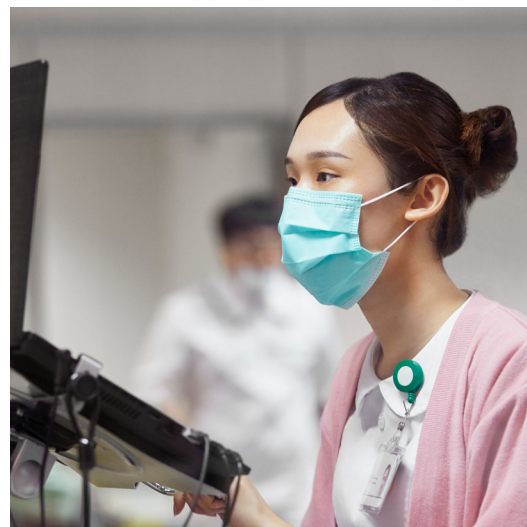**ADA** American Dental Association®

America's leading advocate for oral health

Using the Advanced Dental Admission Test (ADAT) for Admission Purposes

Using the Advanced Dental Admission Test (ADAT) for Admission Purposes: A Guide for Advanced Dental Education Programs

September 2023

TESTING SERVICES

ADA American Dental Association®

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Overview

The American Dental Association's (ADA) Advanced Dental Admission Test (ADAT) is designed to provide dental education programs with an additional means to assess program applicants' potential for success in advanced dental education.

The ADA's Department of Testing Services (DTS) implements the ADAT program under the auspices of the ADA's Council on Dental Education and Licensure (CDEL). The ADAT is administered at test centers operated by Pearson VUE.

The ADAT is composed of multiple-choice questions presented in English, and is developed according to established test specifications. The ADAT consists of three test sections covering the following areas: Biomedical Sciences; Clinical Sciences; and Data, Research Interpretation, & Evidence Based Dentistry.

This guide is intended to provide advanced dental education programs with information concerning the appropriate use and interpretation of ADAT results. Information is provided in the following areas:

- Utilization of ADAT Results in Admission Decisions
- History of the ADAT
- Evidence Supporting Use of the ADAT
- ADAT Content and Scales
- Administration of the ADAT
- ADAT Results Reporting and Interpretation
- Additional Guidelines for Interpreting and Applying ADAT Results

Additional information concerning the ADAT program is available online at ADA.org/adat. The ADAT website contains a wealth of information about the ADAT, including:
- the ADAT Candidate Guide, which provides further details concerning administration of the ADAT Program
- practice test questions that candidates can use to familiarize themselves with the types of questions that appear on the ADAT
- a white paper providing an overview of ADAT policies and procedures supporting and promoting fairness; this document outlines the many efforts undertaken by CDEL and DTS to help ensure the ADAT provides a fair and unbiased assessment of candidate skills

Utilization of ADAT Results in Admission Decisions

Use of the ADAT should take place within the context of advanced dental education programs' standard admission procedures. Each program differs in how admission decisions are made, and the specific tools available to support those decisions. The following provides general considerations for using ADAT results in admission decisions.

- Each program must make its own decision concerning how to use ADAT results.
- In making decisions as to how to use admission tools, including ADAT results, programs should carefully consider the following:
  - Program and school requirements
  - The knowledge, skills, abilities, and other characteristics (KSAOs) necessary to succeed in the program. This should also include characteristics and behaviors that can derail students and lead to failure (e.g., poor study habits).
  - Information available to support admission decisions (i.e., admission tools).
  - The strengths and weaknesses of each admission tool, including:
    - information the tool provides relative to program requirements and the identified KSAOs
    - quality and accuracy of the information provided
    - evidence that supports the use of the tool
    - the extent to which information provided by the tool might be affected by factors unrelated to the KSAOs of focal interest
    - the extent to which the tool provides a fair and unbiased evaluation of candidate qualifications
    - legal defensibility of using the tool
    - the extent to which the tool permits the program to meaningfully compare the program relevant skills of candidates with different backgrounds (educational training, etc.)
  - The strengths and weaknesses of the set of admission tools utilized, including:
    - how information from different admission tools is weighted in decision making
    - how redundancy in the information provided by different tools is handled (e.g., via weighting)
    - any deficiencies that might be present (e.g., helpful or necessary information that may be lacking from the set of tools)
- Programs might differ in how they choose to use the ADAT.
  - Some programs may, in recognition of current challenges in comparing applicants across dental programs, choose to supplement the information from existing admission tools with ADAT results in making candidate admission decisions.
  - Programs may weight ADAT results in accordance with results from a local (i.e., program-specific) validation study, or in accordance with other information available to the program concerning the relationship between ADAT scores and program performance.
  - Some programs may choose to use ADAT results only in certain prescribed situations:
    - Situations where little additional information is available concerning candidate qualifications (e.g., no candidate information is available concerning GPA, class rank, or results from other standardized tests).
    - Situations where candidates are equally qualified, and there is a need to break a tie.
  - Some programs may simply collect data on ADAT performance without using it to inform individual admission decisions. Programs can then review the information, become comfortable with the insight provided, and then decide how best to use ADAT results in future years.

- Programs should not rely exclusively on ADAT results in making admission decisions. The ADAT should be used in conjunction with other admission tools that provide insight into candidate qualifications as they relate to core program requirements.
- Programs should decide on their approach, and then apply that approach consistently, in compliance with school and legal requirements.

History of the ADAT

Background

The ADA's decision to pursue development of advanced dental admission test was based on the conveyed needs of communities of interest. Some of those needs were stated in published articles (Fagin, Howell, Da Silva, & Park, 2014; Fagin, Howell, & Park, 2015), while others were expressed directly to the ADA.

Many advanced dental education programs communicated they were left in a difficult position when the Joint Commission on National Dental Examinations (JCNDE) transitioned to pass/fail reporting in 2012. The JCNDE had made this decision for a variety of reasons, one of which was that the NBDE had never been validated for admission purposes, and thus its use within that context was questionable and posed a potential threat to NBDE test security. In the absence of NBDE scores, advanced dental education programs had little information available to compare the qualifications of candidates with differing educational backgrounds and experiences. The situation was exacerbated by the movement toward pass/fail grading at some dental schools. For programs caught in this precarious situation, ADAT results can provide valuable insight into candidate skills to inform decision making.

Content Development

The areas to be measured within the ADAT were preliminarily identified through review and analysis of the findings of an Advanced Dental Admission Test Task Force Report submitted to the ADA House of Delegates in September 2010. This report included findings from a survey on the evaluation and selection of applicants for positions in advanced dental education programs. This survey was conducted as part of the ADEA Future of Advanced Dental Education Admissions (ADEA/FADEA) project. In May 2014, ADA's Council on Dental Education and Licensure (CDEL) endorsed a creation of a business plan to develop the ADAT. The following October, CDEL distributed a survey to directors of advanced education programs to assess the demand for the ADAT; the survey results were very positive. Thus, in November 2014, CDEL recommended that the ADA pursue the development of the ADAT. The final plan of development was approved by the ADA Board of Trustees in December 2014.

The ADAT test specifications concerning the Biomedical Sciences and Clinical Sciences test sections are based on the test specifications for the National Board Dental Examinations (NBDE) Parts I and II. As such, the ADAT relies on the content domain foundation established for these two examination programs (e.g., the practice analysis involving entry-level general dentists conducted for the NBDE Part II). ADAT content within the Biomedical and Clinical Sciences sections is proportionally reduced, relative to the NBDE specifications. ADAT test specifications for the Data, Research Interpretation, & Evidence Based Dentistry section were constructed based on Test Construction Team (TCT) member input and guidance from the ADA Science Division and its Center for Evidence-Based Dentistry.

The ADA reached out to its members seeking volunteers to help construct the ADAT in December 2014; the first TCT meetings for each section of the ADAT were convened in May 2015. TCTs relied on existing DTS Item Writing Guidelines, and also incorporated a new method of presenting patient information: the Patient Box. A 100-item practice test was also created to help familiarize examinees with the types of questions that could be asked on the ADAT.

Adjustments after the 2016 administration

The ADAT Program instituted several changes to the ADAT based on findings obtained in 2016. Most notably, the Principles of Ethics & Patient Management (PEPM) section was not performing at desired psychometric levels, and from a content perspective did not appear to be truly meeting the needs of advanced dental education programs. Thus, several changes were made to the exam structure and test specifications. First, the PEPM scale was eliminated as a separate reportable scale. PEPM items still appear on the exam, but are now incorporated into the Clinical Sciences (CLI) section. Second, due to the elimination of the PEPM scale, the number of items in the CLI section and Data, Research and Interpretation, and Evidence Based Dentistry (DRI) section was increased. Twenty (20) of the thirty (30) items in the 2016 PEPM scale were incorporated into the CLI scale, while the remaining ten (10) items were made available for use in the DRI scale.

For more information about the ADAT adjustment after the 2016 administration, please refer to the 2017 edition of the present document (i.e., "Using the Advanced Dental Admission Test (ADAT) for Admission Purposes: A Guide for Advanced Dental Education Programs 2017"), which is available on the ADAT website (www.ada.org/adat).

Evidence Supporting Use of the ADAT

The following evidence supports use of the ADAT. Programs should carefully consider this information, as well as information and evidence supporting other available admission tools, in determining how best to approach use of the ADAT for admission purposes.

- ADAT test development, administration, and scoring are implemented by the ADA's Department of Testing Services (DTS), which employs professionally trained staff that includes individuals with advanced degrees in Psychometrics, Educational Psychology, Industrial/Organizational psychology, and Leadership.
- DTS has implemented dental high stakes testing programs for decades, including the testing programs of the Joint Commission on National Dental Examinations.
- Due to their high stakes nature, the testing programs under the care of DTS have been subjected to, and withstood, intense scrutiny over time. All US dental boards currently accept the National Board Dental Examinations (NBDE) and the National Board Dental Hygiene Examination (NBDHE) as valid evidence that a candidate possesses the cognitive skills necessary to safely practice dentistry and dental hygiene respectively.
- Use of the ADAT is supported based on content validity evidence. ADAT items were written by dental subject matter experts, and other subject matter experts whose qualifications matched the needs dictated by the test specifications.
- The ADAT Program is overseen by CDEL and its Dental Admission Testing Committee (DATC). On an annual basis the DATC carefully monitors program policies, as well as operational activity, content development, and research and development activities of the ADAT Program (e.g., psychometric characteristics and test specifications).
- All ADAT TCT member qualifications are reviewed by CDEL.
- Many ADAT TCT members also write items for other high stakes examination programs (e.g., for the National Board Dental Examinations).
- DTS has in place robust policies and procedures that are designed to support and promote fairness in the ADAT Program. A detailed description of these policies and procedures is available at www.ada.org/adat in the report entitled *The DAT and ADAT Programs: Overview of Policies and Procedures Supporting and Promoting Fairness.*
- ADAT TCT members receive extensive training on how to develop valid and reliable questions. This includes training on fairness, and sensitivity considerations in item writing.
- ADAT administrations occur under standardized testing conditions that are closely monitored. Deviations from standardized testing conditions are reported to the ADA's Department of Testing Services by the test administration vendor (Pearson VUE). Candidates who violate rules and regulations can incur severe penalties which include the voiding of scores and the imposition of mandatory wait periods.

- Candidate performance data collected on the ADAT shows that the ADAT reliably distinguishes between candidates of varying skill levels.

The following sections provide additional information concerning ADAT content, administration, scoring, and reporting.

ADAT Content and Scales

ADAT candidates receive the following scale scores:

- ADAT Overall (ADAT) (Critical Thinking in Dentistry)
- Biomedical Sciences (BIO)
- Clinical Sciences (CLI)
- Data, Research Interpretation, & Evidence Based Dentistry (DRI)

ADAT Overall Scale (Critical Thinking in Dentistry)

The ADAT overall scale is a composite scale providing an indication of how the candidate performed on all of the content areas presented in the ADAT. The ADAT overall score is a weighted average of the scale scores from all three ADAT disciplines. Descriptions of each of those content areas appear below.

Biomedical Sciences

This ADAT section focuses on cognitive skills involving the following subject areas:

BIOMEDICAL SCIENCES (80 Items)
Anatomic Sciences (20 items)
Gross Anatomy
Histology
Oral Histology
Developmental Biology
Biochemistry and Physiology (20 items)
Biological Compounds
Metabolism
Molecular and Cellular Biology
Connective Tissue
Membranes
Nervous System
Muscle
Circulation
Respiration
Renal
Oral Physiology
Digestion

Endocrines
Microbiology and Pathology (20 items)
General Microbiology
Reactions of Tissue to Injury
Immunology and Immunopathology
Microbiology, Immunology, and Pathology of Specific Infectious Diseases
Systemic Pathology
Growth Disturbances
Dental Anatomy and Occlusion (20 items)
Tooth Morphology
Pulp Cavity Morphology
Calcification and Eruption
Principles of Occlusion and Function
Clinical Considerations – Tooth Morphology and Anomalies

Clinical Sciences

This section of the ADAT focuses on cognitive skills involving the following disciplines:

CLINICAL SCIENCES (80 standalone and case-based items)
Endodontics
Operative Dentistry
Oral and Maxillofacial Surgery and Pain Control
Oral Diagnosis
Orthodontics and Pediatric Dentistry
Periodontics
Pharmacology
Prosthodontics
Principles of Ethics
Patient Management

With respect to Principles of Ethics, it should be noted that these questions do NOT directly measure professional ethics, or indicate whether a person will behave ethically. Rather, these questions provide information concerning whether a candidate can, for example, recognize the ethical principles that apply to particular situations, and how those situations could be handled in accordance with those ethical principles.

Data, Research Interpretation, & Evidence Based Dentistry

This section of the ADAT focuses on concepts taught within the framework of Evidence Based Dentistry. Within this framework, clinicians must know how to critically and systematically review research findings, understand basic methodological issues, and use this information to apply research findings in decision making involving their practice and patients. Thus, the focus of this scale rests entirely on methodology, interpretation, and application of research, as opposed to referencing specific findings (e.g., the effectiveness of fluoride in preventing caries) that emerged from this research base. Specific findings would instead be referenced in the Biomedical and Clinical Sciences sections of the ADAT.

The following are core concepts in Evidence-Based Dentistry:
- Asking precise, structured clinical questions
- Finding the best evidence using currently available electronic resources
- Reading and critically evaluating research information
- Understanding clinical trial design, such as therapy, diagnosis, and qualitative assessment
- Understanding and interpreting basic statistical information, such as descriptive statistics, odds ratios, risk reduction, and relative risk, to implement Evidence Based Dentistry appropriately in practice settings
- Using evidence based clinical guidelines, recommendations, and systematic reviews
- Implementing best evidence in clinical practice.

This section of the ADAT focuses on cognitive skills involving the following subject areas:

DATA, RESEARCH INTERPRETATION, & EVIDENCE BASED DENTISTRY (40 items)
Study Design
Data Analysis
Result Interpretation
Inference and Implication

Administration of the ADAT

Policies and procedures for administering the ADAT are presented in the ADAT Examination Guide, which is published on an annual basis. This guide is available on the ADAT website (www.ada.org/adat).

ADAT Eligibility

Eligibility to take the ADAT is based on the candidates' training and their current status as a student or graduate.

Training	Enrollment Status	Action Required
CODA Accredited Dental School	**Current Student**	School is responsible for approving the candidate's eligibility.
	Graduate	Candidate must send proof of graduation to DTS. Eligibility is approved after receipt of reasonable proof.

Non-Accredited Dental School	**Current Student**	Candidate requests an Educational Credential Evaluators (ECE) electronic report to certify status as a current dental student.
	Graduate	Candidate requests an ECE electronic report to confirm dental degree.

ADAT Administration Vendor and Testing Schedule

The ADAT is administered at Pearson VUE test centers in the United States, its territories (including Guam, Puerto Rico, and the Virgin Islands), and in Canada. Administration occurs during a predefined testing window indicated in the ADAT Examination Guide.

The time permitted for each ADAT section and for scheduled breaks is shown in the table below.

ADAT TESTING SCHEDULE	
Tutorial	15 minutes
Biomedical Sciences (80 items)	**95 minutes**
Break (optional)	10 minutes
Clinical Sciences (80 items)	**90 minutes**
Break (optional)	10 minutes
Data, Research Interpretation, and Evidence-Based Dentistry (40 items)	**45 minutes**
Post Test Survey (optional)	5 minutes
Total Time	**4 hours 30 minutes**

Candidates are prompted to review their answers in each section before taking a break or moving on to the next section when time permits. Once a candidate has begun a break, he or she is not allowed to return to the previous sections to view questions and/or change answers. Partial testing is not permitted; applicants are required to take all three sections of the ADAT.

In taking the ADAT, candidates agree to adhere to examination rules and regulations, which are described in the ADAT Examination Guide available at www.ada.org/adat. Candidate behavior is closely monitored during test administration to confirm that rules and regulations are followed. Candidates who violate examination regulations are subject to severe penalties that include the voiding of scores and the imposition of mandatory wait periods.

ADAT Results Reporting and Interpretation

Official ADAT Results

Official ADAT results are reported electronically within three to four weeks after the candidate has taken the examination. Test results are posted to the candidate's My Account page, and sent to the advanced dental education programs selected on the candidate's ADAT application or indicated in additional score report requests.

Official results are reported as ADAT scale scores. To assist with interpretation, the ADAT website (www.ada.org/adat) is updated annually with a final report indicating scale scores and corresponding percentiles with respect to the overall candidate pool after the yearly test window has closed.

Candidate percentiles are not provided in the DTS Hub and My Account. This is due to the interpretational challenges associated with percentiles (i.e., their dependence on the sample tested, and their inability to provide a fixed skill interpretation). In lieu of this candidate-specific information, the ADAT Program provides overall normative tables that can serve as a reference in understanding the skills of those who tested in a given year, and how candidates compare to each other (Appendices B1 and B2).

Results are provided electronically to all programs selected by the candidate. Many advanced dental education programs participate in the ADEA Postdoctoral Application Support Service (ADEA PASS) and benefit from the corresponding services provided. If a candidate requests their results be sent to any advanced dental education program, their results will also be made available to the ADEA PASS for use within this service. It should be noted that ADEA PASS is separate and distinct from the American Dental Association's Department of Testing Services, and therefore operates independent of the ADAT Program. For information concerning ADEA PASS test reporting policies, please contact the ADEA PASS directly (http://www.adea.org).

When ADAT results are reported, the candidate's full testing history is reported (i.e., test results for all testing attempts are listed). Once a candidate has taken any part of the ADAT, they cannot request the scores to be voided. In considering a candidate's performance across multiple testing attempts, the Department of Testing Services recommends that programs consider results from the most recent administration, as these should provide the best insight into the candidate's current skills.

ADAT Scale Scores

Official ADAT scores are calculated based on a candidate's correct responses to items. ADAT results are reported in terms of scale scores. These scale scores are not raw scores (i.e., the number of correct answers). The conversion of raw scores to scale scores is accomplished using Item Response Theory procedures. Scale scores enable meaningful comparison of the performance of candidates who have tested using different test forms and at different times. The ADAT program does not designate passing or failing scores.

ADAT scale scores range from 200 to 800. Higher scale scores in a specific area indicate higher cognitive skills in that area. Any test section not taken is designated a score of 200. ADAT scale scores are presented in the following areas:
- Overall ADAT (Critical Thinking in Dentistry)
- Biomedical Sciences
- Clinical Sciences
- Data, Research Interpretation, and Evidence-Based Dentistry

Scoring Model and Equating Procedures

Scale scores for the four ADAT disciplines are calculated using Item Response Theory (IRT) and the Three-Parameter Logistic model (3-PL Model, Birnbaum 1968). In providing an estimate of candidate skills, the IRT 3-PL Model takes into account the following:

- The difficulty level of each test item
- The quality of each test item (item discrimination)
- The impact of guessing on item performance

The ADAT does not penalize candidates for guessing. However, the scores are statistically adjusted based on the items' susceptibility to guessing. This practice increases the precision and accuracy of skill estimation.

Each administered ADAT includes items that enable the Department of Testing Services to place different forms of the test on a common measurement scale, thereby adjusting the forms for differences in

difficulty level. Because of this adjustment, ADAT scores have the same meaning regardless of the test form that was administered.

Although the ADAT consists of 200 questions in total, some items do not contribute to examinee scores. After the data is collected, these questions are evaluated for their statistical performance. If deemed appropriate, the items may be used on future test forms to refresh content. Candidates are not able to distinguish between questions which contribute to their score and those that do not.

Composite and Discipline Based Scales

The ADAT Overall scale is referred to as a composite scale because it is calculated using scores from other scales (i.e., the discipline based scales). The ADAT Overall score is a weighted average of scale scores from the Biomedical Sciences, Clinical Sciences, and Data, Research Interpretation, & Evidence Based Dentistry scales. Weights are proportional to the number of items in each area, and the final score is rounded to the nearest ten.

During the ADAT's first year of implementation, the ADA's Department of Testing Services established the discipline based ADAT score scales so they each had a mean of 500 and a standard deviation of 100. These scale properties (i.e., mean of 500 and standard deviation of 100) are challenging to maintain over time, due to the fact that the population taking the ADAT can change substantially over the years of implementation. In short, as more and more advanced dental education programs use the ADAT, the level of skills of the overall candidate pool may shift based on the skills of those included. Programs should anticipate that recalibration of the score scale may be necessary in future years, as the population taking the ADAT changes.[1]

Interpretation of composite scale scores is slightly different from interpretation of discipline-based scale scores. It is important to note that scores on the ADAT Overall scale have a narrower range than scores on the three discipline scales. While higher scores (e.g., 750 to 800) are possible on the ADAT Overall scale, such scores are more difficult to achieve, and consequently are rarely observed.

Official ADAT results are released to candidates and programs three to four weeks after candidates complete the examination. A complete listing of the percentiles associated with ADAT scale scores appears in Appendix B1.

Additional Guidelines for Interpreting and Applying ADAT Results

The following guidelines may be helpful for interpreting and applying ADAT results:
- Candidates may choose to take the examination more than once. It is recommended that programs reference the candidate's most recent results to best represent the candidate's skills.
- It is recommended that programs avoid employing cut scores with the ADAT (i.e., admitting candidates with ADAT scores of "x" or above) until they have a reasonable understanding of the cognitive dental skills associated with the various ADAT score levels, and how this relates to the skills required at entry into the program.
- Until the preceding information is available to a program, it is recommended that ADAT results be interpreted on a relative basis, as follows:
  - Candidates with higher scores on each scale have demonstrated stronger cognitive skills than candidates obtaining lower scores.
- Candidates with lower percentile standing on the ADAT may still be viable candidates for advanced dental education programs. If, for example, ADAT examinees are more highly skilled on average than those who do not take the ADAT, then their percentile standing within the general

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[1] Recalibration re-centers the score scale and adjusts the score distribution so it takes on desirable properties. The examination's validity and reliability remains intact.

dental population may be considerably higher than one might think given their achieved ADAT percentile standing. Programs should also consider that—within the total pool of advanced dental education candidates—the skills of those who choose to challenge the ADAT in a given year may differ from those who do not. In short, candidates with lower ADAT percentile standing should not be broadly interpreted as "poor candidates."

