Interpreting Advanced Dental Admission Test (ADAT) Results: 2021 Administrations

This document provides information that is intended to assist candidates and programs with interpreting official ADAT results for administrations occurring in 2021. The descriptive statistics and percentiles contained in this document are based on data from the 2020 administration of the ADAT. Normative information based on data from 2021 ADAT administrations will be provided in September 2021, after the 2021 ADAT testing window has closed.

In interpreting ADAT results, candidates and programs should consider the following:

- The ADAT should be used in conjunction with other admission tools that provide insight into candidate qualifications as they relate to core program requirements.

- 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 based on fewer items (e.g., Data, Research Interpretation, & Evidence Based Dentistry).

- Additional guidance regarding ADAT score interpretation is available in the 2020 ADAT User's Guide, which can be accessed via the link below:

  ADAT User's Guide 2020

- Additional general information about the ADAT is available on the ADAT website.

Additional information and updates are forthcoming, and will be shared on the ADAT website and in updates to the ADAT User's Guide (see above links).

ADAT Scale Scores. Official ADAT results are reported as scale scores, which can range from 200 to 800 in 10-point increments. Descriptive statistics for 2020 ADAT scale scores are provided in Table 1.

Table 1. Descriptive statistics for ADAT scale scores: 2020 (234 administrations)

Scale Type	Scale	Mean	SD	Min	Max
Composite	ADAT Overall (ADAT)	507.6	65.9	280	670
Discipline	Biomedical Sciences (BIO)	531.5	82.7	270	720
	Clinical Sciences (CLI)	488.5	73.4	300	680
	Data, Research Interpretation, & Evidence Based Dentistry (DRI)	500.3	101.1	200	730

The ADAT Overall scale is referred to as a composite scale, because it is calculated using scale scores (i.e., the discipline-based scales). The ADAT Overall score is a weighted average of scale scores from all three ADAT disciplines. Weights are proportional to the number of items in each area, and the final score is rounded to the nearest ten.

Interpretation of the ADAT Overall score is slightly different from interpretation of discipline-based scale scores. It is important to note that observed 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 were in fact not observed in the 2020 sample.

Scale scores for the three ADAT disciplines are based on candidate skill level estimates determined from an Item Response Theory (IRT) analysis using the Three-Parameter Logistic (3PL) scoring model. The 3PL model takes into account the following when examining candidate responses and estimating candidate skills:
- The difficulty level of each test item
- The quality of each test item (item discrimination)
- The impact of guessing on item performance

The 3-PL model gives a more accurate and precise measurement of candidate skills than that provided by simply relying on the number of items answered correctly.

A frequency distribution of the ADAT Overall scale is presented in Figure 1 of Appendix B. 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, the right vertical axis shows the cumulative percentile associated with scale scores (superimposed in black line on the graph). Figure 2 of that appendix shows a frequency distribution of the ADAT Overall scale for the 5 years of administration (2016-2020). The graph is interpreted the same way as the Figure 1 graph, but a larger sample size is used.

2020 ADAT Percentiles. Appendix A1 presents the percentiles associated with scores on each ADAT scale, based on the 234 ADAT administrations which occurred in 2020. For each scale and scale score in Appendix A1, the corresponding scale score percentile can be interpreted as the percentage of ADAT 2020 candidates who achieved that scale score or lower. For example, if a given scale score corresponds to a percentile of 88, then 88% of ADAT 2020 candidates achieved that scale score or lower.

2016-2020 ADAT Percentiles. Appendix A2 presents the percentiles associated with scores on each ADAT scale, based on all 1,922 ADAT administrations between 2016 and 2020. These percentiles are interpreted in a similar manner to the 2020 percentiles, except they rely on a broader normative group.

Importantly, percentiles do NOT provide information concerning the absolute level of skills that a candidate has displayed on the examination. Percentiles are designed to provide information concerning how a given candidate performed relative to others. Candidates with lower percentile standing may still potentially possess high levels of the skills being evaluated.

