Update on the Advanced Dental Admission Test (ADAT)
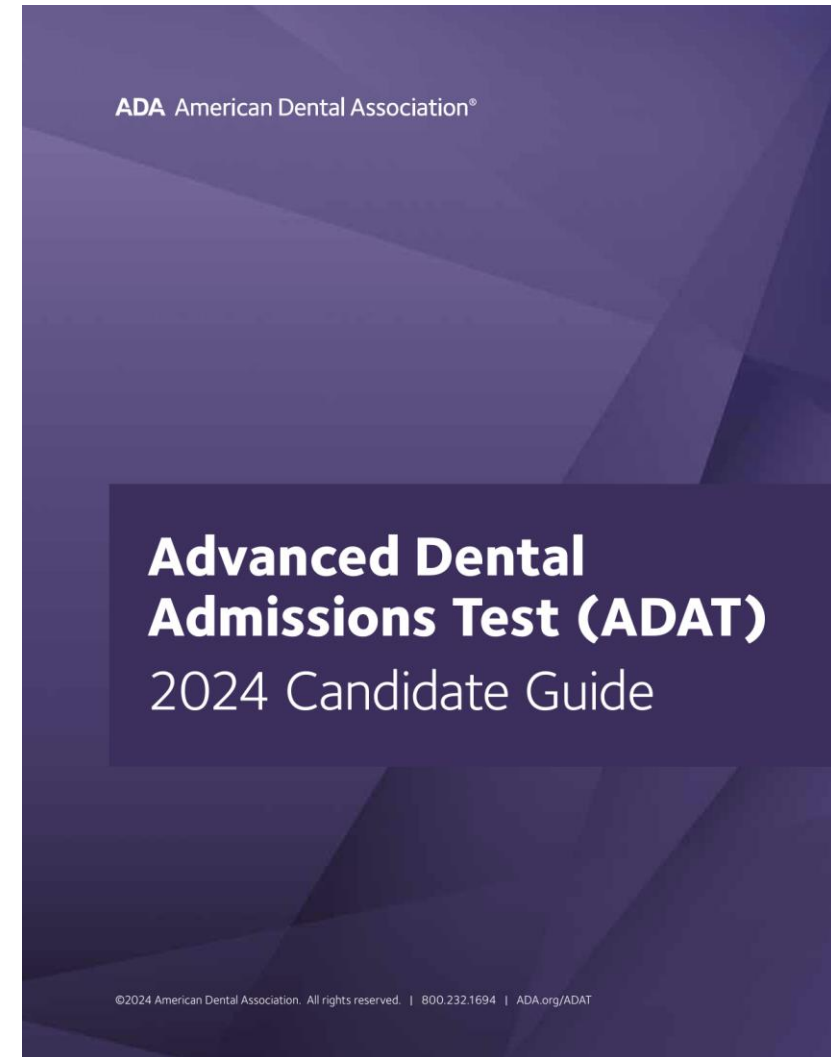
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October 30, 2024

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What is the ADAT's purpose?

- The purpose of the ADAT is to provide advanced dental education programs <u>and</u> advanced placement programs with insight into applicants' potential for success in their program.

- The ADAT helps programs select the candidates who are <u>best prepared</u> to succeed.

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Advanced Dental Admissions Test (ADAT)
2024 Candidate Guide

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What does the ADAT assess?

The ADAT assesses knowledge and skills in three key areas:

1. Biomedical Sciences
2. Clinical Sciences
3. Data, Research Interpretation, and Evidence-based Dentistry

Biomedical Sciences (80 items)
Anatomic Sciences
Biochemistry-Physiology
Microbiology-Pathology
Dental Anatomy-Occlusion

Data, Research Interpretation, and Evidence-based Dentistry (40 items)
Study Design
Data Analysis
Result Interpretation
Inference and Implication

Clinical Sciences (80 items)
Endodontics
Operative Dentistry
Oral and Maxillofacial Surgery / Pain Control
Oral Diagnosis
Orthodontics / Pediatric Dentistry
Periodontics
Pharmacology
Prosthodontics
Principles of Ethics
Patient Management
Case-based items

Key Facts

- The ADAT is administered each year from March through August (6 months).

- The examination contains 200 multiple-choice questions and requires 4.5 hours to administer.

ADAT ADMINISTRATION WINDOW	
March 1, 2024 through August 31, 2024	
ADAT ADMINISTRATION 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

Key Facts

- The ADAT is administered at Pearson VUE test centers located throughout the U.S. and Canada.

- Retesting policy
  - Candidates may test two times per calendar year.
  - Attempts must be separated by a minimum of 45 days.
  - Candidates who have taken the ADAT <u>two or more times</u> previously will be limited to one testing attempt per calendar year and will need to submit evidence that they have actively applied to advanced dental educations programs within the previous 18 months.

- 2024 Fees
  - Examination fee: $430
  - Additional ADAT score reports: $50 (per report)

ADAT Results Reporting

- ADAT candidates receive four scores:
  - **ADAT Overall**
  - Biomedical Sciences
  - Clinical Sciences
  - Data, Research Interpretation, and Evidence-based Dentistry

- The **ADAT Overall** score indicates <u>critical thinking in dentistry</u> and is a weighted average of the three discipline-based scores.
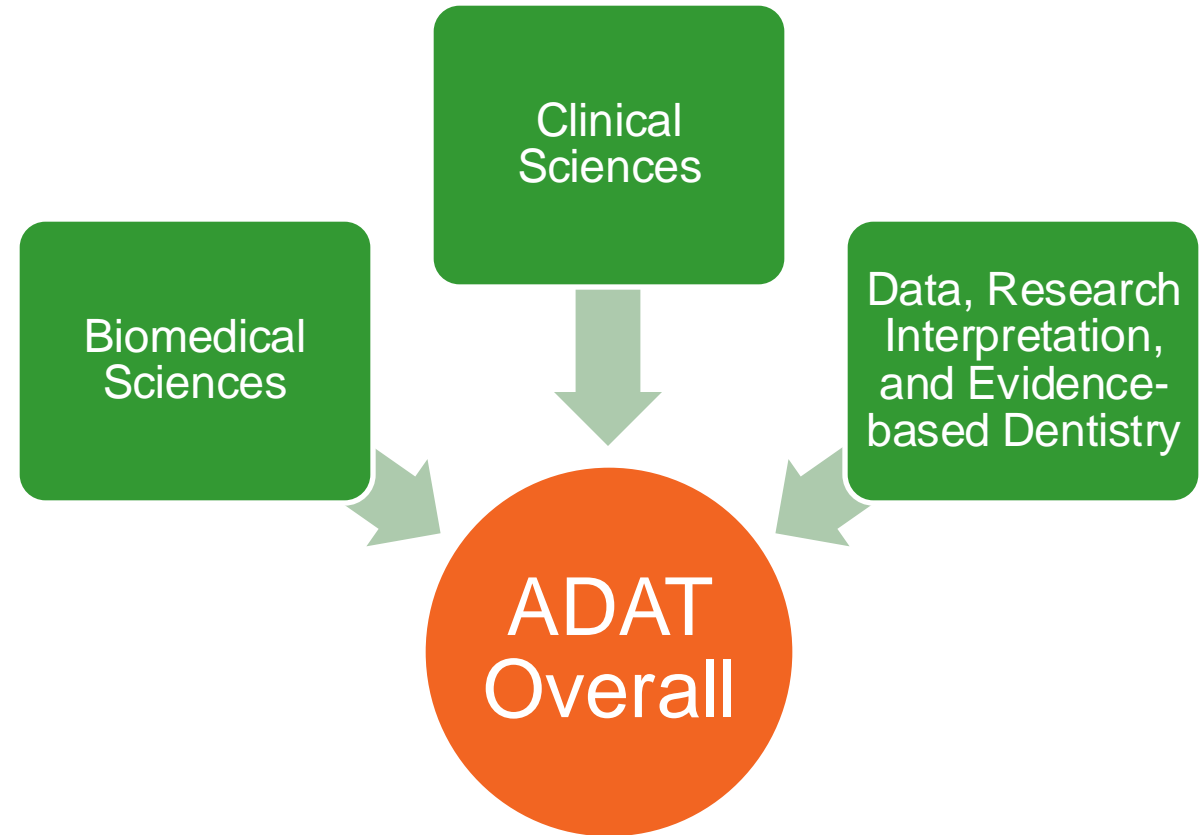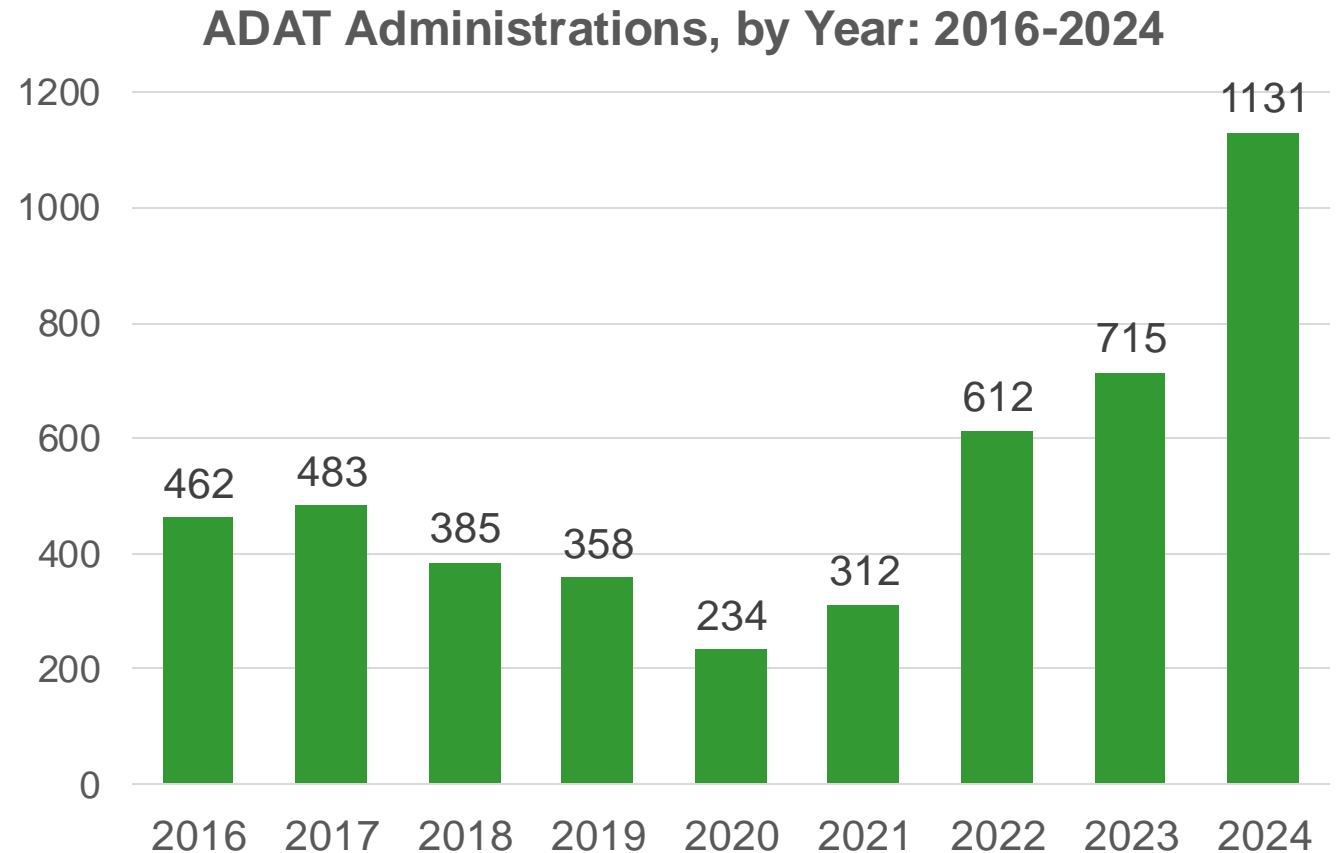
ADAT Results Reporting

