1077	on	on	flat	normal	84	55	2	135	22	5	82	83	-1	118	93	19
1078	left	on	convex	normal	75	60	10	110	30	18	78	74	4	120	90	20
1079	on	on	flat	increased	85	63	17	132	24	8	81	78	3	105	88	28
1080	on	left	flat	normal	89	60	7	132	17	2	87	82	5	114	93	21
1081	left	on	convex	normal	88	61	10	136	18	5	81	77	4	109	93	27
1083	on	on	convex	normal	90	56	18	144	18	4	83	79	4	105	93	32
1084	on	on	convex	normal	93	56	6	106	33	12	93	87	6	125	101	22
1085	on	right	convex	increased	83	64	7	107	37	15	78	72	6	119	91	33
1088	left	right	convex	reduced	89	57	10	144	17	3	83	77	6	100	94	19
1089	left	right	convex	reduced	75	63	2	139	5	6	79	76	3	104	84	31
1090	on	right	convex	normal	88	56	8	135	17	5	79	75	4	122	92	21
1091	right	right	convex	reduced	88	59	5	132	18	6	79	74	5	107	93	20
1092	on	left	concave	normal	96	64	3	142	5	4	82	80	2	114	97	19
1093	left	left	convex	normal	87	62	10	130	18	5	76	74	2	113	89	31
1096	left	on	convex	normal	86	58	13	145	11	4	81	76	5	101	90	25
1097	on	on	convex	normal	88	58	6	128	27	7	83	78	5	112	88	21
1098	left	left	convex	normal	92	52	-3	128	24	4	79	76	3	121	92	17
1099	on	on	convex	increased	84	65	17	124	21	11	85	78	7	108	93	36
1100	right	right	convex	normal	73	60	10	136	20	7	79	72	7	102	90	26
1101	left	left	convex	normal	84	61	18	134	20	4	82	79	3	107	87	30
1102	on	on	convex	normal	91	55	7	141	26	7	80	76	4	104	94	21
1103	left	on	convex	normal	85	57	10	129	17	5	88	82	6	114	89	17
1105	on	left	convex	normal	84	62	12	152	10	3	91	83	8	90	91	28
1106	on	on	convex	normal	97	46	-6	109	29	6	81	81	0	138	95	14
1107	right	right	convex	increased	81	61	11	112	27	11	81	74	7	121	87	30
1108	on	left	convex	normal	85	57	15	133	20	8	75	72	3	110	88	22
1109	on	on	convex	normal	87	60	11	134	14	4	77	75	2	110	88	30

Pt #	Maxillary Midline	Mandibular Midline	Pt profile	Lower Face Height	Facial Plane	Y Axis	Occlusal plane	Interincisal	Lower one to occlusal plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA	FMA
1110	on	right	convex	normal	84	58	12	130	22	3	73	70	3	110	84	28
1111	on	on	convex	increased	92	57	-3	125	28	10	86	79	7	120	98	17
1112	on	on	convex	normal	87	58	3	119	24	7	78	74	4	123	88	13
1114	on	right	convex	reduced	93	53	1	125	22	6	83	79	4	122	94	17
1115	left	on	convex	normal	87	62	12	133	19	2	80	77	3	107	89	34
1121	right	on	convex	normal	87	59	4	130	8	8	76	76	0	116	89	30
1122	on	on	convex	increased	84	68	12	117	30	10	84	77	7	113	90	33
1123	on	right	concave	reduced	94	52	0	129	17	4	84	87	-3	123	90	14
1125	right	on	flat	normal	87	61	11	129	18	5	78	75	3	120	87	28
1126	left	on	convex	reduced	88	57	8	131	22	6	80	77	3	114	90	28
1128	on	on	convex	normal	90	56	6	131	16	7	86	82	4	116	93	24
1129	on	on	flat	normal	88	57	4	144	16	5	78	78	0	109	88	25
1130	on	on	convex	reduced	89	56	3	142	22	2	81	76	5	105	90	16
1131	on	on	convex	normal	89	58	7	140	13	6	81	76	5	107	90	26
1132	left	right	convex	increased	95	64	5	111	33	16	87	86	1	126	86	28
1134	on	on	convex	normal	85	61	9	124	23	7	77	76	1	114	86	28
1135	on	right	flat	reduced	90	60	9	132	20	7	87	82	5	111	89	27
1138	left	on	convex	normal	83	63	14	126	15	3	80	76	4	115	85	26
1139	on	on	convex	normal	89	57	11	122	22	8	86	83	3	115	90	27
1140	right	right	convex	normal	76	68	15	150	16	1	80	75	5	91	81	31
1142	on	right	convex	normal	87	60	3	142	73	-2	80	76	4	109	87	27
1143	on	right	convex	reduced	92	55	3	133	20	3	84	82	2	112	92	20
1144	on	right	convex	increased	87	60	8	127	22	10	72	71	1	112	87	30
1145	on	left	flat	normal	94	51	2	143	13	5	80	78	2	105	93	20
1148	on	on	convex	increased	89	62	6	116	24	10	82	78	4	125	88	37
1149	on	on	flat	normal	88	61	5	140	10	27	82	80	2	108	87	31
1151	on	on	convex	normal	95	51	3	137	11	7	82	79	3	119	97	17
1152	left	on	flat	normal	90	57	2	139	14	5	78	78	0	116	88	20
1154	on	left	concave	normal	90	54	7	139	15	4	83	79	4	110	87	19
1156	left	on	concave	normal	90	57	9	134	15	3	78	77	1	113	89	25
1157	on	on	flat	normal	89	54	7	125	19	5	82	79	3	120	91	18
1158	left	on	convex	increased	87	62	14	148	6	4	80	74	6	102	92	33
1159	left	left	convex	normal	89	55	5	104	36	10	84	78	6	125	96	18
1160	left	right	convex	normal	92	57	2	119	32	8	90	84	6	119	98	28
1161	on	on	flat	normal	92	53	1	160	11	0	81	78	3	99	93	14
1163	on	on	convex	normal	82	60	8	128	14	6	85	81	4	107	90	20
1164	on	on	convex	increased	90	55	4	132	22	4	80	75	5	98	92	24
1165	right	on	convex	normal	94	56	9	140	7	4	87	84	3	115	97	23
1166	right	right	convex	increased	91	59	10	126	15	11	88	83	5	120	96	30
1167	on	on	convex	increased	88	63	6	136	13	4	81	78	3	114	91	28
1169	on	right	convex	increased	92	65	11	127	20	6	84	82	2	115	93	16
1170	right	right	convex	increased	84	69	8	120	26	5	76	71	5	103	91	35
1171	on	right	flat	normal	94	59	5	144	12	-3	81	80	1	109	82	18
1172	on	on	convex	increased	90	67	7	128	28	7	75	70	5	109	87	40
1173	right	right	convex	increased	90	56	9	125	22	5	82	76	6	110	92	25
1174	on	left	convex	normal	87	62	11	99	30	9	87	77	10	130	96	32
1176	on	right	flat	normal	89	62	3	130	26	2	75	72	3	107	90	23
1177	right	right	flat	normal	88	59	4	125	23	6	81	79	2	118	89	22
1178	on	on	flat	reduced	91	54	5	159	4	-2	89	87	2	101	90	12
1179	on	on	flat	normal	92	57	4	123	25	6	86	83	3	119	93	23
1182	on	right	convex	normal	89	61	9	123	26	7	82	77	5	113	93	27
1183	on	on	convex	normal	87	61	12	113	30	5	83	76	7	119	87	32
1184	right	on	convex	normal	88	57	8	121	22	8	80	79	1	120	89	19
1186	on	on	convex	normal	79	62	5	150	24	2	82	77	5	90	89	18
1187	left	on	convex	reduced	85	61	10	113	10	9	80	78	2	119	87	33
1188	on	on	convex	normal	86	62	8	143	22	0	77	73	4	109	88	20
1189	left	right	flat	increased	91	63	8	127	14	7	84	79	5	116	88	29
1190	left	right	convex	normal	78	63	10	124	25	5	82	78	4	111	91	26
1191	on	left	convex	normal	91	56	8	139	14	8	82	74	8	116	94	26
1192	on	right	flat	increased	90	60	4	123	22	10	82	79	3	122	93	27
1193	right	right	concave	increased	91	56	4	132	22	-1	79	79	0	100	92	21
1194	left	on	convex	normal	85	63	10	96	31	12	85	78	7	133	93	29
1195	on	right	convex	reduced	89	65	11	159	6	0	83	79	4	94	91	24
1196	on	on	convex	reduced	87	60	12	155	2	5	79	76	3	91	89	25
1197	right	right	concave	increased	90	56	7	127	18	6	80	81	-1	119	89	26
1198	on	right	convex	reduced	94	55	2	117	28	9	89	87	2	124	94	20
1200	right	on	flat	normal	88	57	3	126	30	9	83	79	4	112	92	18
1201	left	on	convex	increased	84	63	12	116	29	13	82	76	6	114	90	33
1202	right	right	convex	normal	88	56	9	100	38	8	85	77	8	123	95	19
1203	on	on	convex	normal	93	54	5	430	19	2	84	81	3	118	86	22
1204	right	left	convex	increased	91	59	5	123	24	3	86	81	5	119	95	27
1205	on	on	convex	increased	84	64	11	100	34	11	83	80	3	126	87	36
1206	on	right	flat	reduced	90	56	15	140	-1	6	90	86	4	110	92	18
1207	right	on	convex	normal	78	61	7	117	19	10	80	77	3	130	92	31
1208	on	right	convex	normal	83	66	16	108	34	16	80	73	7	117	90	38
1209	on	on	convex	increased	90	59	10	100	31	15	93	83	10	128	97	23
1210	on	left	convex	normal	85	66	10	129	26	9	86	81	5	125	91	26
1211	on	left	flat	normal	89	58	8	121	24	6	81	78	3	118	92	31
1212	on	on	flat	normal	86	56	8	123	24	10	81	77	4	117	89	21
1213	on	left	flat	normal	92	52	6	157	20	5	80	80	0	109	91	9
1214	on	right	convex	increased	87	59	7	120	28	8	79	75	4	116	90	21
1216	right	on	convex	increased	96	55	4	99	29	11	81	82	-1	139	94	23
1217	on	on	flat	normal	90	53	5	129	15	2	75	73	2	123	91	20
1218	left	on	convex	increased	88	61	10	119	27	11	83	76	7	114	97	32
1219	on	right	concave	increased	87	58	5	117	20	13	83	79	4	126	91	23
1220	right	right	flat	normal	92	53	3	123	25	10	82	80	2	126	93	17
1222	right	left	convex	normal	86	61	2	126	34	9	84	80	4	106	90	12
1223	on	left	flat	increased	85	63	11	145	17	2	85	83	2	95	86	25
1224	on	on	convex	normal	82	63	11	101	31	17	78	76	2	125	86	37
1225	right	on	flat	normal	89	56	6	144	13	3	78	77	1	108	87	21

Pt #	Maxillary Midline	Mandibular Midline	Pt profile	Lower Face Height	Facial Plane	Y Axis	Occlusal plane	Interincisal	Lower one to occlusal plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA	FMA
1226	on	right	flat	normal	93	53	4	126	18	4	80	79	1	121	92	17
1227	on	on	flat	increased	93	53	12	139	12	3	81	79	2	112	94	19
1229	left	on	convex	reduced	86	63	18	125	14	10	84	79	5	112	91	35
1230	on	on	flat	normal	87	61	8	138	19	2	76	73	3	103	89	30
1232	right	on	convex	normal	92	56	6	132	12	1	82	80	2	119	95	17
1234	on	right	convex	increased	83	67	13	126	24	9	85	80	5	110	87	33
1236	on	on	convex	normal	86	60	6	121	13	11	74	71	3	119	91	24
1237	right	right	convex	increased	85	61	10	128	21	6	76	74	2	114	87	30
1238	on	on	flat	reduced	92	57	8	142	8	7	79	75	4	103	95	15
1239	on	on	convex	reduced	90	60	10	120	10	7	86	85	1	103	92	18
1240	left	on	flat	normal	97	53	2	136	7	3	82	84	-2	126	93	16
1241	left	left	convex	increased	83	66	21	123	16	10	78	73	5	111	89	39
1242	on	left	concave	increased	87	61	13	90	29	18	85	79	6	136	94	25
1244	left	on	convex	normal	86	61	9	119	30	8	84	76	8	111	91	26
1245	right	right	convex	increased	79	68	12	112	27	7	79	77	2	120	86	31
1246	on	left	convex	normal	91	57	6	111	29	11	91	86	5	126	97	11
1247	on	on	convex	normal	86	61	7	127	18	9	80	77	3	123	89	26
1248	on	on	flat	normal	90	58	11	130	10	1	78	77	1	108	87	29
1249	left	on	flat	normal	92	55	10	132	10	3	80	77	3	120	95	26
1250	on	right	convex	normal	93	57	2	125	25	6	80	81	-1	120	85	18
1253	on	left	flat	increased	91	55	11	134	14	4	73	75	-2	119	87	24
1254	on	on	flat	normal	93	65	1	124	18	5	82	81	1	121	94	22
1255	on	on	convex	reduced	90	55	7	123	15	10	82	77	5	119	94	22
1256	right	right	convex	normal	76	73	19	121	24	15	87	77	10	107	85	42
1257	on	right	convex	normal	87	58	10	111	25	11	84	77	7	119	93	20
1258	on	left	convex	increased	82	67	14	125	19	10	85	82	3	112	94	39
1262	on	on	flat	increased	90	63	5	145	11	2	77	76	1	101	87	33
1263	on	right	flat	normal	86	58	7	149	7	-1	75	73	2	110	91	31
1264	on	right	concave	normal	86	62	9	103	33	15	90	85	5	125	93	26
1265	on	on	convex	increased	87	60	6	138	20	6	77	73	4	110	90	30
1266	right	right	convex	increased	86	63	10	132	23	3	83	76	7	101	87	34
1267	on	on	convex	normal	90	60	7	126	27	1	86	79	7	110	90	25
1269	left	right	convex	increased	90	61	8	116	22	10	84	79	5	125	96	29
1270	on	left	convex	increased	84	58	5	122	27	6	89	84	5	119	98	20
1271	on	on	convex	normal	92	56	6	126	22	6	77	73	4	118	83	27
1273	right	left	convex	increased	71	66	10	123	29	11	78	71	7	116	89	30
1274	on	left	flat	normal	90	57	10	133	6	9	81	79	2	123	92	21
1275	on	right	flat	normal	91	58	7	140	11	2	81	81	0	112	90	21
1277	on	right	convex	normal	78	58	11	130	20	4	83	76	7	99	92	28
1278	on	right	flat	normal	91	58	4	115	30	5	84	83	1	113	89	19
1280	right	left	convex	increased	80	68	19	127	20	9	87	80	7	107	90	34
1281	on	on	concave	normal	94	53	4	111	31	13	82	76	6	128	99	25
1282	on	on	convex	normal	75	66	15	132	18	5	77	73	4	103	84	30
1283	on	on	convex	increased	88	70	15	144	10	4	85	78	7	114	92	27
1284	on	right	convex	normal	86	59	9	127	22	6	85	80	5	111	95	23
1285	left	left	convex	increased	77	66	11	130	23	6	78	76	2	106	85	39
1286	right	on	convex	increased	94	59	11	100	38	10	78	73	5	123	93	25
1287	on	left	flat	reduced	94	49	2	138	19	4	78	77	1	116	92	13
1288	on	right	convex	normal	88	56	7	130	20	8	78	75	3	115	92	24
1289	left	on	flat	normal	94	53	3	134	18	2	83	84	-1	116	91	16
1291	on	right	flat	normal	89	62	6	134	20	7	84	82	2	115	88	27
1293	on	on	flat	normal	82	61	9	124	25	5	77	75	2	110	84	22
1294	on	on	flat	normal	88	61	5	135	18	0	79	73	3	111	88	22
1296	on	left	convex	normal	86	59	11	131	14	5	83	81	2	111	87	29
1297	on	right	concave	increased	78	60	8	112	25	2	81	77	4	125	91	24
1299	on	on	convex	normal	86	61	6	140	20	0	82	78	4	103	94	22
1300	on	left	convex	normal	90	59	7	145	11	1	85	85	0	114	89	23
1301	on	right	convex	reduced	81	50	0	146	28	5	88	80	1	113	90	13
1302	on	on	flat	normal	88	54	10	127	20	12	86	80	6	125	87	20
1303	on	left	flat	normal	80	53	10	134	12	4	81	79	2	113	92	21
1304	on	left	convex	normal	80	75	13	135	12	3	76	73	3	114	83	34
1305	on	left	flat	increased	94	59	6	142	11	6	90	87	3	120	83	32
1306	on	on	convex	normal	81	59	5	128	13	4	80	75	5	125	88	24
1307	left	on	flat	normal	90	53	14	137	10	4	80	77	3	109	90	25
1308	right	on	flat	normal	94	52	4	135	15	4	90	87	3	125	97	21
1309	on	right	flat	normal	81	55	8	128	18	10	84	79	5	117	97	24
1310	right	left	convex	normal	75	67	14	135	13	3	76	73	3	110	94	18
1311	on	right	concave	increased	90	61	13	138	9	5	83	81	2	110	90	26
1312	on	right	convex	normal	82	65	16	129	17	7	78	75	3	106	83	35
1313	on	right	convex	increased	87	62	10	138	14	8	85	80	5	117	93	34
1314	right	left	convex	increased	85	69	12	138	12	2	82	77	5	94	87	22
1316	left	on	flat	normal	89	67	16	125	14	3	79	77	2	121	88	27
1317	on	on	convex	normal	87	58	10	148	7	0	87	83	4	105	87	20
1318	on	on	convex	normal	87	59	9	129	32	7	82	77	5	114	90	23
1319	on	on	flat	normal	93	53	5	120	24	8	87	85	2	122	86	20
1320	on	left	flat	normal	92	58	7	142	11	2	82	80	2	111	94	19
1321	on	on	convex	normal	80	68	10	137	12	0	84	79	5	112	87	20
1322	right	right	flat	normal	88	60	6	123	24	7	83	79	4	118	88	31
1324	on	on	convex	normal	82	65	14	145	15	4	79	75	4	117	91	30
1326	on	on	convex	normal	84	64	13	139	18	5	83	78	5	100	88	31
1327	on	right	convex	normal	88	60	20	112	29	6	82	80	2	128	88	29