- When utilizing the percentile tables in Appendices B1 and B2, programs should be mindful of the fact that strictly speaking percentiles obtained across test administration periods (i.e., across norm groups) are NOT directly comparable with regard to the level of skills represented at each percentile level. Comparison of relative performance using percentiles within testing periods (within a given norm group) is useful and appropriate. DTS provides percentiles for the most recent year and also the most recent five years (combined) for programs interested in making comparisons across a broader sample of ADAT administrations.

- Candidates' percentile standing can and will change across test administration periods, even though a given candidate's performance on the examination remains the same. This is also why ADAT official results are provided in scale scores, which do not change and have the potential to take on fixed interpretations (i.e., a score of 'x' signifies a specific level of cognitive skills with respect to a particular content area of interest).

- When examining and comparing candidate performance, programs should use caution when interpreting differences in percentile standing. Differences in percentile standing communicate differences in candidate relative standing in the population tested, NOT the amount of difference between candidates in their underlying skills. For example, assuming the data are normally distributed, a five percent (5%) difference in percentile standing could correspond to:
  - A small difference in skills for candidates who fall in the middle of the distribution (e.g., 50th percentile).
  - A large difference in skills for candidates scoring in the tails of a distribution (e.g., 95th percentile).

- Use percentiles to understand candidates' relative standing within the population tested.

- Use scale scores to understand candidate skill levels, as well as differences between candidates in their underlying skills.

- Comparison of candidates who tested in different years is best made through comparisons of scale scores and percentiles (Appendices B1 and B2), which is made available annually in September.

- DTS recommends that programs focus their attention on the ADAT Overall scale. This scale contains larger numbers of items and is therefore more reliable than scales containing fewer items (e.g., Data, Research Interpretation, & Evidence Based Dentistry).

- Do NOT overemphasize small differences in test scores.

- Do NOT simply rank order candidates and make selection decisions based on a top-down approach. This approach may disadvantage certain applicant groups.

- As a reminder, in making admission decisions, programs should carefully consider a) the full set of KSAOs required for success in a program, in relation to program, school, and legal requirements, and b) the qualifications of candidates.

- Programs should let the above perspective help inform their decisions with respect to individual candidates.

ADAT Score Reliability

Reliability coefficient estimates for ADAT scale scores are given in the table below[2]. Reliability coefficients can range from zero to one, with higher values indicating higher reliability.

Reliability coefficients for ADAT scale scores: 2023 (715 administrations)

ADAT Scale	Reliability
ADAT Overall (ADAT)	.92
Biomedical Sciences (BIO)	.82
Clinical Sciences (CLI)	.73
Data, Research Interpretation, & Evidence Based Dentistry (DRI)	.75

The Department of Testing Services recommends that candidates and programs focus their attention on the ADAT Overall scale. This scale is based on more items and is therefore more reliable than scales containing fewer items.

Normative Information

ADAT Scale Scores. Descriptive statistics for ADAT scale scores are provided in the table below. ADAT scale scores can range from 200 to 800.

Descriptive statistics for ADAT scale scores: 2023 (715 administrations)

Scale Type	Scale	Mean	SD	Min	Max
Composite	ADAT Overall (ADAT)	486.0	77.3	220	720
Discipline	Biomedical Sciences (BIO)	489.4	98.1	200	800
	Clinical Sciences (CLI)	485.3	78.8	220	770
	Data, Research Interpretation, & Evidence Based Dentistry (DRI)	480.1	92.9	200	800

Frequency distributions for the four ADAT scales are presented in Appendix A1. The horizontal axis of the figure shows the range of possible ADAT scale scores (200 to 800), the left vertical axis shows the number of times each scale score was observed, and the right vertical axis shows the cumulative percentile associated with each scale score (superimposed in black line on the graph). Frequency distributions for the four scales for the past five calendar years are presented in Appendix A2. The graphs are interpreted the same as the current year graph, but a larger sample size is used.

ADAT Percentiles. Appendix B1 presents the percentiles associated with scores on each ADAT scale based on the most recent year of administration, while Appendix B2 presents this information for the most recent five years combined. For each scale and scale score in Appendices B1 and B2, the corresponding scale score percentile can be interpreted as the percentage of candidates who achieved that scale score or lower in the indicated timeframe. If a given scale score corresponds to a percentile of 88, for example, then 88% of candidates achieved that scale score or lower.

Normative Information, by Dental Specialty. At the time of application to complete the ADAT, candidates indicate the programs to which they would like to send their results. Based on the programs selected, candidates can be classified into one or more specialty groups. Candidates who select programs from multiple dental specialties are classified into all the specialties they selected.

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[2] Reliability coefficients are calculated from Item Response Theory (IRT) 3-Parameter Logistic (3PL) model estimates of candidate skill levels and their standard errors using the methods described by Sireci, Thissen and Wainer (1991) and Childs et al. (2004).

Appendix C1 contains descriptive statistics for ADAT scale scores by dental specialty for the most recent calendar year, while Appendix C2 contains descriptive statistics for the most recent five years (combined). Dental specialty area norms are shown if the specialty area was selected by 25 or more candidates.

Appendices D1 and D2 contain frequency distributions for the ADAT Overall scale, by dental specialty, for those specialties selected by 80 or more candidates for the most recent calendar year and most recent five years (combined), respectively. The horizontal axis of the figures shows the range of possible ADAT scale scores (200 to 800), the left vertical axis shows the number of times each scale score was observed for candidates choosing the specialty, and the right vertical axis shows the cumulative percentile for each scale score (represented by a black line superimposed on the graph).

As the ADAT program grows and additional candidates complete the examination, more normative breakdown groups are likely to satisfy the criteria indicated above (N≥25 for descriptive statistics, N≥80 for frequency distributions), and will thus be available for presentation in future years.

Concluding Comments

The American Dental Association is pleased to provide the Advanced Dental Admission Test for consideration by advanced dental education programs and communities of interest. For additional information concerning this examination program, please visit the ADAT website (www.ada.org/adat).

References

Birnbaum, A. (1968). Some latent trait models and their use in inferring an examinee's ability. In F. M. Lord & M. R. Novick (eds.), Statistical Theories of Mental Test Scores (pp. 397- 472). Reading, MA: Addison Wesley Publishing.

Childs, R.A., Elgie, S., Gadalla, T., Traub, R., & Jaciw, A.P. (2004). IRT-linked standard errors of weighted composites. *Practical Assessment, Research & Evaluation, 9.* Retrieved September 7, 2016 from http://PAREonline.net/getvn.asp?v=9&n=13

Fagin A.P., Howell T.H., Da Silva J., & Park S.E. (2014). The impact on dental students of changes to the National Board Dental Examination grading system. Journal of Dental Education, 78(6), 813–822.

Fagin A.P., Howell T.H., & Park S.E. (2015). Impact of the NBDE grading change on postgraduate admissions processes. Journal of Dental Education, 79(4), 362–368.

Sireci, S.G., Thissen, D., & Wainer, H. (1991). On the reliability of testlet-based tests. *Journal of Educational Measurement, 28,* 237-247.

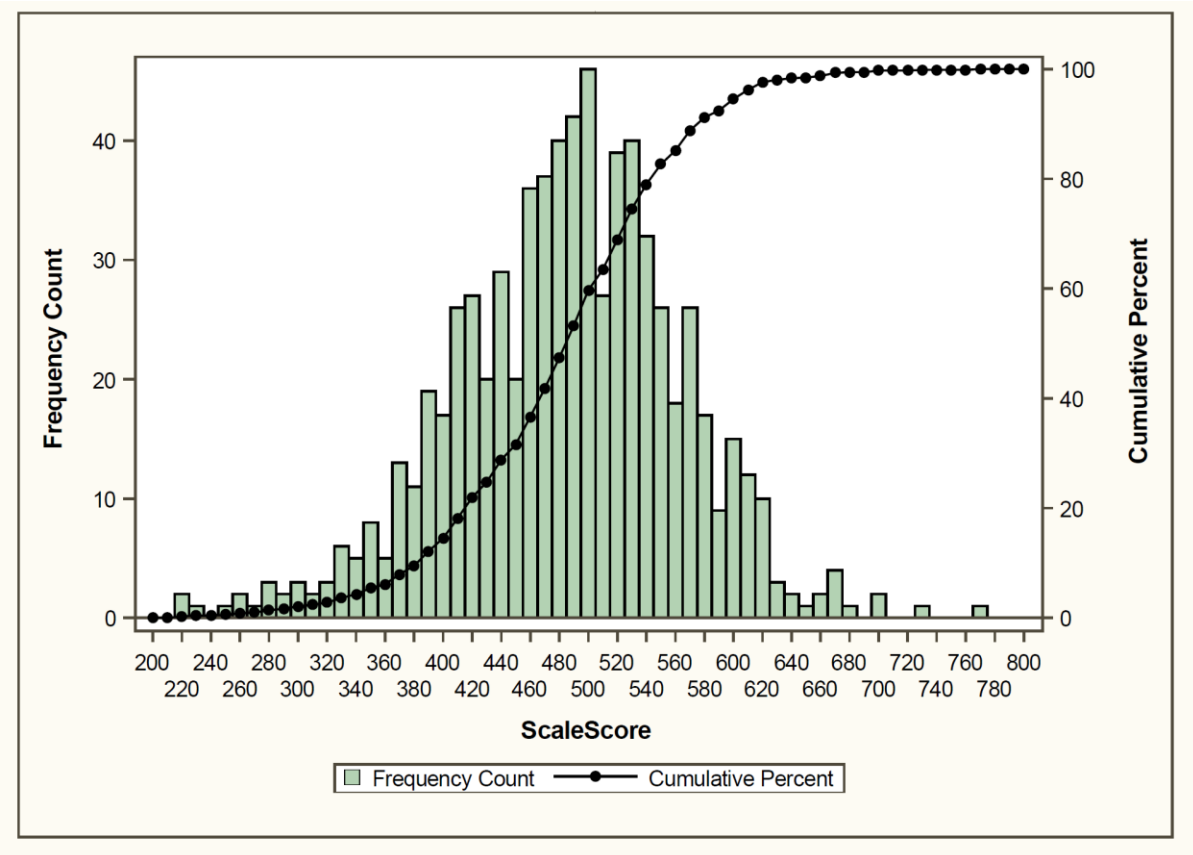**Appendix A1: Frequency Distributions for ADAT Scale Scores: 2023**

Frequency distribution for the ADAT Overall scale: 2023
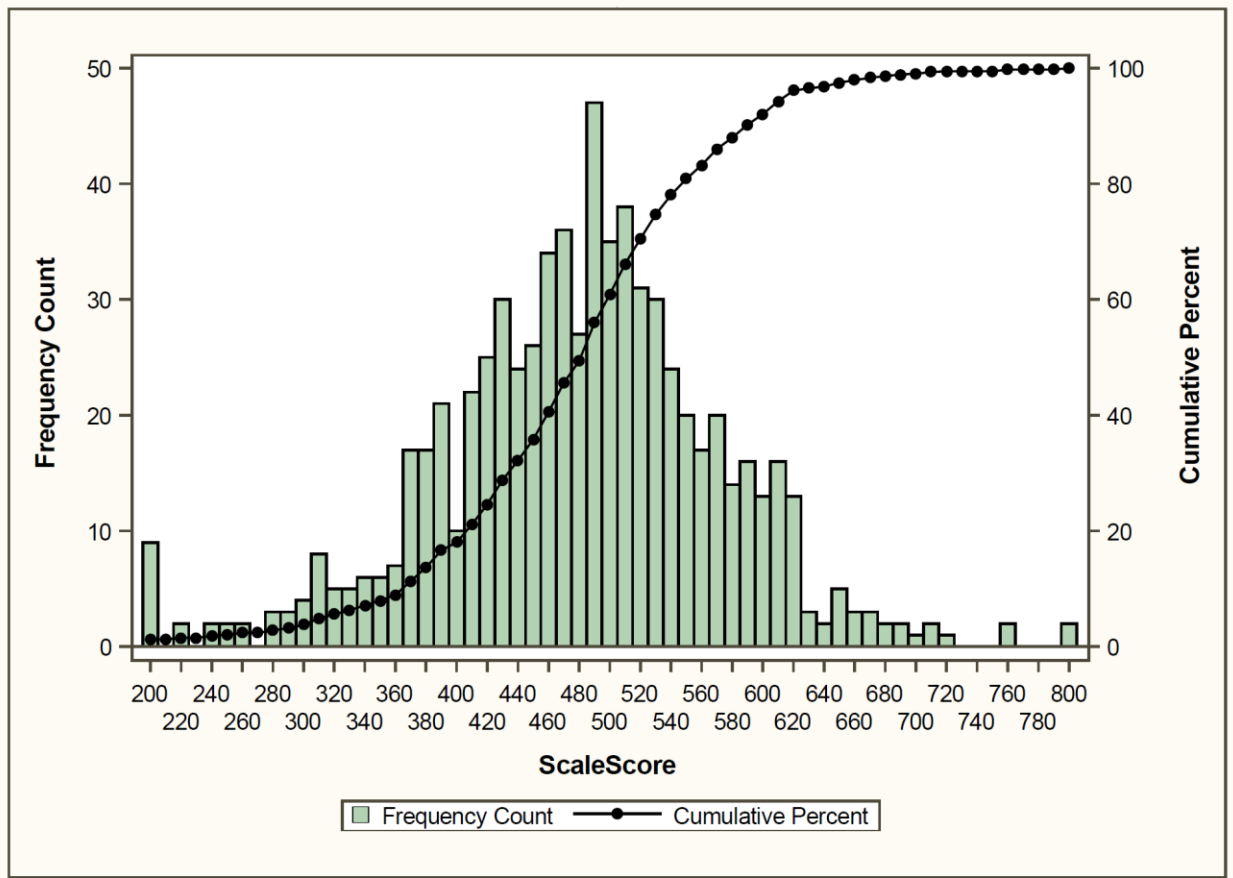*(715 administrations)*
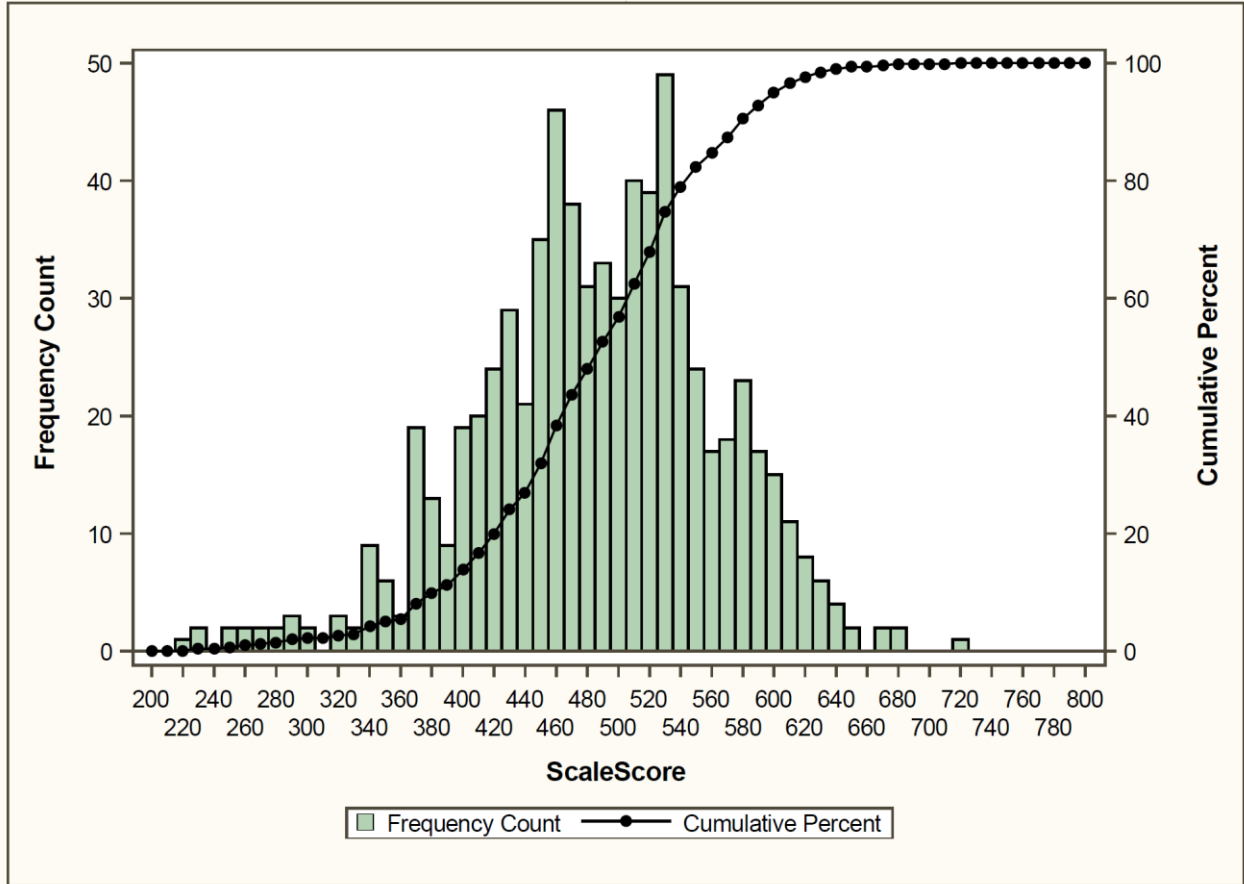
Frequency distribution for the Biomedical Sciences scale: 2023
(715 administrations)
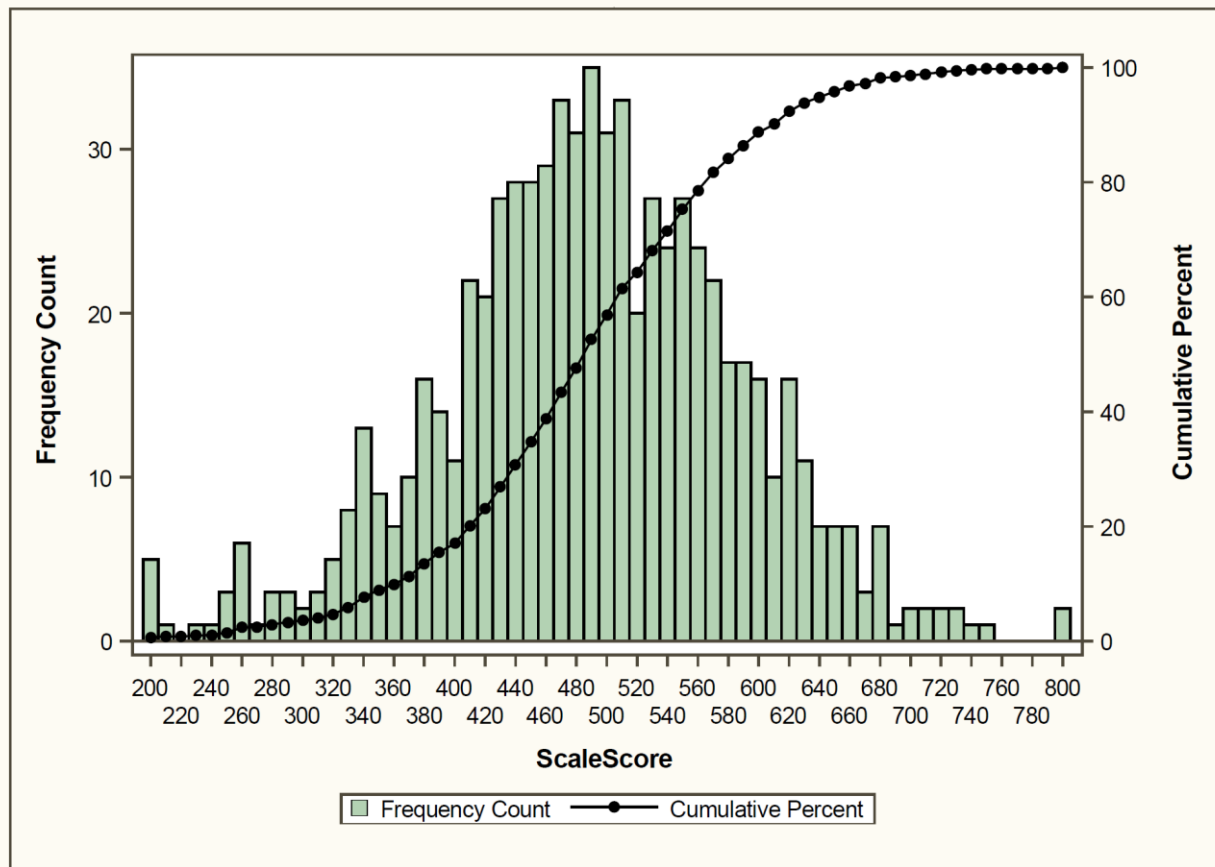
Frequency distribution for the Clinical Sciences scale: 2023
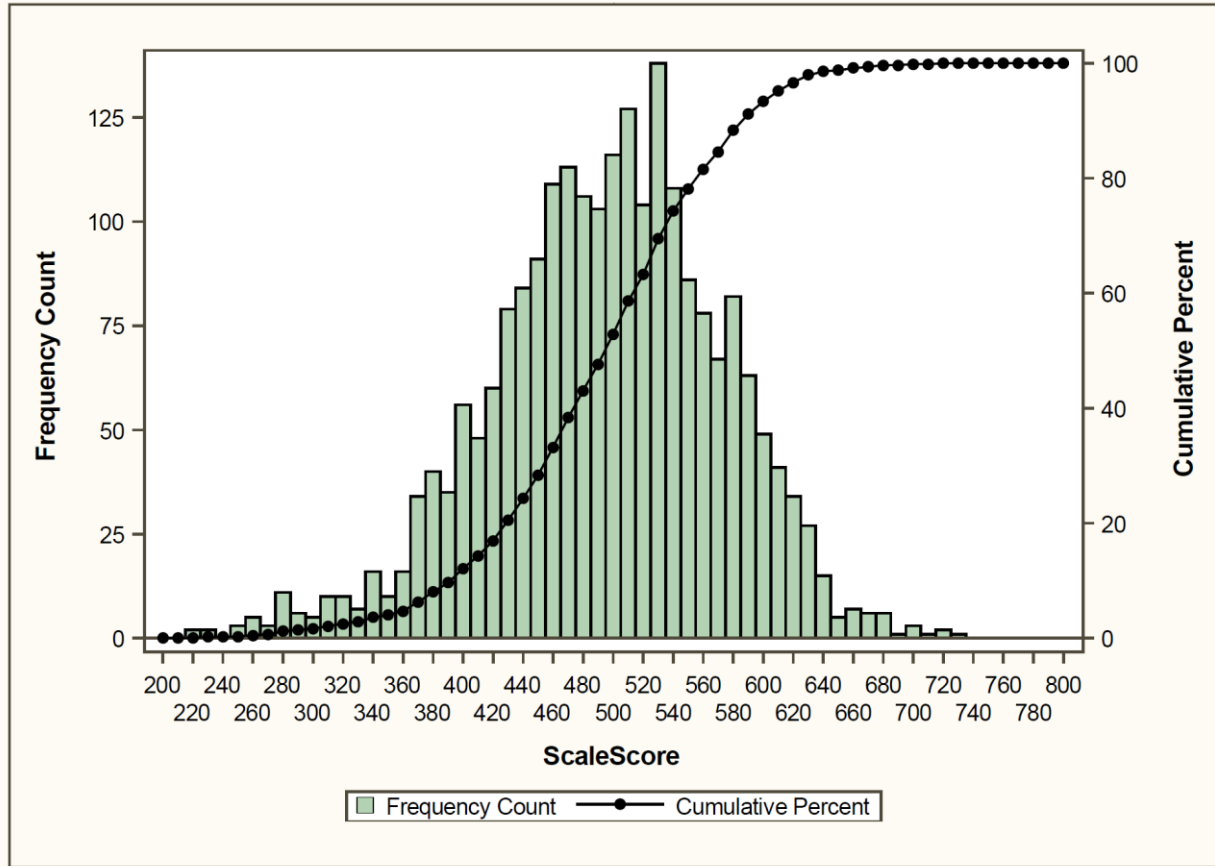*(715 administrations)*