- ADAT results are distributed through ADEA PASS, ADEA CAAPID, and through the Department of Testing Services (DTS) Hub
  - The DTS Hub is an online score reporting portal developed by the ADA

- ADAT results are made available within 4 weeks of a candidate's test date.
  - It's common for ADAT results to be released within <u>2 weeks</u> of the candidate's test date.

How widely used is the ADAT?

- The ADAT launched in 2016 and has just completed its ninth year.

- **More and more candidates are choosing to take the ADAT.**

- 2024 saw more ADAT administrations than any other year in the examination's history.

ADAT Administrations, by Year: 2016-2024

Year	Administrations
2016	462
2017	483
2018	385
2019	358
2020	234
2021	312
2022	612
2023	715
2024	1131

How widely used is the ADAT?

- Most advanced dental education programs currently accept ADAT results; many programs <u>require</u> them.

- The ADA thanks those programs who have championed the ADAT and require its usage. This really helps the success of the ADAT program!

<u>Source</u>: 2019 and 2023 surveys of advanced dental education programs.
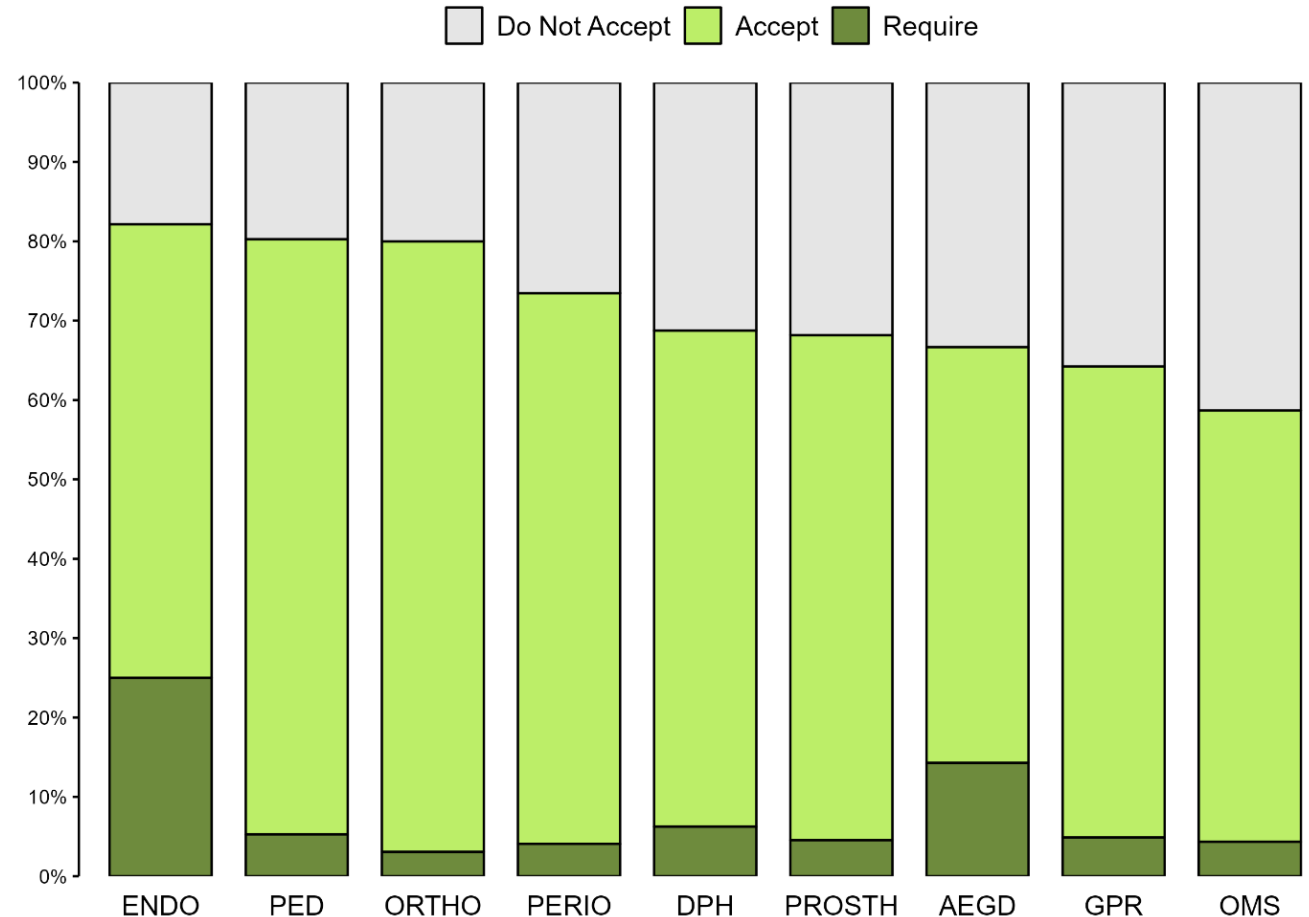
How are advanced programs using ADAT results?

- Advanced programs make their own decisions about how to use ADAT results.

- Some programs <u>require</u> all applicants to submit ADAT scores.
  - This provides these programs with a standardized data point they can use to compare applicants from different pre-doctoral education programs.

- Some programs don't require ADAT results but consider them if they are submitted.
  - "If ADAT result is there I will look at it."

- Some programs use ADAT results only in certain prescribed situations.
  - "I will use this information if it helps to qualify candidates."
  - "Would use testing where applicants do not have class ranks or grade point averages."

Advanced programs see value in ADAT results

- The ADA has received valuable positive feedback on the ADAT from many advanced dental education programs:

"The ADAT test has the potential to be very helpful for decision makers, and especially for evaluating candidates from schools without ranking or formal grading practices."

"Considering using the ADAT because many institutions have gone to P/F and no class ranking. No data to rank candidates."

"The data seems promising and the program will in the near future consider mandating ADAT in applications."

"Looking forward to seeing how we can use this for our Qualifying Program applicants."

"Will be considering requiring ADAT [in] the future."

"We use ADAT when they are available as a quantitative measure relative to other candidates and relative to a scoring benchmark to assess student performance. GRE scores, which are required by most programs, are used more frequently due to the more widespread availability. As schools become more Pass/Fail, we lack any measure of quantitative measures to evaluate student performance, so any exam results are of assistance to narrow down the applicant pool."

Why should programs <u>require</u> the ADAT?

- ADAT scores provide a reliable, valid, fair, and **<u>standardized</u>** data point that programs can use to compare applicants from different pre-doctoral education programs (e.g., programs that use pass/fail grading, are <u>not</u> accredited by CODA, and/or are experiencing grade inflation).

- A program benefits most when ADAT scores are available for <u>every</u> applicant.

- ADA continues to recommend that ADAT results be part of a holistic admissions framework.

ADAT vs. INBDE

- ADAT scores help admissions officers differentiate between high-performing applicants.
  - i.e., The ADAT contains challenging content that can separate strong applicants from <u>extremely strong</u> applicants.

- The Integrated National Board Dental Examination (INBDE) is **<u>not</u>** designed to differentiate between high-performing candidates.
  - The INBDE is designed to identify candidates who lack the <u>minimum</u> level of knowledge and skills required for the safe practice of general dentistry.

- The ADAT is the stronger tool for identifying the candidates who are <u>best prepared</u> for advanced education or advanced placement.

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ADAT candidates report positive experiences

- ADAT candidates continue to report positive test-taking experiences.

- The vast majority of candidates (94%) indicate the Pearson VUE test centers are conveniently located.