Pt #	IMPA	FMIA	Upper one to NA (mm)	Lower one to NB (mm)	# of appts	# of broken appts	Pre-PAR	Post-PAR	Time in months
1002	97	57	8	6	24	4	22	4	23
1003	105	53	20	12	32	14	32	13	36
1004	86	63	5	3	17	0	20	5	16
1005	96	50	10	9	26	9	32	0	23
1006	100	53	9	12	29	4	19	6	26
1007	96	61	5	4	15	4	18	2	15
1008	86	66	7	4	52	6	34	6	40
1009	88	75	2	2	55	9	30	5	42
1010	98	58	2	4	28	3	9	5	23
1011	82	63	4	6	22	7	37	8	24
1012	95	65	-2	2	29	12	23	7	32
1013	87	68	8	8	44	15	15	15	35
1014	82	66	-2	4	16	2	32	17	19
1015	87	58	6	7	41	7	21	4	30
1016	97	62	2	4	23	2	21	3	22
1017	103	51	5	6	17	3	23	4	15
1018	97	60	11	5	29	6	24	9	29
1019	91	54	11	9	25	6	18	7	23
1020	100	53	4	8	27	10	31	6	28
1021	92	66	8	6	37	16	26	11	38
1023	90	63	4	6	35	11	25	3	29
1025	95	54	4	8	24	5	22	6	23
1026	86	87	7	2	20	6	17	4	21
1027	90	72	3	0	21	6	22	16	21
1029	88	67	6	3	17	4	26	9	17
1030	94	64	7	4	18	2	35	2	17
1031	97	57	5	4	30	9	5	6	25
1032	95	61	8	4	15	1	17	8	13
1033	110	50	5	6	24	5	25	3	23
1034	93	65	7	5	20	4	17	2	20
1035	84	78	7	3	44	5	38	12	40
1036	107	52	2	9	19	2	10	6	17
1037	96	57	6	7	21	5	14	6	20
1038	94	62	10	6	21	6	26	4	18
1039	91	61	4	7	14	3	11	0	14
1041	98	62	4	2	23	10	34	2	23
1042	92	62	6	5	23	6	15	2	22
1043	91	65	8	6	12	1	11	0	12
1044	101	60	3	5	19	7	10	2	19
1046	91	63	4	5	26	0	23	4	22
1047	93	54	1	2	20	5	18	4	20
1048	97	67	3	2	38	8	18	9	32
1049	92	62	4	4	41	5	30	4	28
1050	85	72	9	4	36	23	31	0	39
1052	94	62	4	3	30	6	18	4	25
1053	114	46	5	10	30	3	25	0	25
1054	65	68	3	3	17	4	19	4	16
1055	93	60	5	4	22	3	22	4	20
1057	96	55	5	5	56	25	9	7	35
1058	98	49	6	15	26	2	25	6	24
1059	105	55	6	6	32	12	18	6	46
1060	81	72	3	2	35	8	30	9	28
1061	92	53	7	8	19	8	31	6	19
1062	97	56	10	7	29	7	29	15	33
1063	100	60	5	6	26	6	13	2	21
1064	102	48	9	14	27	10	22	8	25
1065	92	63	5	5	20	4	17	0	18
1066	95	56	7	9	27	6	15	6	21
1069	80	72	6	5	25	1	20	2	20
1070	98	57	3	5	22	8	23	4	26
1071	82	80	8	3	34	18	23	13	41
1073	92	77	6	2	26	13	12	9	28
1076	104	58	2	7	32	5	24	8	27
1077	86	75	2	0	47	9	24	14	39
1078	110	70	13	10	40	5	38	6	34
1079	97	55	5	4	12	2	22	6	12
1080	93	66	1	3	31	4	13	4	26
1081	88	65	3	5	26	4	26	4	26
1083	78	70	2	4	25	4	17	5	25
1084	108	50	7	9	10	0	12	4	7
1085	101	46	7	9	26	4	14	12	26
1088	98	63	-2	3	31	6	6	5	27
1089	86	63	5	4	23	5	35	4	24
1090	97	62	3	3	35	4	21	6	32
1091	88	72	3	5	25	3	25	2	23
1092	85	76	4	2	25	2	16	2	22
1093	87	62	4	4	27	6	16	2	25
1096	89	66	3	4	21	1	27	6	20
1097	97	62	5	5	46	16	26	9	43
1098	94	69	5	3	19	7	23	11	21
1099	93	51	5	4	22	2	11	0	19
1100	95	69	3	4	32	2	21	4	27
1101	88	62	3	3	24	3	38	2	24
1102	98	61	4	4	21	2	20	4	21
1103	100	63	5	4	13	6	36	36	14
1105	91	61	6	4	45	12	20	2	40
1106	99	67	8	5	20	6	22	4	21
1107	97	53	8	6	24	1	39	10	24
1108	96	62	7	2	42	13	33	4	48
1109	84	60	5	4	19	3	14	12	18

Pt #	IMPA	FMIA	Upper one to NA (mm)	Lower one to NB (mm)	# of appts	# of broken appts	Pre-PAR	Post-PAR	Time in months
1110	96	56	5	6	47	2	36	13	45
1111	98	65	5	6	25	4	22	21	23
1112	103	64	7	3	23	1	30	6	20
1114	95	68	5	5	21	8	22	6	24
1115	87	59	4	5	14	1	25	7	16
1121	84	66	7	3	27	5	20	9	25
1122	99	48	5	8	29	4	30	0	25
1123	94	72	7	3	14	2	18	4	15
1125	92	60	5	4	15	2	13	4	16
1126	92	70	5	5	18	1	19	4	18
1128	90	66	5	5	20	7	40	8	23
1129	83	72	7	3	22	1	13	7	23
1130	98	56	2	3	18	3	20	7	18
1131	85	69	5	5	22	2	40	8	24
1132	99	53	15	10	26	4	27	8	26
1134	87	665	8	6	20	6	12	4	20
1135	94	59	3	4	18	6	17	7	21
1138	95	58	5	4	27	2	25	10	26
1139	98	55	6	6	29	4	8	7	25
1140	91	58	4	3	31	6	34	2	29
1142	87	70	3	1	37	9	40	6	38
1143	93	67	4	2	13	3	20	6	11
1144	91	59	12	7	64	12	45	8	59
1145	97	63	5	3	20	1	4	12	17
1148	84	71	8	7	25	0	36	2	23
1149	90	60	4	5	28	9	13	4	26
1151	89	74	6	6	17	1	20	7	16
1152	85	75	6	3	20	0	18	2	15
1154	92	69	3	3	20	5	18	8	18
1156	88	67	4	3	14	1	10	6	12
1157	99	63	5	4	23	5	16	0	17
1158	76	71	-1	5	18	2	14	6	15
1159	114	48	6	11	21	6	12	5	17
1160	96	56	6	11	15	2	20	5	12
1161	88	78	0	1	19	1	25	4	15
1163	100	60	2	4	42	6	16	8	30
1164	95	61	4	4	26	10	19	8	35
1165	83	74	3	4	24	3	17	5	21
1166	84	66	6	8	30	3	22	0	23
1167	82	71	2	4	29	2	24	4	25
1169	101	62	7	4	30	12	17	12	36
1170	88	51	6	6	21	3	25	4	21
1171	89	73	4	0	27	2	26	6	24
1172	86	54	7	8	25	6	24	4	26
1173	96	59	1	7	46	4	31	9	45
1174	99	49	11	13	22	5	33	12	25
1176	100	37	4	6	46	5	24	7	39
1177	95	63	6	4	17	6	24	6	17
1178	88	80	0	0	29	4	15	7	25
1179	96	61	5	6	21	0	19	4	19
1182	98	55	4	9	27	3	11	0	25
1183	82	66	6	11	28	3	14	1	24
1184	101	60	7	7	13	2	8	0	18
1186	89	73	0	1	41	18	21	5	43
1187	100	45	6	6	52	14	27	4	45
1188	95	65	0	4	44	0	16	7	31
1189	89	62	5	5	26	2	12	2	23
1190	100	55	5	4	22	8	24	1	23
1191	84	70	4	5	23	0	19	5	19
1192	89	64	7	5	16	1	17	0	14
1193	94	65	1	8	38	16	48	23	31
1194	101	48	16	7	46	16	27	7	45
1195	97	73	1	1	25	4	15	4	27
1196	89	66	2	4	67	11	20	14	43
1197	91	63	8	6	24	0	27	2	19
1198	99	61	8	7	14	6	17	7	13
1200	105	58	4	4	18	4	22	4	17
1201	98	49	6	13	15	1	10	4	12
1202	118	43	8	13	18	7	24	8	18
1203	92	66	4	4	14	1	17	2	14
1204	93	60	6	6	31	10	25	0	36
1205	98	46	9	8	38	2	19	5	29
1206	91	70	5	4	33	2	18	12	30
1207	83	65	7	5	39	6	10	14	25
1208	98	45	10	12	35	10	13	8	41
1209	108	49	14	15	35	9	12	8	35
1210	99	55	5	5	23	12	24	4	28
1211	91	58	5	9	26	4	13	4	21
1212	100	59	6	7	21	5	23	4	22
1213	116	65	9	4	15	2	24	2	14
1214	104	55	4	7	22	7	12	4	21
1216	99	58	17	11	13	4	14	0	16
1217	89	71	10	4	14	2	28	4	15
1218	95	53	5	10	21	6	17	7	18
1219	94	63	8	6	29	15	30	9	34
1220	100	63	9	6	22	8	15	3	21
1222	114	54	6	9	18	3	23	17	14
1223	96	59	3	2	25	8	12	5	27
1224	97	45	16	12	33	7	23	4	28
1225	87	72	4	1	19	3	19	2	16

Pt #	IMPA	FMIA	Upper one to NA (mm)	Lower one to NB (mm)	# of appts	# of broken appts	Pre-PAR	Post-PAR	Time in months
1226	96	67	5	4	15	2	3	6	12
1227	90	71	3	3	22	1	10	4	19
1229	104	57	8	10	35	5	24	4	33
1230	89	61	1	3	29	3	15	2	25
1232	92	71	8	6	12	1	21	6	11
1234	93	55	8	8	31	7	33	4	29
1236	96	60	8	6	25	7	36	6	23
1237	86	64	6	5	40	18	32	9	38
1238	100	65	4	3	45	8	12	11	30
1239	107	55	14	9	26	13	29	39	42
1240	84	80	7	0	29	1	15	7	26
1241	86	55	6	9	12	3	25	8	13
1242	107	48	13	12	19	7	30	4	21
1244	104	50	4	8	13	2	14	10	12
1245	98	51	8	6	19	7	10	2	20
1246	114	55	7	8	37	3	11	2	23
1247	91	63	8	6	20	3	22	10	17
1248	83	68	4	2	16	1	7	8	13
1249	83	71	4	5	18	2	16	12	15
1250	99	63	10	5	36	17	32	9	39
1253	90	66	7	3	32	9	25	8	34
1254	91	67	5	4	22	13	26	2	29
1255	93	65	7	6	37	8	16	6	34
1256	91	48	9	29	35	12	29	4	42
1257	105	55	7	6	25	10	28	7	28
1258	84	57	10	5	19	2	27	3	23
1262	75	72	3	3	27	1	16	13	30
1263	84	65	2	0	45	10	40	8	36
1264	106	48	12	12	32	6	28	11	24
1265	87	63	4	4	15	7	28	8	19
1266	87	59	3	4	45	7	28	8	37
1267	100	55	2	4	38	4	30	6	29
1269	91	60	5	8	26	5	40	0	24
1270	99	61	6	11	15	1	12	4	12
1271	90	63	4	6	15	0	8	4	13
1273	98	52	5	8	23	6	32	4	23
1274	84	75	9	4	63	18	39	4	66
1275	87	72	3	0	13	2	11	3	14
1277	92	60	2	5	17	1	29	12	14
1278	105	56	6	6	20	5	23	2	18
1280	94	52	1	10	20	7	19	5	18
1281	97	58	10	9	21	6	31	2	23
1282	93	57	5	5	18	5	18	2	16
1283	95	68	6	5	24	4	39	3	20
1284	92	60	2	6	26	6	24	8	22
1285	84	57	5	6	24	3	19	3	23
1286	113	42	12	12	46	30	31	17	44
1287	95	72	5	2	27	1	22	5	18
1288	92	64	4	5	18	2	16	9	15
1289	94	70	6	2	15	1	8	4	13
1291	89	64	6	5	25	2	12	7	23
1293	103	55	5	5	17	4	12	13	15
1294	93	65	5	3	23	9	16	5	26
1296	87	64	5	4	20	1	21	5	19
1297	100	56	7	5	25	4	26	7	22
1299	96	62	3	3	25	6	22	14	22
1300	86	71	4	1	22	4	12	13	19
1301	105	62	2	2	25	6	21	5	28
1302	100	60	5	7	26	11	12	9	24
1303	92	67	4	3	21	2	17	5	20
1304	98	48	1	2	15	5	11	3	18
1305	75	73	3	4	37	11	16	6	39
1306	91	65	7	4	25	7	31	18	30
1307	91	64	6	3	19	4	18	4	21
1308	90	69	2	2	20	6	19	6	21
1309	90	66	4	4	26	7	31	7	24
1310	90	72	4	2	43	11	35	14	48
1311	85	67	5	4	15	5	20	7	14
1312	92	53	6	6	22	5	21	7	23
1313	81	65	2	4	26	15	25	17	29
1314	99	59	5	5	43	10	30	8	37
1316	89	59	6	5	37	6	31	0	35
1317	92	68	4	2	31	5	15	0	25
1318	98	60	7	5	28	10	28	18	36
1319	98	62	7	3	19	13	18	4	22
1320	88	73	3	3	19	4	14	11	20
1321	92	78	6	4	29	6	31	21	37
1322	90	59	4	5	19	5	19	4	20
1324	95	55	4	8	28	8	7	5	26
1326	90	59	3	5	27	10	11	8	26
1327	97	53	11	7	41	11	46	28	40