ADAT Score Reliability. Reliability coefficient estimates for the 2020 ADAT scale scores are given in Table 2[1]. Reliability coefficients can range from zero to one, with higher values indicating higher reliability.

Table 2. Reliability coefficients for ADAT scale scores: 2020 (234 administrations)

ADAT Scale	Reliability
ADAT Overall (ADAT)	.86
Biomedical Sciences (BIO)	.76
Clinical Sciences (CLI)	.65
Data, Research Interpretation, & Evidence Based Dentistry (DRI)	.77

---

[1] The reliability coefficients reported in Table 2 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).

References

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

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

Appendix A1

Percentiles Associated with ADAT Scale Scores: 2020
(234 administrations)

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

Scale Score	ADAT	BIO	CLI	DRI
800	.	.	.	.
790	.	.	.	.
780	.	.	.	.
770	.	.	.	.
760	.	.	.	.
750	.	.	.	.
740	.	.	.	.
730	.	.	.	99
720	.	99	.	99
710	.	99	.	99
700	.	99	.	99
690	.	99	.	99
680	.	97	99	99
670	99	97	99	98
660	99	95	99	97
650	99	92	99	96
640	99	90	98	94
630	98	88	98	92
620	98	85	98	91
610	96	82	96	89
600	95	81	94	87
590	93	79	92	86
580	88	76	88	83
570	84	70	86	79
560	80	67	84	75
550	73	62	82	70
540	70	59	78	65
530	62	53	75	61
520	58	47	71	54
510	53	41	65	49
500	44	35	59	45
490	41	30	52	41
480	37	26	47	39
470	32	23	41	34
460	26	20	36	31
450	24	16	31	28

Scale Score	ADAT	BIO	CLI	DRI
440	19	14	27	26
430	14	11	25	21
420	9	10	21	20
410	7	8	17	18
400	6	7	13	17
390	4	6	11	15
380	3	4	9	14
370	3	4	7	13
360	2	3	6	12
350	1	2	4	10
340	1	2	3	9
330	1	2	1	8
320	1	1	1	6
310	1	1	1	6
300	1	1	1	4
290	1	1	.	4
280	1	1	.	3
270	.	1	.	3
260	.	.	.	2
250	.	.	.	2
240	.	.	.	2
230	.	.	.	1
220	.	.	.	1
210	.	.	.	1
200	.	.	.	1

Appendix A2

**Percentiles Associated with ADAT Scale Scores: 2016-2020
(1,922 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	99
790	.	99	99	99
780	.	99	99	99
770	.	99	99	99
760	.	99	99	99
750	.	99	99	99
740	99	99	99	99
730	99	99	99	99

Scale Score	ADAT	BIO	CLI	DRI
720	99	99	99	99
710	99	99	99	98
700	99	98	99	98
690	99	98	99	98
680	99	97	99	97
670	99	96	98	96
660	99	95	97	96
650	98	94	97	94
640	98	93	96	93
630	96	92	95	92
620	95	89	94	90
610	94	88	92	89
600	93	86	90	87
590	90	84	88	85
580	87	80	85	82
570	84	77	83	79
560	80	72	79	75
550	76	68	75	71
540	72	64	71	67
530	67	59	67	63
520	61	55	62	58
510	55	50	57	54
500	49	46	52	50
490	43	42	47	45
480	38	37	43	41
470	33	32	39	37
460	29	29	34	33
450	25	26	31	30
440	21	22	27	26
430	17	19	24	23
420	13	17	20	21
410	11	14	18	18
400	9	11	15	16
390	7	9	12	14
380	5	7	10	12
370	4	6	8	11
360	3	5	7	10
350	3	4	6	8
340	2	4	5	7
330	2	3	4	6
320	2	3	3	5
310	2	2	3	4
300	1	2	2	4

Scale Score	ADAT	BIO	CLI	DRI
290	1	1	1	3
280	1	1	1	2
270	1	1	1	2
260	1	1	1	2
250	1	1	1	2
240	1	1	1	2
230	1	1	1	1
220	1	1	1	1
210	1	1	1	1
200	1	1	1	1