How convenient or inconvenient was the location of the test center?
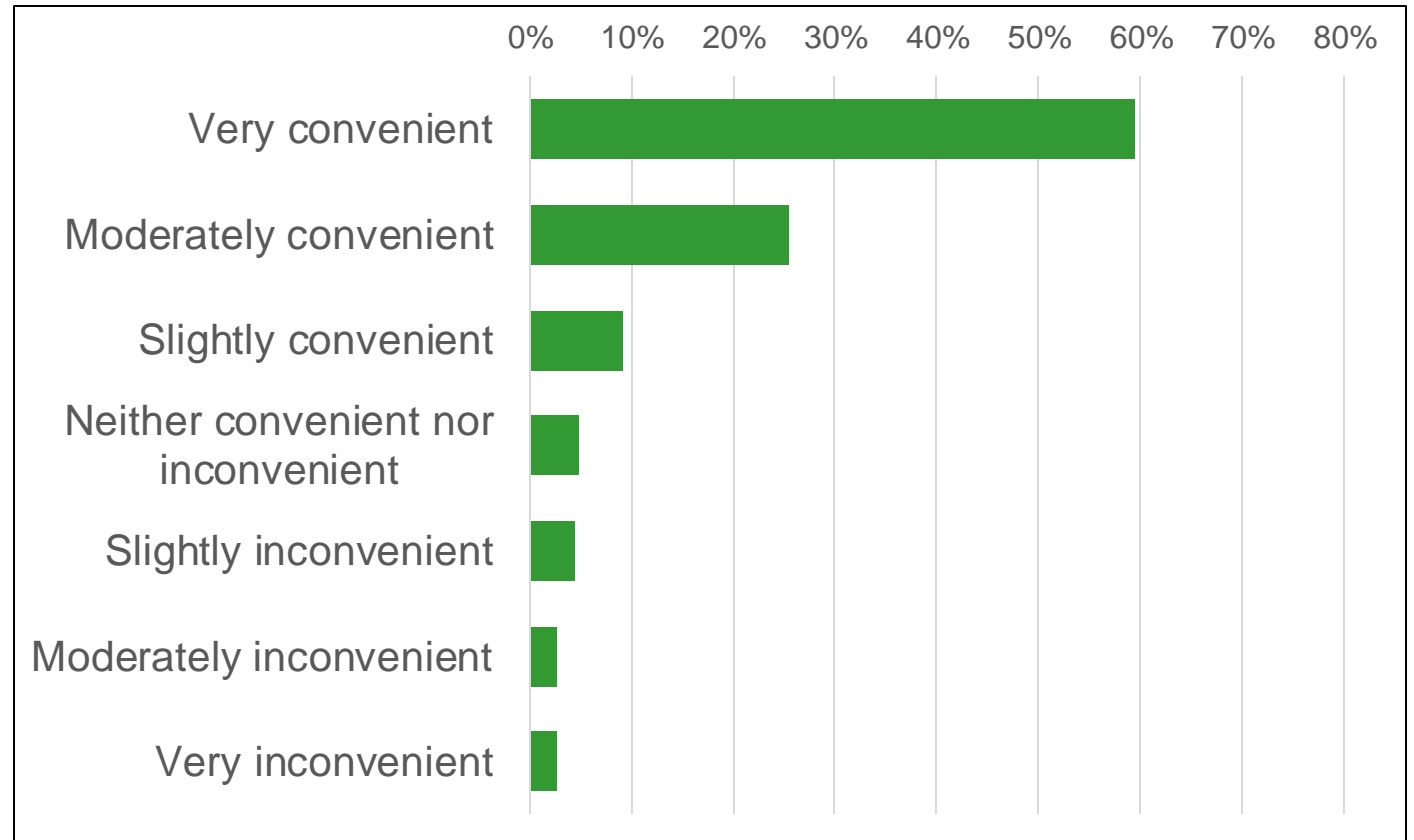
ADAT candidates report positive experiences

- 95% of ADAT candidates indicate they are satisfied with the Pearson VUE testing environment.

How satisfied or dissatisfied were you with the environment in which you took the test?

ADAT candidates report positive experiences
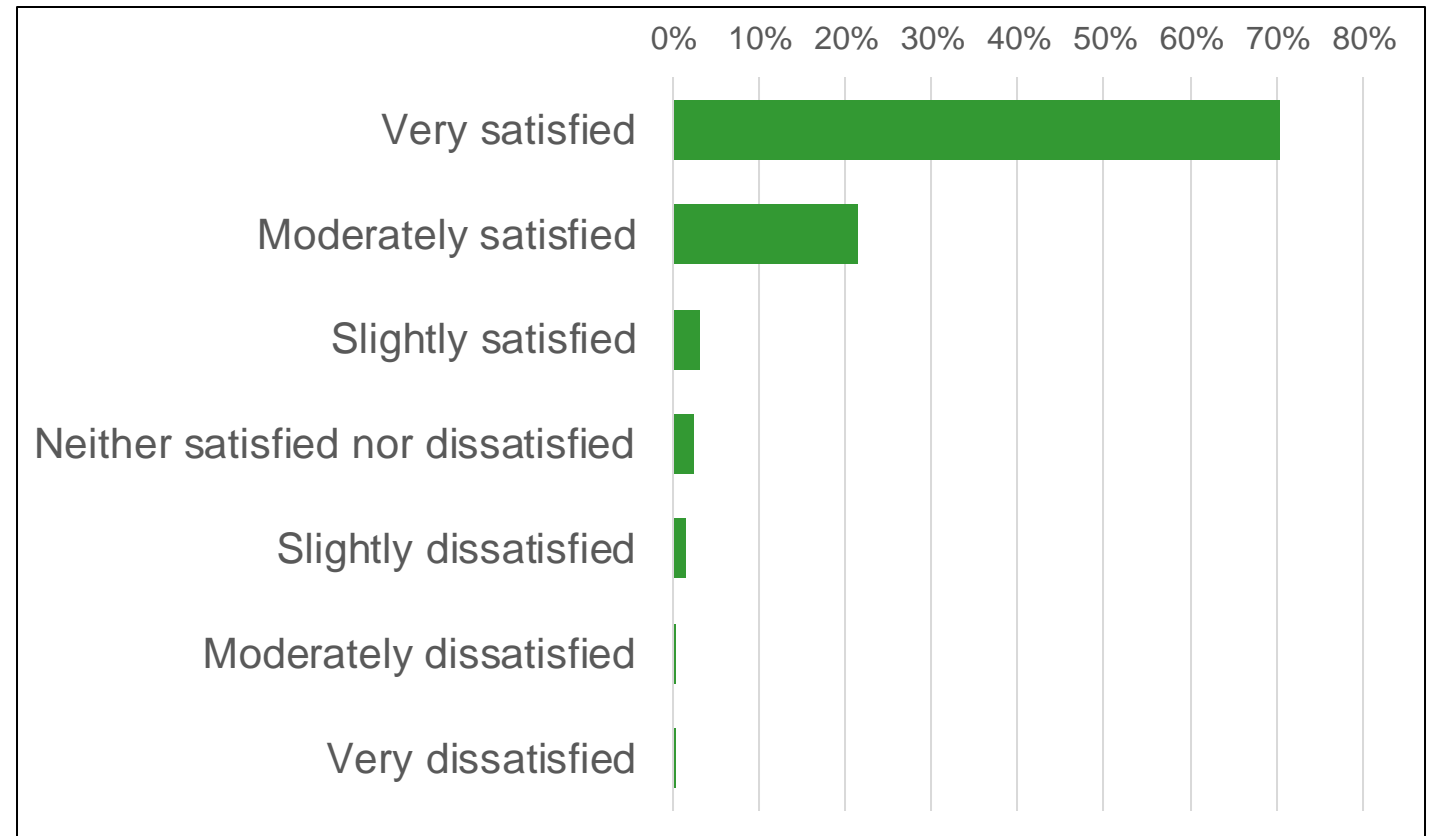
- 80% of ADAT candidates indicate the examination questions are effective at assessing their knowledge and skills.

How effective or ineffective do you think the test questions were at assessing your knowledge and skills?

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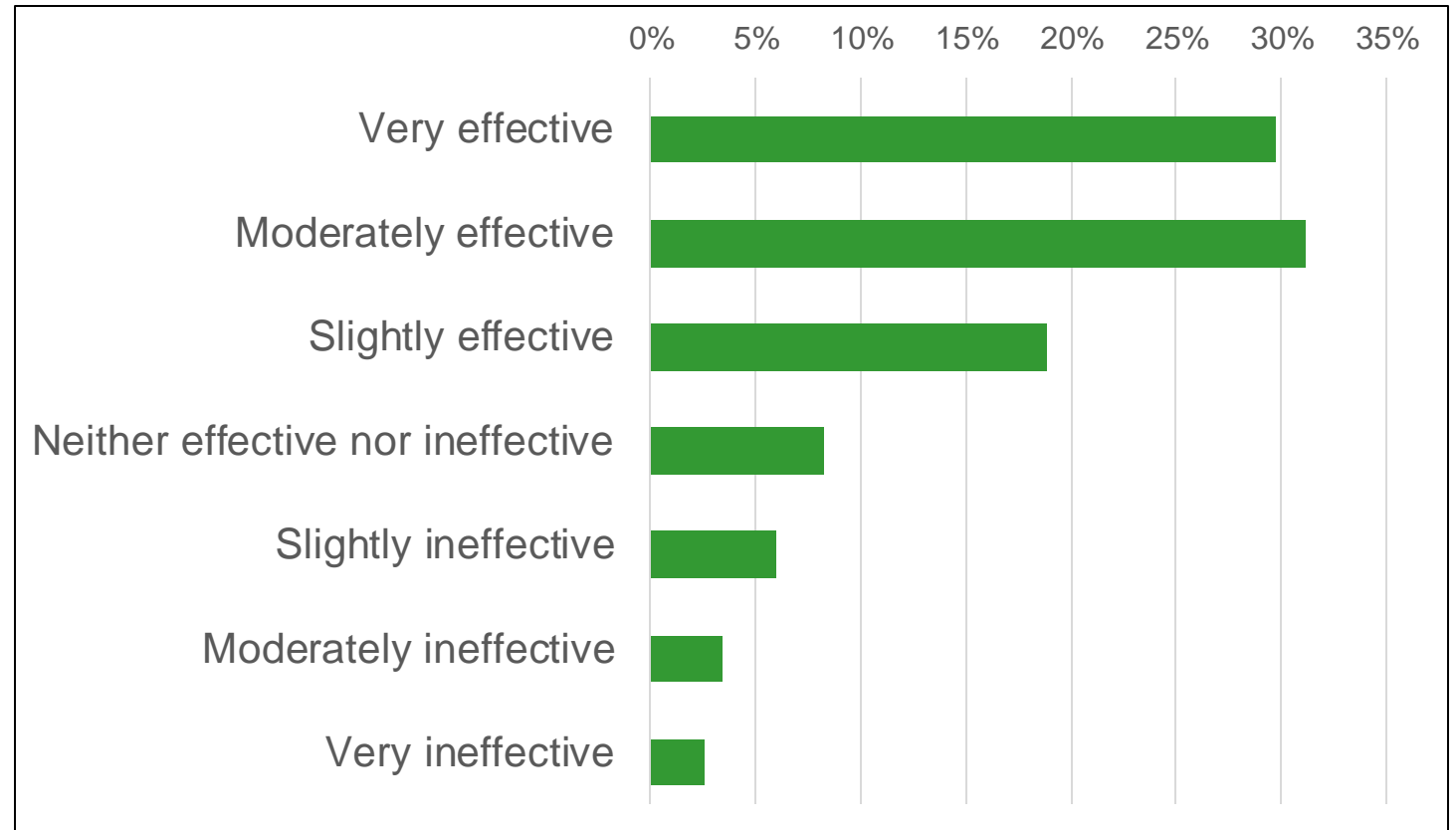
What ADAT resources are available?