APPENDIX II

Converted Data

Pt #	Resident	Gender	Extractions	Start Age (months)	Marital Status	School Grades	Family with ortho experience	Reached Puberty	# of missing teeth	# of impacted teeth	Angle Class	Overjet	Overbite	Maxillary arch form
1002	1	1	0	134	1	5	1	2	0	1	2	7	50	1
1003	1	2	0	140	2	2	1	0	0	0	2	11	100	2
1004	1	1	0	155	1	1	1	2	0	0	1	2	30	2
1005	1	2	4	182	1	2	1	1	0	0	1	9	0	1
1006	1	1	4	148	1	1	2	1	0	2	4	6	40	2
1007	1	1	0	165	1	2	2	1	0	0	1	2	50	1
1008	1	2	0	154	1	5	1	1	0	1	4	2	30	1
1009	1	1	0	162	1	1	1	2	0	0	3	3	100	2
1010	1	2	4	165	2	2	2	2	0	2	1	2	25	1
1011	1	1	4	175	2	2	1	1	0	0	1	2	10	1
1012	1	1	0	156	1	3	1	0	0	0	3	2	100	1
1013	1	1	1	161	1	6	2	1	0	0	2	3	20	1
1014	1	2	0	192	3	2	2	1	0	0	1	5	0	1
1015	1	1	0	170	0	1	2	1	0	0	1	4	100	1
1016	1	2	0	187	0	4	2	1	0	0	2	2	80	2
1017	1	2	0	158	1	1	1	2	0	1	2	6	70	2
1018	1	1	2	195	1	1	2	1	2	0	3	5	100	3
1019	1	1	0	139	3	2	1	2	0	0	4	0	0	2
1020	1	2	4	171	1	2	1	1	0	0	2	2	20	2
1021	1	1	0	164	1	1	2	1	0	0	4	1	10	1
1023	1	2	0	169	2	0	0	1	0	0	1	2	20	2
1025	1	1	0	153	1	1	2	1	0	0	2	5	25	1
1026	1	2	0	183	2	1	1	1	0	0	1	3	20	1
1027	1	1	0	165	2	2	2	1	0	0	1	2	60	2
1029	1	1	0	173	1	1	1	1	0	0	1	2	70	2
1030	1	2	4	170	1	2	1	2	0	0	1	3	25	1
1031	1	1	0	139	3	1	2	2	0	0	1	3	20	1
1032	1	1	1	201	0	2	1	1	0	0	1	5	20	1
1033	1	2	0	170	3	2	1	1	0	0	1	2	40	2
1034	1	2	0	154	1	1	1	2	0	0	1	6	50	2
1035	1	1	0	155	1	2	1	1	0	0	4	-4	100	1
1036	1	1	0	179	1	1	2	1	0	0	1	0	0	1
1037	1	1	4	131	2	1	1	2	0	2	1	6	40	1
1038	1	1	0	181	1	5	2	1	0	0	1	7	50	1
1039	1	1	0	166	1	1	1	2	0	0	1	2	50	1
1041	1	1	0	144	1	2	1	1	0	1	2	6	70	1
1042	1	1	0	159	0	1	2	2	2	0	1	2	40	1
1043	1	1	0	157	3	2	1	1	0	0	1	3	40	1
1044	1	1	0	155	1	5	1	1	0	0	1	4	50	1
1046	1	2	0	172	0	0	1	1	0	0	1	5	25	1
1047	1	2	0	151	3	3	2	2	0	0	3	5	80	2
1048	1	1	0	186	1	1	2	1	0	0	3	4	100	3
1049	1	1	0	156	1	3	1	2	0	0	3	6	100	1
1050	1	1	0	164	1	2	1	2	0	0	1	8	30	3
1052	1	2	0	156	1	1	1	2	0	0	2	2	55	2
1053	1	2	0	158	1	5	2	1	0	0	2	6	75	1
1054	1	1	0	144	0	2	1	2	0	0	1	4	100	1
1055	1	1	0	154	2	1	2	2	0	1	1	2	30	2
1057	1	1	0	156	1	1	1	1	0	0	1	3	20	1
1058	1	1	4	150	1	2	1	2	0	0	1	5	80	1
1059	1	2	4	162	1	1	1	2	0	0	2	6	100	1
1060	1	1	4	141	1	1	2	2	0	0	2	6	100	1
1061	1	2	4	157	1	1	1	2	0	2	2	5	70	1
1062	1	1	0	146	1	1	2	1	0	0	2	8	25	1
1063	1	2	0	210	1	5	2	1	0	0	4	2	10	1
1064	1	1	4	139	1	3	2	1	0	0	1	2	10	3
1065	1	1	0	167	1	1	1	1	0	0	1	2	50	2
1066	1	2	4	167	1	2	1	1	0	0	1	0	0	2
1069	2	1	4	165	1	2	1	1	0	0	1	3	50	2
1070	2	2	0	162	1	3	1	1	0	0	2	4	40	1
1071	2	2	4	133	1	2	1	2	0	0	1	7	100	2
1073	2	1	0	157	1	2	1	1	0	0	1	3	60	2
1076	2	1	2	133	1	2	2	2	0	0	3	5	60	1
1077	2	1	0	145	1	2	1	0	0	0	3	4	100	2
1078	2	2	4	160	2	0	2	2	0	0	2	13	90	2
1079	2	2	0	162	1	1	1	2	0	0	2	0	0	2
1080	2	2	0	156	1	3	2	2	0	2	1	3	80	1
1081	2	1	0	172	1	2	2	1	0	0	1	2	40	1
1083	2	1	0	191	1	2	1	1	1	0	1	3	75	1
1084	2	1	0	172	0	1	1	1	0	0	1	2	50	2
1085	2	1	2	188	1	1	2	1	1	0	1	2	30	1
1088	2	1	0	151	1	1	2	0	1	0	1	4	60	1
1089	2	1	4	163	1	5	2	2	0	0	1	3	80	1
1090	2	2	0	171	1	2	1	1	1	0	1	3	25	2
1091	2	1	0	178	2	2	1	1	0	0	1	2	30	1
1092	2	1	0	173	1	1	1	1	0	0	1	2	75	2
1093	2	1	0	159	1	1	1	1	0	0	1	3	0	1
1096	2	2	0	161	2	1	1	2	0	0	3	4	80	3
1097	2	1	4	179	0	5	2	0	0	0	1	4	20	3
1098	2	2	0	195	2	1	1	1	0	0	2	4	50	1
1099	2	1	0	174	1	1	2	2	0	0	1	4	40	3
1100	2	1	0	153	1	1	1	2	0	0	2	6	100	1
1101	2	1	0	136	1	2	2	2	0	0	1	1	50	1
1102	2	1	0	178	1	5	1	0	0	0	3	4	100	2
1103	2	2	0	168	3	4	2	1	0	0	1	7	70	1
1105	2	1	1	149	0	0	2	1	1	1	3	2	100	2
1106	2	1	0	176	2	1	2	1	0	0	1	1	10	1
1107	2	1	4	139	1	1	1	0	1	0	2	8	40	1
1108	2	1	4	148	1	1	1	2	0	0	2	2	10	1
1109	2	1	0	152	0	2	2	1	0	0	1	4	50	3
1110	2	2	0	142	1	2	1	2	0	4	2	5	100	2
1111	2	2	0	179	2	7	1	1	0	0	2	9	20	1
1112	2	2	0	164	1	1	0	0	0	0	2	10	50	1

Pt #	Resident	Gender	Extractions	Start Age (months)	Marital Status	School Grades	Family with ortho experience	Reached Puberty	# of missing teeth	# of impacted teeth	Angle Class	Overjet	Overbite	Maxillary arch form
1114	3	2	2	162	1	1	1	1	0	2	2	8	20	1
1115	3	1	0	187	1	1	1	1	0	0	1	2	40	2
1121	3	1	0	191	3	3	2	1	0	1	1	5	40	1
1122	3	1	0	150	1	1	1	2	0	0	1	4	0	2
1123	3	1	0	172	1	1	1	1	0	0	1	4	40	2
1125	3	1	0	148	0	3	1	1	0	0	1	3	40	2
1126	3	1	0	159	0	1	2	1	0	0	1	3	60	2
1128	3	2	2	190	2	2	2	1	0	0	3	6	20	1
1129	3	1	4	192	1	1	1	1	0	0	1	3	80	3
1130	3	1	0	164	1	2	1	1	0	0	1	4	100	3
1131	3	2	0	214	1	2	1	1	2	2	2	6	100	1
1132	3	1	4	214	0	1	2	1	0	0	1	4	30	1
1134	3	2	0	164	1	1	2	1	0	0	1	4	20	2
1135	3	2	2	138	1	2	1	2	0	0	2	2	80	2
1138	3	2	2	161	1	5	1	1	0	0	2	7	70	1
1139	3	1	2	150	1	5	2	1	2	0	1	3	20	2
1140	3	1	2	204	1	1	2	1	0	0	3	4	50	2
1142	3	2	4	193	1	1	1	1	0	0	2	6	100	1
1143	3	1	0	153	1	5	1	1	0	0	1	2	60	2
1144	3	1	0	187	1	1	0	2	0	0	3	6	80	1
1145	3	2	4	194	0	2	1	1	0	0	1	2	40	1
1148	3	2	0	151	1	1	2	1	0	0	1	5	0	2
1149	3	1	4	182	1	1	1	1	0	0	1	2	20	1
1151	3	2	0	189	0	2	1	1	0	0	1	6	70	2
1152	3	1	4	138	1	1	2	1	1	0	3	4	33	1
1154	4	1	2	146	1	7	1	2	2	0	2	5	100	1
1156	4	1	0	143	2	1	2	2	0	0	1	3	60	1
1157	4	2	0	147	1	5	1	2	0	0	1	6	45	2
1158	4	1	0	149	1	2	1	1	0	0	1	2	80	1
1159	4	1	4	125	0	1	2	2	0	0	1	4	40	1
1160	4	2	0	168	1	3	2	2	1	0	1	3	10	2
1161	4	1	0	156	0	2	1	1	0	0	3	1	100	1
1163	4	2	4	149	1	5	1	2	0	0	1	3	75	1
1164	4	1	2	149	0	4	2	2	2	0	2	4	20	1
1165	4	1	4	168	2	2	1	1	0	1	1	2	60	1
1166	4	2	0	146	1	1	2	1	0	0	4	5	60	2
1167	4	2	0	165	1	5	1	1	0	0	1	4	35	1
1169	4	2	4	166	1	0	1	1	0	0	1	4	40	3
1170	4	2	2	176	1	1	1	1	0	0	2	4	50	3
1171	4	1	0	143	1	2	1	1	0	0	1	2	20	1
1172	4	2	0	187	1	1	1	1	0	0	1	3	50	1
1173	4	1	4	169	2	1	1	1	0	0	3	3	60	2
1174	4	1	4	163	4	1	2	1	0	0	1	9	0	2
1176	4	1	0	134	1	1	1	1	0	0	2	3	50	2
1177	4	2	0	182	1	1	1	1	0	0	1	6	100	1
1178	4	1	0	180	2	2	1	1	0	1	1	2	100	2
1179	4	1	0	176	0	2	1	1	0	0	1	5	60	1
1182	4	2	0	160	1	5	1	2	0	0	1	2	15	2
1183	4	1	0	146	1	1	1	2	0	2	1	4	10	2
1184	4	2	0	174	1	1	1	1	0	0	1	3	15	1
1186	4	2	4	166	1	1	2	1	0	0	3	2	80	3
1187	4	1	0	127	0	2	2	1	0	0	1	5	10	1
1188	4	1	0	170	1	1	2	1	0	0	1	2	100	1
1189	4	2	0	161	1	1	1	2	0	0	1	4	50	2
1190	5	1	0	133	1	1	2	2	0	0	2	6	90	2
1191	5	2	0	149	1	3	1	1	0	0	1	4	40	2
1192	5	1	0	133	1	1	1	2	0	0	1	6	50	1
1193	5	1	0	141	0	3	2	2	0	0	4	0	100	3
1194	5	1	4	146	0	2	1	1	0	0	2	9	0	2
1195	5	2	0	163	1	1	1	2	0	0	1	2	90	2
1196	5	2	3	179	1	1	1	1	1	0	3	5	80	2
1197	5	2	0	178	1	5	2	1	0	0	1	0	10	3
1198	5	2	0	195	1	2	1	1	0	0	2	5	70	2
1200	5	1	0	145	1	1	1	2	0	0	2	5	60	2
1201	5	2	0	167	0	3	2	2	0	0	1	3	50	2
1202	5	2	2	136	1	1	2	2	0	0	2	6	25	2
1203	5	1	0	141	0	2	1	2	0	0	2	3	0	2
1204	5	2	4	146	1	2	1	2	0	0	1	8	60	2
1205	5	1	0	122	0	3	2	2	0	1	1	4	0	2
1206	5	1	0	157	1	0	2	2	0	0	3	4	70	2
1207	5	1	0	143	0	1	1	2	0	0	1	4	20	2
1208	5	2	4	142	1	1	1	2	0	0	1	5	30	3
1209	5	1	4	163	1	3	1	1	0	0	1	0	70	3
1210	5	2	4	161	2	2	1	2	0	0	2	4	70	2
1211	5	1	2	185	0	5	1	1	0	0	4	1	0	2
1212	5	1	2	135	1	2	1	2	0	0	2	4	60	2
1213	5	1	0	197	1	2	2	1	0	0	2	2	50	2
1214	5	1	0	204	1	1	2	1	0	0	1	3	60	3
1216	5	1	0	167	2	1	2	1	0	0	1	4	5	2
1217	5	2	4	150	1	2	1	2	0	0	2	9	90	1
1218	5	1	4	163	1	3	1	1	0	0	1	5	30	1
1219	5	2	0	176	2	3	1	1	0	0	1	7	60	1
1220	5	1	4	171	1	2	1	1	0	0	2	4	10	2
1222	5	2	1	184	0	3	1	2	0	0	1	4	100	2
1223	5	1	0	157	0	1	1	2	0	0	1	1	90	3
1224	5	2	4	148	1	3	2	2	0	0	1	6	10	1
1225	5	1	0	143	0	1	2	2	0	0	2	4	40	2
1226	5	1	0	170	1	2	1	1	1	0	1	2	20	2
1227	6	2	0	146	1	2	2	1	0	0	1	1	20	2
1229	6	1	0	139	1	2	2	1	0	0	1	2	10	1
1230	6	1	4	180	1	1	1	1	0	2	1	0	50	2
1232	6	1	0	153	1	1	2	2	0	0	2	2	50	1
1234	6	1	2	215	2	2	2	1	0	0	2	6	10	1

Pt #	Resident	Gender	Extractions	Start Age (months)	Maritial Status	School Grades	Family with ortho experience	Reached Puberty	# of missing teeth	# of impacted teeth	Angle Class	Overjet	Overbite	Maxillary arch form
1236	6	1	2	165	0	1	2	2	0	0	2	8	50	2
1237	6	1	0	134	1	2	1	2	0	0	2	5	30	1
1238	6	1	0	154	1	1	1	1	0	0	1	3	100	1
1239	6	1	0	190	0	5	1	1	2	0	2	2	30	1
1240	6	1	0	167	1	5	1	1	0	0	1	2	90	2
1241	6	1	0	182	1	2	2	1	0	1	1	2	15	1
1242	6	2	0	149	0	0	2	2	0	0	1	9	0	1
1244	6	1	0	168	1	1	1	2	2	0	2	2	35	2
1245	6	2	0	176	1	2	2	1	0	0	1	3	20	1
1246	6	1	0	183	1	2	2	1	0	0	1	4	50	2
1247	6	1	0	164	1	1	1	1	0	0	1	5	20	2
1248	6	1	0	189	1	1	1	1	0	2	1	1	20	1
1249	6	1	0	156	1	2	1	1	0	0	1	2	25	2
1250	6	1	0	141	2	3	2	1	0	0	2	5	70	1
1253	6	1	0	147	1	2	2	1	0	0	2	2	20	1
1254	6	2	0	172	1	1	1	1	0	0	1	2	20	1
1255	6	1	0	152	1	5	1	2	0	0	2	6	0	1
1256	6	2	4	143	4	7	2	1	0	1	2	10	80	1
1257	6	2	0	172	0	2	2	2	0	0	3	8	100	1
1258	6	2	0	163	2	1	1	1	0	0	1	4	75	1
1262	6	1	0	180	1	0	2	1	0	0	4	2	20	2
1263	7	2	4	128	1	1	1	2	0	0	1	2	20	1
1264	7	2	4	137	0	3	1	2	0	0	1	5	15	2
1265	7	2	0	190	2	2	2	1	0	0	2	6	50	1
1266	7	1	4	130	0	7	1	2	0	0	2	4	30	2
1267	7	2	0	153	1	0	0	0	0	0	2	7	80	1
1269	7	1	0	200	1	7	2	1	0	0	1	4	15	3
1270	7	2	0	148	0	5	2	1	0	0	1	4	50	2
1271	7	1	0	134	1	1	2	2	0	0	2	3	60	2
1273	7	1	2	170	2	1	1	1	0	0	2	7	50	1
1274	7	1	4	153	0	2	1	2	0	0	2	9	100	2
1275	7	1	0	168	0	1	1	1	0	0	1	1	60	3
1277	7	2	0	175	1	2	2	0	0	0	2	8	60	1
1278	7	1	0	138	2	2	1	2	0	0	1	2	20	1
1280	7	2	4	167	1	2	2	1	0	2	2	2	10	1
1281	7	1	0	134	0	0	2	2	0	0	1	5	50	1
1282	7	2	0	176	1	1	1	1	0	0	2	4	60	1
1283	7	1	0	185	1	2	2	1	0	0	2	5	0	2
1284	7	2	0	150	2	8	2	2	0	0	1	6	50	1
1285	7	2	0	158	1	5	1	2	0	0	2	3	25	1
1286	7	1	4	192	1	2	1	1	0	0	2	2	0	1
1287	7	1	0	163	2	2	2	1	0	0	3	5	65	3
1288	7	2	0	166	1	7	1	1	0	0	1	3	50	2
1289	7	1	0	162	2	1	2	2	0	0	1	1	30	2
1291	7	1	0	163	1	2	1	1	0	0	1	2	50	2
1293	7	1	0	170	2	2	2	0	0	0	3	2	0	2
1294	7	1	0	143	1	1	1	2	0	0	1	5	90	2
1296	7	2	0	170	0	1	1	2	0	0	1	1	40	2
1297	7	1	4	152	1	0	1	2	0	0	2	8	50	1
1299	7	1	0	152	1	1	1	0	0	0	2	2	100	2
1300	8	2	0	181	1	1	1	1	0	0	1	2	70	1
1301	8	1	0	153	1	5	1	2	0	1	2	2	70	1
1302	8	1	0	149	0	0	1	2	0	0	1	2	0	2
1303	8	1	0	172	1	1	1	1	0	0	1	2	50	2
1304	8	1	0	156	0	2	1	1	0	0	1	2	50	2
1305	8	1	0	167	1	1	1	1	0	0	1	2	50	1
1306	8	2	2	158	2	3	1	1	0	0	2	10	100	3
1307	8	1	0	166	1	2	2	1	0	0	1	2	20	2
1308	8	1	0	180	2	2	1	2	0	0	4	3	60	2
1309	8	1	4	144	1	2	2	2	0	0	1	5	90	2
1310	8	2	4	167	1	3	2	1	0	0	2	2	80	3
1311	8	1	0	152	1	2	2	1	0	0	2	2	20	2
1312	8	1	0	138	1	1	2	1	0	0	2	0	0	1
1313	8	2	0	162	1	2	1	2	0	0	2	2	0	1
1314	8	1	4	146	1	1	1	1	0	0	3	3	100	1
1316	8	1	4	189	2	2	1	1	0	1	1	0	0	2
1317	8	1	0	169	1	2	2	1	0	0	1	3	100	2
1318	8	2	0	141	2	3	2	2	0	1	2	10	100	3
1319	8	2	0	138	1	3	1	2	0	0	1	3	90	2
1320	8	1	0	150	1	2	1	1	0	0	1	3	40	2
1321	8	2	4	143	1	2	1	2	0	0	3	7	100	2
1322	8	1	0	135	1	3	1	1	0	0	1	5	40	1
1324	8	1	4	152	1	2	1	2	0	0	1	5	80	2
1326	8	2	0	179	1	1	1	1	0	1	2	2	40	2
1327	8	1	4	175	1	1	1	0	0	0	1	3	40	3
			Mean:	162.046										
			Std. deviation:	18.38681										
			Range: (min)	122										
			(max)	215										