Frequency distribution for the Data, Research Interpretation, & Evidence Based Dentistry scale: 2023
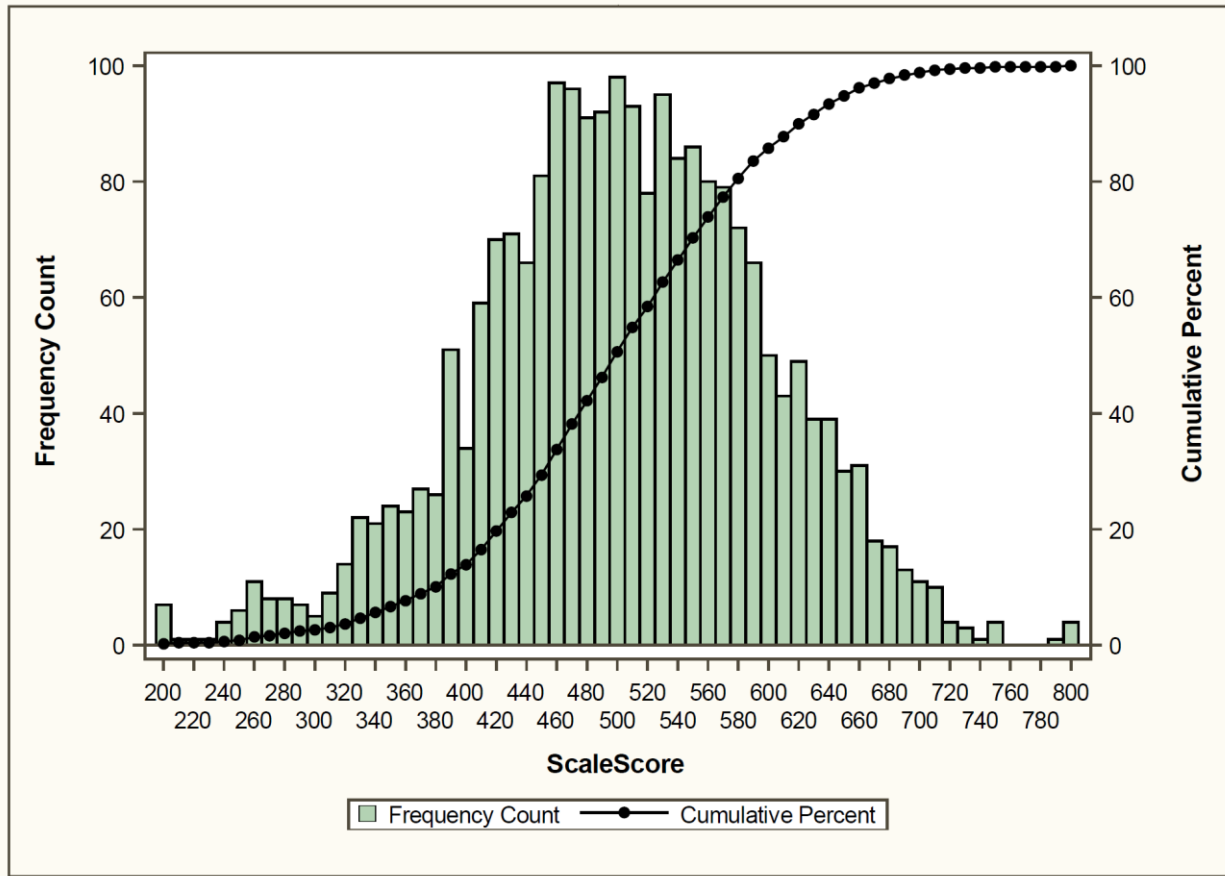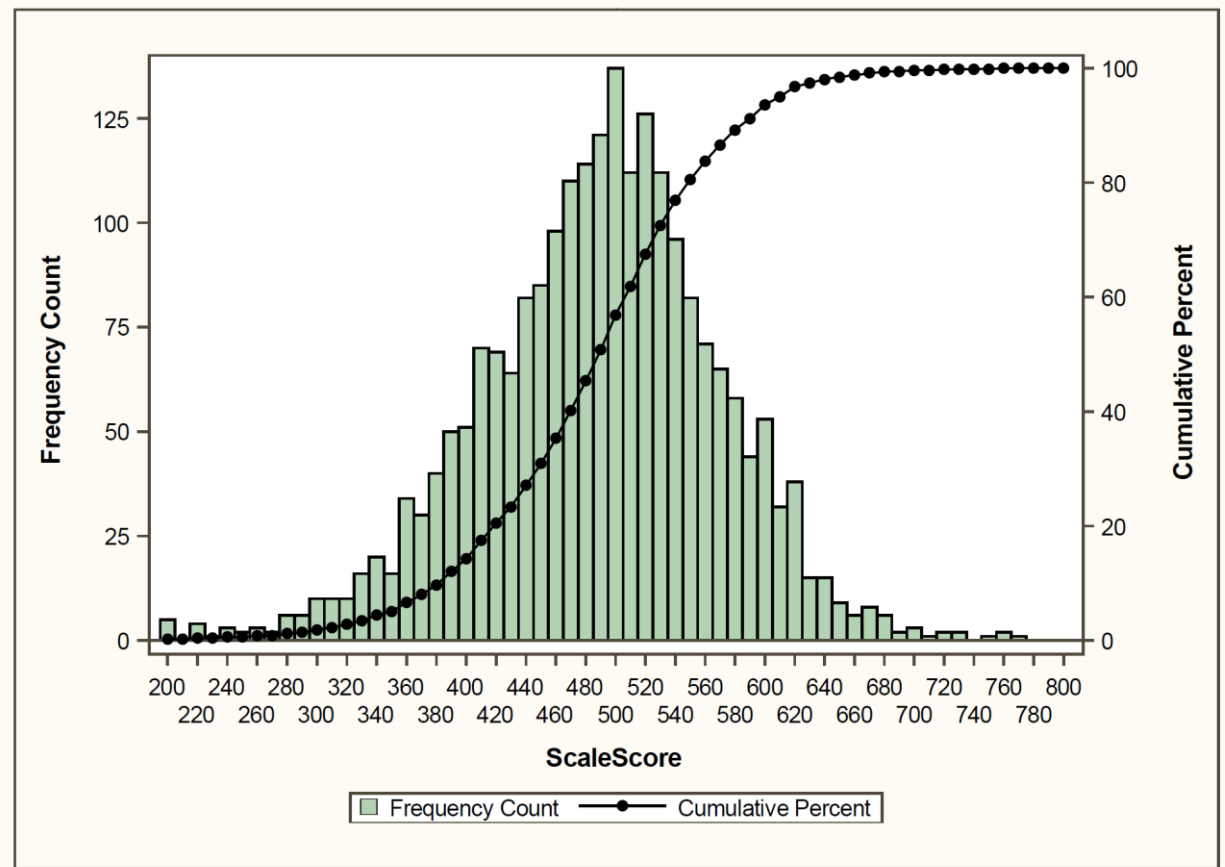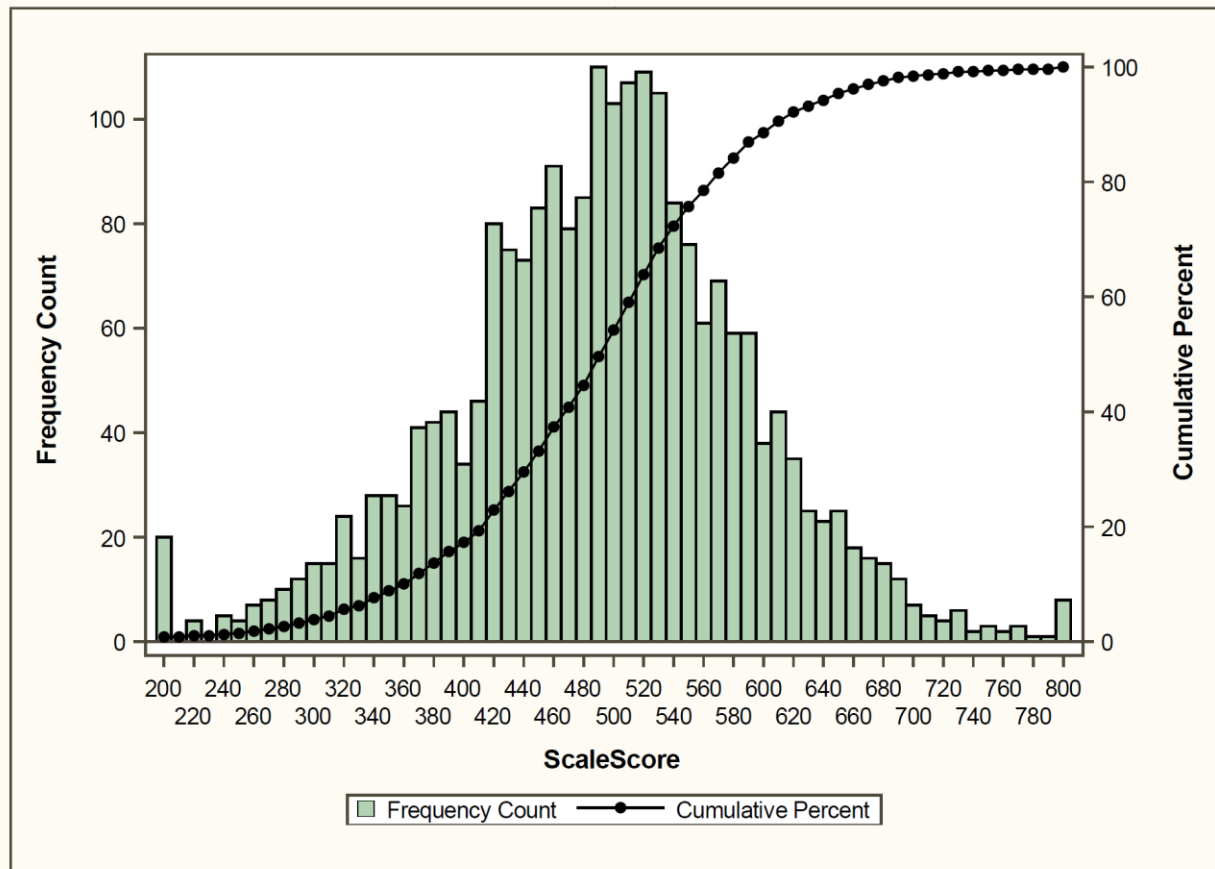*(715 administrations)*

Appendix A2: Frequency Distributions for ADAT Scale Scores: 2019-2023

Frequency distribution for the ADAT Overall scale: 2019-2023
(2,231 administrations)

Frequency distribution for the Biomedical Sciences scale: 2019-2023
(2,231 administrations)

Frequency distribution for the Clinical Sciences scale: 2019-2023

(2,231 administrations)

Frequency distribution for the Data, Research Interpretation, & Evidence Based Dentistry scale:
2019-2023
(2,231 administrations)

Appendix B1: Percentiles Associated with ADAT Scale Scores: 2023
(715 administrations)

ADAT=ADAT Overall; BIO=Biomedical Sciences; CLI=Clinical Sciences;
DRI=Data, Research Interpretation, & Evidence Based Dentistry;

Scale Score	ADAT	BIO	CLI	DRI
800		99		99
790		99		99
780		99		99
770		99	99	99
760		99	99	99
750		99	99	99
740		99	99	99
730		99	99	99
720	99	99	99	99
710	99	99	99	99
700	99	99	99	99
690	99	98	99	99
680	99	98	99	99
670	99	97	99	98
660	99	97	99	98
650	99	96	98	97
640	99	95	98	97
630	98	94	98	97
620	98	92	98	96
610	97	90	96	94
600	95	89	95	92
590	93	86	92	90
580	90	84	91	88
570	87	82	89	86
560	85	79	85	83
550	82	75	83	81
540	79	71	79	78
530	75	68	75	75
520	68	64	69	70
510	62	62	63	66
500	57	57	60	61
490	53	53	53	56
480	48	48	47	49
470	44	43	42	46
460	38	39	37	41
450	32	35	32	36
440	27	31	29	32
430	24	27	25	29
420	20	23	22	25

Scale Score	ADAT	BIO	CLI	DRI
410	17	20	18	21
400	14	17	15	18
390	11	16	12	17
380	10	14	10	14
370	8	11	8	11
360	5	10	6	9
350	5	9	5	8
340	4	8	4	7
330	3	6	4	6
320	3	5	3	6
310	2	4	2	5
300	2	4	2	4
290	2	3	2	3
280	2	3	1	3
270	1	3	1	2
260	1	2	1	2
250	1	2	1	2
240	1	1	1	2
230	1	1	1	2
220	1	1	1	2
210		1		1
200		1		1

Appendix B2: Percentiles Associated with ADAT Scale Scores: 2019-2023
(2,231 administrations)

ADAT=ADAT Overall; BIO=Biomedical Sciences; CLI=Clinical Sciences
DRI=Data, Research Interpretation, & Evidence Based Dentistry

Scale Score	ADAT	BIO	CLI	DRI
800		99		99
790		99		99
780		99		99
770		99	99	99
760		99	99	99
750		99	99	99
740		99	99	99
730	99	99	99	99
720	99	99	99	99
710	99	99	99	99
700	99	99	99	98
690	99	98	99	98
680	99	98	99	98
670	99	97	99	97
660	99	96	99	96
650	99	95	98	95
640	99	93	98	94
630	98	92	97	93
620	97	90	97	92
610	95	88	95	91
600	93	86	94	89
590	91	84	91	87
580	88	81	89	84
570	85	77	87	82
560	82	74	84	78
550	78	70	81	76
540	74	66	77	72
530	69	63	73	69
520	63	58	68	64
510	59	55	62	59
500	53	51	57	54
490	48	46	51	50
480	43	42	45	45
470	38	38	40	41
460	33	34	35	37
450	28	29	31	33
440	24	26	27	29
430	21	23	23	26
420	17	20	21	23
410	14	17	17	19

Scale Score	ADAT	BIO	CLI	DRI
400	12	14	14	17
390	10	12	12	16
380	8	10	10	14
370	6	9	8	12
360	5	8	7	10
350	4	7	5	9
340	4	6	4	8
330	3	5	3	6
320	3	4	3	6
310	2	3	2	5
300	2	3	2	4
290	1	2	1	3
280	1	2	1	3
270	1	2	1	2
260	1	1	1	2
250	1	1	1	2
240	1	1	1	1
230	1	1	1	1
220	1	1	1	1
210		1	1	1
200		1	1	1

Appendix C1: Descriptive Statistics for ADAT Scale Scores, by Specialty: 2023

Specialty	N†	ADAT		BIO		CLI		DRI	
		MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
Advanced Education in General Dentistry, 12 Months	167	483.2	77.0	488.7	97.5	481.7	78.9	476.0	91.8
Advanced Education in General Dentistry, 24 Months	198	477.6	78.0	487.4	101.5	475.4	78.9	462.1	84.8
Dental Anesthesiology	60	487.2	72.5	502.7	93.2	483.7	76.5	464.0	81.0
Dental Public Health	67	488.5	74.0	504.6	100.0	484.0	73.5	464.3	80.9
Endodontics	289	506.5	68.8	500.5	86.7	509.4	70.7	512.8	93.3
General Practice Residency, 12 Months	124	493.5	79.0	501.2	97.3	490.1	82.6	485.2	91.8
General Practice Residency, 24 Months	123	482.4	80.8	494.6	107.6	477.6	81.0	468.0	84.1
Oral and Maxillofacial Surgery Clinical Fellowships Cosmetic	63	475.9	76.1	485.6	105.6	474.0	77.6	461.7	79.4
Oral and Maxillofacial Surgery Clinical Fellowships Craniofacial	59	482.9	74.3	494.9	99.9	480.0	77.1	464.6	81.4
Oral and Maxillofacial Surgery Clinical Fellowships Oncology	57	482.5	75.2	494.6	100.6	479.6	78.4	464.2	82.8
Maxillofacial Prosthetics	60	491.2	65.4	510.3	86.5	485.8	66.0	464.3	77.1
Prosthodontics/Maxillofacial Prosthetics	69	492.9	67.5	508.6	93.5	488.3	66.3	472.0	68.6
Oral and Maxillofacial Pathology	59	489.8	67.4	501.7	91.3	489.8	68.4	466.4	78.9
Oral and Maxillofacial Radiology	70	482.9	74.9	494.7	99.3	480.4	75.8	465.0	81.1
Oral and Maxillofacial Surgery	73	475.5	80.7	482.5	107.8	473.7	83.3	466.7	81.5

	N†	ADAT		BIO		CLI		DRI	
Oral Medicine	73	487.7	71.0	504.0	96.9	483.6	69.4	464.4	82.0
Orofacial Pain	71	489.4	72.4	507.6	96.9	485.6	75.0	460.4	75.4
Clinical Fellowship in Craniofacial and Special Care Orthodontics	65	493.4	68.8	509.2	88.6	491.7	71.0	464.9	79.1
Orthodontics and Dentofacial Orthopedics	97	486.4	76.2	498.5	97.1	483.7	76.6	467.4	89.1
Orthodontics/Periodontics	88	489.4	68.9	499.2	94.9	489.3	68.6	470.8	74.0
Pediatric Dentistry	104	485.8	76.5	497.1	106.1	483.6	70.8	467.6	87.0
Periodontics	97	489.9	67.2	503.4	96.0	487.2	66.0	469.0	76.0
Prosthodontics	89	490.8	70.2	502.4	96.0	488.5	70.1	472.7	73.1

Note. ADAT=ADAT Overall, BIO=Biomedical Sciences; CLI=Clinical Sciences, DRI=Data, Research Interpretation, & Evidence Based Dentistry;
Norms are presented only for specialty areas selected by 25 or more candidates.
†Represents the number of candidates who reported interest in the specialty. Candidates could pick multiple specialties.

Appendix C2: Descriptive Statistics for ADAT Scale Scores, by Specialty: 2019-2023

SPECIALTY	N[†]	ADAT		BIO		CLI		DRI	
		MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
Advanced Education in General Dentistry, 12 Months	430	487.4	75.9	499.3	97.9	480.4	78.1	476.9	94.6
Advanced Education in General Dentistry, 24 Months	501	475.6	79.6	493.1	103.1	466.8	80.8	457.0	89.9
Dental Anesthesiology	135	492.4	72.1	509.3	90.8	485.3	76.5	472.1	88.2
Dental Public Health	150	492.0	71.7	510.9	94.4	482.5	74.9	472.6	85.2
Endodontics	935	514.6	71.1	513.0	87.3	512.0	75.0	523.5	96.8
General Practice Residency, 12 Months	359	500.4	76.8	512.4	96.5	490.8	80.1	494.8	96.1
General Practice Residency, 24 Months	315	485.8	76.5	503.2	102.4	476.4	76.1	468.8	89.0
Oral and Maxillofacial Surgery Clinical Fellowships Cosmetic	128	482.8	75.8	497.1	100.7	478.9	76.4	461.8	85.1
Oral and Maxillofacial Surgery Clinical Fellowships Craniofacial	120	488.1	75.2	504.1	98.4	482.8	76.5	465.6	88.4
Oral and Maxillofacial Surgery Clinical Fellowships Oncology	114	488.1	72.0	504.9	93.7	481.7	75.5	467.1	88.7
Maxillofacial Prosthetics	126	491.3	66.6	510.2	86.9	486.3	68.4	464.0	80.2
Prosthodontics/Maxillofacial Prosthetics	162	494.3	65.7	513.1	86.5	486.6	68.5	472.3	76.3
Oral and Maxillofacial Pathology	128	485.3	70.1	499.1	91.4	480.9	72.2	465.9	84.7
Oral and Maxillofacial Radiology	142	484.9	71.1	498.7	93.4	480.5	73.1	465.8	82.9
Oral and Maxillofacial Surgery	173	481.0	78.1	492.5	100.5	476.1	80.6	467.2	91.1
Oral Medicine	158	486.6	69.8	501.8	94.1	482.6	70.4	464.9	84.4
Orofacial Pain	158	493.6	69.6	511.3	90.9	486.1	72.4	472.6	85.7

SPECIALTY	N†	ADAT		BIO		CLI		DRI	
		MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
Clinical Fellowship in Craniofacial and Special Care Orthodontics	132	492.7	71.6	508.3	90.8	489.2	75.6	467.9	82.8
Orthodontics and Dentofacial Orthopedics	269	498.0	71.3	510.0	89.5	493.6	73.4	482.9	92.5
Orthodontics/Periodontics	217	496.0	72.7	508.8	93.1	491.0	73.6	479.4	89.7
Pediatric Dentistry	334	485.7	73.7	497.8	94.5	480.8	75.3	471.5	91.8
Periodontics	270	491.2	70.9	506.4	92.1	482.8	71.8	476.6	91.4
Prosthodontics	251	484.0	74.3	495.7	95.6	481.0	75.6	466.2	89.0

Note. ADAT=ADAT Overall, BIO=Biomedical Sciences; CLI=Clinical Sciences, DRI=Data, Research Interpretation, & Evidence Based Dentistry;
Norms are presented only for specialty areas selected by 25 or more candidates.
†Represents the number of candidates who reported interest in the specialty. Candidates could pick multiple specialties.

Appendix D1: Frequency Distributions for ADAT Overall Scales, by Specialty: 2023
Note: Frequency distributions are provided for specialty areas selected by 80 or more candidates.