- Additional information about the ADAT is available on the ADAT website www.ada.org/adat
  - Candidate Guide
  - User's Guide
  - Free Sample Questions
  - FAQs
  - Past presentations
  - Program tracker
  - Volunteer Test Constructor application

Advanced Dental Admission Test (ADAT)

The ADAT is for anyone interested in advanced dental education programs, post-graduate training, or advanced standing in pre-doctoral programs. Learn how to apply and prepare.

About ADAT

The Advanced Dental Admission Test (ADAT) is used by 400+ advanced dental education programs to assess applicants' potential for success. The test takes 4.5 hours to complete and is offered at test centers throughout the U.S. and Canada.

Accepted by	Offered at	Test Time	Available	Topics Include
Over 400 programs	Pearson VUE Test Centers in the U.S. and Canada	4 hours and 30 minutes	3/1/2022 until 8/31/2022	• Biomedical Sciences • Data • Research Interpretation • Evidence-Based Dentistry

Overview

- Interpreting ADAT results

- Summary of ADAT validity evidence

- Concluding thoughts

Need help understanding ADAT scores?

- The **ADAT User's Guide** provides information that helps admissions officers and candidates interpret ADAT scores.

- A new edition of the User's Guide is published each year. The 2024 edition is now available on the ADAT website under *Frequently Asked Questions.*

  www.ada.org/ADAT

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Advanced Dental Admission Test (ADAT)
User's Guide

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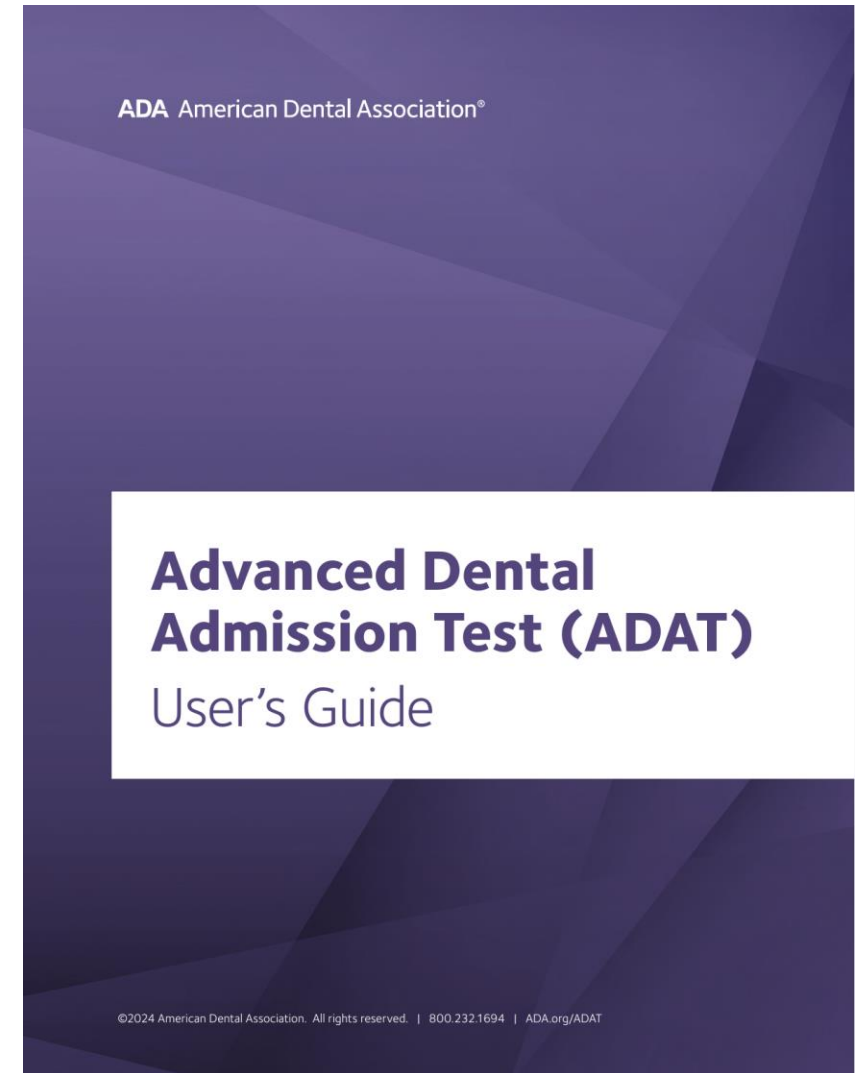
Need help understanding ADAT scores?

- The **ADAT User's Guide** provides:
  - Information about ADAT content and scoring
  - Descriptive statistics for ADAT scores
    - Averages
    - Standard deviations
  - Graphs to help users visualize candidate performance on the ADAT
  - Percentiles corresponding to different ADAT scores
  - General guidance

NORMAL DISTRIBUTION
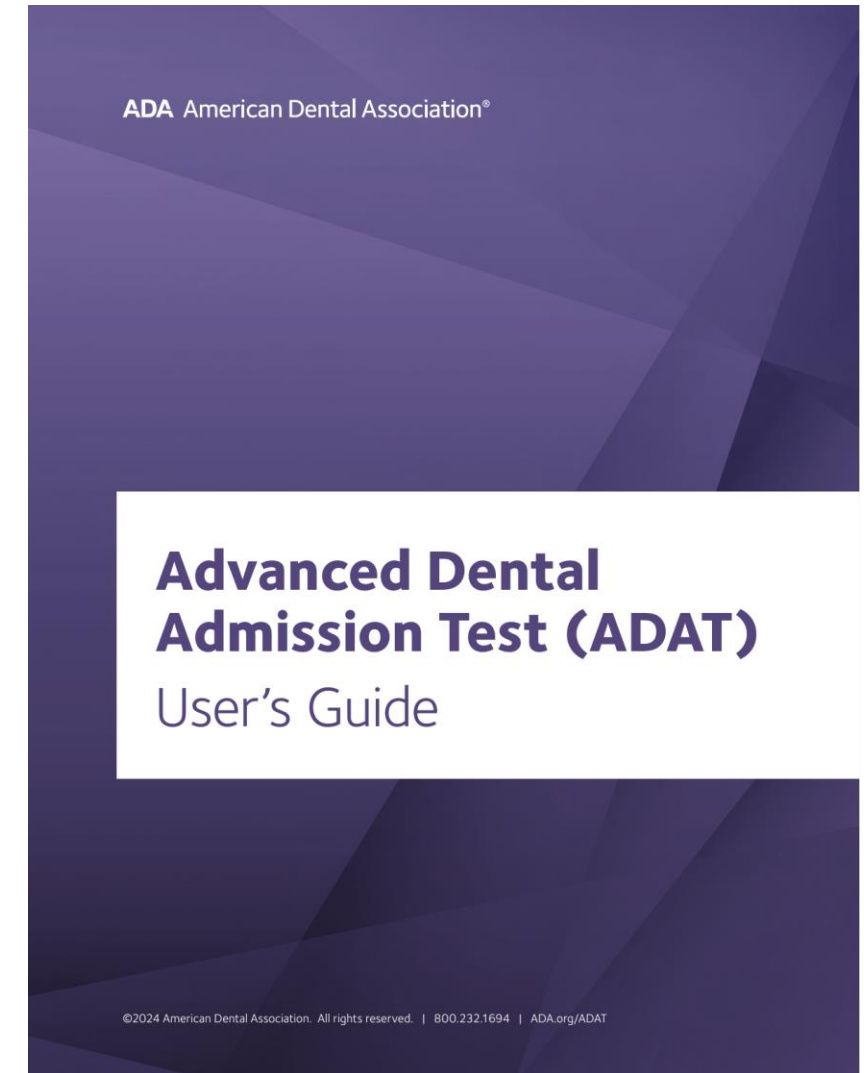
First, some basic statistical concepts ...