Pt #	Mandibular arch form	Maxillary crowding	Mandibular crowding	Posterior Crossbite	Habits	Lip Competence	Maxillary midline	Mandibular midline	Pt profile	Lower facial height	Facial plane	Y axis	Occlusal plane	Interincisal
1002	1	6	4	2	1	2	1	3	1	1	86	60	7	114
1003	2	0	0	2	1	2	1	1	1	3	85	58	4	105
1004	2	4	4	1	1	1	3	1	1	1	84	64	14	135
1005	1	6	7	2	1	2	2	1	1	2	85	64	4	106
1006	2	0	6	2	1	2	1	3	1	1	86	64	6	103
1007	1	2	2	2	1	1	1	3	2	1	80	58	9	126
1008	1	4	4	1	1	2	1	3	3	1	92	58	3	129
1009	2	15	16	2	1	1	3	1	1	3	89	52	2	156
1010	2	5	7	2	1	2	1	3	1	1	87	58	10	123
1011	1	14	10	1	1	1	1	2	2	1	90	61	5	134
1012	1	14	14	2	8	1	1	2	1	3	81	56	13	145
1013	1	4	0	2	1	2	1	1	1	3	92	60	5	130
1014	2	3	3	2	1	1	1	3	1	2	90	61	10	135
1015	1	10	15	2	1	2	1	3	1	2	84	66	7	135
1016	2	0	0	1	1	1	3	3	1	1	89	59	7	132
1017	2	0	0	2	1	1	2	2	1	3	84	61	8	126
1018	3	9	9	2	1	1	1	2	1	3	86	61	12	125
1019	3	3	3	2	2	1	1	1	1	1	88	67	15	90
1020	2	4	0	1	1	1	2	3	1	1	92	60	6	116
1021	1	0	0	1	1	1	1	1	2	3	95	60	2	118
1023	2	9	13	2	1	1	3	2	1	3	87	65	9	128
1025	1	1	3	2	1	1	1	3	1	2	87	62	14	129
1026	1	3	1	1	3	1	1	1	3	1	93	55	0	142
1027	2	6	6	2	1	1	1	2	1	1	92	53	2	135
1029	2	4	4	2	1	1	1	1	3	1	89	58	10	135
1030	2	15	10	1	1	1	1	2	3	1	87	60	7	129
1031	1	9	9	2	1	2	1	1	1	1	89	58	3	130
1032	1	3	2	2	4	1	2	3	1	1	87	58	5	126
1033	2	-6	-5	2	1	1	1	3	1	1	83	55	10	115
1034	1	-2	6	2	1	2	1	2	1	1	86	57	11	131
1035	1	13	10	1	1	1	1	1	2	3	98	52	0	140
1036	1	5	3	2	1	1	1	3	3	1	90	57	7	116
1037	3	5	7	2	1	1	1	3	1	1	87	59	9	119
1038	1	4	5	1	1	1	1	3	3	1	91	57	4	123
1039	1	2	2	2	4	1	3	1	3	1	89	60	10	124
1041	2	1	0	1	1	1	1	2	1	1	92	60	6	130
1042	2	-14	4	2	1	1	2	2	3	2	88	59	5	127
1043	2	1	2	2	6	2	1	1	1	1	87	57	8	126
1044	2	-3	-4	2	1	1	1	1	1	1	92	54	6	124
1046	1	3	1	2	1	1	1	3	1	2	91	58	5	125
1047	2	-2	0	2	1	2	1	3	1	2	86	58	11	133
1048	3	14	15	2	1	2	1	1	1	3	89	53	7	133
1049	1	3	3	2	5	1	1	1	1	3	80	59	5	131
1050	1	12	12	2	1	1	1	2	1	3	89	58	8	127
1052	2	5	5	2	1	1	1	3	1	2	85	58	5	136
1053	1	4	4	1	1	2	1	1	1	3	85	58	9	119
1054	1	0	-1	2	1	1	1	3	1	3	95	50	2	130
1055	2	-1	1	2	1	1	2	1	1	1	86	58	9	124
1057	1	10	10	1	7	1	1	1	1	2	84	62	12	138
1058	1	2	6	2	1	1	2	2	1	2	83	68	13	105
1059	1	10	10	2	1	1	1	1	2	1	89	64	8	122
1060	1	8	11	2	1	1	1	1	1	2	87	59	7	137
1061	1	8	7	2	1	2	1	3	2	2	80	64	15	123
1062	1	20	19	2	1	2	1	3	1	3	90	54	5	112
1063	1	5	5	1	1	1	2	2	1	1	87	58	10	129
1064	3	-3	-2	2	1	2	1	2	1	2	86	61	9	110
1065	2	1	2	2	1	1	1	2	3	1	92	56	7	133
1066	2	5	3	2	1	1	1	1	1	1	87	60	10	124
1069	2	5	9	2	1	1	1	2	1	3	88	61	7	134
1070	1	4	2	2	7	1	1	2	1	1	86	58	9	132
1071	2	0	6	2	1	2	1	3	1	1	74	58	10	131
1073	2	-3	0	2	1	1	2	1	1	1	98	47	-1	129
1076	1	7	1	2	7	2	3	1	1	1	88	56	8	133
1077	2	12	14	2	1	2	1	1	3	1	84	55	2	135
1078	2	6	13	2	1	1	3	1	1	1	75	60	10	110
1079	2	0	2	2	1	1	1	1	3	2	85	63	17	132
1080	1	0	2	2	1	1	1	3	3	1	89	60	7	132
1081	2	0	0	1	1	2	3	1	1	1	88	61	10	136
1083	1	-3	0	2	1	1	1	1	1	1	90	56	18	144
1084	2	-5	-1	2	1	1	1	1	1	1	93	56	6	106
1085	1	4	0	2	1	1	1	2	1	2	83	64	7	107
1088	1	-9	-1	2	1	1	3	2	1	3	89	57	10	144
1089	1	10	12	2	1	2	3	2	1	3	75	63	2	139
1090	2	6	7	2	1	1	1	2	1	1	88	56	8	135
1091	1	5	5	2	1	1	2	2	1	3	88	59	5	132
1092	2	0	4	1	1	1	1	3	2	1	96	64	3	142
1093	1	4	1	2	1	1	3	3	1	1	87	62	10	130
1096	3	2	5	2	1	1	3	1	1	1	86	58	13	145
1097	3	4	5	2	1	2	1	1	1	1	88	58	6	128
1098	1	3	3	2	1	1	3	3	1	1	92	52	-3	128
1099	3	0	0	2	1	1	1	1	1	2	84	65	17	124
1100	1	1	4	2	1	2	2	2	1	1	73	60	10	136
1101	1	2	0	2	1	1	3	3	1	1	84	61	18	134
1102	2	4	2	2	1	1	1	1	1	1	91	55	7	141
1103	1	2	5	2	1	1	3	1	1	1	85	57	10	129
1105	2	4	-2	2	1	1	1	3	1	1	84	62	12	152
1106	1	3	3	2	4	1	1	1	1	1	97	46	-6	109
1107	1	6	1	2	1	1	2	2	1	2	81	61	11	112
1108	2	6	5	1	1	1	1	3	1	1	85	57	15	133
1109	1	3	0	2	1	1	1	1	1	1	87	60	11	134
1110	2	5	6	2	1	1	1	2	1	1	84	58	12	130
1111	1	0	0	2	1	2	1	1	1	2	92	57	-3	125
1112	3	0	0	2	1	1	1	1	1	1	87	58	3	119

Pt #	Mandibular arch form	Maxillary crowding	Mandibular crowding	Posterior Crossbite	Habits	Lip Competence	Maxillary midline	Mandibular midline	Pt profile	Lower facial height	Facial plane	Y axis	Occlusal plane	Interincisal
1114	1	3	0	2	1	1	1	2	1	3	93	53	1	125
1115	2	3	1	2	1	1	3	1	1	1	87	62	12	133
1121	1	2	3	2	1	1	2	1	1	1	87	59	4	130
1122	3	0	3	2	6	2	1	1	1	2	84	68	12	117
1123	2	0	0	2	1	1	1	2	2	3	94	52	0	129
1125	2	4	2	2	1	1	2	1	3	1	87	61	11	129
1126	1	3	1	1	1	1	3	1	1	3	88	57	8	131
1128	1	8	4	2	1	2	1	1	1	1	90	56	6	131
1129	3	6	8	2	1	1	1	1	3	1	88	57	4	144
1130	3	1	5	1	1	1	1	1	1	3	89	56	3	142
1131	2	0	0	2	1	1	1	1	1	1	89	58	7	140
1132	1	8	8	1	1	1	3	2	1	2	95	64	5	111
1134	2	4	6	2	1	1	1	1	1	1	85	61	9	124
1135	2	0	0	2	1	1	1	2	3	3	90	60	9	132
1138	1	0	0	2	1	1	3	1	1	1	83	63	14	126
1139	2	-3	-1	2	1	1	1	1	1	1	89	57	11	122
1140	2	7	7	2	1	1	2	2	1	1	76	68	15	150
1142	2	5	5	1	1	2	1	2	1	1	87	60	3	142
1143	2	4	1	2	1	1	1	2	1	3	92	55	3	133
1144	1	6	6	1	1	1	1	2	1	2	87	60	8	127
1145	1	0	10	1	1	1	1	3	3	1	94	51	2	143
1148	2	4	0	1	3	2	1	1	1	2	89	62	6	116
1149	2	2	5	2	1	1	1	1	3	1	88	61	5	140
1151	1	-7	4	1	1	2	1	1	1	1	95	51	3	137
1152	1	10	12	2	1	1	3	1	3	1	90	57	2	139
1154	1	7	-4	2	1	2	1	3	2	1	90	54	7	139
1156	1	3	1	2	1	1	3	1	2	1	90	57	9	134
1157	1	3	4	1	4	2	1	1	3	1	89	54	7	125
1158	1	7	8	2	1	1	3	1	1	2	87	62	14	148
1159	1	0	0	2	1	1	3	3	1	1	89	55	5	104
1160	2	0	3	2	1	1	3	2	1	1	92	57	2	119
1161	1	7	7	2	1	1	1	1	3	1	92	53	1	160
1163	1	2	2	2	1	1	1	1	1	1	82	60	8	128
1164	3	-2	4	1	1	2	1	1	1	2	90	55	4	132
1165	1	14	6	2	1	1	2	1	1	1	94	56	9	140
1166	2	0	2	2	4	1	2	2	1	2	91	59	10	126
1167	1	0	0	1	1	2	1	1	1	2	88	63	6	136
1169	3	4	6	2	1	2	1	2	1	2	92	65	11	127
1170	2	4	4	2	1	2	2	2	1	2	84	69	8	120
1171	3	7	7	1	1	2	1	2	3	1	94	59	5	144
1172	2	4	4	1	1	2	1	1	1	2	90	67	7	128
1173	2	5	5	1	1	2	2	2	1	2	90	56	9	125
1174	2	8	9	2	1	2	1	3	1	1	87	62	11	99
1176	2	-2	3	2	1	1	1	2	3	1	89	62	3	130
1177	1	2	2	2	1	1	2	2	3	1	88	59	4	125
1178	2	8	9	2	1	1	1	1	3	3	91	54	5	159
1179	1	1	4	2	1	1	1	1	3	1	92	57	4	123
1182	2	3	2	2	1	1	1	2	1	1	89	61	9	123
1183	2	5	2	1	1	2	1	1	1	1	87	61	12	113
1184	1	4	2	2	1	1	2	1	1	1	88	57	8	121
1186	3	5	2	2	1	2	1	1	1	1	79	62	5	150
1187	1	5	3	2	6	1	3	1	1	3	85	61	10	113
1188	1	-3	2	2	1	2	1	1	1	1	86	62	8	143
1189	2	4	6	2	1	2	3	2	3	2	91	63	8	127
1190	2	1	2	2	1	2	3	2	1	1	78	63	10	124
1191	2	5	3	1	1	1	1	3	1	1	91	56	8	139
1192	1	3	5	2	1	1	1	2	3	2	90	60	4	123
1193	3	0	0	2	1	1	2	2	2	2	91	56	4	132
1194	2	-7	3	2	1	1	3	1	1	1	85	63	10	96
1195	2	-1	3	2	1	1	1	2	1	3	89	65	11	159
1196	2	3	2	2	5	2	1	1	1	3	87	60	12	155
1197	3	0	-2	2	4	1	2	2	2	2	90	56	7	127
1198	2	0	4	2	1	2	1	2	1	3	94	55	2	117
1200	2	-4	-2	2	1	1	2	1	3	1	88	57	3	126
1201	2	-2	5	1	1	2	3	1	1	2	84	63	12	116
1202	2	2	2	2	1	2	2	2	1	1	88	56	9	100
1203	2	0	0	2	7	1	1	1	1	1	93	54	5	430
1204	2	2	8	2	1	2	2	3	1	2	91	59	5	123
1205	2	5	8	2	7	1	1	1	1	2	84	64	11	100
1206	2	4	3	2	1	2	1	2	3	3	90	56	15	140
1207	2	6	5	2	1	1	2	1	1	1	78	61	7	117
1208	3	1	5	2	4	2	1	2	1	1	83	66	16	108
1209	3	0	3	1	1	1	1	1	1	2	90	59	10	100
1210	2	2	2	1	1	2	1	3	1	1	85	66	10	129
1211	2	2	6	1	1	1	1	3	3	1	89	58	8	121
1212	2	3	6	2	1	1	1	1	3	1	86	56	8	123
1213	2	3	3	2	1	1	1	3	3	1	92	52	6	157
1214	3	5	7	2	1	1	1	2	1	2	87	59	7	120
1216	2	-7	-7	2	1	2	2	1	1	2	96	55	4	99
1217	2	3	3	2	1	2	1	1	3	1	90	53	5	129
1218	2	0	2	2	1	2	3	1	1	2	88	61	10	119
1219	1	2	2	2	1	1	1	2	2	2	87	58	5	117
1220	2	3	5	2	1	2	2	2	3	1	92	53	3	123
1222	3	3	7	2	1	2	2	3	1	1	86	61	2	126
1223	2	5	-1	2	1	1	1	3	3	2	85	63	11	145
1224	3	0	0	2	1	2	1	1	1	1	82	63	11	101
1225	2	3	2	2	1	2	2	1	3	1	89	56	6	144
1226	2	2	0	2	1	1	1	2	3	1	93	53	4	126
1227	2	7	0	2	1	2	1	1	3	2	93	53	12	139
1229	2	0	0	2	4	1	3	1	1	3	86	63	18	125
1230	2	12	10	1	1	1	1	1	3	1	87	61	8	138
1232	1	0	1	2	1	2	2	1	1	1	92	56	6	132
1234	1	0	0	1	1	2	1	2	1	2	83	67	13	126