Frequency distribution for the ADAT Overall scale: 2023
Advanced Education in General Dentistry, 12 Months
(167 administrations)
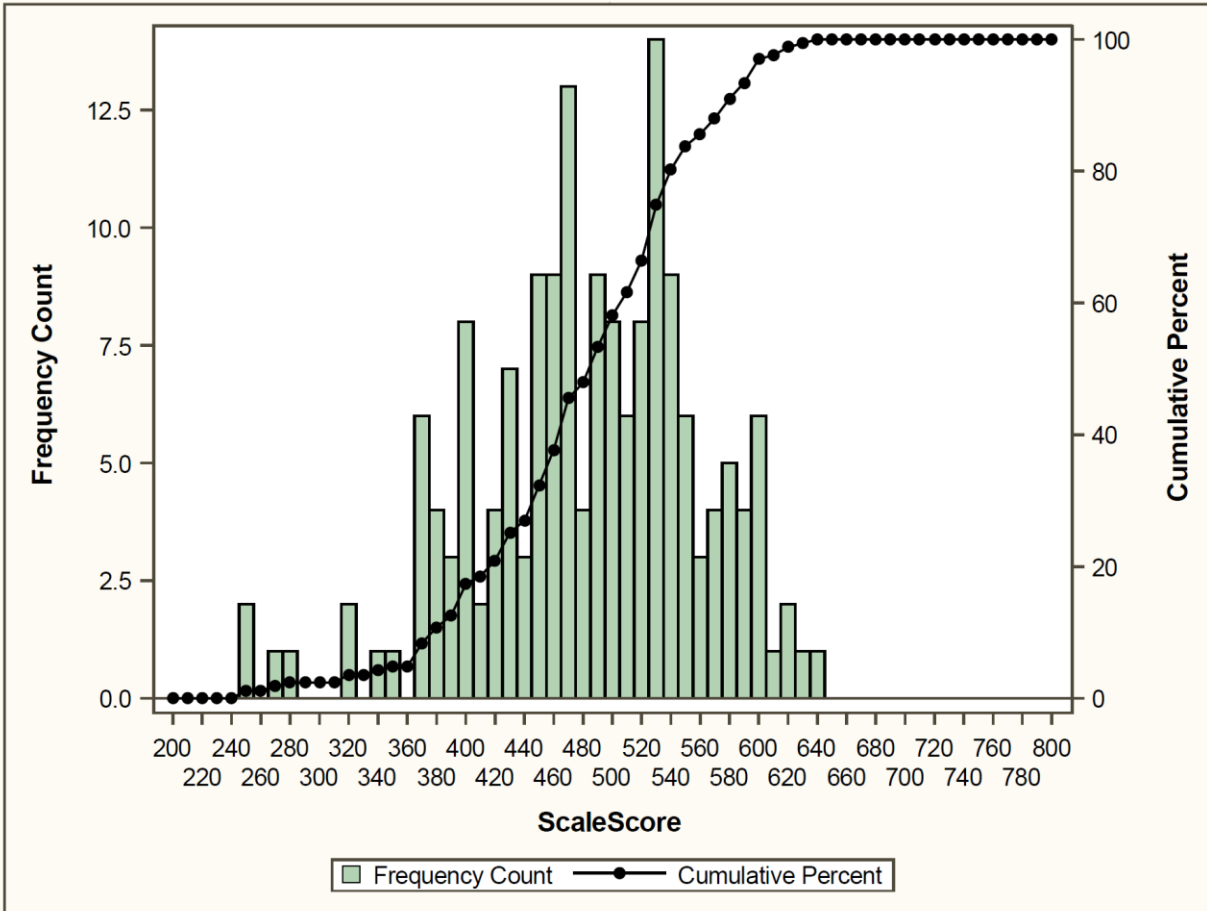
Frequency distribution for the ADAT Overall scale: 2023
Advanced Education in General Dentistry, 24 Months
(198 administrations)
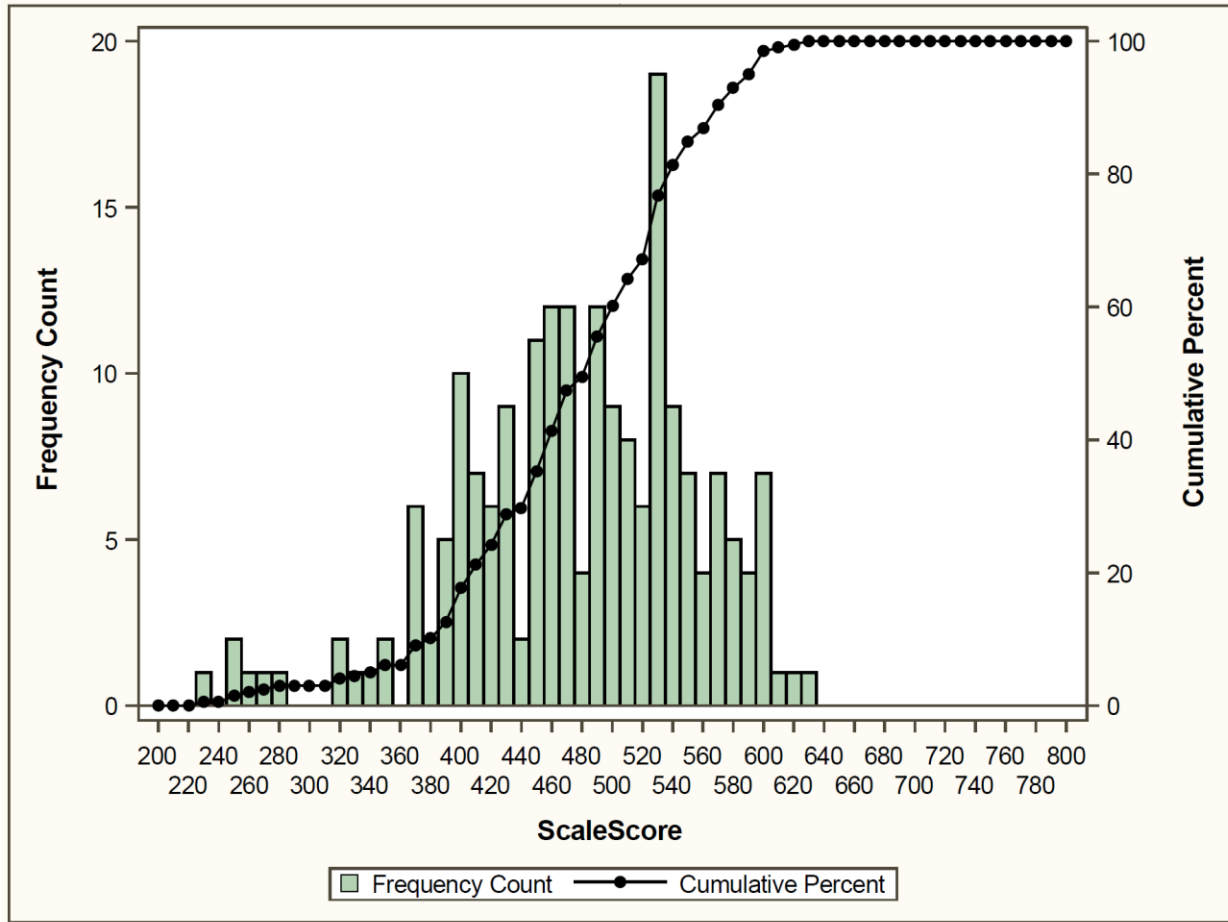
Frequency distribution for the ADAT Overall scale: 2023
Endodontics
(289 administrations)
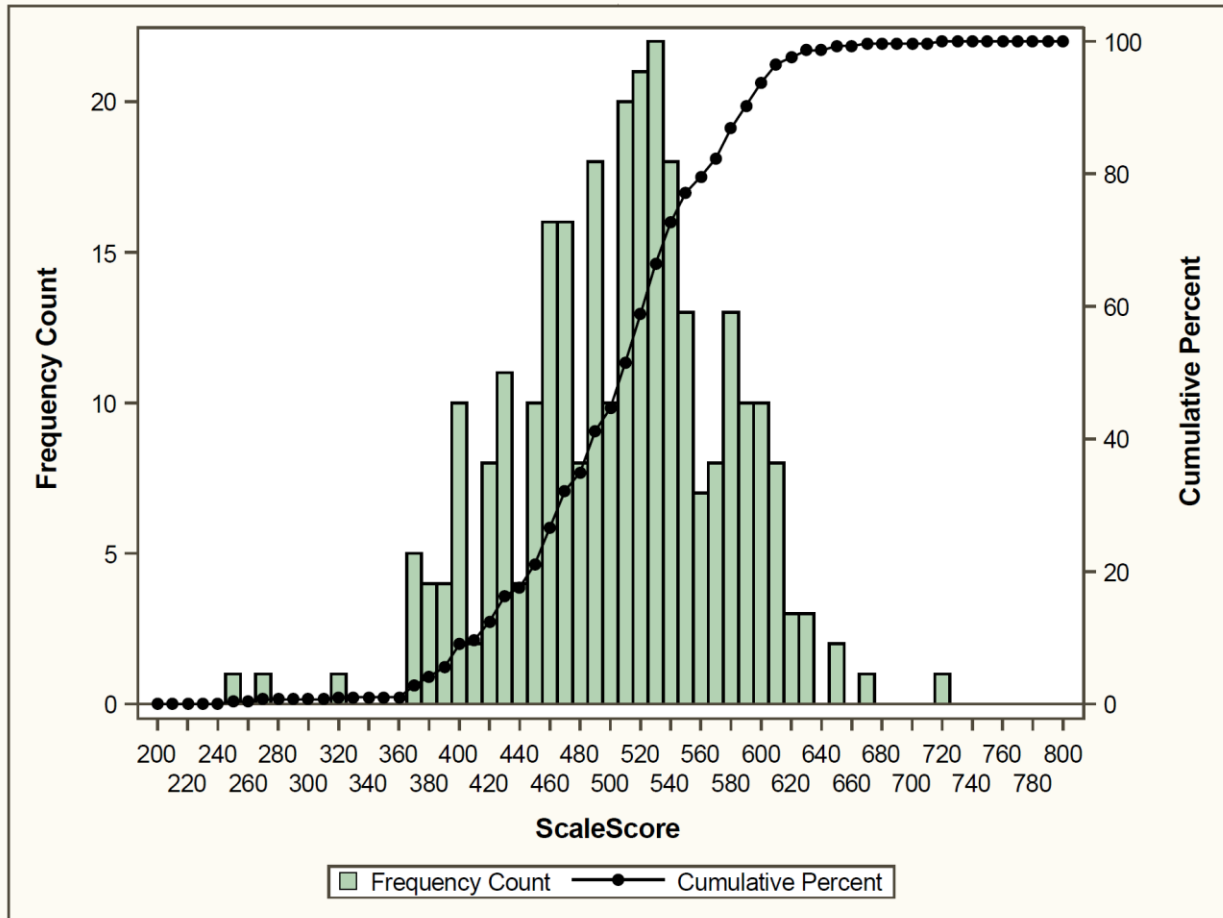
Frequency distribution for the ADAT Overall scale: 2023