PARANORMAL DISTRIBUTION
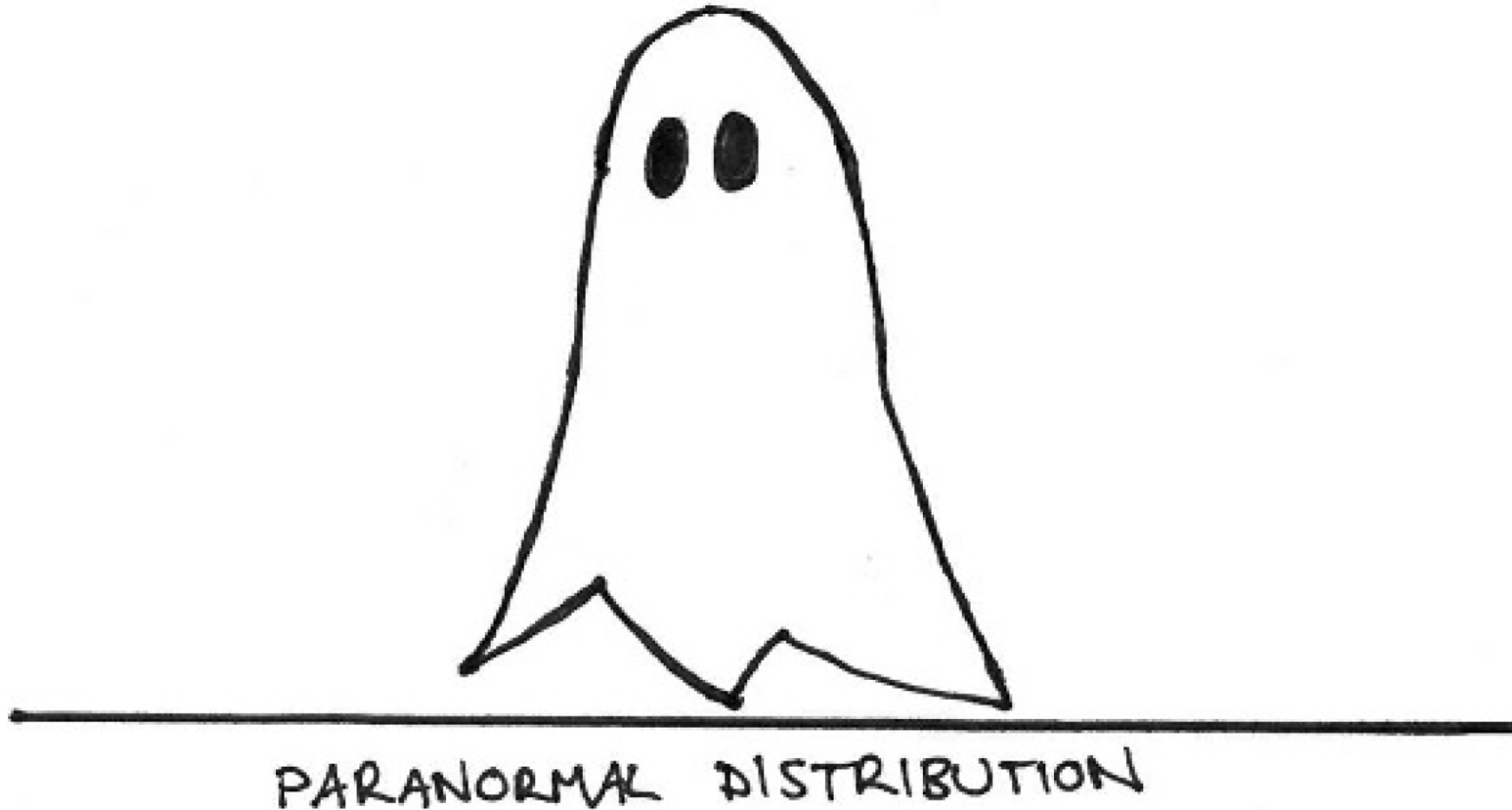
Freeman M. A visual comparison of normal and paranormal distributions. J Epidemiol Community Health 2006 January; 60(1): 6.

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What was the average ADAT score in 2024?

Descriptive Statistics for ADAT Scores: 2024

Reporting Area	Average	St. Dev.
ADAT Overall	**491**	**81**
Biomedical Sciences	495	96
Clinical Sciences	490	89
Data, Research Interpretation, and Evidence-based Dentistry	486	82

Source: 2024 ADAT User's Guide

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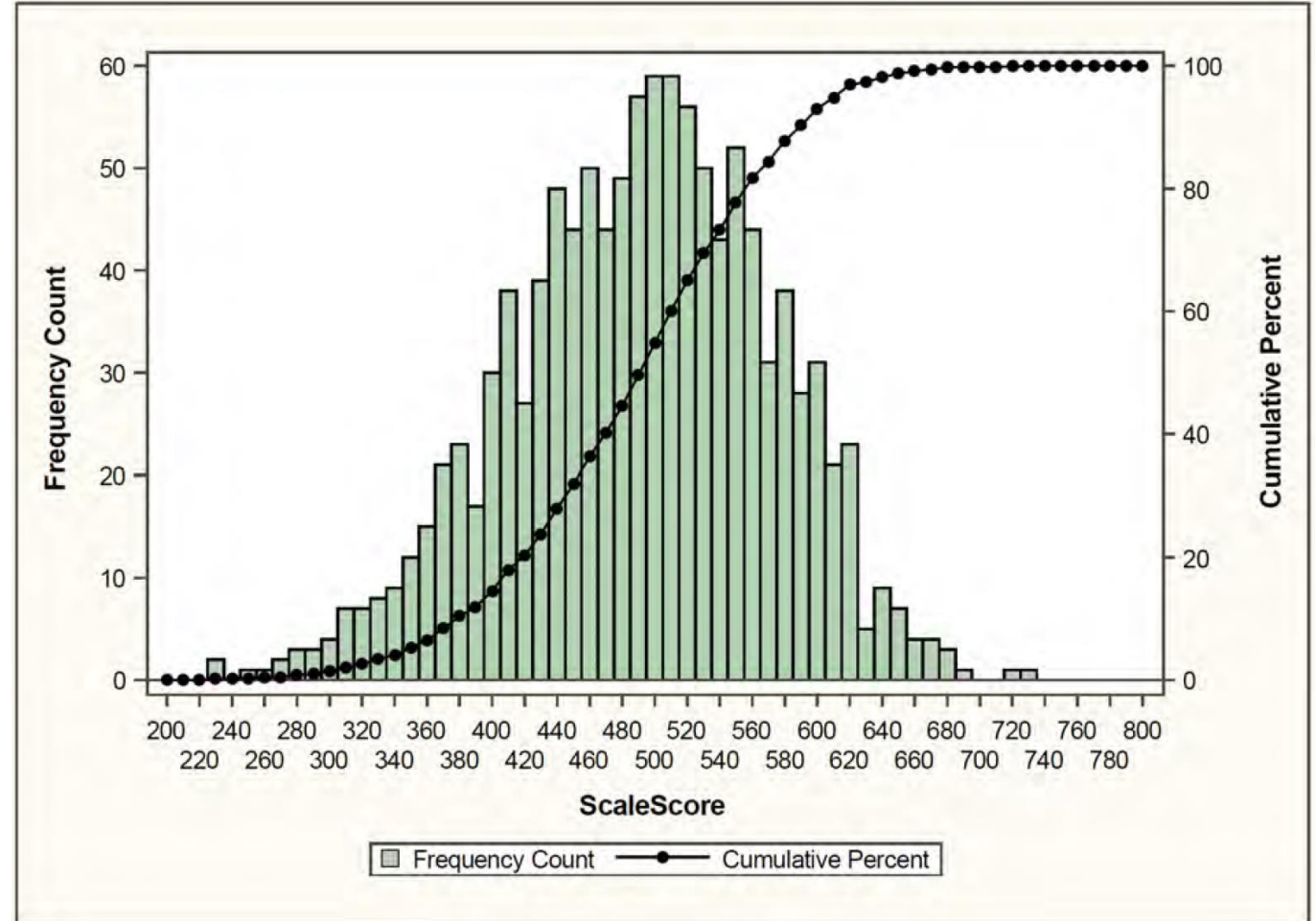# ADAT Overall Scores (2024)

- This graph from the ADAT User's Guide shows the **ADAT Overall** scores that were earned in 2024.

- Most candidates earned **ADAT Overall** scores between 300 and 650.

  – Only the top performing candidates earned **ADAT Overall** scores above 650.

- The dark, curved line shows percentile standing.

Source: 2024 ADAT User's Guide

ADAT Overall Scores: 2024

ADAT Percentiles (2024)

- For the **ADAT Overall** scale:
  - A score of **700** puts a candidate at the 99th percentile (i.e., 99% of candidates score 700 or below).
  - A score of **600** puts a candidate at the 93rd percentile.
  - A score of **500** puts a candidate at the 55th percentile.
  - A score of **400** puts a candidate at the 15th percentile.

Source: 2024 ADAT User's Guide

ADAT Score Percentiles: 2024

Score	ADAT	BIO	CLI	DRIEBD
…	…	…	…	…
700	99	99	99	99
…	…	…	…	…
600	93	87	91	93
…	…	…	…	…
550	78	74	76	81
540	73	69	73	77
530	69	66	69	73
520	65	62	65	69
510	60	57	60	63
500	55	52	56	59
…	…	…	…	…
450	32	33	34	33
…	…	…	…	…
400	15	18	16	16
…	…	…	…	…

Interpreting ADAT Scores: An example …

- Suppose a candidate received the ADAT scores shown here. **How might an admissions officer interpret these scores?**

Reporting Area	Score
ADAT Overall	**550**
Biomedical Sciences	550
Clinical Sciences	580
Data, Research Interpretation, and Evidence-based Dentistry	470

Interpreting ADAT Scores: An example …

- Here are the 2024 percentiles taken from the ADAT User's Guide.
- This candidate's **ADAT Overall** score puts them in the 78th percentile. This means only 22% earned a higher ADAT Overall score in 2024.

Reporting Area	Score	Percentile
ADAT Overall	**550**	**78th**
Biomedical Sciences	550	74th
Clinical Sciences	580	85th
Data, Research Interpretation, and Evidence-based Dentistry	470	42nd

In 2024, 78% of candidates scored 550 or below. The remaining 22% of candidates scored above 550.

Source: 2024 ADAT User's Guide

Interpreting ADAT Scores: An example …

- Relative to other candidates, this candidate performed <u>strongest</u> in Clinical Sciences (85th percentile) and <u>weakest</u> in DRIEBD (42nd percentile).

Reporting Area	Score	Percentile
ADAT Overall	**550**	**78th**
Biomedical Sciences	550	74th
Clinical Sciences	580	85th
Data, Research Interpretation, and Evidence-based Dentistry	470	42nd

<u>Source</u>: 2024 ADAT User's Guide

Interpreting ADAT Scores: An example …

- Here are the 2024 score averages taken from the ADAT User's Guide.
- This candidate scored <u>above average</u> in each area except Data, Research Interpretation, and Evidence-based Dentistry (DRIEBD).