Pt #	Mandibular arch form	Maxillary crowding	Mandibular crowding	Posterior Crossbite	Habits	Lip Competence	Maxillary midline	Mandibular midline	Pt profile	Lower facial height	Facial plane	Y axis	Occlusal plane	Interincisal
1236	2	0	0	2	1	1	1	1	1	1	86	60	6	121
1237	1	7	5	2	1	2	2	2	1	2	85	61	10	128
1238	1	0	0	2	1	1	1	1	3	3	92	57	8	142
1239	1	-13	-7	2	1	1	1	1	1	3	90	60	10	120
1240	2	4	6	1	1	1	3	1	3	1	97	53	2	136
1241	1	0	5	2	1	1	3	3	1	2	83	66	21	123
1242	2	-3	0	2	6	2	1	3	2	2	87	61	13	90
1244	2	1	4	2	1	1	3	1	1	1	86	61	9	119
1245	3	-1	4	2	1	1	2	2	1	2	79	68	12	112
1246	2	0	4	2	1	1	1	3	1	1	91	57	6	111
1247	2	8	4	2	4	1	1	1	1	1	86	61	7	127
1248	2	0	0	2	3	1	1	1	3	1	90	58	11	130
1249	2	6	0	1	1	1	3	1	3	1	92	55	10	132
1250	1	0	0	1	5	1	1	2	1	1	93	57	2	125
1253	1	8	11	1	4	1	1	3	3	2	91	55	11	134
1254	3	0	0	2	1	1	1	1	3	1	93	65	1	124
1255	1	6	9	1	6	1	1	1	1	3	90	55	7	123
1256	2	6	8	2	1	2	2	2	1	1	76	73	19	121
1257	2	0	2	2	1	1	1	2	1	1	87	58	10	111
1258	1	4	1	2	1	2	1	3	1	2	82	67	14	125
1262	2	4	6	1	1	2	1	1	3	2	90	63	5	145
1263	1	12	6	2	1	2	1	2	3	1	86	58	7	149
1264	3	4	4	2	1	1	1	2	2	1	86	62	9	103
1265	2	2	5	2	1	1	1	1	1	2	87	60	6	138
1266	2	4	5	2	1	2	2	2	1	2	86	63	10	132
1267	1	0	2	2	1	2	1	1	1	1	90	60	7	126
1269	3	0	0	1	1	1	3	2	1	2	90	61	8	116
1270	2	0	5	2	1	2	1	3	1	2	84	58	5	122
1271	2	0	3	2	1	2	1	1	1	1	92	56	6	126
1273	2	2	0	2	1	2	2	3	1	2	71	66	10	123
1274	2	-2	0	2	1	1	1	3	3	1	90	57	10	133
1275	2	2	5	2	1	2	1	2	3	1	91	58	7	140
1277	2	-3	1	2	1	2	1	2	1	1	78	58	11	130
1278	1	0	0	2	1	2	1	2	3	1	91	58	4	115
1280	2	5	7	1	1	1	2	3	1	2	80	68	19	127
1281	2	0	1	1	1	2	1	1	2	1	94	53	4	111
1282	1	1	2	2	1	2	1	1	1	1	75	66	15	132
1283	3	2	0	1	6	2	1	1	1	2	88	70	15	144
1284	3	5	5	2	1	2	1	2	1	1	86	59	9	127
1285	3	0	0	2	1	2	3	3	1	2	77	66	11	130
1286	2	3	7	2	1	2	2	1	1	2	94	59	11	100
1287	2	5	3	2	1	2	1	3	3	3	94	49	2	138
1288	2	-2	0	2	1	1	1	2	1	1	88	56	7	130
1289	2	2	2	2	1	1	3	1	3	1	94	53	3	134
1291	2	0	0	2	1	1	1	2	3	1	89	62	6	134
1293	2	1	-2	2	6	2	1	1	3	1	82	61	9	124
1294	2	3	3	2	1	2	1	1	3	1	88	61	5	135
1296	3	2	2	2	1	1	1	3	1	1	86	59	11	131
1297	1	5	5	2	1	1	1	2	2	2	78	60	8	112
1299	2	2	2	2	1	2	1	1	1	1	86	61	6	140
1300	1	2	3	2	1	1	1	3	1	1	90	59	7	145
1301	1	3	0	2	1	1	1	2	1	3	81	50	0	146
1302	2	0	2	2	6	1	1	1	3	1	88	54	10	127
1303	2	2	1	2	1	1	1	3	3	1	80	53	10	134
1304	2	1	4	2	1	1	1	3	1	1	80	75	13	135
1305	1	0	0	2	3	1	1	3	3	2	94	59	6	142
1306	3	-3	-1	2	6	2	1	1	1	1	81	59	5	128
1307	2	2	0	2	1	1	3	1	3	1	90	53	14	137
1308	2	0	4	1	1	1	2	1	3	1	94	52	4	135
1309	2	5	6	2	1	1	1	2	3	1	81	55	8	128
1310	2	12	10	2	1	1	2	3	1	1	75	67	14	135
1311	2	4	2	2	1	1	1	2	2	2	90	61	13	138
1312	1	1	0	1	1	1	1	2	1	1	82	65	16	129
1313	2	4	0	1	1	2	1	2	1	2	87	62	10	138
1314	2	8	9	2	1	1	2	3	1	2	85	69	12	138
1316	2	8	7	2	1	1	3	1	3	1	89	67	16	125
1317	2	-3	-3	2	1	1	1	1	1	1	87	58	10	148
1318	3	0	0	2	6	1	1	1	1	1	87	59	9	129
1319	2	0	2	2	1	1	1	1	3	1	93	53	5	120
1320	2	-2	4	1	1	1	1	3	3	1	92	58	7	142
1321	2	5	5	2	1	1	1	1	1	1	80	68	10	137
1322	1	0	0	2	1	1	2	2	3	1	88	60	6	123
1324	2	0	0	2	1	2	1	1	1	1	82	65	14	145
1326	2	4	7	2	1	1	1	1	1	1	84	64	13	139
1327	3	4	3	1	1	1	1	2	1	1	88	60	20	112

Pt #	Lower one to occlusal plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA	FMA	IMPA	FMIA	Upper one to NA (mm)	Lower one to NB (mm)	# of appts	# of broken appts	Pre-PAR
1002	26	9	82	79	3	123	88	26	97	57	8	6	24	4	22
1003	35	17	77	77	0	127	85	22	105	53	20	12	32	14	32
1004	14	5	81	79	2	108	85	31	86	63	5	3	17	0	20
1005	36	13	80	77	3	122	88	34	96	50	10	9	26	9	32
1006	32	12	89	83	6	128	92	27	100	53	9	12	29	4	19
1007	20	6	80	78	2	115	87	23	96	61	5	4	15	4	18
1008	22	6	83	81	2	119	93	28	86	66	7	4	52	6	34
1009	14	3	81	75	6	94	90	19	88	75	2	2	55	9	30
1010	22	5	79	76	3	117	89	24	98	58	2	4	28	3	9
1011	20	5	84	81	3	110	90	35	82	63	4	6	22	7	37
1012	12	1	82	76	6	109	89	20	95	65	-2	2	29	12	23
1013	16	11	80	77	3	115	90	25	87	68	8	8	44	15	15
1014	15	8	85	78	7	111	97	32	82	66	-2	4	16	2	32
1015	20	13	81	80	1	103	91	35	87	58	6	7	41	7	21
1016	23	7	85	79	6	110	93	21	97	62	2	4	23	2	21
1017	26	8	82	77	5	108	88	26	103	51	5	6	17	3	23
1018	22	6	76	68	8	104	96	23	97	60	11	5	29	6	24
1019	10	4	87	86	1	122	86	35	91	54	11	9	25	6	18
1020	33	11	87	80	7	115	93	27	100	53	4	8	27	10	31
1021	26	8	88	87	1	116	91	22	92	66	8	6	37	16	26
1023	16	7	81	78	3	107	90	27	90	63	4	6	35	11	25
1025	24	8	84	77	7	110	95	31	95	54	4	8	24	5	22
1026	14	-1	81	83	-2	114	87	17	86	87	7	2	20	6	17
1027	15	2	80	78	2	117	89	20	90	72	3	0	21	6	22
1029	14	5	76	75	1	111	89	25	88	67	6	3	17	4	26
1030	20	7	52	82	0	115	87	22	94	64	7	4	18	2	35
1031	26	5	83	80	3	104	86	26	97	57	5	4	30	9	5
1032	22	6	74	73	1	115	84	24	95	61	8	4	15	1	17
1033	30	6	85	82	3	116	92	20	110	50	5	6	24	5	25
1034	13	8	78	76	2	114	87	22	93	65	7	5	20	4	17
1035	10	-5	88	95	-7	124	90	78	84	78	7	3	44	5	38
1036	32	8	84	78	6	118	94	21	107	52	2	9	19	2	10
1037	25	9	83	78	5	117	97	27	96	57	6	7	21	5	14
1038	25	11	85	83	2	120	93	24	94	62	10	6	21	6	26
1039	20	7	83	79	4	116	93	28	91	61	4	7	14	3	11
1041	24	4	81	79	2	111	85	20	98	62	4	2	23	10	34
1042	24	7	74	75	-1	115	90	26	92	62	6	5	23	6	15
1043	18	5	87	85	2	119	91	24	91	65	8	6	12	1	11
1044	24	2	87	83	4	116	96	19	101	60	3	5	19	7	10
1046	23	6	87	83	4	118	93	26	91	63	4	5	26	0	23
1047	16	7	84	78	6	110	89	23	93	54	1	2	20	5	18
1048	17	5	81	76	5	122	95	16	97	67	3	2	38	8	18
1049	24	8	85	80	5	110	90	27	92	62	4	4	41	5	30
1050	10	8	84	84	0	122	91	23	85	72	9	4	36	23	31
1052	23	4	74	70	4	115	84	24	94	62	4	3	30	6	18
1053	32	10	84	77	7	105	85	20	114	46	5	10	30	3	25
1054	20	4	86	82	4	116	99	17	65	68	3	3	17	4	19
1055	23	7	77	75	2	115	87	27	93	60	5	4	22	3	22
1057	18	4	81	78	3	109	93	25	96	55	5	5	56	25	9
1058	34	9	94	82	12	119	97	33	98	49	6	15	26	2	25
1059	26	6	82	76	6	115	89	20	105	55	6	6	32	12	18
1060	23	7	78	72	6	108	90	27	81	72	3	2	35	8	30
1061	22	10	78	72	6	111	85	35	92	53	7	8	19	8	31
1062	23	13	79	75	4	102	89	27	97	56	10	7	29	7	29
1063	20	6	82	79	3	112	89	20	100	60	5	6	26	6	13
1064	23	13	83	77	6	118	93	30	102	48	9	14	27	10	22
1065	20	6	82	80	2	111	88	25	92	63	5	5	20	4	17
1066	23	6	80	77	3	111	88	29	95	56	7	9	27	6	15
1069	18	8	79	75	4	117	93	28	80	72	6	5	25	1	20
1070	26	4	79	75	4	105	94	25	98	57	3	5	22	8	23
1071	16	10	75	74	1	114	84	18	82	80	8	3	34	18	23
1073	17	4	81	81	0	127	97	11	92	77	6	2	26	13	12
1076	24	6	79	73	6	106	94	18	104	58	2	7	32	5	24
1077	22	5	82	83	1	118	93	19	86	75	2	0	47	9	24
1078	30	18	78	74	4	120	90	20	110	70	13	10	40	5	38
1079	24	8	81	78	3	105	88	28	97	55	5	4	12	2	22
1080	17	2	87	82	5	114	93	21	93	66	1	3	31	4	13
1081	16	5	81	77	4	109	93	27	88	65	3	5	26	4	26
1083	18	4	83	79	4	105	93	32	78	70	2	4	25	4	17
1084	33	12	93	87	6	125	101	22	108	50	7	9	10	0	12
1085	37	15	78	72	6	119	91	33	101	46	7	9	26	4	14
1088	17	3	83	77	6	100	94	19	98	63	-2	3	31	6	6
1089	5	6	79	76	3	104	84	31	86	63	5	4	23	5	35
1090	17	5	79	75	4	122	92	21	97	62	3	3	35	4	21
1091	18	6	79	74	5	107	93	20	88	72	3	5	25	3	25
1092	5	4	82	80	2	114	97	19	85	76	4	2	25	2	16
1093	18	5	76	74	2	113	89	31	87	62	4	4	27	6	16
1096	11	4	81	76	5	101	90	25	89	66	3	4	21	1	27
1097	27	7	83	78	5	112	88	21	97	62	5	5	46	16	26
1098	24	4	79	76	3	121	92	17	94	69	5	3	19	7	23
1099	21	11	85	78	7	108	93	36	93	51	5	4	22	2	11
1100	20	7	79	72	7	102	90	26	95	69	3	4	32	2	21
1101	20	4	82	79	3	107	87	30	88	62	3	3	24	3	38
1102	26	7	80	76	4	104	94	21	98	61	4	4	21	2	20
1103	17	5	88	82	6	114	89	17	100	63	5	4	13	6	36
1105	10	3	91	83	8	90	91	28	91	61	6	4	45	12	20
1106	29	6	81	81	0	138	95	14	99	67	8	5	20	6	22
1107	27	11	81	74	7	121	87	30	97	53	8	6	24	1	39
1108	20	8	75	72	3	110	88	22	96	62	7	2	42	13	33
1109	14	4	77	75	2	110	88	30	84	60	5	4	19	3	14
1110	22	3	73	70	3	110	84	28	96	56	5	6	47	2	36
1111	28	10	86	79	7	120	98	17	98	65	5	6	25	4	22
1112	24	7	78	74	4	123	88	13	103	64	7	3	23	1	30

Pt #	Lower one to occlusal plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA	FMA	IMPA	FMIA	Upper one to NA (mm)	Lower one to NB (mm)	# of appts	# of broken appts	Pre-PAR
1114	22	6	83	79	4	122	94	17	95	68	5	5	21	8	22
1115	19	2	80	77	3	107	89	34	87	59	4	5	14	1	25
1121	8	8	76	76	0	116	89	30	84	66	7	3	27	5	20
1122	30	10	84	77	7	113	90	33	99	48	5	8	29	4	30
1123	17	4	84	87	-3	123	90	14	94	72	7	3	14	2	18
1125	18	5	78	75	3	120	87	28	92	60	5	4	15	2	13
1126	22	6	80	77	3	114	90	28	92	70	5	5	18	1	19
1128	16	7	86	82	4	116	93	24	90	66	5	5	20	7	40
1129	16	5	78	78	0	109	88	25	83	72	7	3	22	1	13
1130	22	2	81	76	5	105	90	16	98	56	2	3	18	3	20
1131	13	6	81	76	5	107	90	26	85	69	5	5	22	2	40
1132	33	16	87	86	1	126	86	28	99	53	15	10	26	4	27
1134	23	7	77	76	1	114	86	28	87	665	8	6	20	6	12
1135	20	7	87	82	5	111	89	27	94	59	3	4	18	6	17
1138	15	3	80	76	4	115	85	26	95	58	5	4	27	2	25
1139	22	8	86	83	3	115	90	27	98	55	6	6	29	4	8
1140	16	1	80	75	5	91	81	31	91	58	4	3	31	6	34
1142	73	-2	80	76	4	109	87	27	87	70	3	1	37	9	40
1143	20	3	84	82	2	112	92	20	93	67	4	2	13	3	20
1144	22	10	72	71	1	112	87	30	91	59	12	7	64	12	45
1145	13	5	80	78	2	105	93	20	97	63	5	3	20	1	4
1148	24	10	82	78	4	125	88	37	84	71	8	7	25	0	36
1149	10	27	82	80	2	108	87	31	90	60	4	5	28	9	13
1151	11	7	82	79	3	119	97	17	89	74	6	6	17	1	20
1152	14	5	78	78	0	116	88	20	85	75	6	3	20	0	18
1154	15	4	83	79	4	110	87	19	92	69	3	3	20	5	18
1156	15	3	78	77	1	113	89	25	88	67	4	3	14	1	10
1157	19	5	82	79	3	120	91	18	99	63	5	4	23	5	16
1158	6	4	80	74	6	102	92	33	76	71	-1	5	18	2	14
1159	36	10	84	78	6	125	96	18	114	48	6	11	21	6	12
1160	32	8	90	84	6	119	98	28	96	56	6	11	15	2	20
1161	11	0	81	78	3	99	93	14	88	78	0	1	19	1	25
1163	14	6	85	81	4	107	90	20	100	60	2	4	42	6	16
1164	22	4	80	75	5	98	92	24	95	61	4	4	26	10	19
1165	7	4	87	84	3	115	97	23	83	74	3	4	24	3	17
1166	15	11	88	83	5	120	96	30	84	66	6	8	30	3	22
1167	13	4	81	78	3	114	91	28	82	71	2	4	29	2	24
1169	20	6	84	82	2	115	93	16	101	62	7	4	30	12	17
1170	26	5	76	71	5	103	91	35	88	51	6	6	21	3	25
1171	12	-3	81	80	1	109	82	18	89	73	4	0	27	2	26
1172	28	7	75	70	5	109	87	40	86	54	7	8	25	6	24
1173	22	5	82	76	6	110	92	25	96	59	1	7	46	4	31
1174	30	9	87	77	10	130	96	32	99	49	11	13	22	5	33
1176	26	2	75	72	3	107	90	23	100	37	4	6	46	5	24
1177	23	6	81	79	2	118	89	22	95	63	6	4	17	6	24
1178	4	-2	89	87	5	101	90	12	88	80	0	0	29	4	15
1179	25	6	86	83	3	119	93	23	96	61	5	6	21	0	19
1182	26	7	82	77	5	113	93	27	98	55	4	9	27	3	11
1183	30	5	83	76	7	119	87	32	82	66	6	11	28	3	14
1184	22	8	80	79	1	120	89	19	101	60	7	7	13	2	8
1186	24	2	82	77	5	90	89	18	89	73	0	1	41	18	21
1187	10	9	80	78	2	119	87	33	100	45	6	6	52	14	27
1188	22	0	77	73	4	109	88	20	95	65	0	4	44	0	18
1189	14	7	84	79	5	116	88	29	89	62	5	5	26	2	12
1190	25	5	82	78	4	111	91	26	100	55	5	4	22	8	24
1191	14	8	82	74	8	116	94	26	84	70	4	5	23	0	19
1192	22	10	82	79	3	122	93	27	89	64	7	5	16	1	17
1193	22	-1	79	79	0	100	92	21	94	65	1	8	38	16	48
1194	31	12	85	78	7	133	93	29	101	48	16	7	46	16	27
1195	6	0	83	79	4	94	91	24	97	73	1	1	25	4	15
1196	2	5	79	76	3	91	89	25	89	66	2	4	67	11	20
1197	18	6	80	81	1	119	89	26	91	63	8	6	24	0	27
1198	28	9	89	87	2	124	94	20	99	61	8	7	14	6	17
1200	30	9	83	79	4	112	92	18	105	58	4	4	18	4	22
1201	29	13	82	76	6	114	90	33	98	49	6	13	15	1	10
1202	38	8	85	77	8	123	95	19	118	43	8	13	18	7	24
1203	19	2	84	81	3	118	86	22	92	66	4	4	14	1	17
1204	24	3	86	81	5	119	95	27	93	60	6	6	31	10	25
1205	34	11	83	80	3	126	87	36	98	46	9	8	38	2	19
1206	-1	6	90	86	4	110	92	18	91	70	5	4	33	2	18
1207	19	10	80	77	3	130	92	31	83	65	7	5	39	6	10
1208	34	16	80	73	7	117	90	38	98	45	10	12	35	10	13
1209	31	15	93	83	10	128	97	23	108	49	14	15	35	9	12
1210	26	9	86	81	5	125	91	26	99	55	5	5	23	12	24
1211	24	6	81	78	3	118	92	31	91	58	5	9	26	4	13
1212	24	10	81	77	4	117	89	21	100	59	6	7	21	5	23
1213	20	5	80	80	0	109	91	9	116	65	9	4	15	2	24
1214	28	8	79	75	4	116	90	21	104	55	4	7	22	7	12
1216	29	11	81	82	1	139	94	23	99	58	17	11	13	4	14
1217	15	2	75	73	2	123	91	20	89	71	10	4	14	2	28
1218	27	11	83	76	7	114	97	32	95	53	5	10	21	6	17
1219	20	13	83	79	4	126	91	23	94	63	8	6	29	15	30
1220	25	10	82	80	2	126	93	17	100	63	9	6	22	8	15
1222	34	9	84	80	4	106	90	12	114	54	6	9	18	3	23
1223	17	2	85	83	2	95	86	25	96	59	3	2	25	8	12
1224	31	17	78	76	2	125	86	37	97	45	16	12	33	7	23
1225	13	3	78	77	1	108	87	21	87	72	4	1	19	3	19
1226	18	4	80	79	1	121	92	17	96	67	5	4	15	2	3
1227	12	3	81	79	2	112	94	19	90	71	3	3	22	1	10
1229	14	10	84	79	5	112	91	35	104	57	8	10	35	5	24
1230	19	2	76	73	3	103	89	30	89	61	1	3	29	3	15
1232	12	1	82	80	2	119	95	17	92	71	8	6	12	1	21
1234	24	9	85	80	5	110	87	33	93	55	8	8	31	7	33