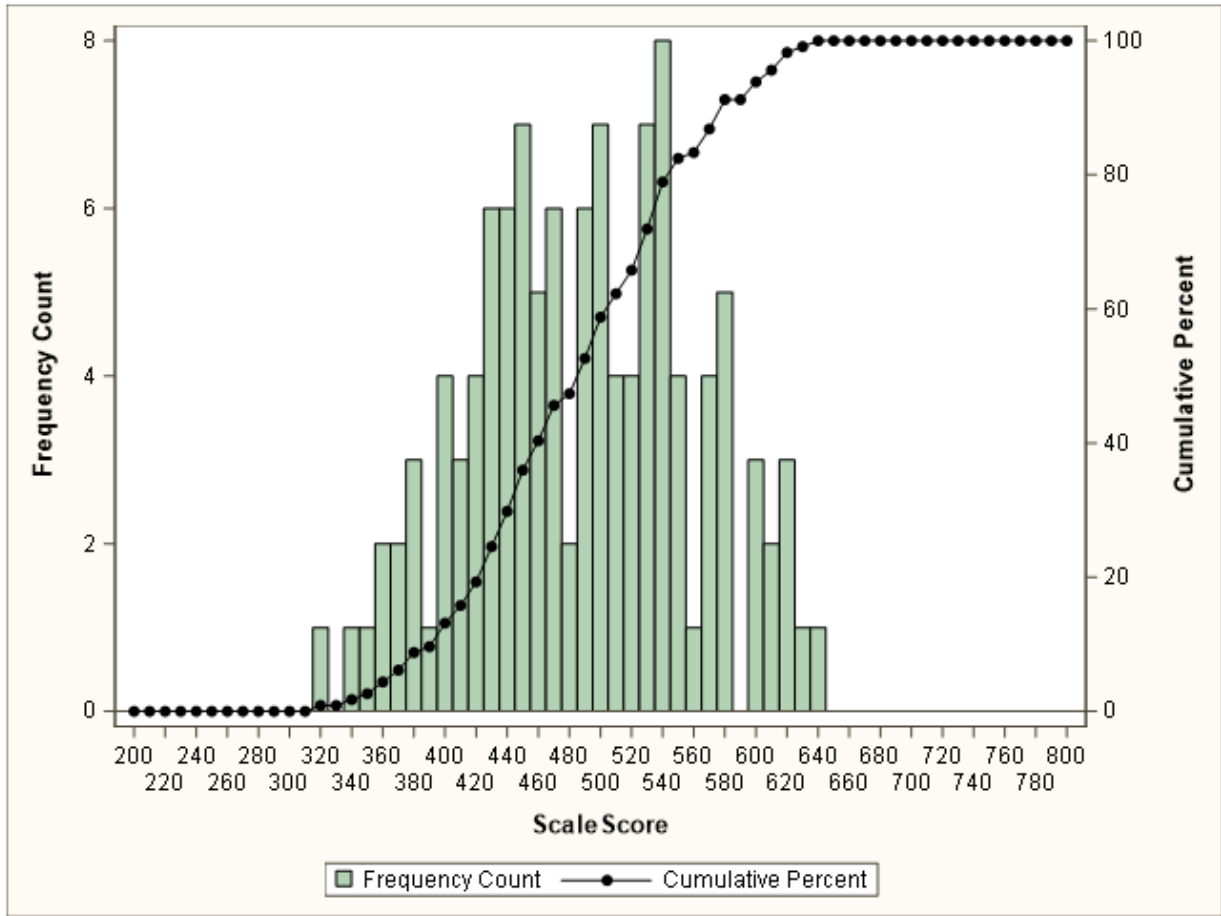General Practice Residency, 12 Months
(124 administrations)
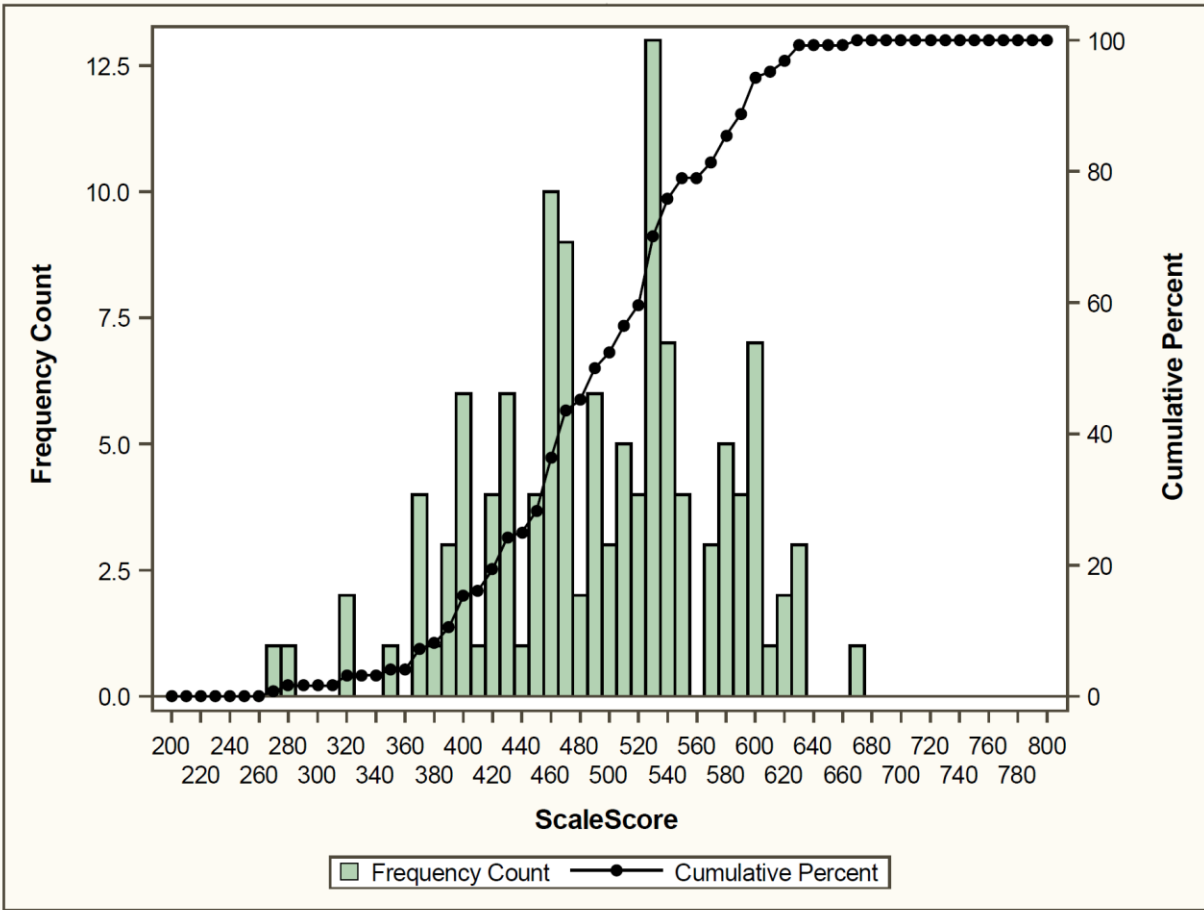
Frequency distribution for the ADAT Overall scale: 2023
General Practice Residency, 24 Months
(123 administrations)
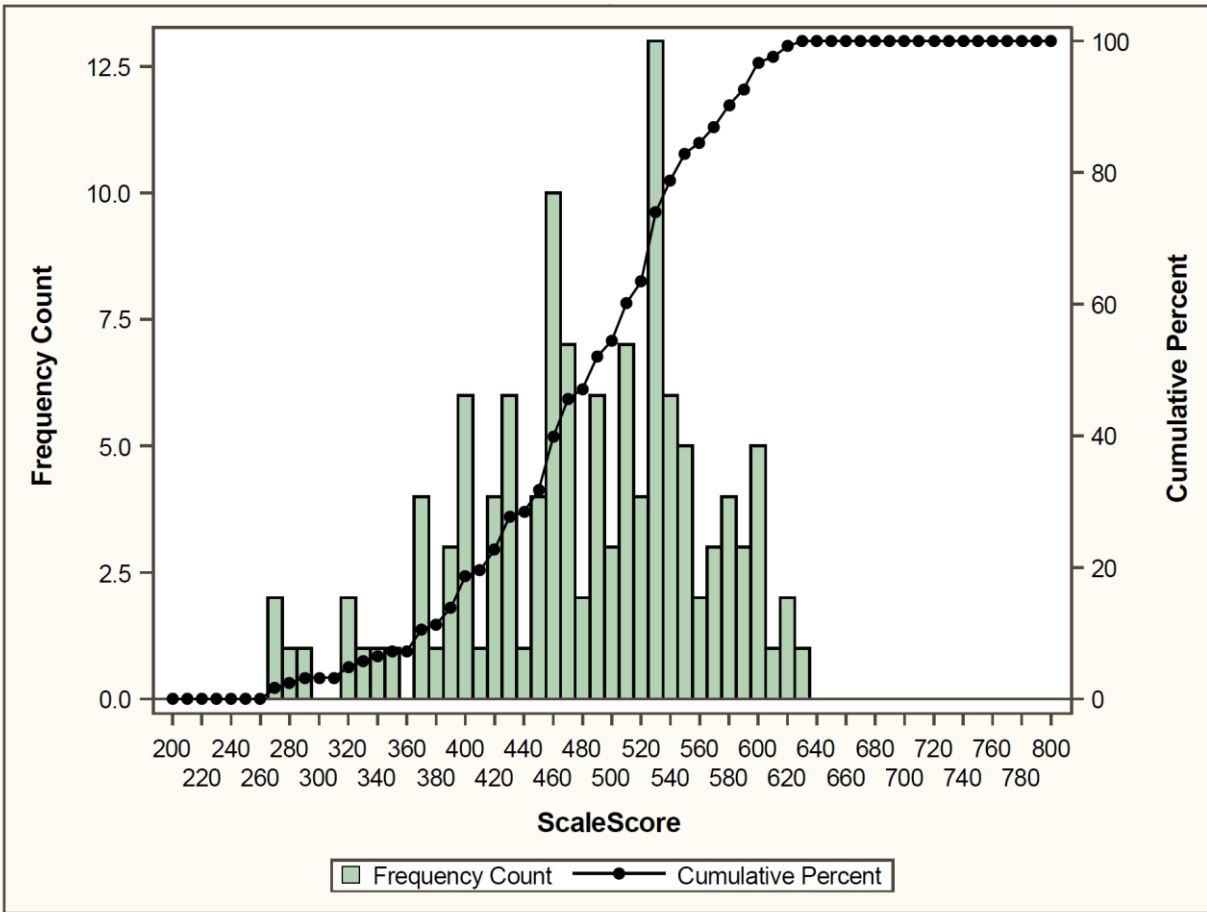
Frequency distribution for the ADAT Overall scale: 2023
Orthodontics/Periodontics
(88 administrations)
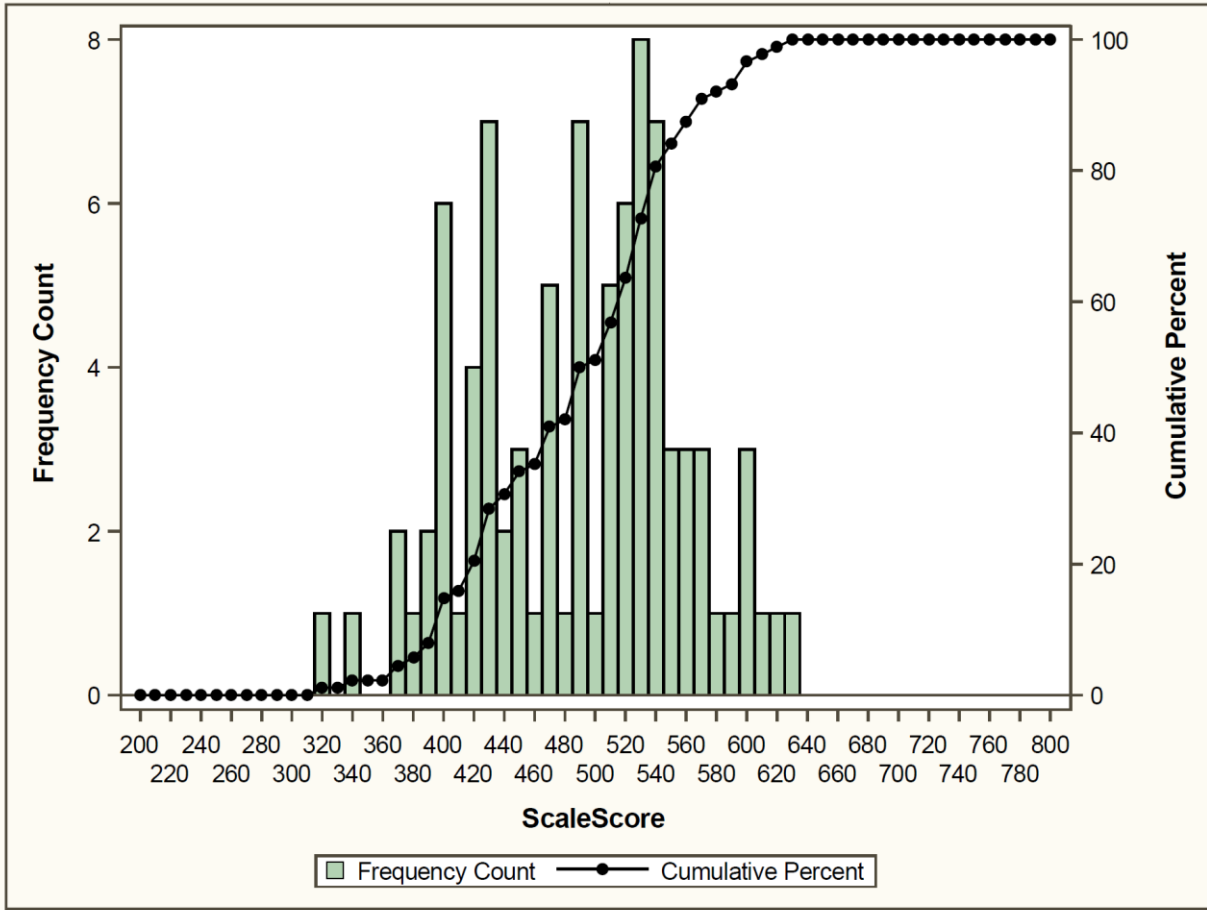
Frequency distribution for the ADAT Overall scale: 2023
Pediatric Dentistry
(104 administrations)
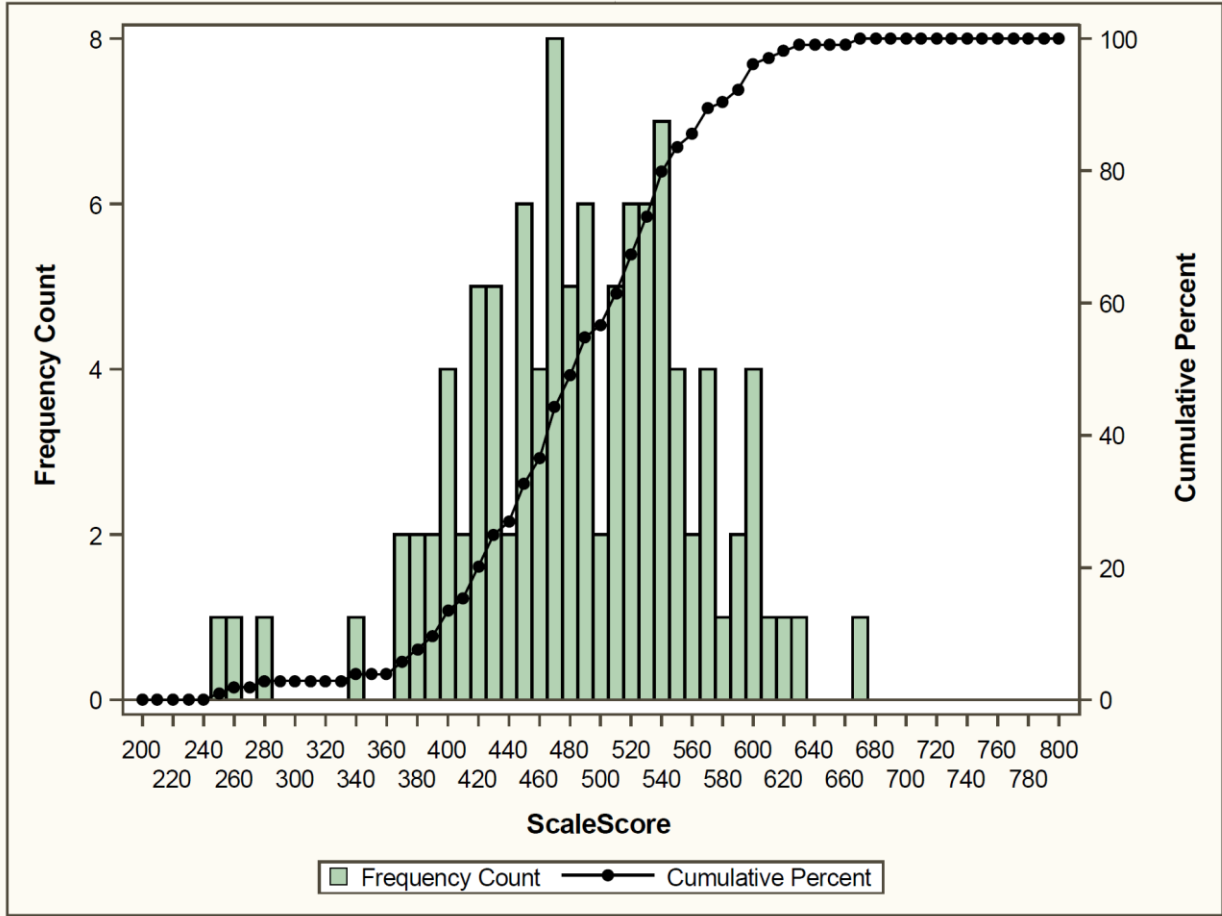
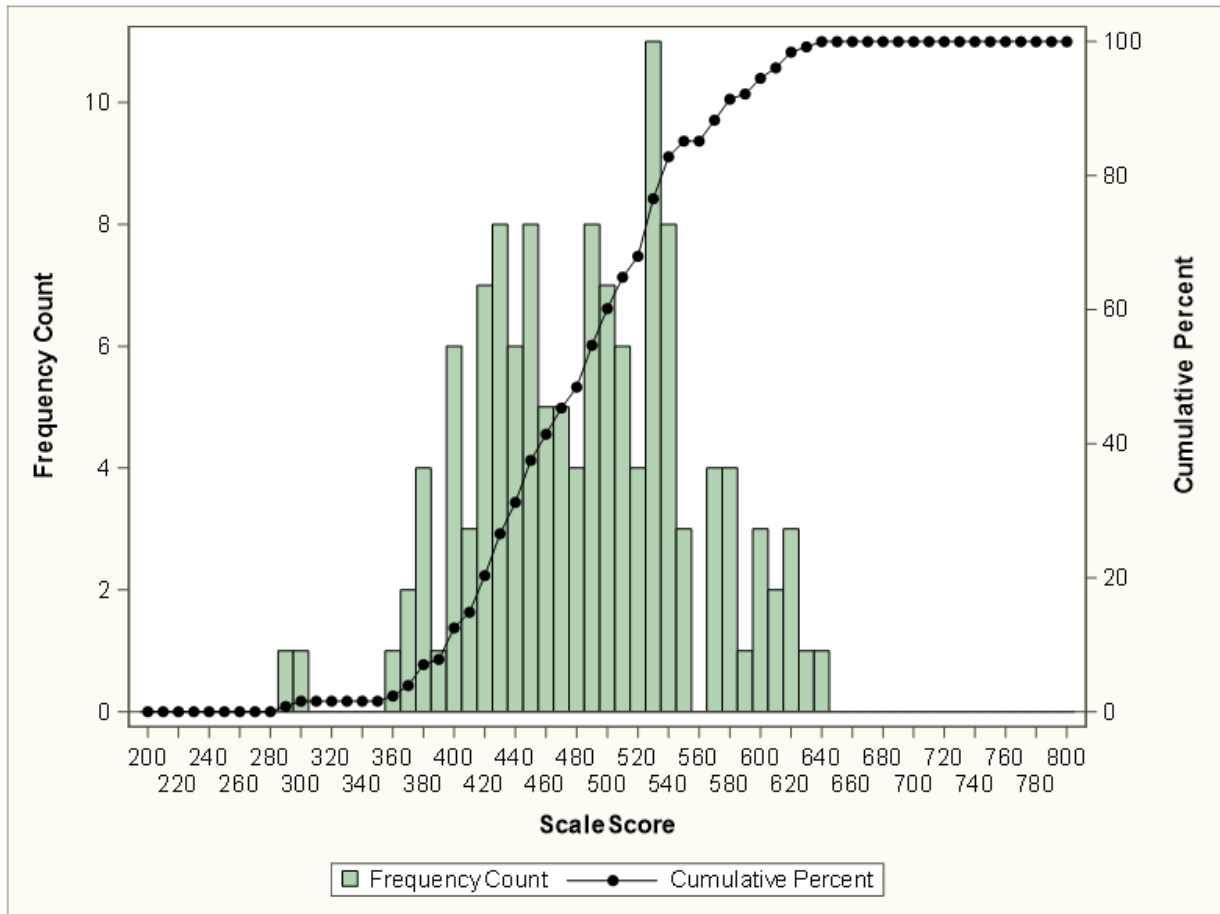*Frequency distribution for the ADAT Overall scale: 2023*
Periodontics
(97 administrations)
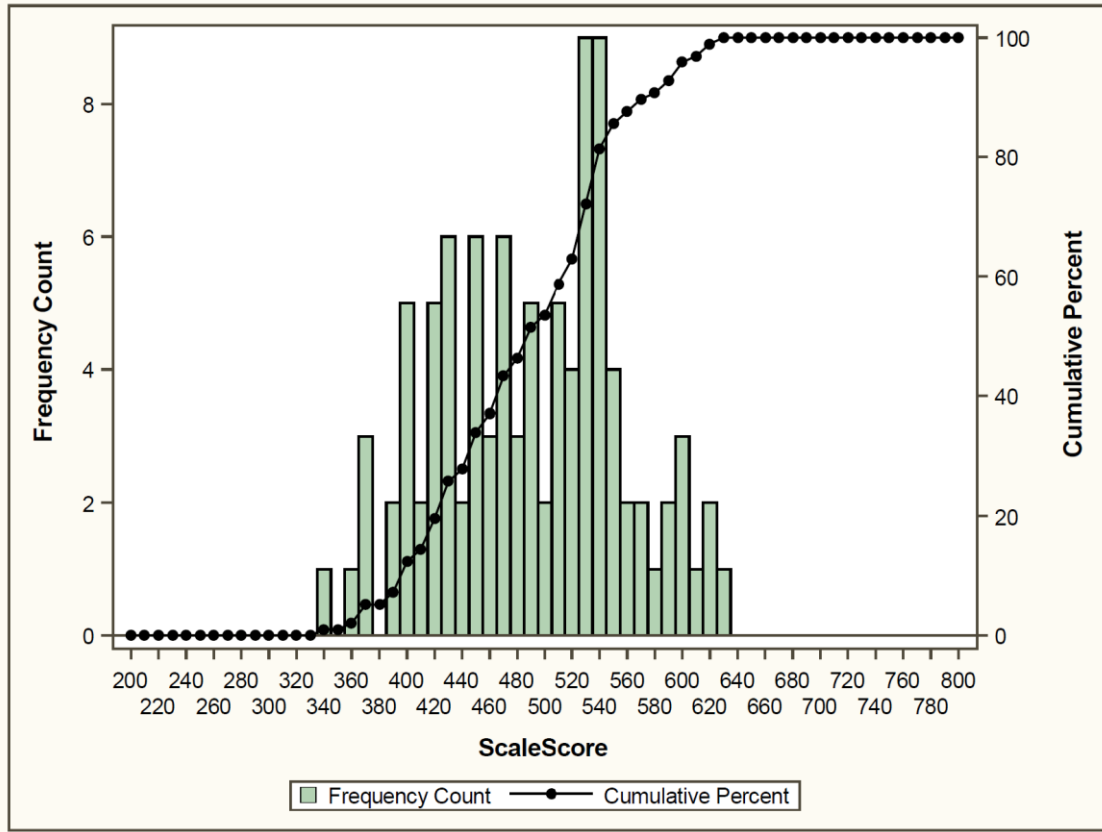
Frequency distribution for the ADAT Overall scale: 2023
Prosthodontics
(89 administrations)
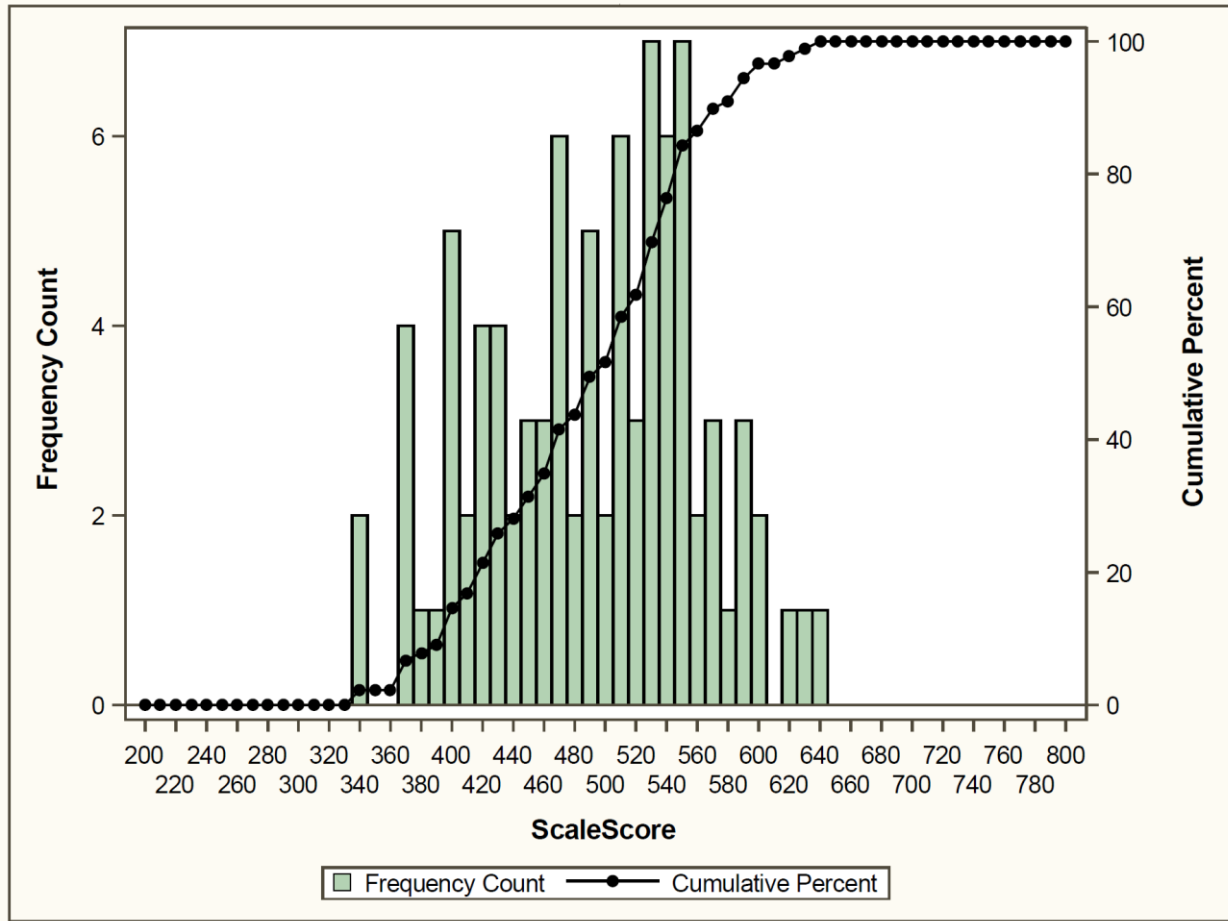
Appendix D2: Frequency Distributions for ADAT Overall Scales, by Specialty: 2019-2023
Note: Frequency distributions are provided for specialties selected by 80 or more candidates.