Reporting Area	Score	Average (2024)
ADAT Overall	**550**	**491**
Biomedical Sciences	550	495
Clinical Sciences	580	490
Data, Research Interpretation, and Evidence-based Dentistry	470	486

<u>Source</u>: 2024 ADAT User's Guide

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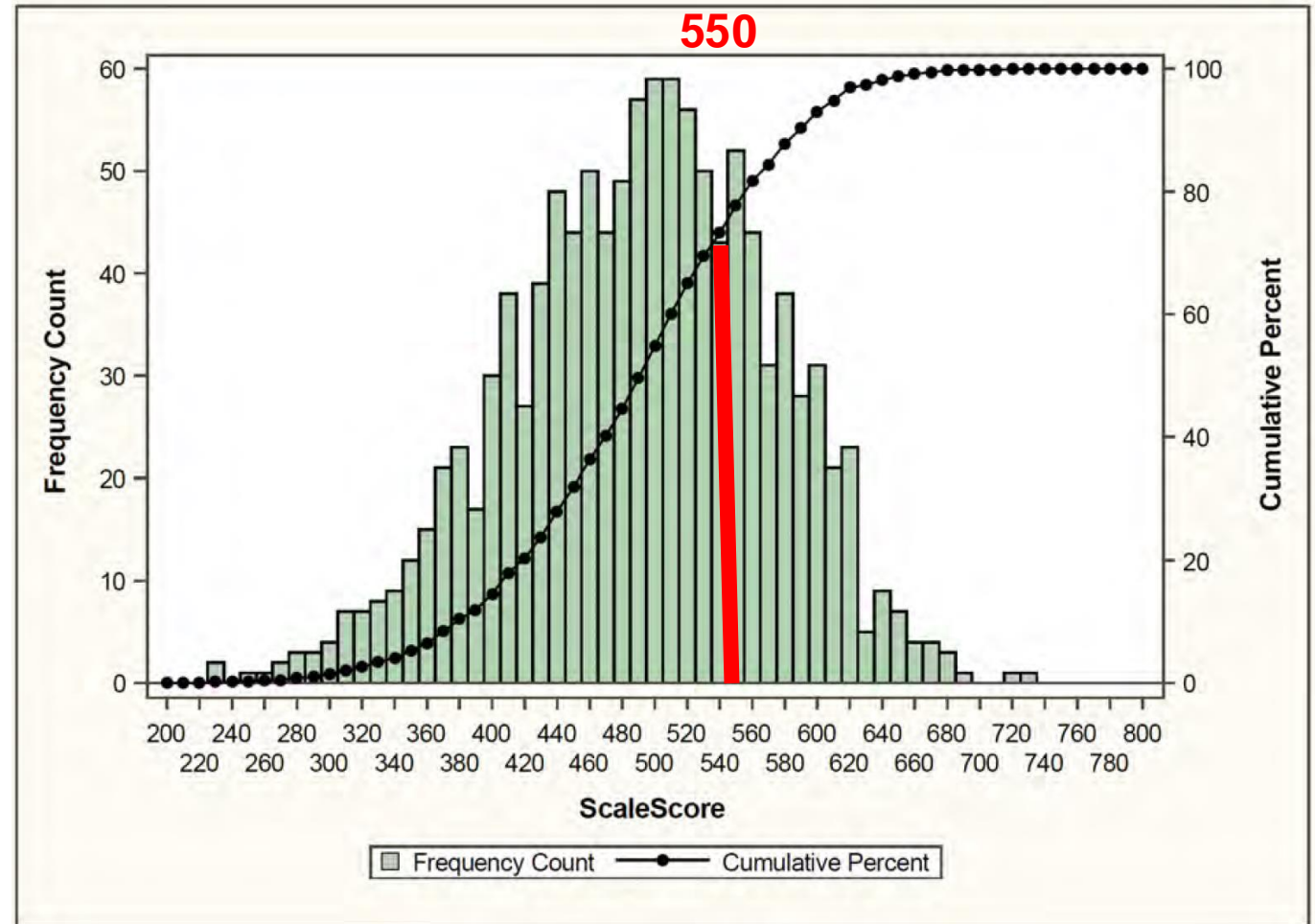
Interpreting ADAT Scores: An example …

- The graphs in the ADAT User's Guide are also helpful for understanding candidate performance.

- From the graph, I can see that this candidate's **ADAT Overall** score of 550 falls in the <u>upper half</u> of the 2024 score distribution.

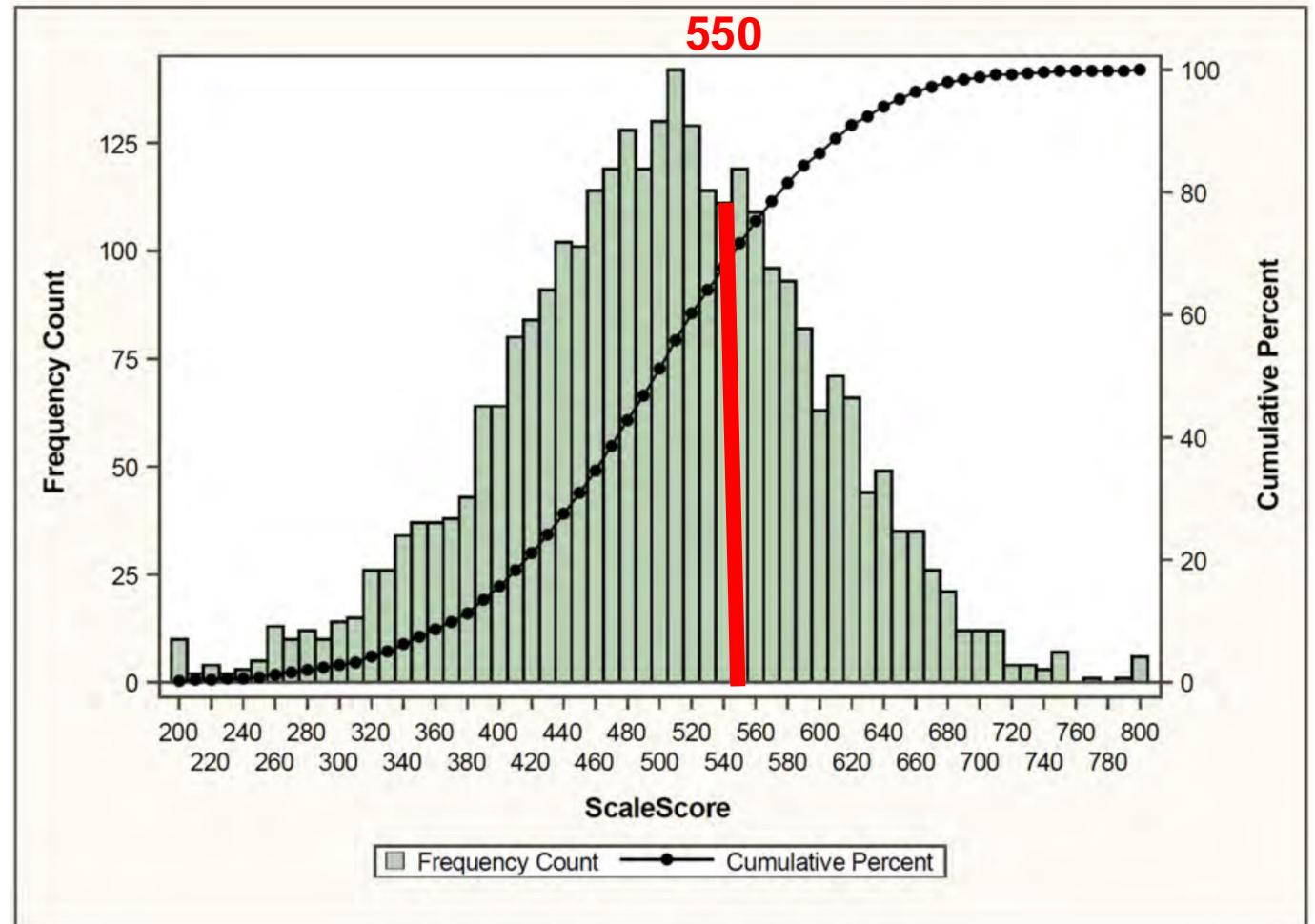<u>Source</u>: 2024 ADAT User's Guide

ADAT Overall Scores: 2024

Interpreting ADAT Scores: An example …

- The candidate's **Biomedical Sciences** score of 550 also falls in the <u>upper half</u> of the 2024 score distribution.
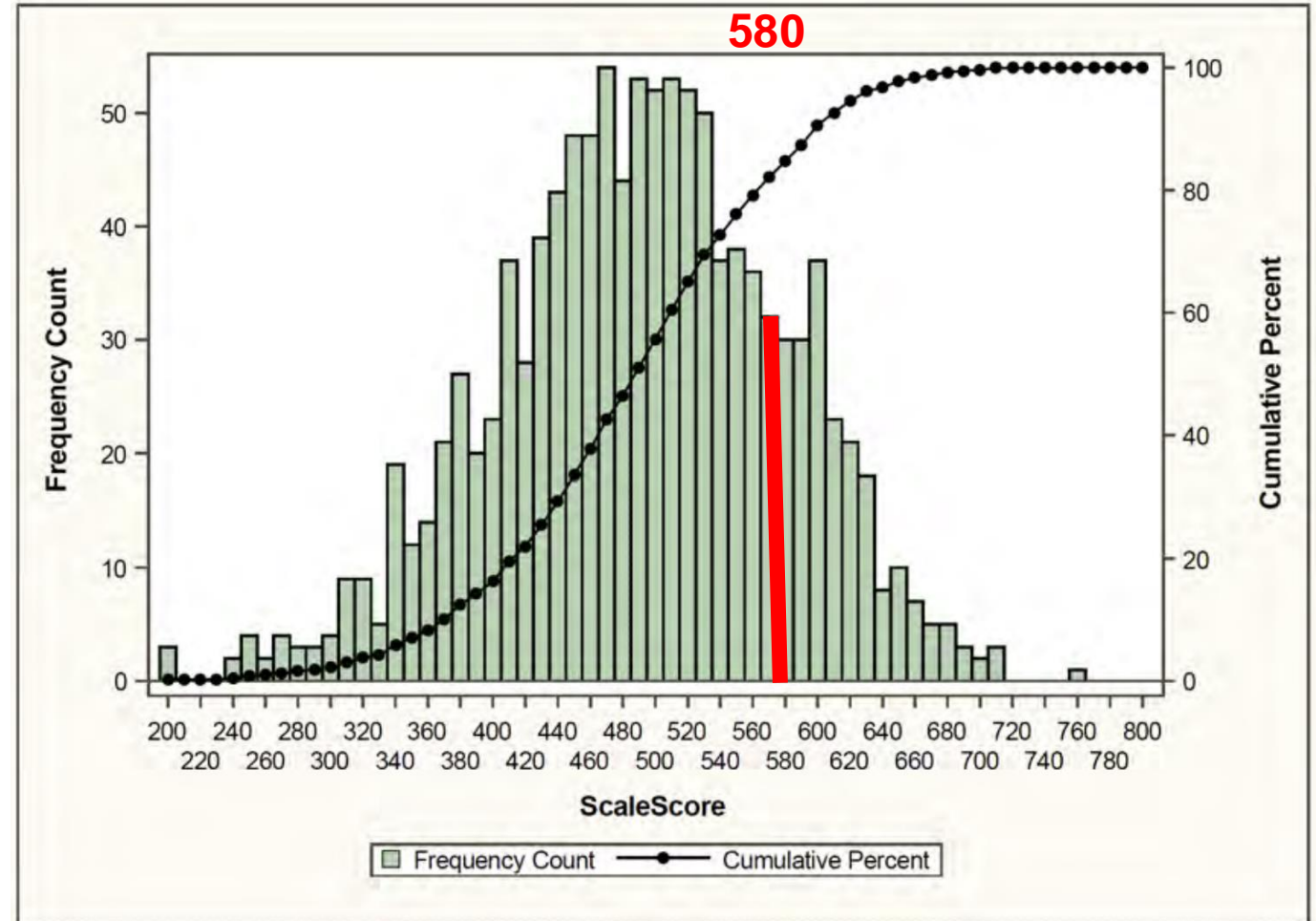
<u>Source</u>: 2024 ADAT User's Guide