Pt #	Lower one to occlusal plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA	FMA	IMPA	FMIA	Upper one to NA (mm)	Lower one to NB (mm)	# of appts	# of broken appts	Pre-PAR
1236	13	11	74	71	3	119	91	24	96	60	8	6	25	7	36
1237	21	6	76	74	2	114	87	30	86	64	6	5	40	18	32
1238	8	7	79	75	4	103	95	15	100	65	4	3	45	8	12
1239	10	7	86	85	1	103	92	18	107	55	14	9	26	13	29
1240	7	3	82	84	-2	126	93	16	84	80	7	0	29	1	15
1241	16	10	78	73	5	111	89	39	86	55	6	9	12	3	25
1242	29	18	85	79	6	136	94	25	107	48	13	12	19	7	30
1244	30	8	84	76	8	111	91	26	104	50	4	8	13	2	14
1245	27	7	79	77	2	120	86	31	98	51	8	6	19	7	10
1246	29	11	91	86	5	126	97	11	114	55	7	8	37	3	11
1247	18	9	80	77	3	123	89	26	91	63	8	6	20	3	22
1248	10	1	78	77	1	108	87	29	83	68	4	2	16	1	7
1249	10	3	80	77	3	120	95	26	83	71	4	5	18	2	16
1250	25	6	80	81	-1	120	85	18	99	63	10	5	36	17	32
1253	14	4	73	75	-2	119	87	24	90	66	7	3	32	9	25
1254	18	5	82	81	1	121	94	22	91	67	5	4	22	13	26
1255	15	10	82	77	5	119	94	22	93	65	7	6	37	8	16
1256	24	15	87	77	10	107	85	42	91	48	9	29	35	12	29
1257	25	11	84	77	7	119	93	20	105	55	7	6	25	10	28
1258	19	10	85	82	3	112	94	39	84	57	10	5	19	2	27
1262	11	2	77	76	1	101	87	33	75	72	3	3	27	1	16
1263	7	-1	75	73	2	110	91	31	84	65	2	0	45	10	40
1264	33	15	90	85	5	125	93	26	106	48	12	12	32	6	28
1265	20	6	77	73	4	110	90	30	87	63	4	4	15	7	28
1266	23	3	83	76	7	101	87	34	87	59	3	4	45	7	28
1267	27	1	86	79	7	110	90	25	100	55	2	4	38	4	30
1269	22	10	84	79	5	125	96	29	91	60	5	8	26	5	40
1270	27	6	89	84	5	119	98	20	99	61	6	11	15	1	12
1271	22	6	77	73	4	118	83	27	90	63	4	6	15	0	8
1273	29	11	78	71	7	116	89	30	98	52	5	8	23	6	32
1274	6	9	81	79	2	123	92	21	84	75	9	4	63	18	39
1275	11	2	81	81	0	112	90	21	87	72	3	0	13	2	11
1277	20	4	83	76	7	99	92	28	92	60	2	5	17	1	29
1278	30	5	84	83	1	113	89	19	105	56	6	6	20	5	23
1280	20	9	87	80	7	107	90	34	94	52	1	10	20	7	19
1281	31	13	82	76	6	128	99	25	97	58	10	9	21	6	31
1282	18	5	77	73	4	103	84	30	93	57	5	5	18	5	18
1283	10	4	85	78	7	114	92	27	95	68	6	5	24	4	39
1284	22	6	85	80	5	111	95	23	92	60	2	6	26	6	24
1285	23	6	78	76	2	106	85	39	84	57	5	6	24	3	19
1286	38	10	78	73	5	123	93	25	113	42	12	12	46	30	31
1287	19	4	78	77	1	116	92	13	95	72	5	2	27	1	22
1288	20	8	78	75	3	115	92	24	92	64	4	5	18	2	16
1289	18	2	83	84	-1	116	91	16	94	70	6	2	15	1	8
1291	20	7	84	82	2	115	88	27	89	64	6	5	25	2	12
1293	25	5	77	75	2	110	84	22	103	55	5	5	17	4	12
1294	18	0	79	73	3	111	88	22	93	65	5	3	23	9	16
1296	14	5	83	81	2	111	87	29	87	64	5	4	20	1	21
1297	25	2	81	77	4	125	91	24	100	56	7	5	25	4	26
1299	20	0	82	78	4	103	94	22	96	62	3	3	25	6	22
1300	11	1	85	85	0	114	89	23	86	71	4	1	22	4	12
1301	28	5	88	80	1	113	90	13	105	62	2	2	25	6	21
1302	20	12	86	80	6	125	87	20	100	60	5	7	26	11	12
1303	12	4	81	79	2	113	92	21	92	67	4	3	21	2	17
1304	12	3	76	73	3	114	83	34	98	48	1	2	15	5	11
1305	11	6	90	87	3	120	83	32	75	73	3	4	37	11	16
1306	13	4	80	75	5	125	88	24	91	65	7	4	25	7	31
1307	10	4	80	77	3	109	90	25	91	64	6	3	19	4	18
1308	15	4	90	87	3	125	97	21	90	69	2	2	20	6	19
1309	18	10	84	79	5	117	97	24	90	66	4	4	26	7	31
1310	13	3	76	73	3	110	94	18	90	72	4	2	43	11	35
1311	9	5	83	81	2	110	90	28	85	67	5	4	15	5	20
1312	17	7	78	75	3	106	83	35	92	53	6	6	22	5	21
1313	14	8	85	80	5	117	93	34	81	65	2	4	26	15	25
1314	12	2	82	77	5	94	87	22	99	59	5	5	43	10	30
1316	14	3	79	77	2	121	88	27	89	59	6	5	37	6	31
1317	7	0	87	83	4	105	87	20	92	68	4	2	31	5	15
1318	32	7	82	77	5	114	90	23	98	60	7	5	28	10	28
1319	24	8	87	85	2	122	86	20	98	62	7	3	19	13	18
1320	11	2	82	80	2	111	94	19	88	73	3	3	19	4	14
1321	12	0	84	79	5	112	87	20	92	78	6	4	29	6	31
1322	24	7	83	79	4	118	88	31	90	59	4	5	19	5	19
1324	15	4	79	75	4	117	91	30	95	55	4	8	28	8	7
1326	18	5	83	78	5	100	88	31	90	59	3	5	27	10	11
1327	29	6	82	80	2	128	88	29	97	53	11	7	41	11	46
												Means:	26.33333	5.8084291	21.7395
												Std. Deviations	10.08197	4.6103652	8.53776
												Range: (minimium)	10	0	3
												(maximum)	67	30	48

Pt #	Post-PAR	Tx duration (months)
1002	4	23
1003	13	36
1004	5	16
1005	0	23
1006	6	26
1007	2	15
1008	6	40
1009	5	42
1010	5	23
1011	8	24
1012	7	32
1013	15	35
1014	17	19
1015	4	30
1016	3	22
1017	4	15
1018	9	29
1019	7	23
1020	6	28
1021	11	38
1023	3	29
1025	6	23
1026	4	21
1027	16	21
1029	9	17
1030	2	17
1031	6	25
1032	8	13
1033	3	23
1034	2	20
1035	12	40
1036	6	17
1037	6	20
1038	4	18
1039	0	14
1041	2	23
1042	2	22
1043	0	12
1044	2	19
1046	4	22
1047	4	20
1048	9	32
1049	4	28
1050	0	39
1052	4	25
1053	0	25
1054	4	16
1055	4	20
1057	7	35
1058	6	24
1059	6	46
1060	9	28
1061	6	19
1062	15	33
1063	2	21
1064	8	25
1065	0	18
1066	6	21
1069	2	20
1070	4	26
1071	13	41
1073	9	28
1076	8	27
1077	14	39
1078	6	34
1079	6	12
1080	4	26
1081	4	26
1083	5	25
1084	4	7
1085	12	26
1088	5	27
1089	4	24
1090	6	32
1091	2	23
1092	2	22
1093	2	25
1096	6	20
1097	9	43
1098	11	21
1099	0	19
1100	4	27
1101	2	24
1102	4	21
1103	36	14
1105	2	40
1106	4	21
1107	10	24
1108	4	48
1109	12	18
1110	13	45
1111	21	23
1112	6	20

Pt #	Post-PAR	Tx duration (months)
1114	6	24
1115	7	16
1121	9	25
1122	0	25
1123	4	15
1125	4	16
1126	4	18
1128	8	23
1129	7	23
1130	7	18
1131	8	24
1132	8	26
1134	4	20
1135	7	21
1138	10	26
1139	7	25
1140	2	29
1142	6	38
1143	6	11
1144	8	59
1145	12	17
1148	2	23
1149	4	26
1151	7	16
1152	2	15
1154	8	18
1156	6	12
1157	0	17
1158	6	15
1159	5	17
1160	5	12
1161	4	15
1163	8	30
1164	8	35
1165	5	21
1166	0	23
1167	4	25
1169	12	36
1170	4	21
1171	6	24
1172	4	26
1173	9	45
1174	12	25
1176	7	39
1177	6	17
1178	7	25
1179	4	19
1182	0	25
1183	1	24
1184	0	18
1186	5	43
1187	4	45
1188	7	31
1189	2	23
1190	1	23
1191	5	19
1192	0	14
1193	23	31
1194	7	45
1195	4	27
1196	14	43
1197	2	19
1198	7	13
1200	4	17
1201	4	12
1202	8	18
1203	2	14
1204	0	36
1205	5	29
1206	12	30
1207	14	25
1208	8	41
1209	8	35
1210	4	28
1211	4	21
1212	4	22
1213	2	14
1214	4	21
1216	0	16
1217	4	15
1218	7	18
1219	9	34
1220	3	21
1222	17	14
1223	5	27
1224	4	28
1225	2	16
1226	6	12
1227	4	19
1229	4	33
1230	2	25
1232	6	11
1234	4	29

Pt #	Post-PAR	Tx duration (months)
1236	6	23
1237	9	38
1238	11	30
1239	39	42
1240	7	26
1241	8	13
1242	4	21
1244	10	12
1245	2	20
1246	2	23
1247	10	17
1248	8	13
1249	12	15
1250	9	39
1253	8	34
1254	2	29
1255	6	34
1256	4	42
1257	7	28
1258	3	23
1262	13	30
1263	8	36
1264	11	24
1265	8	19
1266	8	37
1267	6	29
1269	0	24
1270	4	12
1271	4	13
1273	4	23
1274	4	66
1275	3	14
1277	12	14
1278	2	18
1280	5	18
1281	2	23
1282	2	16
1283	3	20
1284	8	22
1285	3	23
1286	17	44
1287	5	18
1288	9	15
1289	4	13
1291	7	23
1293	13	15
1294	5	26
1296	5	19
1297	7	22
1299	14	22
1300	13	19
1301	5	28
1302	9	24
1303	5	20
1304	3	18
1305	6	39
1306	18	30
1307	4	21
1308	5	21
1309	7	24
1310	14	48
1311	7	14
1312	7	23
1313	17	29
1314	8	37
1316	0	35
1317	0	25
1318	18	36
1319	4	22
1320	11	20
1321	21	37
1322	4	20
1324	5	26
1326	8	26
1327	28	40
	6.4980843	24.789272
	5.1877255	9.1271804
	0	7
	39	66

APPENDIX III

Pearson Correlation Results

	Resident	Gender	Extractions	Start Age	Marital Status	School grades
Resident	1	-0.008	0.006	-0.081	-0.099	0.048
Gender	-0.008	1	0.072	0.107	0.118	0.117
Extractions	0.006	0.072	1	-0.042	0.023	-0.009
Start Age	-0.081	0.107	-0.042	1	0.073	-0.019
Marital Status	-0.099	0.118	0.023	0.073	1	0.04
School grades	0.048	0.117	-0.009	-0.019	0.04	1
Family with ortho experience	-0.001	-0.119	-0.053	-0.003	0.058	0.061
Reached puberty	0.048	0.073	0.077	-0.4	-0.085	-0.017
Medical History	-0.028	-0.032	0.016	0.033	0.019	-0.001
# of missing teeth	-0.08	-0.095	0.014	0.093	-0.12	0.081
# of supernumerary teeth	-0.078	0.081	0.109	0.03	-0.005	-0.002
# of impactions	-0.074	0.083	0.091	-0.027	0.102	-0.012
Angle Class	-0.042	0.005	0.037	-0.014	0.045	0.018
Overjet	-0.026	0.257	0.188	-0.129	0.131	0.055
Overbite	-0.031	0.052	-0.004	-0.062	-0.042	-0.009
Maxillary Arch form	0.15	-0.019	0.035	0.018	-0.094	-0.055
Mandibular Arch Form	0.226	0.095	0.117	0.016	-0.013	-0.002
Maxillary Crowding	-0.183	-0.061	0.242	-0.005	-0.135	-0.074
Mandibular Crowding	-0.202	-0.026	0.272	0.042	0.049	-0.124
Posterior Crossbite	0.015	0.021	-0.004	-0.163	0.069	-0.099
Habits	0.041	-0.056	-0.153	-0.15	-0.007	0.007
Lip Competence	0.093	0.176	0.133	-0.13	0.113	0.078
Maxillary Midline	-0.019	-0.082	0.023	0.004	0.007	0.007
Mandibular Midline	-0.036	0.114	0.092	0.007	-0.037	0.021
Pt profile	0.202	-0.175	-0.072	-0.047	-0.098	-0.109
Lower Face Height	-0.13	-0.066	-0.109	0.021	-0.145	0.017
Facial Plane	-0.077	-0.153	-0.229	0.129	-0.06	-0.001
Convexity	-0.097	0.073	0.16	-0.083	-0.146	0.067
A-B plane	0.096	-0.094	-0.056	0.022	0.06	0.024
Y Axis	0.117	0.128	0.234	0.017	0.029	-0.08
Occlusal plane	0.165	0.032	0.139	-0.078	0.033	-0.077
Interincisal	0.051	-0.075	-0.131	0.018	-0.098	-0.017
Lower one to occlusal plane	-0.132	0.133	0.191	-0.014	-0.015	0.011
Lower one to mandibular plane	-0.014	0.026	0.089	-0.08	-0.083	-0.007