Frequency distribution for the ADAT Overall scale: 2019-2023
Advanced Education in General Dentistry, 12 Months
(430 administrations)
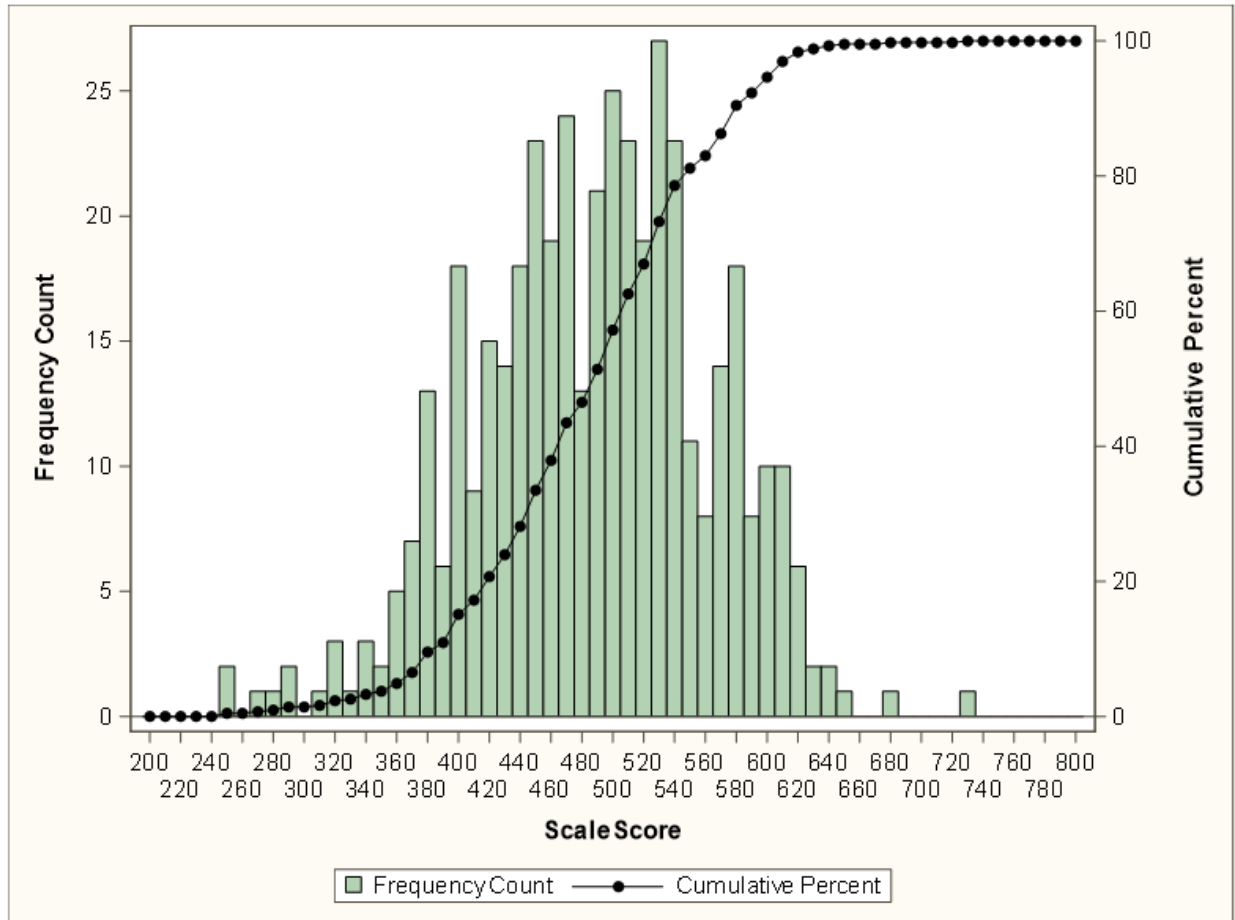
Frequency distribution for the ADAT Overall scale: 2019-2023
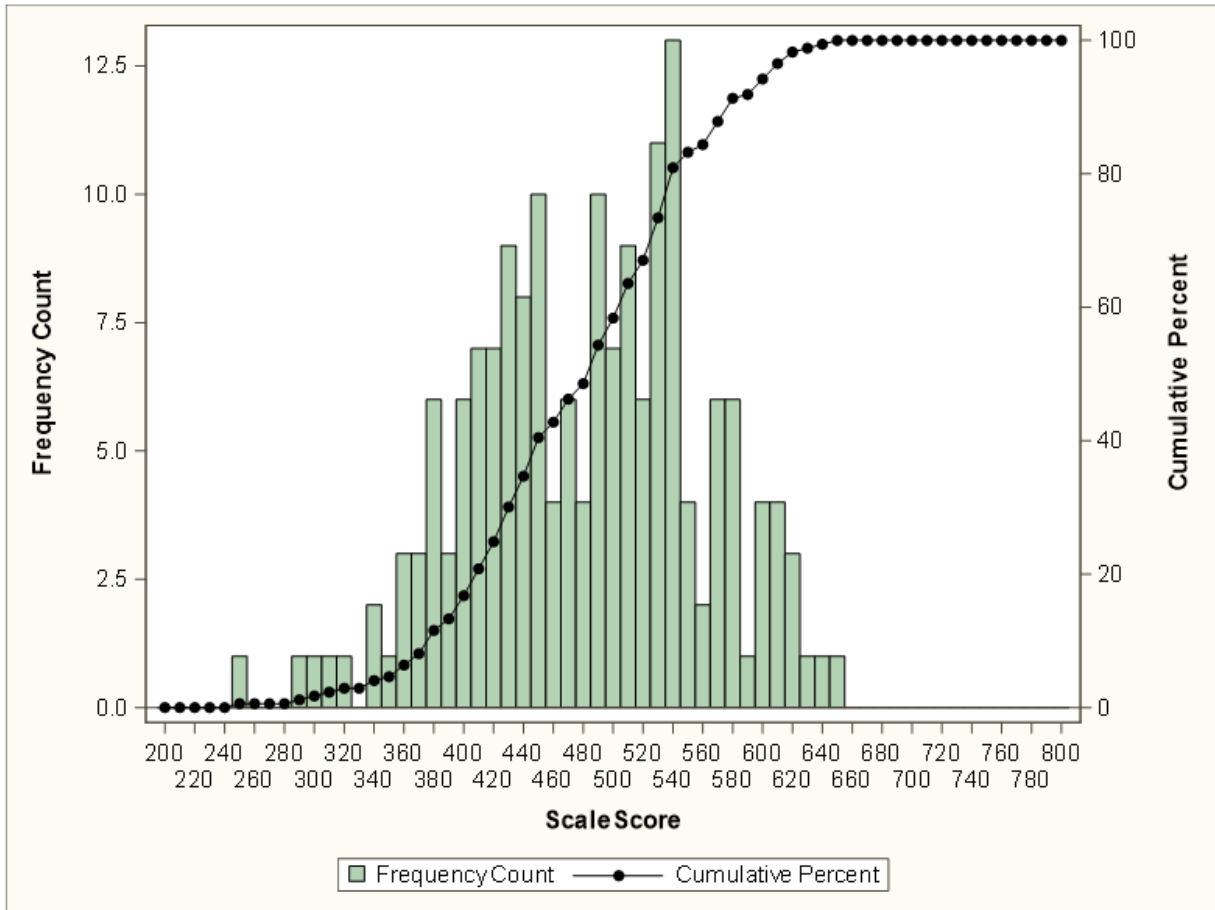*Advanced Education in General Dentistry, 24 Months*
(501 administrations)
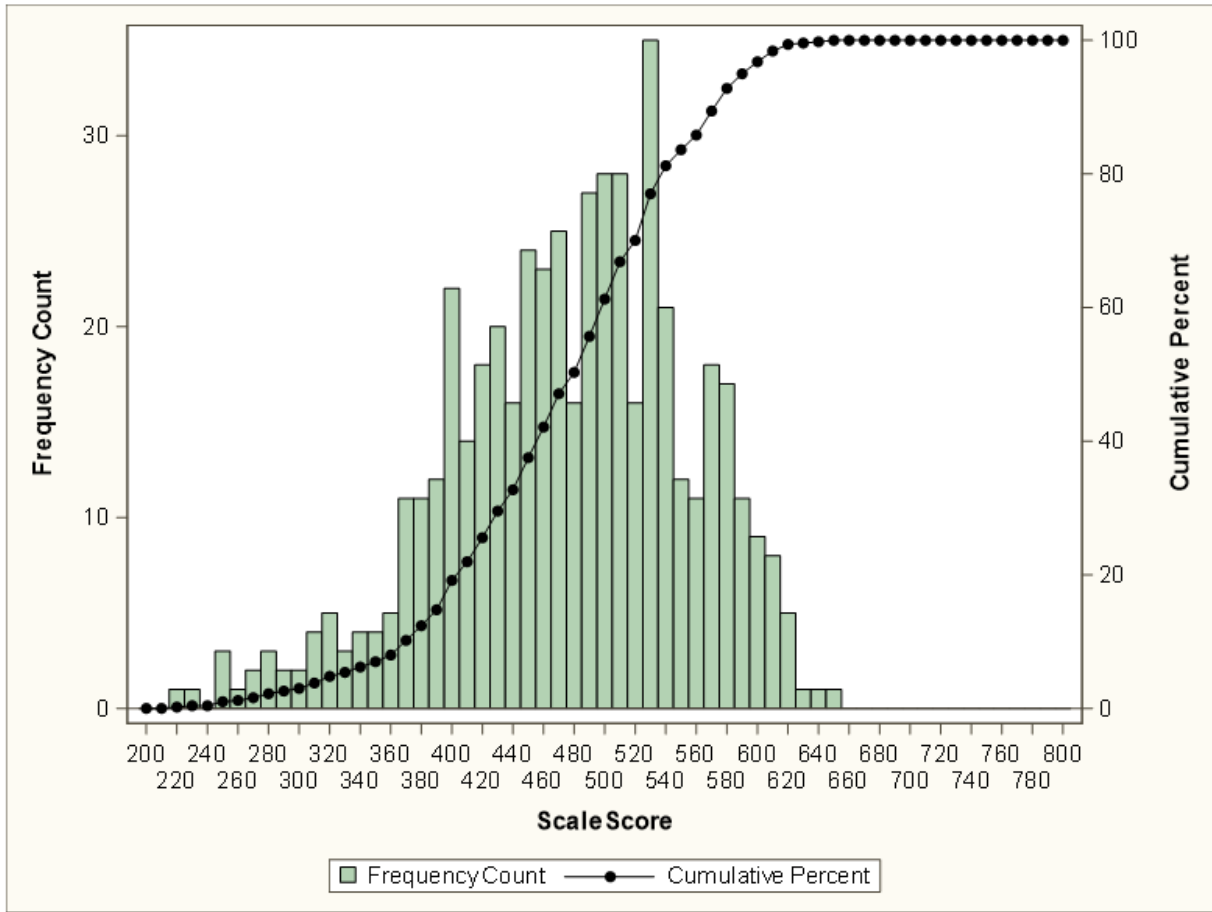
Frequency distribution for the ADAT Overall scale: 2019-2023
Dental Anesthesiology
(135 administrations)
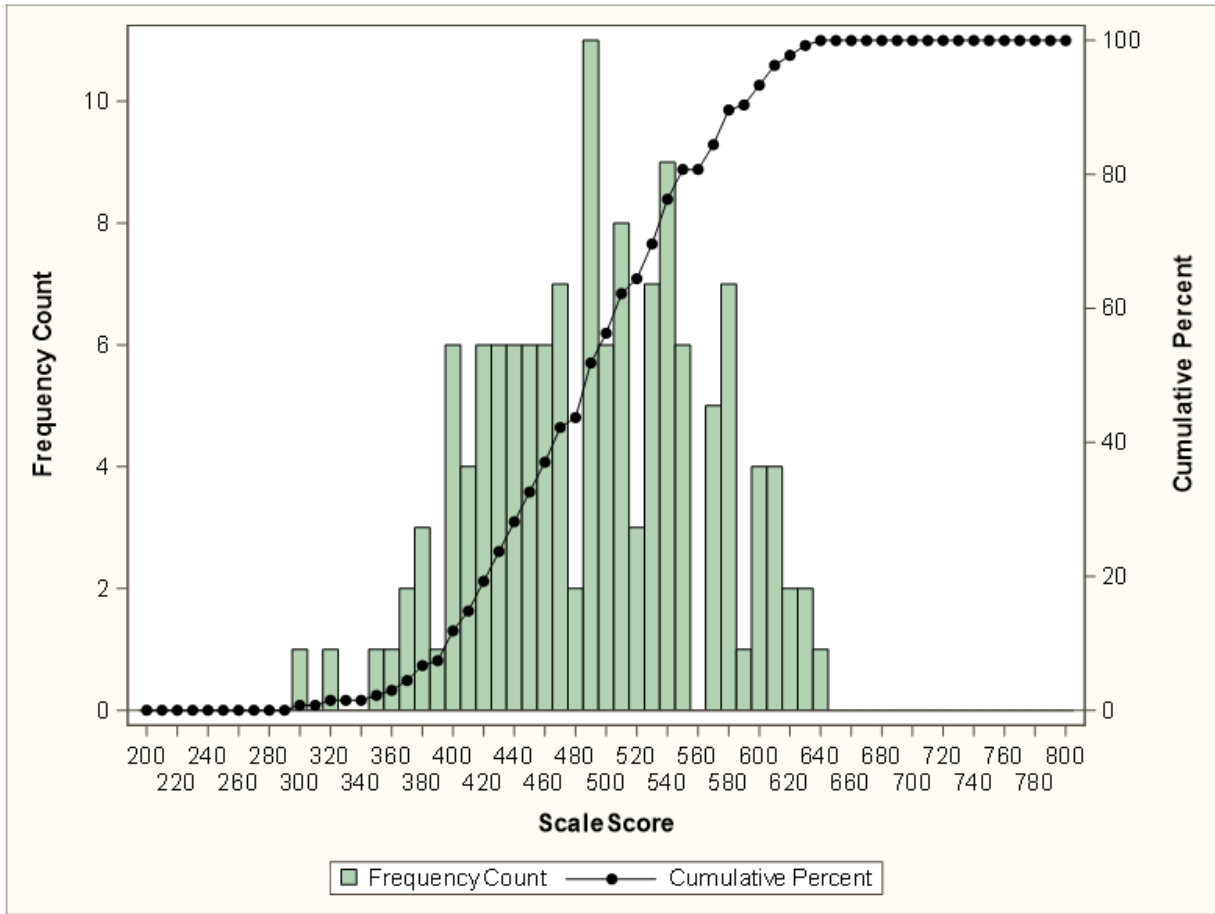
Frequency distribution for the ADAT Overall scale: 2019-2023
Dental Public Health
(150 administrations)
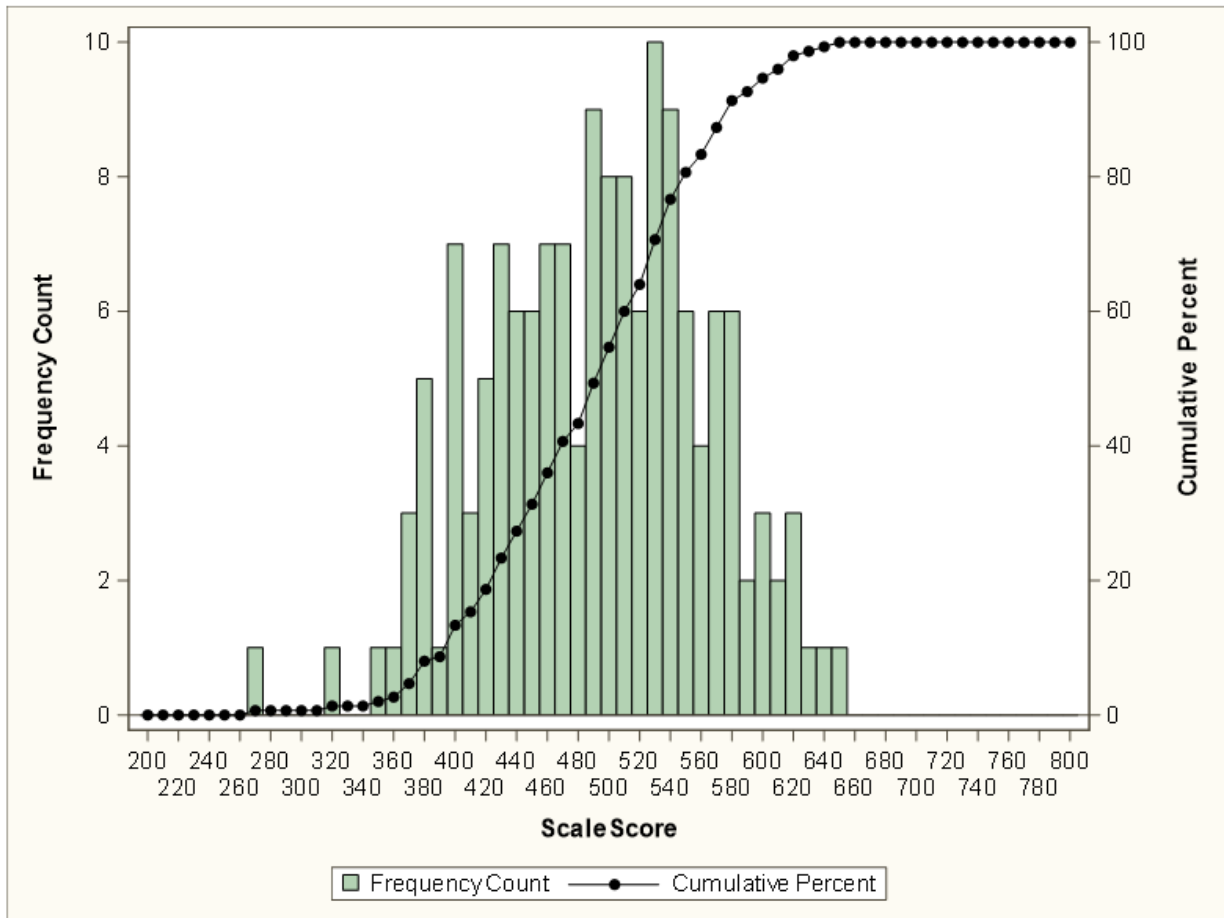
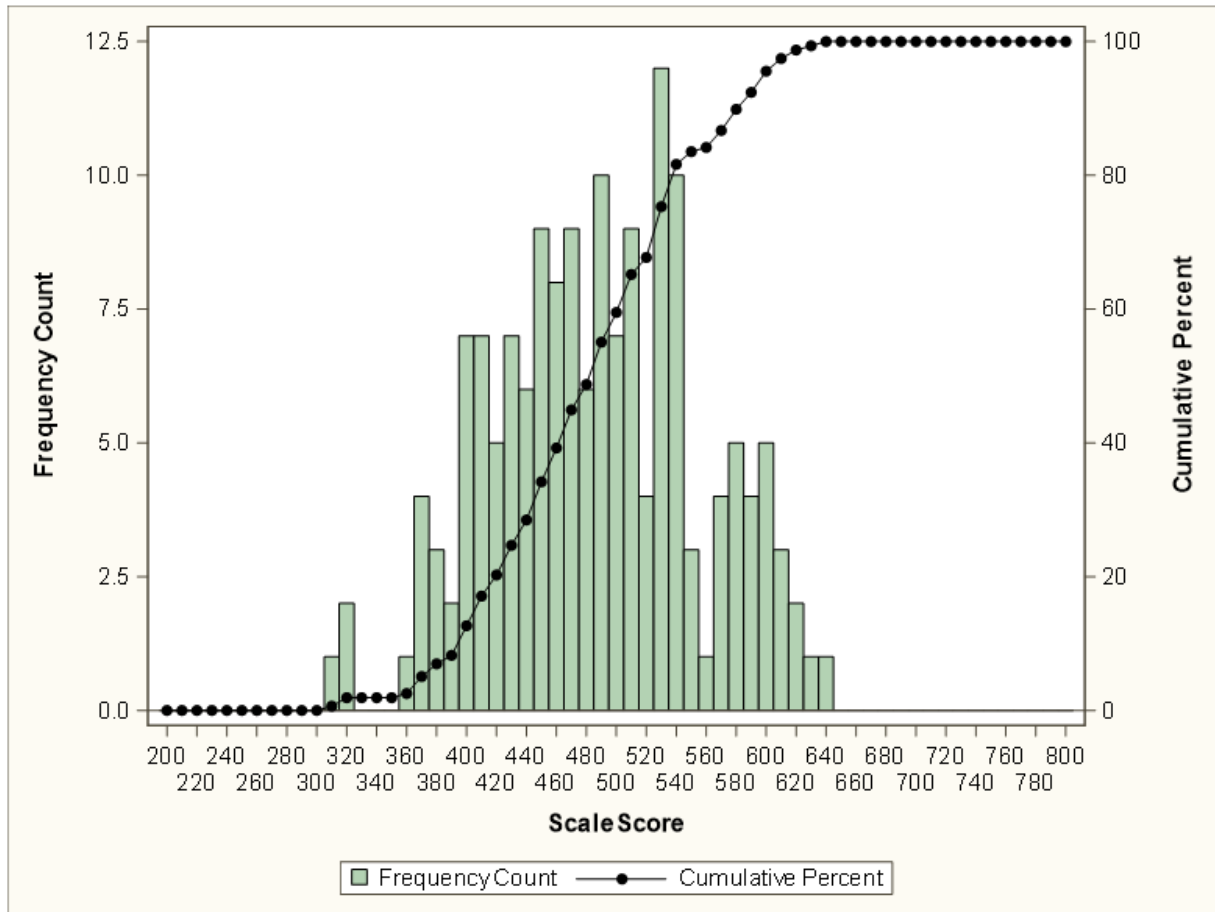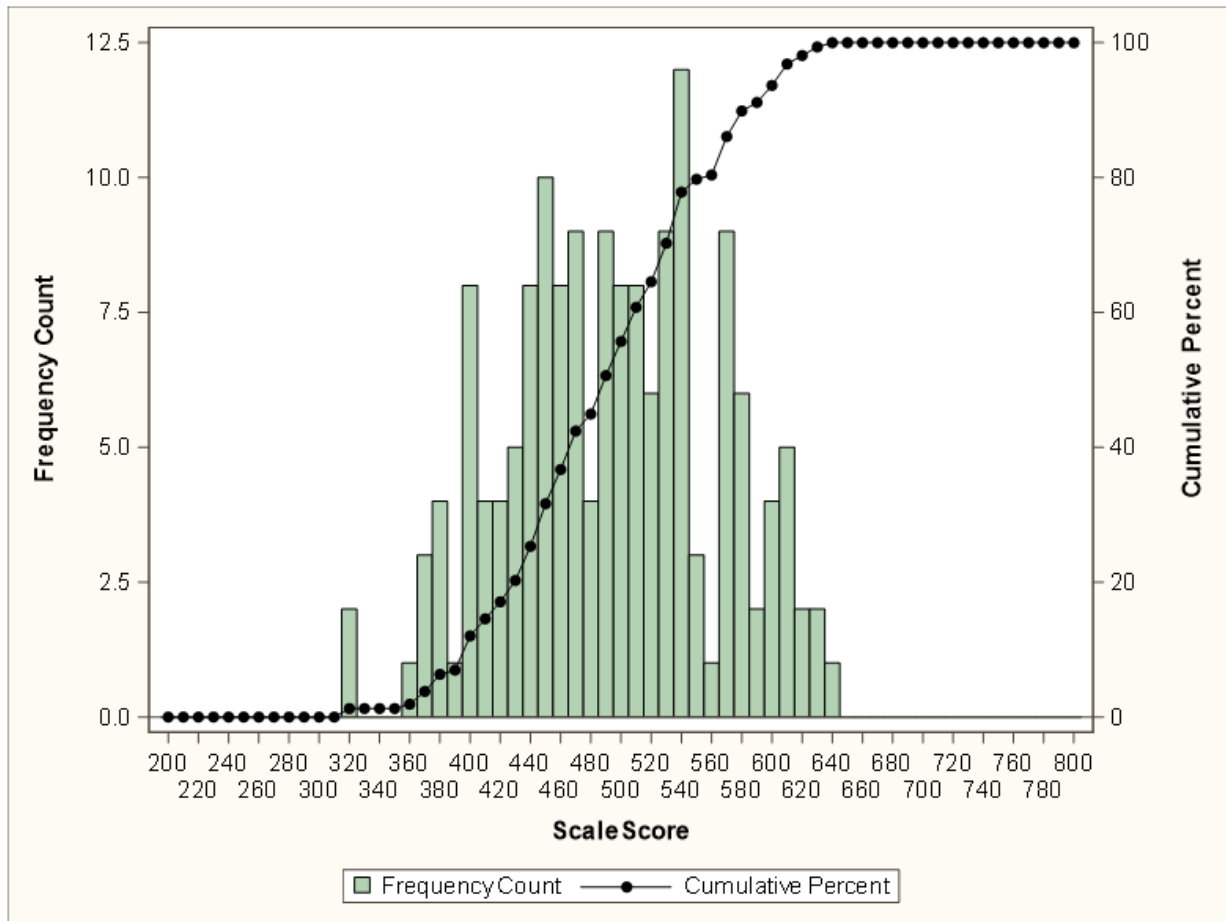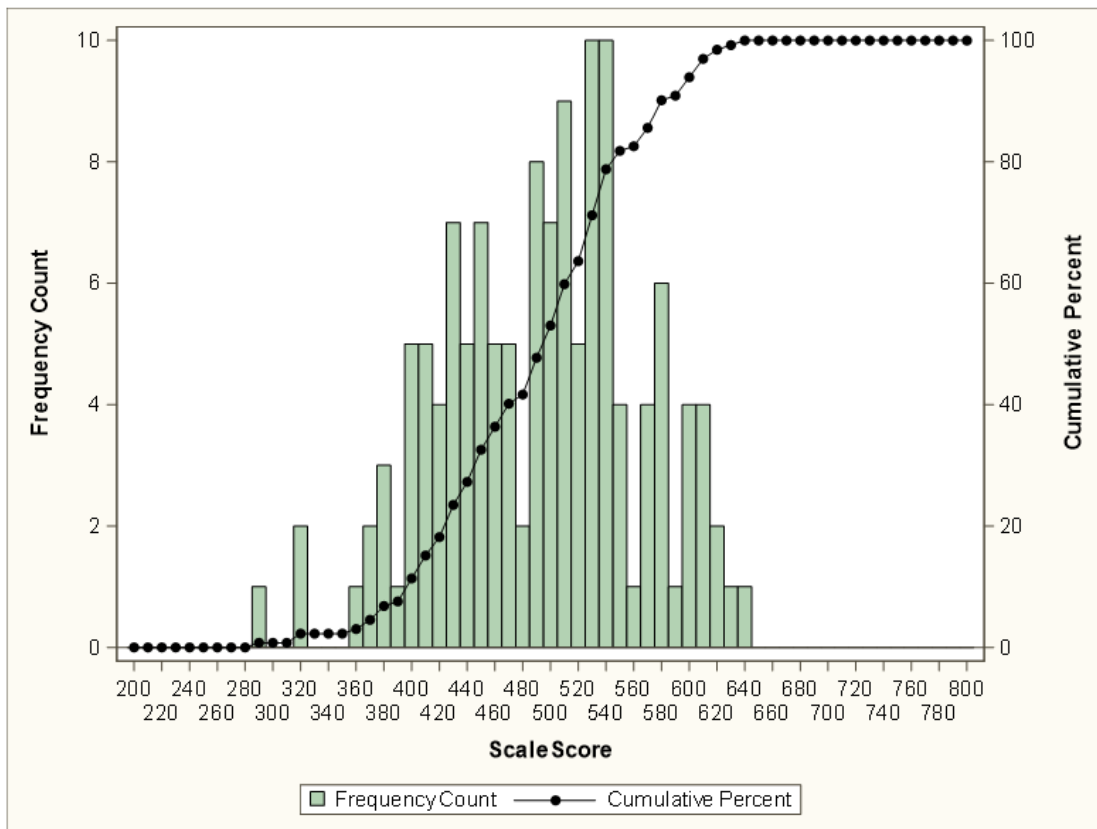*Frequency distribution for the ADAT Overall scale: 2019-2023*
Endodontics
(935 administrations)
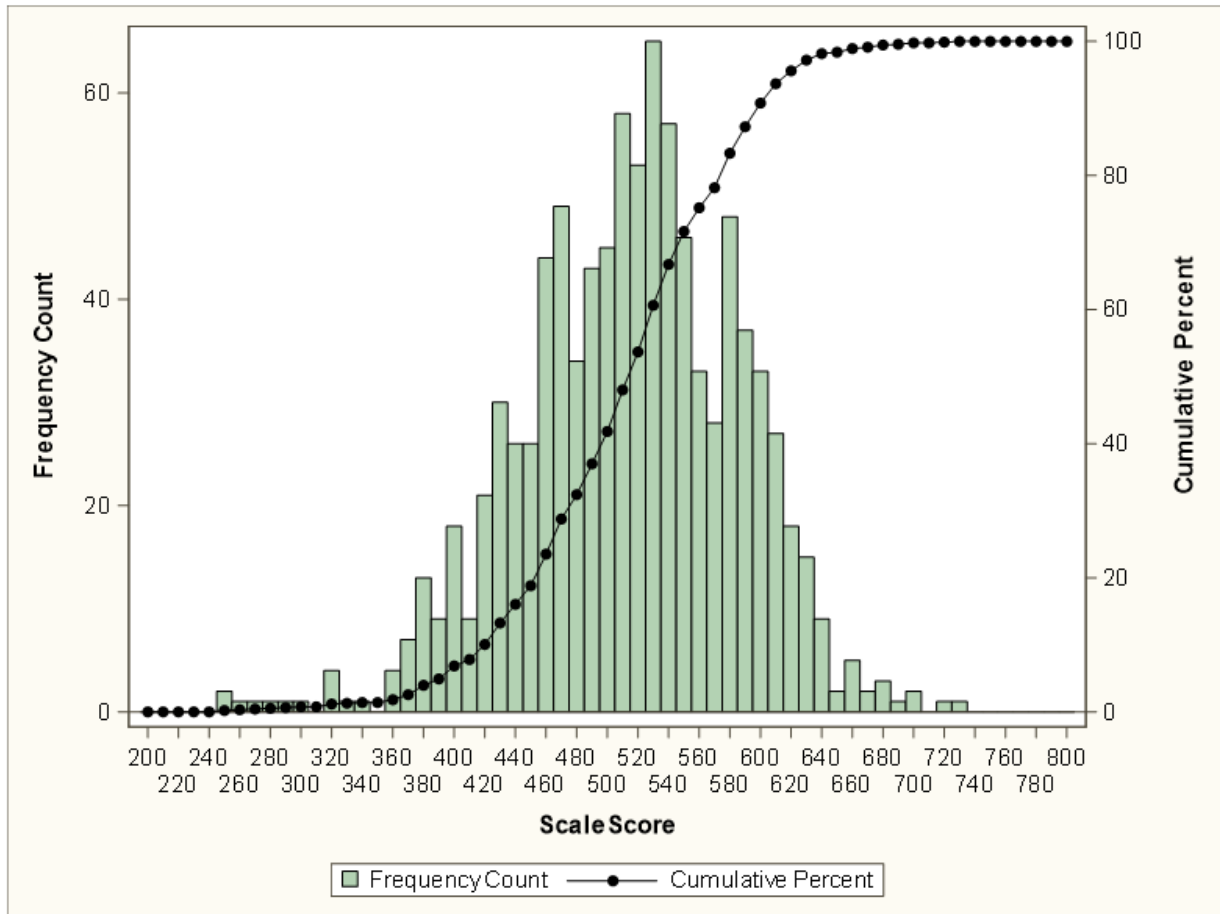
Frequency distribution for the ADAT Overall scale: 2019-2023
General Practice Residency, 12 Months
(359 administrations)
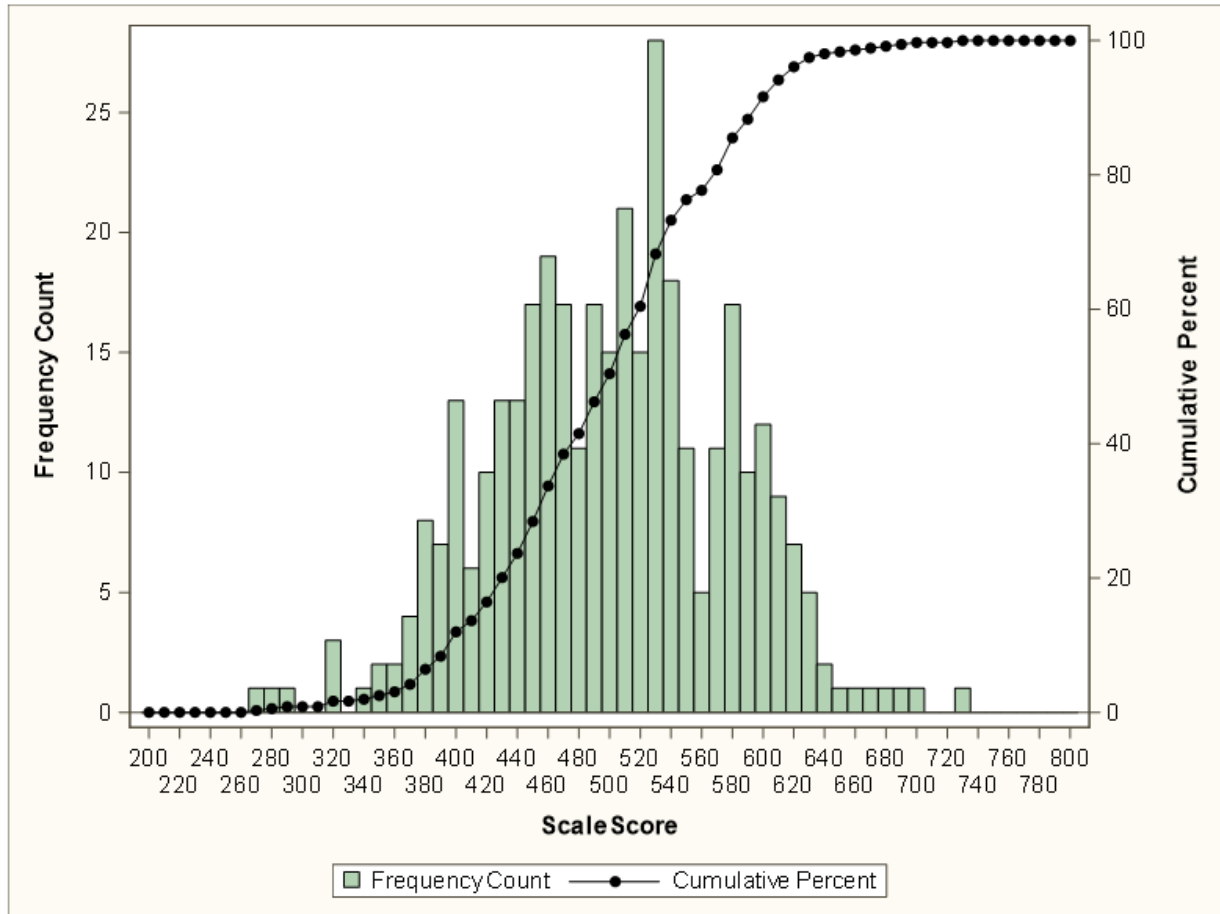
Frequency distribution for the ADAT Overall scale: 2019-2023
General Practice Residency, 24 Months
(315 administrations)
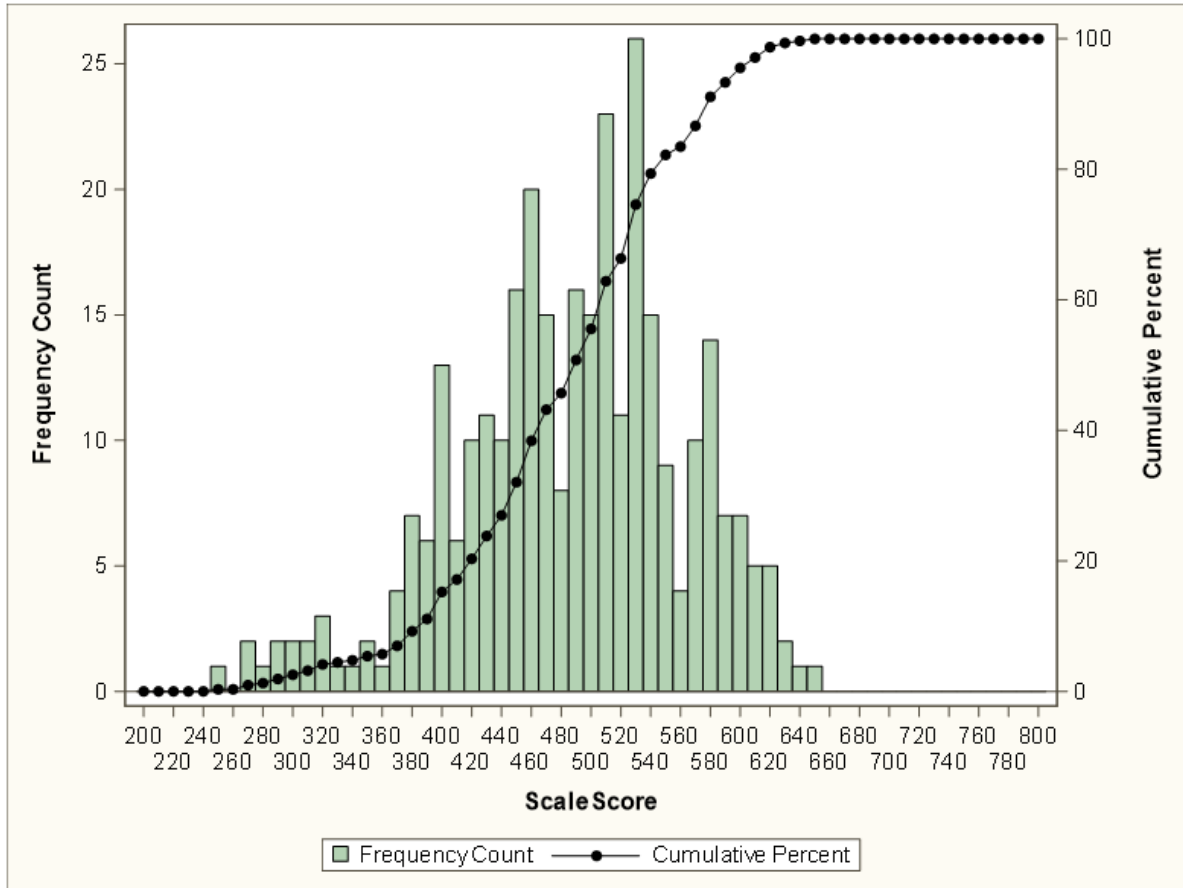
Frequency distribution for the ADAT Overall scale: 2019-2023
Oral and Maxillofacial Surgery Clinical Fellowships Cosmetic
(128 administrations)
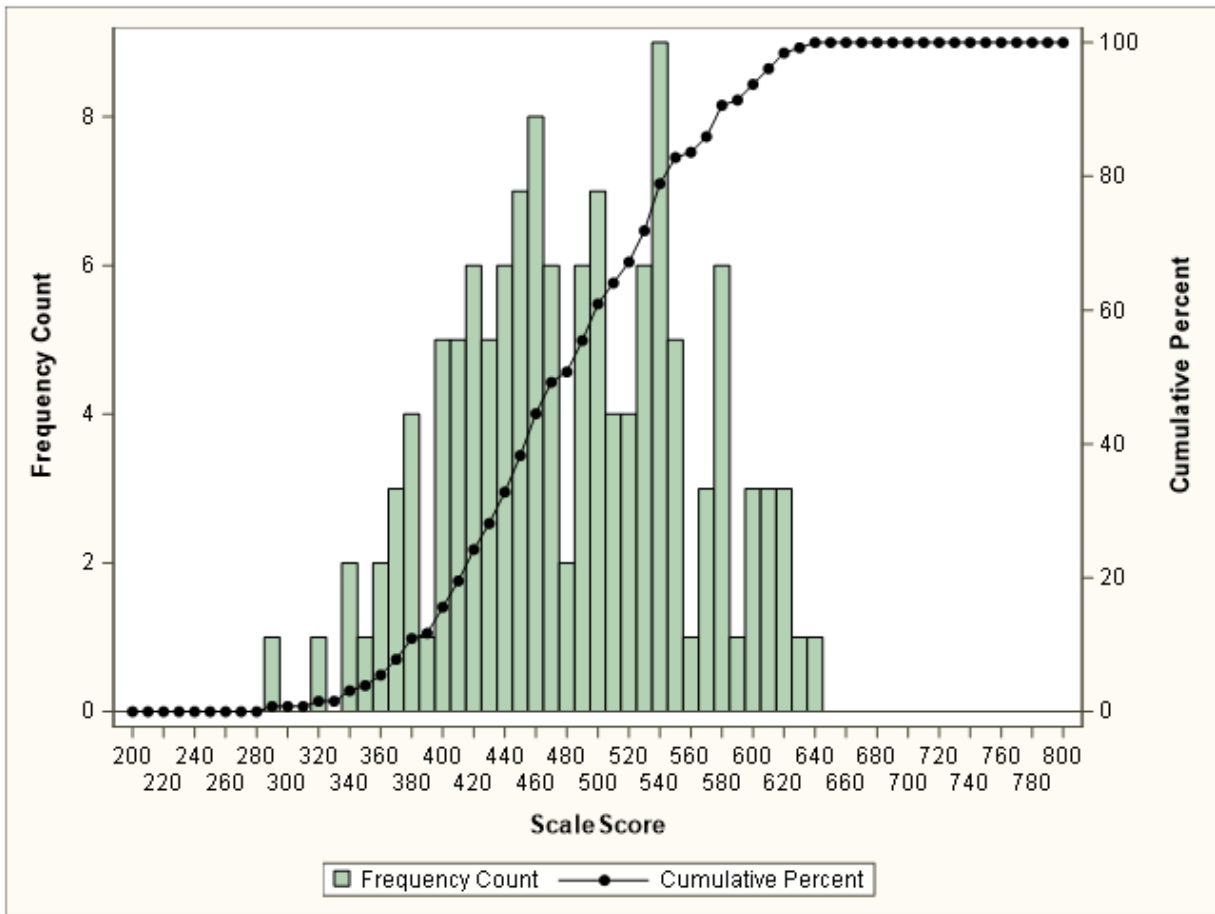
Frequency distribution for the ADAT Overall scale: 2019-2023
Oral and Maxillofacial Surgery Clinical Fellowships Craniofacial
(120 administrations)
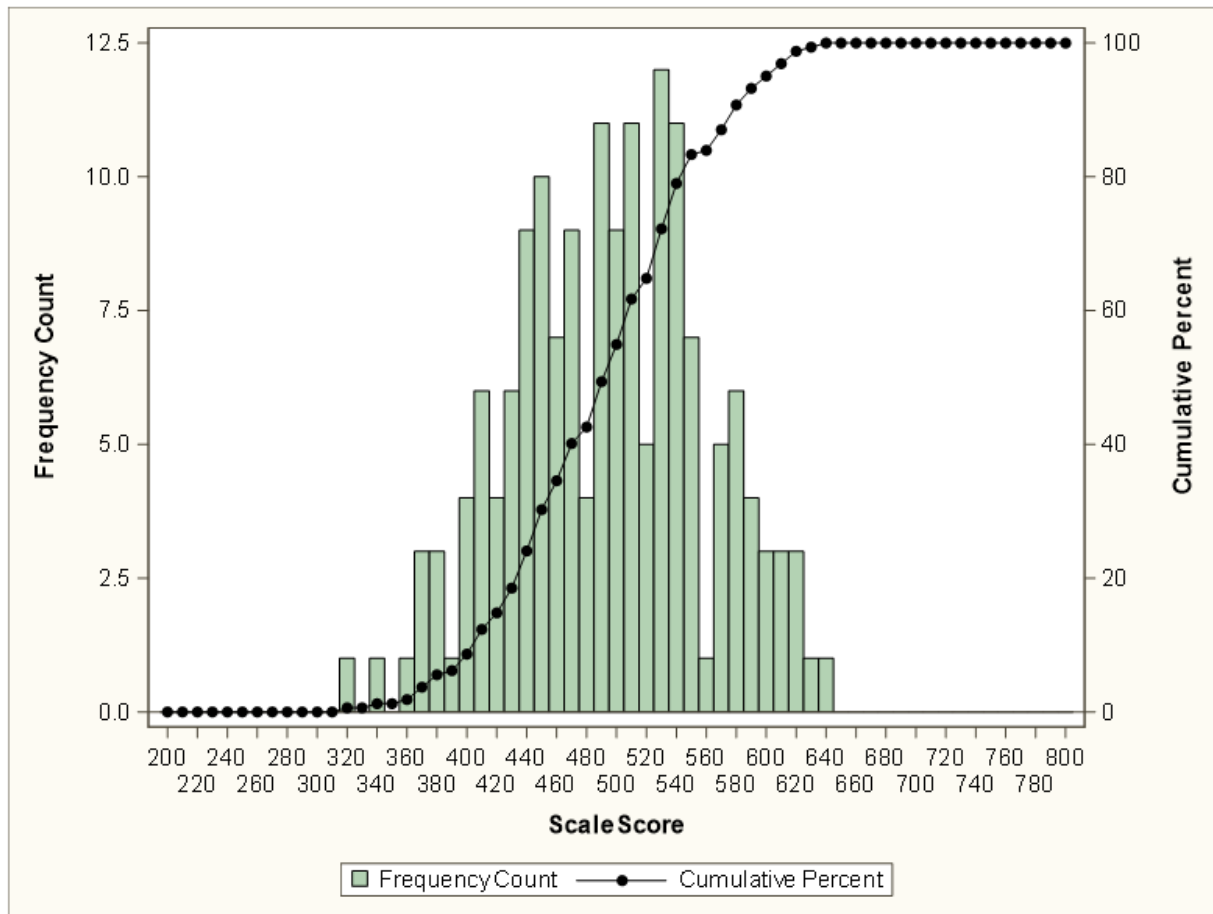
Frequency distribution for the ADAT Overall scale: 2019-2023
Oral and Maxillofacial Surgery Clinical Fellowships Oncology
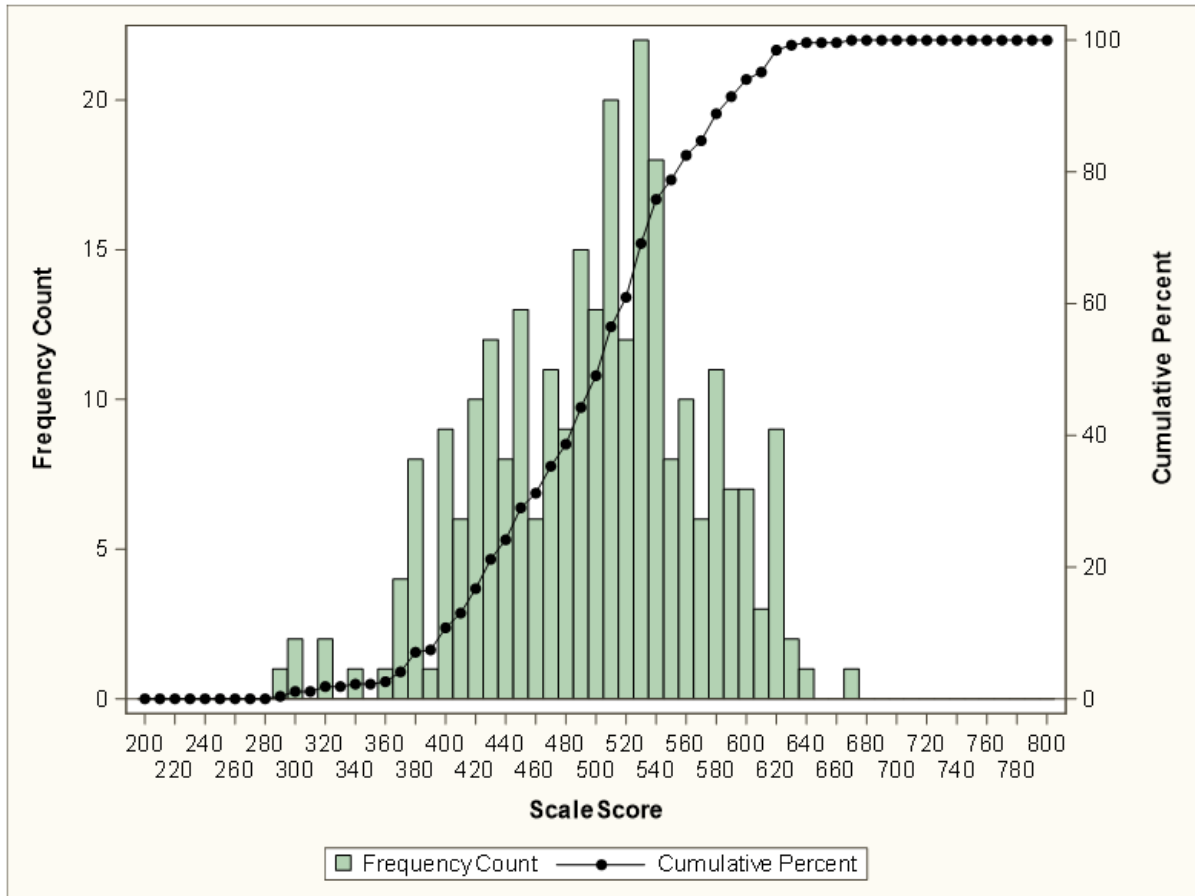*(114 administrations)*