Biomedical Science Scores: 2024

Interpreting ADAT Scores: An example …

- The candidate's **Clinical Sciences** score of 580 appears to fall in the <u>upper quarter</u> of the 2024 score distribution.

<u>Source</u>: 2024 ADAT User's Guide

Clinical Science Scores: 2024
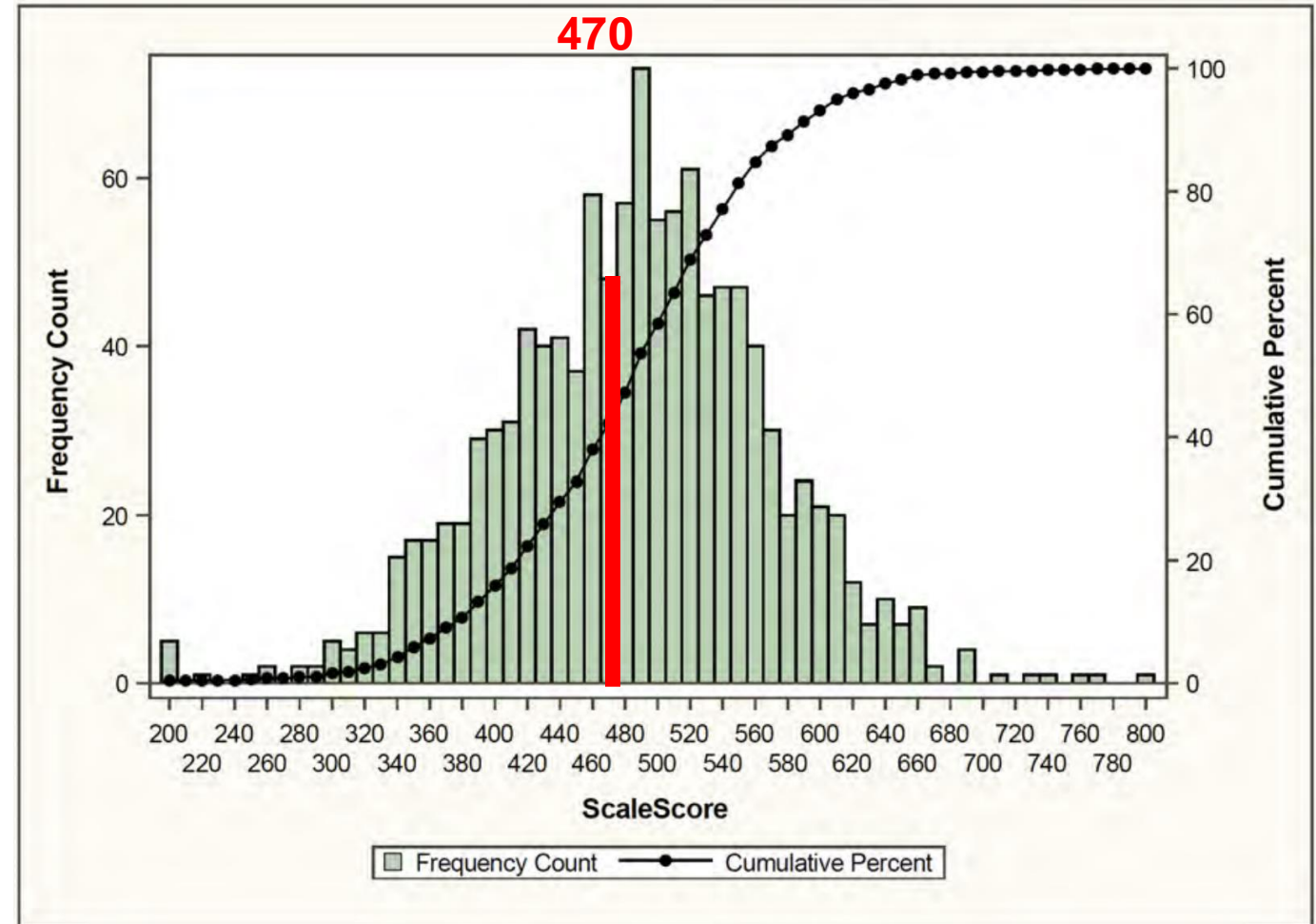
Interpreting ADAT Scores: An example …

- The candidate's **Data, Research Interpretation, and Evidence-based Dentistry** score of 470 falls in the <u>lower half</u> of the 2024 score distribution.

<u>Source</u>: 2024 ADAT User's Guide

DRIEBD Scores: 2024

Has the ADAT been validated?

- Since 2016, the ADA has accumulated strong <u>validity evidence</u> in support of the ADAT.

- Each year, we strive to strengthen existing validity evidence for the ADAT and provide new evidence where possible.

- Our validation efforts for the ADAT are guided by the *Standards for Educational and Psychological Testing* (AERA, APA, and NCME, 2014).

STANDARDS
for Educational and
Psychological Testing

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AMERICAN PSYCHOLOGICAL ASSOCIATION
NATIONAL COUNCIL ON MEASUREMENT IN EDUCATION

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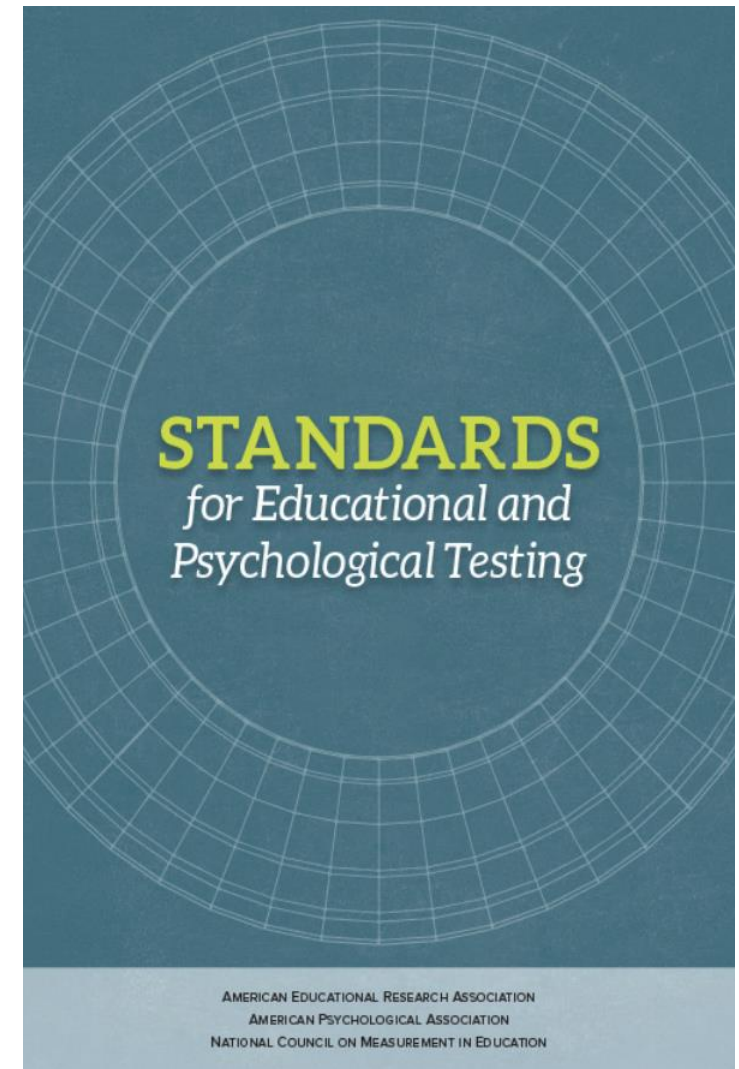
What validity evidence supports the ADAT?

- Two primary types of validity evidence support programs' use of the ADAT:

- **Content-oriented validity evidence**
  - Evidence that the content domain for the ADAT is appropriate, given the examination's purpose.
  - Evidence that the questions on the examination provide an adequate sampling of the established content domain.

- **Convergent validity evidence**
  - Evidence that scores on the ADAT are positively correlated with measures of related constructs (e.g., dental GPAs).

What content-oriented validity evidence supports the ADAT?

Content Validity Evidence:

- The disciplines covered on the ADAT are based on findings from a survey on advanced dental education conducted by an ADA Task Force and ADEA.

- The test specifications for the **Clinical Sciences** section are based on the test specifications for the National Board Dental Examinations (NBDE) Part II, which were informed by the results of a practice analysis involving entry-level general dentists.