Appendix B

Figure 1. Frequency distribution for the ADAT Overall scale: 2020 (234 administrations)
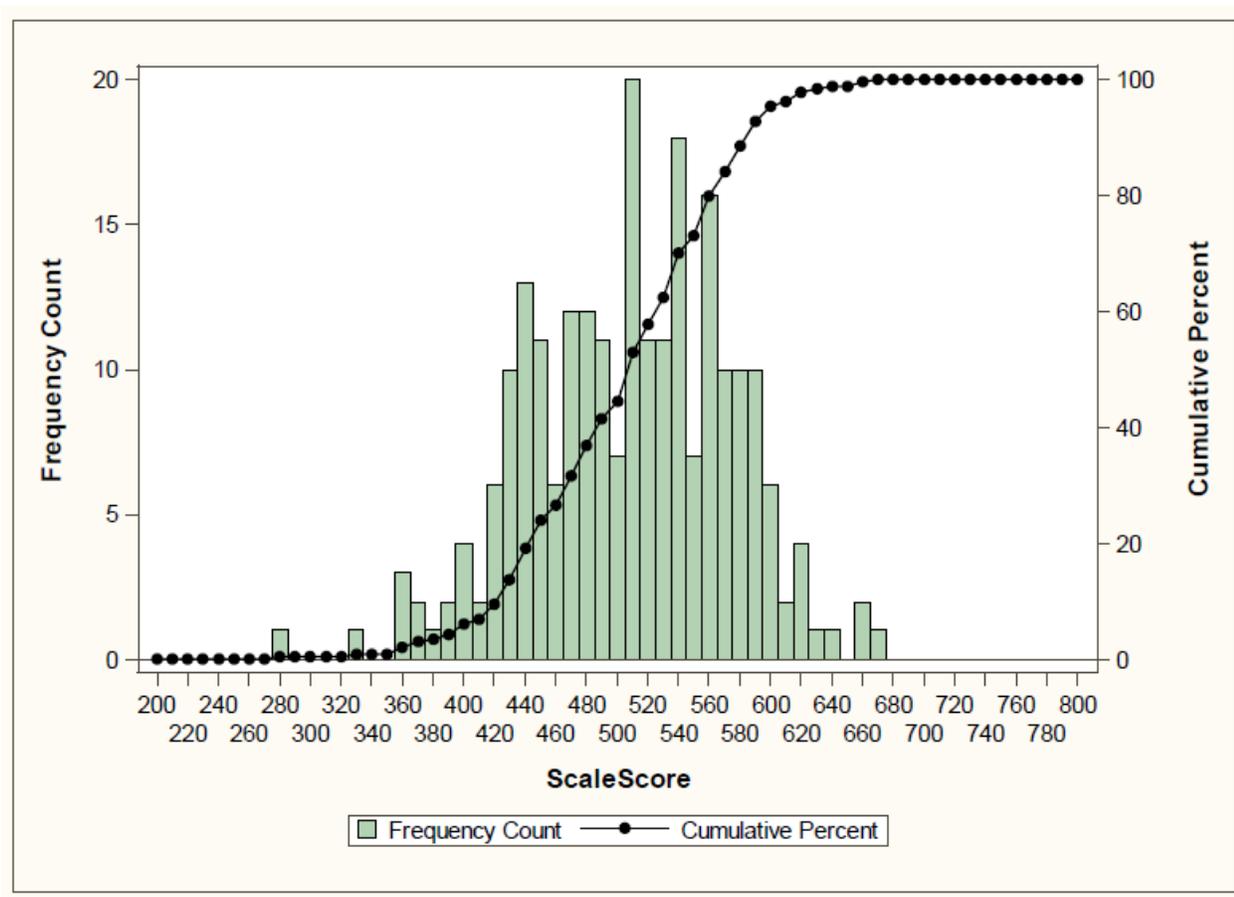
Figure 2. Frequency distribution for the ADAT Overall scale: 2016-2020 (1,922 administrations)