	Resident	Gender	Extractions	Start Age	Marital Status	School grades
Lower one to AP plane	-0.094	0.087	0.222	-0.002	-0.022	0.037
SNA	0.066	-0.008	-0.047	-0.031	0.047	0.14
SNB	0.024	-0.049	-0.143	0.033	0.029	0.113
ANB	-0.005	0.135	0.23	-0.073	0.046	0.055
Upper one to FH	0.061	0.003	0.06	-0.08	0.052	0.022
FH-NA	-0.022	-0.032	-0.001	0.067	-0.031	0.065
FMA	-0.005	0.005	0.104	-0.048	0.024	-0.04
IMPA	0.002	0.072	0.098	-0.035	-0.035	0.032
FMIA	-0.028	0.066	-0.077	0.027	0.002	-0.048
Upper one to NA (mm)	0.008	0.008	0.202	-0.005	0.009	-0.037
Upper one to NA	0.062	0.012	0.106	-0.082	0.028	0.029
Lower one to NB (mm)	0.009	0.1	0.26	-0.065	0.076	0.134
Lower one to NB	-0.006	0.018	0.11	-0.087	-0.093	-0.01
PO to NB	-0.068	0.085	-0.036	0.14	0.149	0.004
Pre-PAR	-0.023	0.119	0.22	0.024	0.108	0.036
Time in months	0.011	-0.004	0.328	-0.11	-0.006	0.02

	Family with ortho experience	Reached puberty	Medical History	# of missing teeth	# of supernumerary teeth	# of impactions
Resident	-0.001	0.048	-0.028	-0.08	-0.078	-0.074
Gender	-0.119	0.073	-0.032	-0.095	0.081	0.083
Extractions	-0.053	0.077	0.016	0.014	0.109	0.091
Start Age	-0.003	-0.4	0.033	0.093	0.03	-0.027
Marital Status	0.058	-0.085	0.019	-0.12	-0.005	0.102
School grades	0.061	-0.017	-0.011	0.081	-0.002	-0.012
Family with ortho experience	1	0.006	-0.012	0.066	-0.044	-0.007
Reached puberty	0.006	1	-0.042	-0.022	-0.035	0.088
Medical History	-0.012	-0.042	1	-0.024	-0.033	-0.025
# of missing teeth	0.066	-0.022	-0.024	1	-0.016	0.016
# of supernumerary teeth	-0.044	-0.035	-0.033	-0.016	1	-0.019
# of impactions	-0.007	0.088	-0.025	0.016	-0.019	1
Angle Class	0.074	-0.024	-0.042	0.06	0.029	0.038
Overjet	0	0.076	0.055	-0.026	-0.049	0.026
Overbite	-0.13	0.057	-0.034	0.03	-0.057	0.033
Maxillary Arch form	0.035	0.012	0.038	-0.048	0.035	-0.082
Mandibular Arch Form	0.031	0.049	0.095	0.013	0.021	0.006
Maxillary Crowding	-0.049	-0.014	-0.033	-0.184	0.017	0.087
Mandibular Crowding	-0.031	0.036	-0.008	-0.127	-0.055	0.065
Posterior Crossbite	0.016	0.087	0.02	0.082	-0.121	0.013
Habits	0.037	0.005	0.118	-0.066	-0.022	-0.037
Lip Competence	0.108	0.063	0.013	-0.082	-0.045	-0.055
Maxillary Midline	0.128	0.072	-0.034	0.01	0.044	-0.088
Mandibular Midline	0.039	0.052	0.006	-0.046	0.097	0.095
Pt profile	-0.125	0.047	-0.038	-0.054	-0.041	-0.033
Lower Face Height	0.036	-0.052	0.009	0.055	-0.046	-0.067
Facial Plane	-0.071	-0.123	-0.08	0.039	0.06	-0.077
Convexity	0.043	0.092	-0.01	0.084	0.065	0.049
A-B plane	0.001	-0.015	0.064	-0.089	-0.069	-0.121
Y Axis	0.005	0.02	0.034	-0.061	0.011	0.072
Occlusal plane	0.11	0.067	0.056	0.018	-0.029	0.127
Interincisal	-0.096	0.012	-0.065	0.009	-0.037	-0.026
Lower one to occlusal plane	0.059	0.033	0.039	-0.027	0.097	0.011
Lower one to mandibular plane	0.027	0.13	-0.042	0.061	0.05	-0.048

	Family with ortho experience	Reached puberty	Medical History	# of missing teeth	# of supernumerary teeth	# of impactions
Lower one to AP plane	0.154	0.085	0.062	-0.01	0.07	-0.039
SNA	0.039	-0.008	0.009	-0.006	0.076	-0.008
SNB	-0.02	-0.038	-0.007	-0.06	0.028	-0.076
ANB	0.082	0.071	0.015	0.073	0.089	0.082
Upper one to FH	-0.013	0.033	0.004	-0.157	0.008	-0.045
FH-NA	0.047	-0.044	-0.017	0.053	0.044	-0.106
FMA	0.027	0.038	0.04	-0.029	0.018	0.102
IMPA	0.113	0.02	0.025	0.043	0.052	-0.054
FMIA	0.052	-0.048	-0.046	-0.021	-0.018	-0.03
Upper one to NA (mm)	0.063	0.018	-0.003	0.017	-0.03	-0.073
Upper one to NA	0.026	0.023	0.031	-0.085	0.002	-0.011
Lower one to NB (mm)	0.176	0.052	-0.019	0.001	0.05	0.075
Lower one to NB	0.106	0.113	0.118	0.034	-0.005	-0.025
PO to NB	-0.145	-0.151	-0.014	0.015	0.031	0.091
Pre-PAR	-0.003	-0.022	0.058	-0.062	0.067	0.007
Time in months	-0.09	-0.005	0.028	0.028	0.022	0.052

	Angle Class	Overjet	Overbite	Maxillary Arch form	Mandibular Arch Form	Maxillary Crowding	Mandibular Crowding
Resident	-0.042	-0.026	-0.031	0.15	0.226	-0.183	-0.202
Gender	0.005	0.257	0.052	-0.019	0.095	-0.061	-0.026
Extractions	0.037	0.188	-0.004	0.035	0.117	0.242	0.272
Start Age	-0.014	-0.129	-0.062	0.018	0.016	-0.005	0.042
Marital Status	0.045	0.131	-0.042	-0.094	-0.013	0.135	0.049
School grades	0.018	0.055	-0.009	-0.055	-0.002	-0.074	-0.124
Family with ortho experience	0.074	0	-0.13	0.035	0.031	-0.049	-0.031
Reached puberty	-0.024	0.076	0.057	0.012	0.049	-0.014	0.036
Medical History	-0.042	0.055	-0.034	0.038	0.095	-0.033	-0.008
# of missing teeth	0.06	-0.026	0.03	-0.048	0.013	-0.184	-0.127
# of supernumerary teeth	0.029	-0.049	-0.057	0.035	0.021	0.017	-0.055
# of impactions	0.038	0.026	0.033	-0.082	0.006	0.087	0.065
Angle Class	1	0.07	0.204	0.029	0.015	0.147	0.114
Overjet	0.07	1	0.205	-0.095	-0.046	-0.058	0.048
Overbite	0.204	0.205	1	0.112	-0.025	0.049	0.12
Maxillary Arch form	0.029	-0.095	0.112	1	0.642	-0.047	-0.003
Mandibular Arch Form	0.015	-0.046	-0.025	0.642	1	-0.142	-0.057
Maxillary Crowding	0.147	-0.058	0.049	-0.047	-0.142	1	0.721
Mandibular Crowding	0.114	0.048	0.12	-0.003	-0.057	0.721	1
Posterior Crossbite	-0.09	0.158	0.152	0.068	0.026	-0.08	-0.072
Habits	0.058	0.068	-0.17	-0.025	-0.015	0.019	-0.038
Lip Competence	0.106	0.265	-0.004	-0.003	0.09	0.012	0.026
Maxillary Midline	-0.052	-0.04	-0.079	-0.053	-0.079	-0.011	0.033
Mandibular Midline	-0.014	-0.002	0.009	-0.078	-0.075	0.051	0.065
Pt profile	-0.036	-0.251	-0.009	0.024	-0.037	0.038	0.016
Lower Face Height	0.122	0.019	0.061	-0.011	-0.09	0.108	0.135
Facial Plane	-0.059	-0.262	-0.132	0.007	-0.059	-0.087	-0.12
Convexity	-0.031	0.173	-0.043	-0.015	0.008	-0.07	-0.01
A-B plane	-0.074	-0.155	-0.05	0.091	0.109	-0.022	-0.033
Y Axis	-0.022	0.064	-0.118	-0.006	0.144	0.037	0.076
Occlusal plane	-0.028	-0.042	-0.123	0.083	0.138	-0.005	-0.031
Interincisal	0.087	-0.189	0.141	0.045	-0.032	0.075	0.014
Lower one to occlusal plane	-0.027	0.256	-0.133	-0.033	0.096	-0.124	-0.055
Lower one to mandibular plane	-0.026	0.185	-0.024	0.075	0.066	-0.202	-0.134

	Angle Class	Overjet	Overbite	Maxillary Arch form	Mandibular Arch Form	Maxillary Crowding	Mandibular Crowding
Lower one to AP plane	-0.13	0.365	-0.262	-0.05	0.045	-0.125	0.002
SNA	0.03	-0.014	0.027	0.038	0.012	-0.206	-0.181
SNB	-0.023	-0.223	-0.034	0.011	-0.037	-0.115	-0.145
ANB	0.052	0.316	0.057	0.026	0.119	-0.05	-0.001
Upper one to FH	-0.196	0.241	-0.316	0.007	0.013	-0.149	-0.119
FH-NA	-0.053	0.035	0.011	0.053	0.026	-0.143	-0.065
FMA	0.012	-0.105	-0.229	-0.118	-0.016	0.13	0.087
IMPA	0.016	0.172	-0.056	0.047	0.112	-0.22	-0.125
FMIA	-0.031	-0.024	0.005	0.039	-0.004	0.055	0.063
Upper one to NA (mm)	-0.047	0.349	-0.229	0.045	0.092	-0.116	-0.042
Upper one to NA	-0.115	0.285	-0.359	-0.053	-0.016	-0.139	-0.074
Lower one to NB (mm)	-0.042	0.24	-0.27	-0.031	0.094	-0.0149	-0.042
Lower one to NB	-0.119	0.111	-0.334	0.042	0.14	-0.283	-0.206
PO to NB	0.018	0.043	0.167	0.082	0.09	0.136	0.11
Pre-PAR	0.297	0.355	0.12	-0.084	0.009	0.215	0.116
Time in months	0.289	0.165	0.172	0.037	0.029	0.2	0.232

	Posterior Crossbite	Habits	Lip Competence	Maxillary Midline	Mandibular Midline	Pt profile	Lower Face Height
Resident	0.015	0.041	0.093	-0.019	-0.036	0.202	-0.13
Gender	0.021	-0.056	0.176	-0.082	0.114	-0.175	-0.066
Extractions	-0.004	-0.153	0.133	0.023	0.092	-0.072	-0.109
Start Age	-0.163	-0.15	-0.13	0.004	0.007	-0.047	0.021
Marital Status	0.069	-0.007	0.113	0.007	-0.037	-0.098	-0.045
School grades	-0.099	0.007	0.078	0.007	0.021	-0.109	0.017
Family with ortho experience	0.016	0.037	0.108	0.128	0.039	-0.125	0.036
Reached puberty	0.087	0.005	0.063	0.072	0.052	0.047	-0.052
Medical History	0.02	0.118	0.013	-0.034	0.006	-0.038	0.009
# of missing teeth	0.082	-0.066	-0.082	0.01	-0.046	-0.054	0.055
# of supernumerary teeth	-0.121	-0.022	-0.045	0.044	0.097	-0.041	-0.046
# of impactions	0.013	-0.037	-0.055	-0.088	0.095	-0.033	-0.067
Angle Class	-0.09	0.058	0.106	-0.052	-0.014	-0.036	0.122
Overjet	0.158	0.068	0.265	-0.04	-0.002	-0.251	0.019
Overbite	0.152	-0.17	-0.004	-0.079	0.009	-0.009	0.061
Maxillary Arch form	0.68	-0.025	-0.003	-0.053	-0.078	0.024	-0.011
Mandibular Arch Form	0.026	-0.015	0.09	-0.079	-0.075	-0.037	-0.09
Maxillary Crowding	-0.08	0.019	0.012	-0.011	0.051	0.038	0.108
Mandibular Crowding	-0.072	-0.038	0.026	0.033	0.065	0.016	0.135
Posterior Crossbite	1	-0.009	-0.027	0.031	0	-0.048	0
Habits	-0.009	1	0.002	-0.077	-0.173	-0.061	0.079
Lip Competence	-0.027	0.002	1	-0.113	-0.023	-0.122	0.041
Maxillary Midline	0.031	-0.077	-0.113	1	-0.079	-0.106	0
Mandibular Midline	0	-0.173	-0.023	-0.079	1	-0.013	0.018
Pt profile	-0.048	-0.061	-0.122	-0.106	-0.013	1	-0.173
Lower Face Height	0	0.079	0.041	0	0.018	-0.173	1
Facial Plane	-0.228	-0.041	-0.138	-0.091	-0.125	0.31	0.043
Convexity	0.041	-0.001	0.061	0.032	0.132	-0.362	0.06
A-B plane	-0.124	-0.031	-0.052	-0.052	-0.089	0.128	-0.012
Y Axis	0	-0.013	0.121	0.102	0.09	-0.267	0.018
Occlusal plane	0.049	0.084	-0.013	0.128	0.075	-0.213	-0.029
Interincisal	-0.006	0.159	-0.089	-0.07	-0.064	0.087	-0.017
Lower one to occlusal plane	-0.029	-0.017	0.166	-0.012	0.075	-0.241	-0.085
Lower one to mandibular plane	0.118	0.061	0.046	-0.024	0.068	-0.124	0.023

	Posterior Crossbite	Habits	Lip Competence	Maxillary Midline	Mandibular Midline	Pt profile	Lower Face Height
Lower one to AP plane	0.043	0.035	0.077	0.035	0.064	-0.18	0.094
SNA	0.024	0.007	-0.025	-0.037	0.058	-0.085	0.1
SNB	-0.078	-0.01	-0.144	-0.099	0.027	0.198	0.05
ANB	0.075	0.019	0.158	0.072	0.069	-0.384	0.058
Upper one to FH	-0.047	0.103	-0.01	-0.017	-0.007	0.045	-0.13
FH-NA	-0.003	-0.073	-0.035	0.013	0.054	-0.033	0.074
FMA	-0.12	0.015	0.072	0.103	0.003	-0.187	0.094
IMPA	0.127	0.085	0.025	-0.002	0.036	-0.135	-0.032
FMIA	0.009	-0.036	-0.065	-0.051	-0.082	0.021	-0.045
Upper one to NA (mm)	-0.023	0.034	0.089	-0.021	-0.056	-0.091	0.019
Upper one to NA	-0.023	0.101	0.002	0.043	-0.03	0.018	-0.075
Lower one to NB (mm)	0.001	0.038	0.189	0.113	0.033	-0.29	0.046
Lower one to NB	0.06	0.076	0.056	0.05	0.043	-0.255	0.029
PO to NB	-0.027	0.1	-0.172	-0.039	-0.088	0.122	-0.053
Pre-PAR	-0.147	-0.004	0.086	0.044	0.085	-0.178	0.096
Time in months	-0.105	0.072	0.07	-0.106	0.023	-0.149	0.165

	Facial Plane	Convexity	A-B plane	Y Axis	Occlusal plane	Interincisal	Lower one to occlusal plane
Resident	-0.077	-0.097	0.096	0.117	0.165	0.051	-0.132
Gender	-0.153	0.073	-0.094	0.128	0.032	-0.075	0.133
Extractions	-0.229	-0.16	-0.056	0.234	0.139	-0.131	0.191
Start Age	-0.129	-0.083	0.022	0.017	-0.078	0.018	-0.014
Marital Status	-0.06	-0.146	0.06	0.029	0.033	-0.098	-0.015
School grades	-0.001	0.067	0.024	-0.08	-0.077	-0.017	0.011
Family with ortho experience	-0.071	0.043	0.001	0.005	0.11	-0.096	0.059
Reached puberty	-0.123	0.092	-0.015	0.02	0.067	0.012	0.033
Medical History	-0.08	-0.01	0.064	0.034	0.056	-0.065	0.039
# of missing teeth	0.039	0.084	-0.089	-0.061	0.018	0.009	-0.027
# of supernumerary teeth	0.06	0.065	-0.069	0.011	-0.029	-0.037	0.097
# of impactions	-0.077	0.049	-0.121	0.072	0.127	-0.026	0.011
Angle Class	-0.059	-0.031	-0.074	-0.022	-0.028	0.087	-0.027
Overjet	-0.262	0.173	-0.155	0.064	-0.042	-0.189	0.256
Overbite	-0.132	-0.043	-0.05	-0.188	-0.123	0.141	-0.133
Maxillary Arch form	0.007	-0.015	0.091	-0.006	0.083	0.045	-0.033
Mandibular Arch Form	-0.059	0.008	0.109	0.144	0.138	-0.032	0.096
Maxillary Crowding	-0.087	-0.07	-0.022	0.037	-0.005	0.075	-0.124
Mandibular Crowding	-0.12	-0.01	-0.033	0.076	-0.031	0.014	-0.055
Posterior Crossbite	-0.228	0.041	-0.124	0	0.049	-0.006	-0.029
Habits	-0.041	-0.001	-0.031	-0.013	0.084	0.159	-0.017
Lip Competence	-0.138	0.061	-0.052	0.121	-0.013	-0.089	0.166
Maxillary Midline	-0.091	0.032	-0.052	0.102	0.128	-0.07	-0.012
Mandibular Midline	-0.125	0.132	-0.089	0.09	0.075	-0.064	0.075
Pt profile	0.31	-0.362	0.128	-0.267	-0.213	0.087	-0.241
Lower Face Height	0.043	0.06	-0.012	0.018	-0.029	-0.017	-0.085
Facial Plane	1	-0.2	0.144	-0.555	-0.505	0.092	-0.097
Convexity	-0.2	1	-0.501	0.161	0.183	-0.214	0.332
A-B plane	0.114	-0.501	1	0.025	-0.084	0.1	-0.219
Y Axis	-0.555	0.161	0.025	1	0.572	-0.14	0.075
Occlusal plane	-0.505	0.183	-0.084	0.572	1	-0.069	-0.128
Interincisal	0.092	-0.214	0.1	-0.14	-0.069	1	0.35
Lower one to occlusal plane	-0.097	0.332	-0.219	0.075	-0.128	-0.35	1
Lower one to mandibular plane	-0.067	0.325	-0.189	-0.102	-0.01	-0.269	0.479