- The test specifications for the **Biomedical Sciences** section are based on the test specifications for the NBDE Part I which involve the key biomedical sciences thought to underlie dental practice.

- The test specifications for the **Data, Research Interpretation, & Evidence Based Dentistry** section were constructed based on subject matter expert input, and guidance from the ADA Science Division and its Center for Evidence-Based Dentistry.

Content Validity Evidence (continued):

- Each ADAT form is built to meet detailed content specifications which dictate the number of questions administered from each discipline and sub-discipline of the domain.

- The ADAT content specifications are reviewed by the Council on Dental Education and Licensure (CDEL) each year.

- **ADAT questions are written by highly qualified test constructors** whose qualifications match the needs dictated by the content specifications. All test constructors' qualifications are reviewed by CDEL.

- ADAT test constructors can recommend updates to the ADAT content specifications for consideration by CDEL and its Dental Admission Testing Committee.

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- A study by DeSantis et al. (2018) found that **ADAT scores were positively correlated with several indices of ability** in a sample of residency program applicants.

The correlation between applicants' ADAT Overall scores and dental school GPAs was **.64**

The correlation between applicants' ADAT Overall scores and dental school class ranks was **.60**

DeSantis, L.D., Ghoneima, A., Vanchit, J., Eckert, G., & Stewart, K.T. (2018). Preliminary performance of the Advanced Dental Admission Test (ADAT): Association between ADAT scores and other variables for applicants to residency programs at a U.S. Dental School, *Journal of Dental Education, 82,* 1327-1334.

Table 3. Correlations of applicants' TOEFL, GRE, GPA, and class rank with ADAT scores

ADAT	Variable	N	Correlation	p-value
Biomedical sciences	TOEFL score	10	0.17	0.6514
	GRE quantitative	45	0.40	0.0063*
	GRE verbal	45	0.11	0.4600
	GRE analytical	45	0.17	0.2656
	Undergrad GPA	92	0.22	0.0345*
	Dental school GPA	84	0.49	<0.0001*
	Dental school class rank	67	0.57	<0.0001*
Clinical sciences	TOEFL score	10	0.63	0.0504
	GRE quantitative	45	0.47	0.0011*
	GRE verbal	45	0.33	0.0286*
	GRE analytical	45	0.15	0.3378
	Undergrad GPA	92	0.36	0.0003*
	Dental school GPA	84	0.48	<0.0001*
	Dental school class rank	67	0.38	0.0012*
Critical thinking	TOEFL score	10	0.48	0.1646
	GRE quantitative	45	0.59	<0.0001*
	GRE verbal	45	0.36	0.0159*
	GRE analytical	45	0.26	0.0885
	Undergrad GPA	92	0.37	0.0003*
	Dental school GPA	84	0.62	<0.0001*
	Dental school class rank	67	0.58	<0.0001*
Data, research interpretation, and evidence-based dentistry	TOEFL score	10	0.42	0.2397
	GRE quantitative	45	0.66	<0.0001*
	GRE verbal	45	0.64	<0.0001*
	GRE analytical	45	0.42	0.0039*
	Undergrad GPA	92	0.30	0.0032*
	Dental school GPA	84	0.44	<0.0001*
	Dental school class rank	67	0.33	0.0061*
Total score	TOEFL score	10	0.51	0.1398
	GRE quantitative	45	0.58	<0.0001*
	GRE verbal	45	0.44	0.0022*
	GRE analytical	45	0.29	0.0499*
	Undergrad GPA	92	0.37	0.0002*
	Dental school GPA	84	0.64	<0.0001*
	Dental school class rank	67	0.60	<0.0001*

*Statistically significant at p≤0.05

- Analysis conducted by the ADA in 2024 also indicates **ADAT scores show a positive relationship with dental school GPA**.

- For the ADAT Overall scale, examinees reporting dental school GPAs above 3.5 performed **1.2 standard deviations better** than examinees reporting GPAs of 2.5 or below.

Average ADAT Score, by Dental School GPA: 2019-2024
(3,362 administrations)
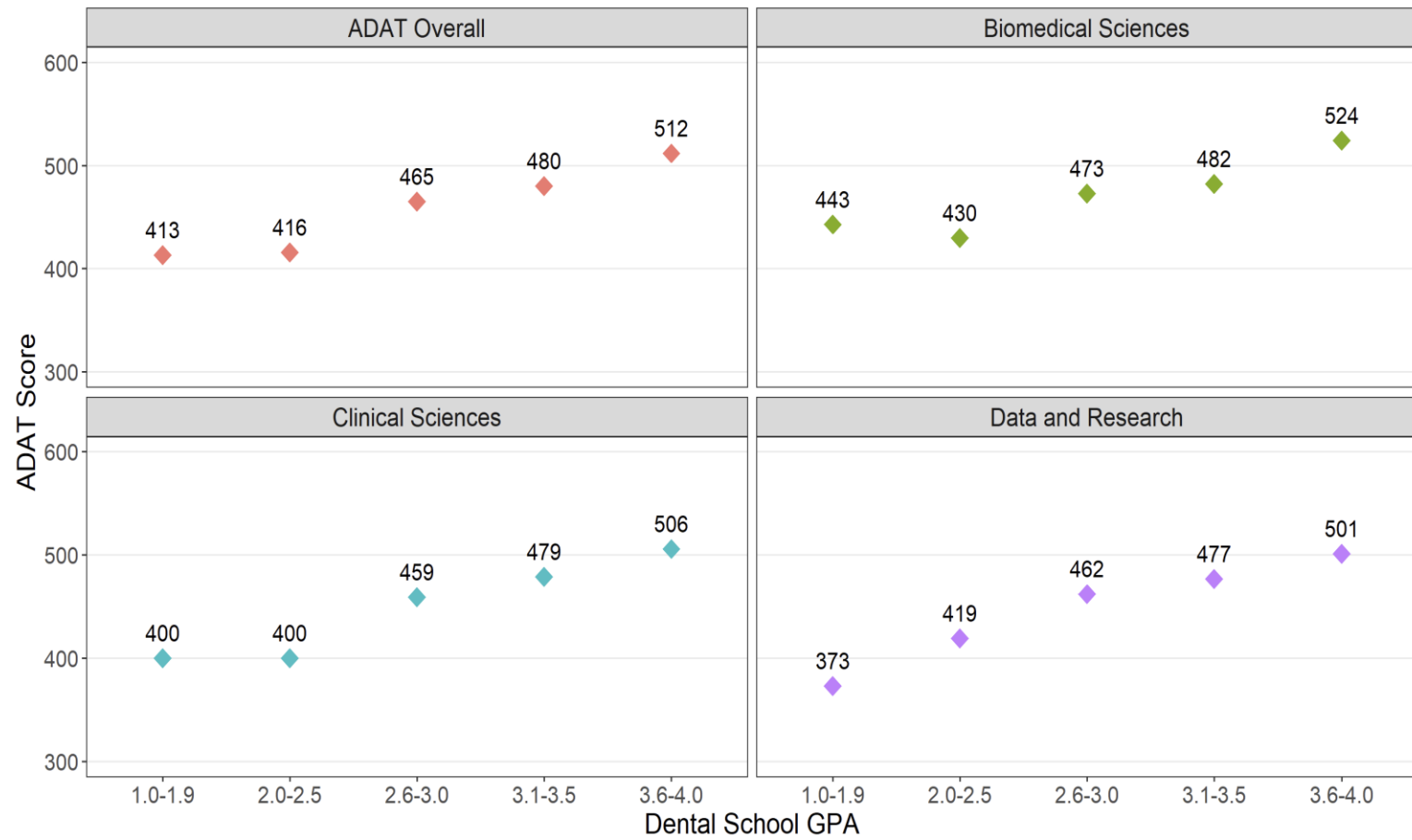
How reliable are ADAT scores?

- **ADAT scores are highly reliable.**

- Reliability estimates for **ADAT Overall** scores have exceeded .90 in each of the past three years.

- Reliability estimates for the other three reporting areas often approach or exceed .80.

ADAT Score Reliability, by Year: 2022-2024

Year	ADAT Overall	BIO	CLI	DRI
2024	.93	.87	.78	.79
2023	.92	.82	.73	.75
2022	.92	.82	.73	.77

The ADAT Overall score is a highly reliable indicator of a candidate's overall critical thinking skills in dentistry.

What other validity evidence supports the ADAT?

- ADAT administrations occur under standardized testing conditions that are closely monitored
  - Deviations from standardized testing conditions are reported to DTS by the test administration vendor (Pearson VUE).

- All ADAT questions are pretested (i.e., "tried out") before they are used operationally
  - Non-performing questions can be flagged and withheld from operational use

- The ADAT is implemented by the ADA's DTS, an organization with decades of experience implementing high stakes testing programs
  - DTS employs professionally trained staff that includes individuals with advanced degrees in Psychometrics, Educational Psychology, Industrial/Organizational psychology, and Leadership

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What about fairness?

- **Fairness is fundamental to validity** (AERA, APA, and NCME, 2014). DTS strives to develop examinations that are fair for all candidates.

- DTS and our partners employ well-defined standard operating procedures and policies to help ensure that all candidates are treated fairly and equitably before, during, and after the examination.

- DTS test development staff and test constructors are trained to identify and avoid content that could introduce *construct irrelevant variance (CIV)* into examination results. Dedicated Fairness and Sensitivity reviewers evaluate examination content during the development stage, so any concerns can be addressed before the content is used operationally.
  - CIV could include language, concepts, or objects that might be familiar to certain groups but not others, in a way that is irrelevant to the concept being tested (extraneous).

- Programs and candidates can learn more about our efforts to promote fairness here: *The DAT and ADAT Programs: Overview of Policies and Procedures Supporting and Promoting Fairness*

Concluding Thoughts

- More than 4,500 ADAT administrations have occurred since 2016. **DTS extends its thanks to all of the advanced dental education programs that have utilized the ADAT!**

- Validity evidence supports the use of ADAT results for their intended purpose.
  - Content-oriented validity evidence
  - Convergent validity evidence
  - Other sources, including fairness considerations

- Resources are available to assist advanced program directors in interpreting ADAT scores.
  - See the ADAT User's Guide

- The ADA invites programs to consider making the ADAT a requirement.

Thank You!

Questions?

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