Frequency distribution for the ADAT Overall scale: 2019-2023
Maxillofacial Prosthetics
(126 administrations)
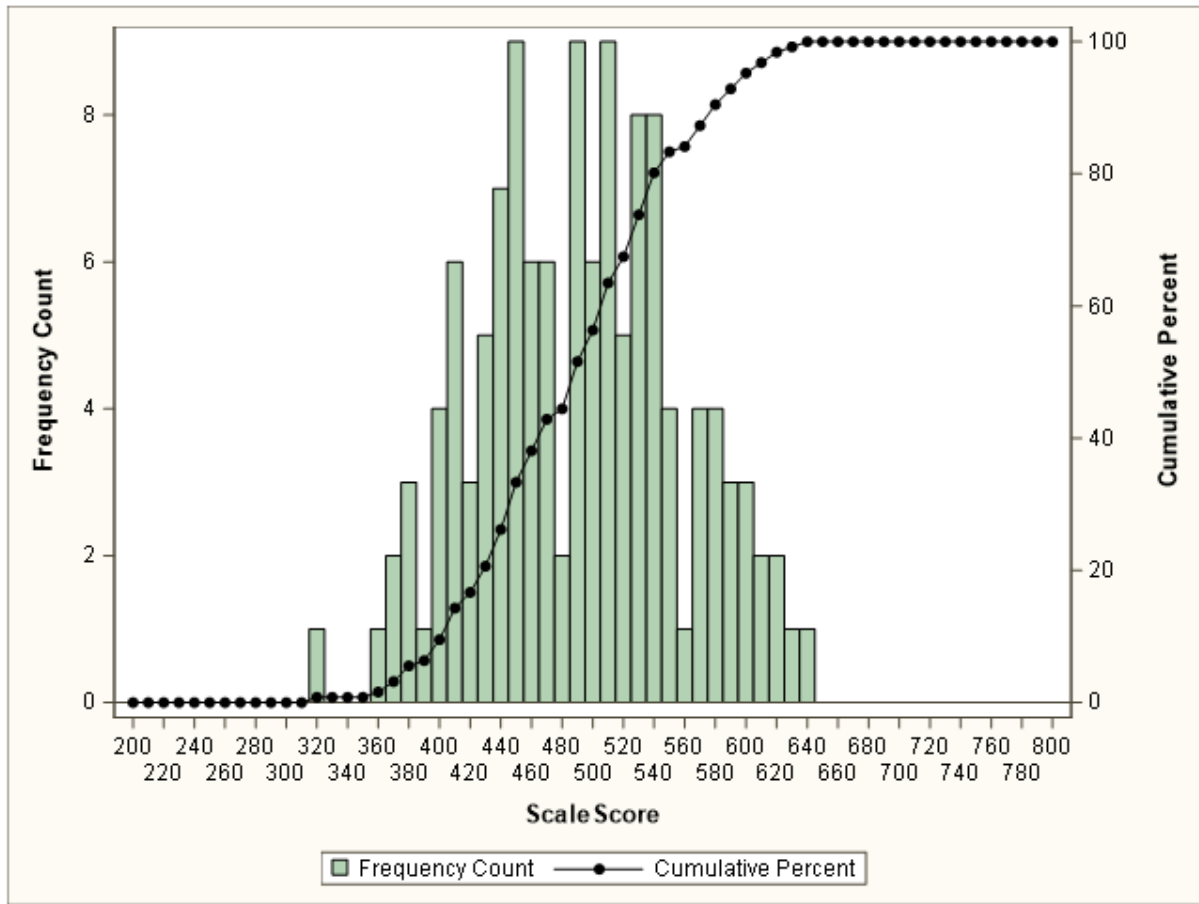
Frequency distribution for the ADAT Overall scale: 2019-2023
Prosthodontics/Maxillofacial Prosthetics
(162 administrations)
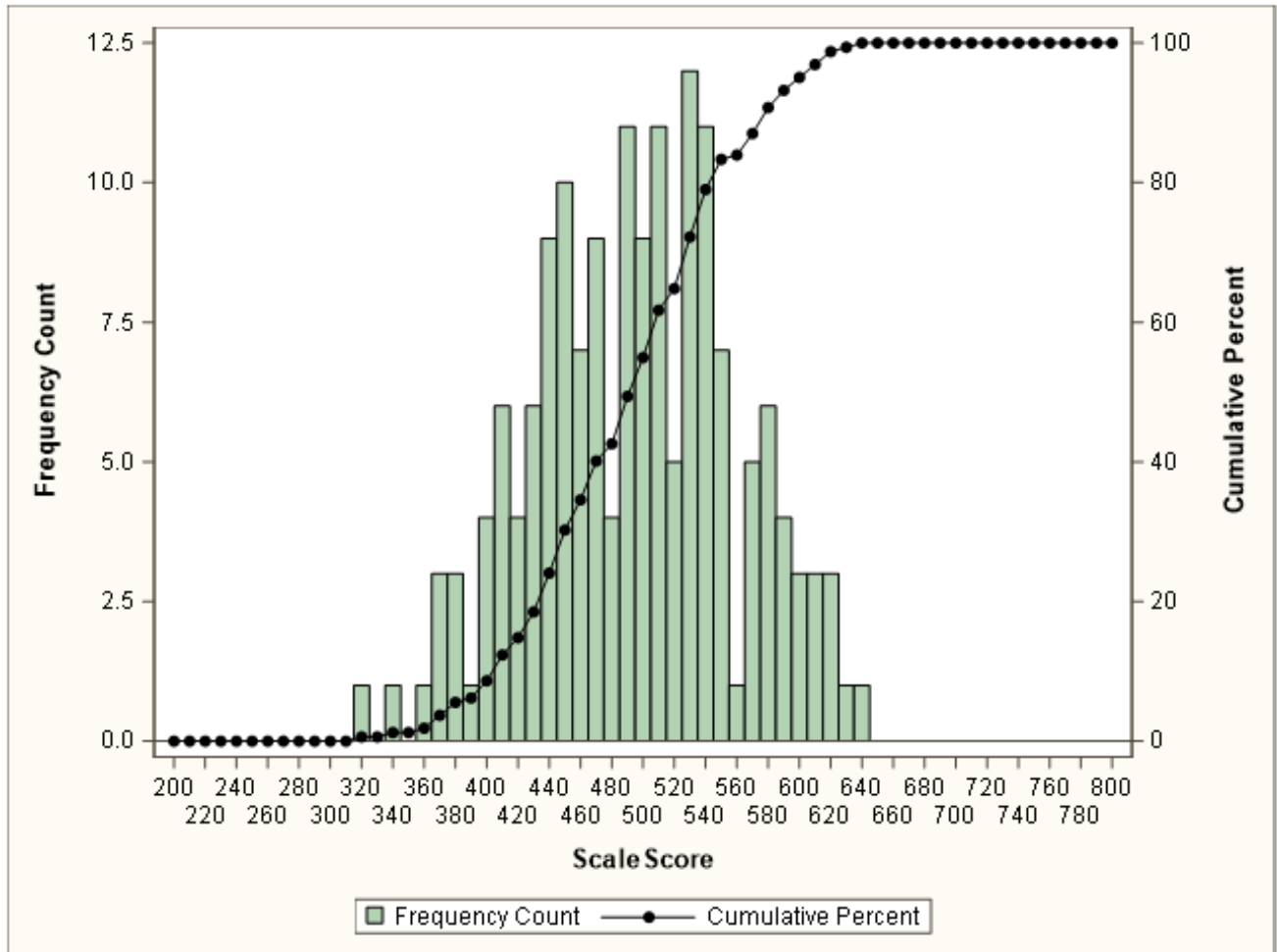
Frequency distribution for the ADAT Overall scale: 2019-2023
Oral and Maxillofacial Pathology
(128 administrations)