	Facial Plane	Convexity	A-B plane	Y Axis	Occlusal plane	Interincisal	Lower one to occlusal plane
Lower one to AP plane	-0.169	0.307	-0.086	0.184	0.12	-0.406	0.395
SNA	0.201	0.2	-0.102	-0.048	-0.022	-0.065	0.1
SNB	0.436	-0.234	0.227	-0.241	-0.247	0.007	-0.089
ANB	-0.322	0.676	-0.504	0.319	0.361	-0.137	0.308
Upper one to FH	0.266	0.015	0.14	-0.217	-0.24	-0.345	0.312
FH-NA	0.361	0.323	-0.218	-0.317	-0.212	-0.146	0.083
FMA	-0.277	0.046	0.076	0.543	0.42	-0.111	0.039
IMPA	-0.078	0.255	-0.156	-0.042	-0.01	-0.279	0.523
FMIA	0.035	-0.132	0.142	-0.067	-0.063	0.067	-0.101
Upper one to NA (mm)	0.027	-0.067	0.17	0.076	-0.001	-0.39	0.323
Upper one to NA	0.104	-0.098	0.214	-0.032	-0.173	-0.381	0.029
Lower one to NB (mm)	-0.162	0.293	-0.051	0.324	0.026	-0.403	0.491
Lower one to NB	-0.069	0.477	-0.169	0.151	0.146	-0.414	0.591
PO to NB	0.031	-0.341	0.052	-0.027	-0.041	0.18	-0.162
Pre-PAR	-0.172	0.033	-0.027	0.145	0.051	-0.074	0.119
Time in months	-0.134	-0.011	0.066	0.174	0.115	-0.053	-0.004

	Lower one to mandibular plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA
Resident	-0.014	-0.094	0.066	0.024	-0.005	0.061	-0.022
Gender	0.026	0.087	-0.008	-0.049	0.135	0.003	-0.032
Extractions	0.089	0.222	-0.047	-0.143	0.234	0.06	-0.001
Start Age	-0.08	-0.002	-0.031	0.033	-0.073	-0.08	0.067
Marital Status	-0.083	-0.022	0.047	0.029	0.046	0.052	-0.031
School grades	-0.007	0.037	0.14	0.113	0.055	0.022	0.065
Family with ortho experience	0.027	0.154	0.039	-0.02	0.082	-0.013	0.047
Reached puberty	0.13	0.085	-0.008	-0.038	0.071	0.033	-0.044
Medical History	-0.042	0.062	0.009	-0.007	0.015	0.004	-0.017
# of missing teeth	0.061	-0.01	-0.006	-0.06	0.073	-0.157	0.053
# of supernumerary teeth	0.05	0.07	0.076	0.028	0.089	0.008	0.044
# of impactions	-0.048	-0.039	-0.008	-0.076	0.082	-0.045	-0.106
Angle Class	-0.026	-0.13	0.03	-0.023	0.052	-0.196	-0.053
Overjet	0.185	0.365	-0.014	-0.223	0.316	0.241	0.035
Overbite	-0.024	-0.262	0.027	-0.034	0.057	-0.316	0.011
Maxillary Arch form	0.075	-0.05	0.038	0.011	0.026	0.007	0.053
Mandibular Arch Form	0.066	0.045	0.012	-0.037	0.119	0.013	0.026
Maxillary Crowding	-0.202	-0.125	-0.206	-0.115	-0.05	-0.149	-0.143
Mandibular Crowding	-0.134	0.002	-0.181	-0.145	-0.001	-0.119	-0.065
Posterior Crossbite	0.118	0.043	0.024	-0.078	0.075	-0.047	-0.003
Habits	0.061	0.035	0.007	-0.01	0.019	0.103	-0.073
Lip Competence	0.046	0.077	-0.025	-0.144	0.158	-0.01	-0.035
Maxillary Midline	-0.024	0.035	-0.037	-0.099	0.072	-0.017	0.013
Mandibular Midline	0.068	0.064	0.058	0.027	0.069	-0.007	0.054
Pt profile	-0.124	-0.18	-0.085	0.198	-0.384	0.045	-0.033
Lower Face Height	0.023	0.094	0.1	0.05	0.058	-0.13	0.074
Facial Plane	-0.067	-0.169	0.201	0.436	-0.322	0.266	0.361
Convexity	0.325	0.307	0.2	-0.234	0.676	0.015	0.323
A-B plane	-0.189	-0.086	-0.102	0.227	-0.504	0.14	-0.218
Y Axis	-0.102	0.184	-0.048	-0.241	0.319	-0.217	-0.317
Occlusal plane	-0.01	0.12	-0.022	-0.247	0.361	-0.24	-0.212
Interincisal	-0.269	-0.406	-0.0675	0.007	-0.137	-0.345	-0.146
Lower one to occlusal plane	0.479	0.395	0.1	-0.089	0.308	0.312	0.083
Lower one to mandibular plane	1	0.317	0.248	0.083	0.292	0.229	0.168

	Lower one to mandibular plane	Lower one to AP plane	SNA	SNB	ANB	Upper one to FH	FH-NA
Lower one to AP plane	0.317	1	0.116	-0.046	0.296	0.398	0.122
SNA	0.248	0.116	1	0.702	0.34	0.158	0.399
SNB	0.083	-0.046	0.702	1	-0.277	0.263	0.251
ANB	0.292	0.296	0.34	-0.277	1	-0.124	0.279
Upper one to FH	0.229	0.398	0.158	0.263	-0.124	1	0.259
FH-NA	0.168	0.122	0.399	0.251	0.279	0.259	1
FMA	-0.33	0.171	-0.029	-0.096	0.092	-0.043	-0.24
IMPA	0.755	0.325	0.168	0.021	0.251	0.199	0.117
FMIA	-0.164	-0.097	-0.085	0.004	-0.159	-0.026	-0.064
Upper one to NA (mm)	0.246	0.561	-0.013	0.093	-0.137	0.555	-0.038
Upper one to NA	0.183	0.406	-0.028	0.136	-0.245	0.77	-0.035
Lower one to NB (mm)	0.378	0.642	0.24	-0.015	0.447	0.309	0.145
Lower one to NB	0.568	0.536	0.251	0.063	0.338	0.397	0.252
PO to NB	-0.151	-0.286	-0.087	-0.052	-0.065	-0.205	-0.188
Pre-PAR	-0.037	0.06	-0.119	-0.133	0.075	0.012	-0.088
Time in months	0.027	0.055	-0.057	-0.119	0.044	-0.088	-0.12

	FMA	IMPA	FMIA	Upper one to NA (mm)	Upper one to NA	Lower one to NB (mm)	Lower one to NB
Resident	-0.005	0.002	-0.028	0.008	0.062	0.009	-0.006
Gender	0.005	0.072	0.066	0.008	0.012	0.1	0.018
Extractions	0.104	0.098	-0.077	0.202	0.106	0.26	0.11
Start Age	-0.048	-0.035	0.027	-0.005	-0.082	-0.065	-0.087
Marital Status	0.024	-0.035	0.002	0.009	0.028	0.076	-0.093
School grades	-0.04	0.032	-0.048	-0.037	0.029	0.134	-0.1
Family with ortho experience	0.027	0.113	0.052	0.063	0.026	0.176	0.106
Reached puberty	0.038	0.02	-0.048	0.018	0.023	0.052	0.113
Medical History	0.04	0.025	-0.046	-0.003	0.031	-0.019	0.118
# of missing teeth	-0.029	0.043	-0.021	0.017	-0.085	0.001	0.034
# of supernumerary teeth	0.018	0.052	-0.018	-0.03	0.002	0.05	-0.005
# of impactions	0.102	-0.054	-0.03	-0.073	-0.011	0.075	-0.025
Angle Class	0.012	0.016	-0.031	-0.047	-0.115	-0.042	-0.119
Overjet	-0.105	0.172	-0.024	0.349	0.285	0.24	0.111
Overbite	-0.229	-0.056	0.005	-0.229	-0.359	-0.27	-0.334
Maxillary Arch form	-0.118	0.047	0.039	0.045	-0.053	-0.031	0.042
Mandibular Arch Form	-0.016	0.112	-0.004	0.092	-0.016	0.094	0.14
Maxillary Crowding	0.13	-0.22	0.055	-0.116	-0.139	-0.149	-0.283
Mandibular Crowding	0.087	-0.125	0.063	-0.042	-0.074	-0.042	-0.206
Posterior Crossbite	-0.12	0.127	0.009	-0.023	-0.023	0.001	0.06
Habits	0.015	0.085	-0.036	0.034	0.101	0.038	0.076
Lip Competence	0.072	0.025	-0.065	0.089	0.002	0.189	0.056
Maxillary Midline	0.103	-0.002	-0.051	-0.021	0.043	0.113	0.05
Mandibular Midline	0.003	0.036	-0.082	-0.056	-0.03	0.033	0.043
Pt profile	-0.187	-0.135	0.021	-0.091	0.018	-0.29	-0.255
Lower Face Height	0.094	-0.032	-0.045	0.019	-0.075	0.46	0.029
Facial Plane	-0.277	-0.078	0.035	0.027	0.104	-0.162	-0.069
Convexity	0.046	0.255	-0.132	-0.067	-0.098	0.293	0.477
A-B plane	0.076	-0.156	0.142	0.17	0.214	-0.051	-0.169
Y Axis	0.543	-0.042	-0.067	0.076	-0.032	0.324	0.151
Occlusal plane	0.42	-0.01	-0.063	-0.001	-0.173	0.26	0.146
Interincisal	-0.111	-0.279	0.067	-0.39	-0.381	-0.403	-0.414
Lower one to occlusal plane	0.039	0.523	-0.101	0.323	0.29	0.491	0.591
Lower one to mandibular plane	-0.33	0.755	-0.164	0.246	0.183	0.378	0.568

	FMA	IMPA	FMIA	Upper one to NA (mm)	Upper one to NA	Lower one to NB (mm)	Lower one to NB
Lower one to AP plane	0.171	0.325	-0.097	0.561	0.406	0.642	0.536
SNA	-0.029	0.168	-0.085	-0.013	-0.028	0.24	0.251
SNB	-0.096	0.021	0.004	0.093	0.136	-0.015	0.063
ANB	0.092	0.251	-0.159	-0.137	-0.245	0.447	0.338
Upper one to FH	-0.043	0.199	-0.026	0.555	0.77	0.309	0.397
FH-NA	-0.24	0.117	-0.064	-0.038	-0.035	0.145	0.252
FMA	1	-0.337	-0.039	0.106	0.038	0.308	0.114
IMPA	-0.337	1	-0.182	0.304	0.216	0.402	0.604
FMIA	-0.039	-0.182	1	-0.019	-0.01	-0.125	-0.146
Upper one to NA (mm)	0.106	0.304	-0.019	1	0.726	0.52	0.423
Upper one to NA	0.038	0.216	-0.01	0.726	1	0.306	0.354
Lower one to NB (mm)	0.308	0.402	-0.125	0.52	0.306	1	0.588
Lower one to NB	0.114	0.604	-0.146	0.423	0.354	0.588	1
PO to NB	-0.163	-0.131	0.048	-0.128	-0.096	-0.221	-0.415
Pre-PAR	0.169	-0.03	-0.072	0.204	0.134	0.073	-0.044
Time in months	0.106	-0.011	-0.035	0.163	0.028	0.044	-0.077

	PO to NB	Pre-PAR	Time in months
Resident	-0.068	-0.023	0.011
Gender	0.085	0.119	-0.004
Extractions	-0.036	0.22	0.328
Start Age	0.14	0.024	-0.11
Marital Status	0.149	0.108	-0.006
School grades	0.004	0.036	0.02
Family with ortho experience	-0.145	-0.003	-0.09
Reached puberty	-0.151	-0.022	-0.005
Medical History	-0.014	0.058	0.028
# of missing teeth	0.015	-0.062	0.028
# of supernumerary teeth	0.031	0.067	0.022
# of impactions	0.091	0.007	0.052
Angle Class	0.018	0.297	0.289
Overjet	0.043	0.355	0.165
Overbite	0.167	0.12	0.172
Maxillary Arch form	0.082	-0.084	0.037
Mandibular Arch Form	0.09	0.009	0.029
Maxillary Crowding	0.136	0.215	0.2
Mandibular Crowding	0.11	0.116	0.232
Posterior Crossbite	-0.027	-0.147	-0.105
Habits	0.01	-0.004	0.072
Lip Competence	-0.172	0.086	0.07
Maxillary Midline	-0.039	0.044	-0.106
Mandibular Midline	-0.088	0.085	0.023
Pt profile	0.112	-0.178	-0.149
Lower Face Height	-0.053	0.096	0.165
Facial Plane	0.031	-0.172	-0.134
Convexity	-0.341	0.033	-0.011
A-B plane	0.052	-0.027	0.066
Y Axis	-0.027	0.145	0.174
Occlusal plane	-0.041	0.051	0.115
Interincisal	0.18	-0.074	-0.053
Lower one to occlusal plane	-0.162	0.119	-0.004
Lower one to mandibular plane	-0.151	-0.037	0.027

	PO to NB	Pre-PAR	Time in months
Lower one to AP plane	-0.286	0.06	0.055
SNA	-0.087	-0.119	-0.057
SNB	-0.052	-0.133	-0.119
ANB	-0.065	0.075	0.044
Upper one to FH	-0.205	0.012	-0.088
FH-NA	-0.188	-0.088	-0.12
FMA	-0.163	0.169	0.106
IMPA	-0.131	-0.03	-0.011
FMIA	0.048	-0.072	-0.035
Upper one to NA (mm)	-0.128	0.204	0.163
Upper one to NA	-0.096	0.134	0.028
Lower one to NB (mm)	-0.221	0.073	0.044
Lower one to NB	-0.415	-0.044	-0.077
PO to NB	1	0.03	0.057
Pre-PAR	0.03	1	0.422
Time in months	0.057	0.422	1

APPENDIX IV

IRB Approval

Case Western Reserve University
Institutional Review Board
NOTICE OF APPROVAL

Responsible Investigator: **B. Douglas Amberman**
Department: **Dental Clinic Ortho**
IRB Protocol #: **20050212**
Title: ***Predicting Orthodontic Treatment Duration Using Pre-treatment Patient Variable***
Co-Investigator: **Clifford Lowdenback**

Approval Date: **March 29, 2005**
Continuing Review Deadline: **March 14, 2006**
Expiration Date: **March 28, 2006**

The Institutional Review Board (IRB) has APPROVED the above new protocol through the expedited review process.

It has been determined that this study involves minimal risk, and that no vulnerable populations will be involved.

As an investigator of human subjects, your responsibilities include the following (see full description of responsibilities at our website):

1. Report all adverse events and unanticipated problems involving human subjects to the IRB Office, located in the Office of Research Compliance (ORC), within three (3) business days of your knowledge of the occurrence.
2. Provide the IRB with a complete Continuing Review form (available at the CWRU IRB Web Pages, or from the ORC) by the continuing review deadline noted above, and when the study is terminated.
3. Discontinue all work pertaining to this protocol if a continuing review approval is not finalized by the expiration date noted above.
4. Submit all proposed changes to the protocol to the IRB, and receive approval from the IRB, before implementation of the change.
5. Keep all research data and original consent documents in your possession for at least three (3) years after the study is terminated.

Questions? Please visit our website: http://ora.ra.cwru.edu/orc_humansubjects_CWRU_IRB.asp

OR
contact our administrative office...

Isabel Sanchez, IRB Administrator
216.368.6993
Maureen Dore-Arshenovitz, IRB Assistant
216.368.6925
Fax: 216.368.3737

CASE Institutional Review Board
Office of Research Compliance
Sears Building 657
Cleveland, OH 44106-7230

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