Frequency distribution for the ADAT Overall scale: 2019-2023
Oral and Maxillofacial Radiology
(142 administrations)
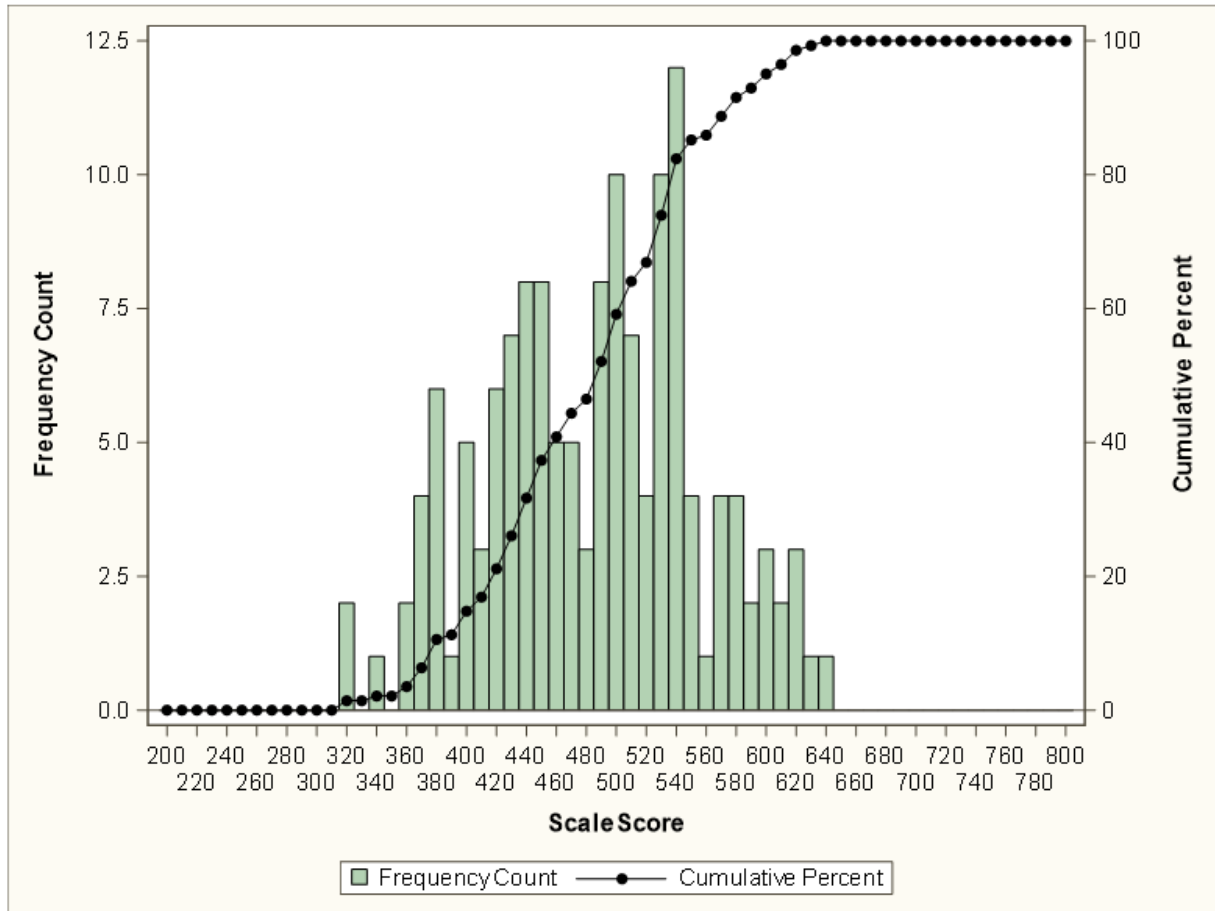
Frequency distribution for the ADAT Overall scale: 2019-2023
Oral Medicine
(158 administrations)

Frequency distribution for the ADAT Overall scale: 2019-2023
Orofacial Pain
(158 administrations)

Frequency distribution for the ADAT Overall scale: 2019-2023
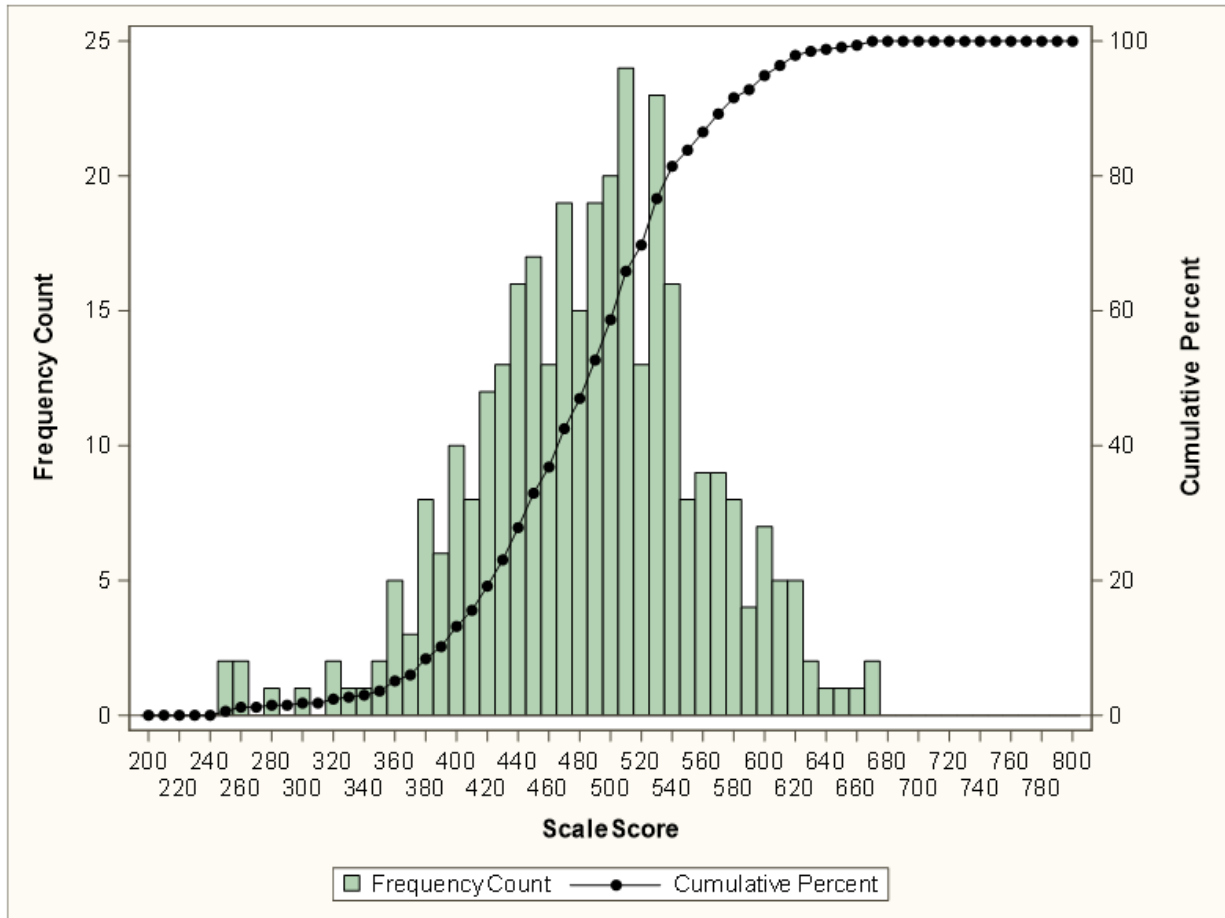*Clinical Fellowship in Craniofacial and Special Care Orthodontics*
(132 administrations)

Frequency distribution for the ADAT Overall scale: 2019-2023
Orthodontics and Dentofacial Orthopedics
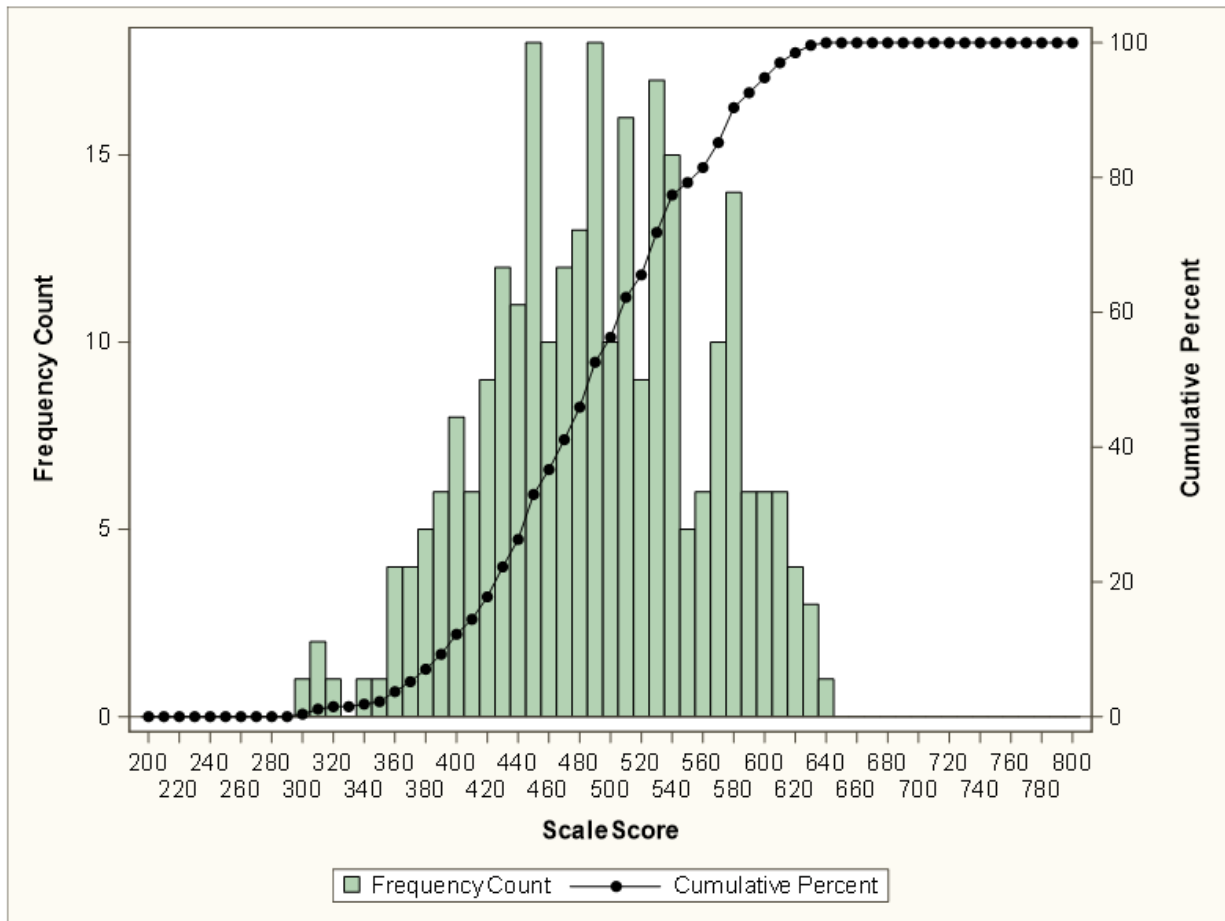*(269 administrations)*
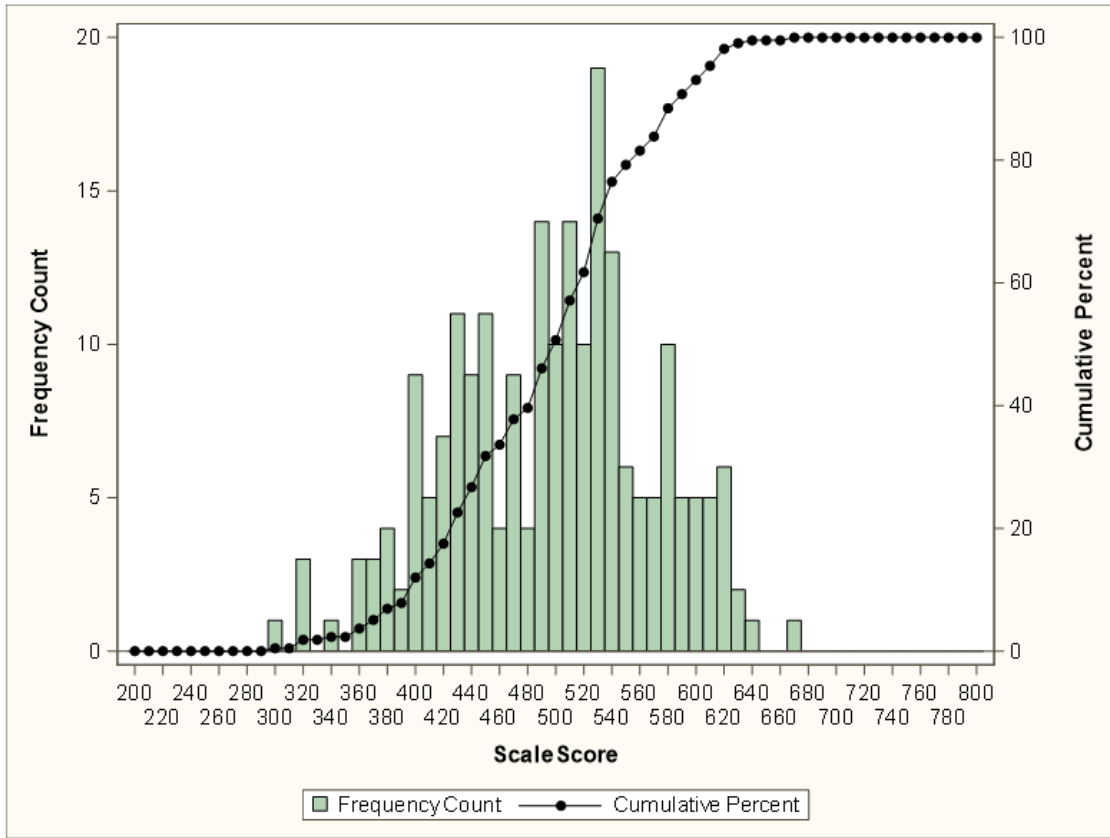
Frequency distribution for the ADAT Overall scale: 2019-2023
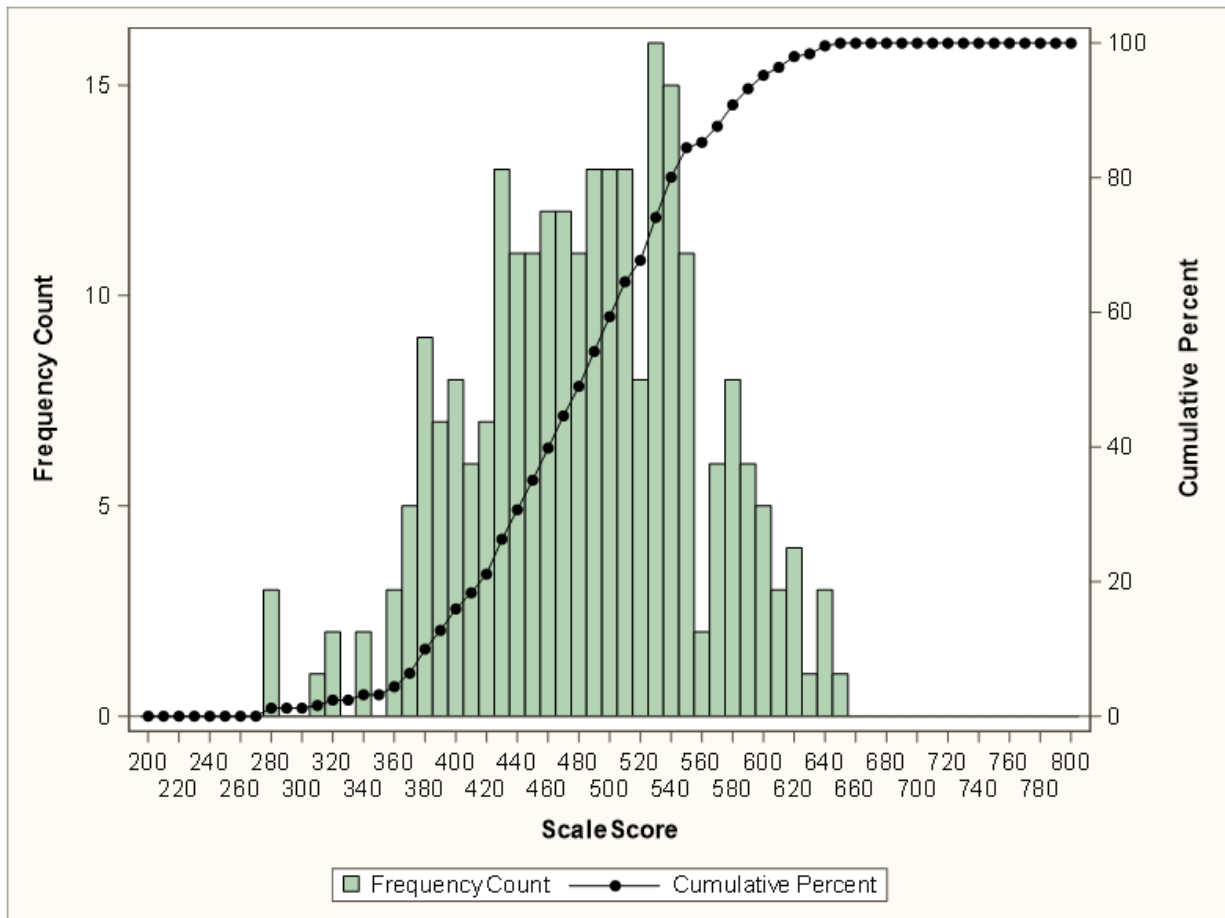*Pediatric Dentistry*
(334 administrations)

Frequency distribution for the ADAT Overall scale: 2019-2023
Periodontics
(270 administrations)

Frequency distribution for the ADAT Overall scale: 2019-2023
Prosthodontics
(251 administrations)

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Advanced Dental Admission Test Program

Department of Testing Services
211 East Chicago Avenue
Chicago, Illinois 60611- 2637

September 2023