



# MICHIGAN TEST FOR TEACHER CERTIFICATION

## **Technical Report: Appendices**

---

OCTOBER 2018–SEPTEMBER 2019

---

**STATE OF MICHIGAN  
STATE BOARD OF EDUCATION**

CASANDRA E. ULBRICH – PRESIDENT

PAMELA PUGH – VICE PRESIDENT

MICHELLE FECTEAU – SECRETARY

TOM MCMILLIN – TREASURER

TIFFANY TILLEY – NASBE DELEGATE

JUDITH PRITCHETT

LUPE RAMOS-MONTIGNY

NIKKI SNYDER

EX-OFFICIO

GRETCHEN WHITMER – GOVERNOR

MICHAEL F. RICE – STATE SUPERINTENDENT OF PUBLIC INSTRUCTION

MARILYN SCHNEIDER – EXECUTIVE

MICHIGAN DEPARTMENT OF EDUCATION

608 WEST ALLEGAN STREET • P.O. BOX 30008 • LANSING, MICHIGAN 48909

---

Educator Preparation Unit of, Office of Educator Excellence (MDE-OEE)

[Formerly Office of Professional Preparation Services (OPPS)]

[www.michigan.gov/teachercert](http://www.michigan.gov/teachercert)

**MICHIGAN STATE BOARD OF EDUCATION  
STATEMENT OF ASSURANCE OF COMPLIANCE WITH FEDERAL LAW**

The Michigan State Board of Education complies with all Federal laws and regulations prohibiting discrimination and with all requirements and regulations of the U.S. Department of Education. It is the policy of the Michigan State Board of Education that no person on the basis of race, color, religion, national origin or ancestry, age, sex, marital status, or handicap shall be discriminated against, excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination in any program or activity for which it is responsible or for which it receives financial assistance from the U.S. Department of Education.

**Michigan Test for Teacher Certification**

**Technical Report: Appendices**

**Test Statistics**

**October 1, 2018 – September 30, 2019**

Table of Contents

Section I: Overview

Section II: Technical Report Statistics by Test Form and  
Technical Report Statistics by Test Field (All Forms: Performance Assignments)

Section III: Total Scaled Score Distribution by Test Field (All Forms)

Section IV: References.

[PAGE INTENTIONALLY LEFT BLANK]

# MTTC Technical Report

## Test Statistics: October 1, 2018 – September 30, 2019

### Section I: Overview

Volume II of the MTTC Technical Report provides test statistics for test forms administered to at least 10 examinees during test administrations between October 1, 2018 and September 30, 2019. Total test statistics are provided as the basis for understanding the usefulness of the test for licensing decisions. Additional statistical information is provided for tests administered to at least 60 examinees. These statistics provide further information for the multiple-choice items and for the performance assignment(s) on each of the World Language tests except Italian (including Arabic [Modern Standard], Chinese [Mandarin], French, German, Japanese, Russian, and Spanish), and Latin.

#### Aids to Interpreting the MTTC Statistics

A large amount of statistical information is presented in the reports that follow. Readers may benefit from a number of interpretive aids while considering these data.

- Information in these reports that is based on the test performance of relatively small numbers of examinees (i.e., fewer than 60 examinees) may not be indicative of the performance of larger numbers of examinees.
- The MTTC tests include multiple-choice items and performance assignments. Procedures for estimating the psychometric characteristics of multiple-choice items and tests are well-established and documented in the literature; such procedures for performance assignments, and for tests that combine performance assignments and multiple-choice items, are less well-established and documented. Most MTTC tests presently consist of multiple-choice items only. Each of the MTTC World Language tests except Italian, as well as the Latin test, consists of a multiple-choice section and a performance assignment section. The Spanish, French, German, and Latin content-area tests each include two written performance assignments. The Chinese (Mandarin), Arabic (Modern Standard), Russian, and Japanese tests each contain eight performance assignments.

- The scores that are reported on the MTTC are scaled scores. They have been converted mathematically to a scale with a lower limit of 100, a passing score of 220, and an upper limit of 300. This is the scale used in reporting all MTTC scaled score statistics.

### Test Reliability: Overview

As a term used in testing, “reliability/precision” may be defined as “the degree to which test scores for a group of test takers are consistent over repeated applications of a measurement procedure and hence are inferred to be dependable and consistent for an individual test taker; the degree to which scores are free of random errors of measurement for a given group” (*Standards for Educational and Psychological Testing (AERA, APA & NCME, 2014, p. 222)*).

Every test (in fact, every measurement tool) can be expected to produce some measurement error; well-constructed tests produce a small amount of measurement error and generally yield consistent results from one measurement occasion (i.e., test administration) to another.

The process that was used to develop the Michigan Test for Teacher Certification contained features designed to ensure, to the extent possible, that the content and format of the tests would contribute to the stability of the scores derived from them. Test content is based on Michigan regulations, documents, and resources, and was reviewed for accuracy and edited for clarity. Test items were reviewed to ensure that they relate to knowledge and skills judged to be important to the job of an educator entering teaching in Michigan schools.

For the performance assignments, scoring procedures were carefully designed to include detailed orientation, explicit scoring scales and standards, and ongoing verification of scorer accuracy and consistency. Test administration conditions are standardized to be consistent across test sites and occasions.

Statistical estimates of reliability focus on the results of tests—the scores achieved by specific groups of examinees. To the extent that the quality of test materials and procedures can contribute to the underlying reliability and consistency of test scores, the Michigan Tests for Teacher Certification have been developed to ensure high test quality and to affect procedural consistency in test development, administration, and scoring.

**Factors that affect statistical estimates of test reliability.** Reliability is a property of test scores for a particular group of examinees, not a fixed property of a test. Many factors may affect statistical estimates of test reliability, among them the following.

*Number of examinees.* The number of examinees whose test scores contribute to a statistical estimate of reliability affects the stability of the estimate. Estimates based on smaller numbers of examinees are typically less stable than estimates based on larger numbers. For this reason, statistical estimates of reliability are calculated for the MTTC only for those tests that are taken by 60 or more examinees.

*Self-selection of examinees by test administration date.* Typically, examinees can decide when to take a particular test. The tests are offered multiple times per year, and examinees can select when to take and retake the tests. This self-selection can affect the composition, ability level, and variability of the group taking a particular test at a given test administration.

*Variability of the group tested.* In general, the larger the true variance or true spread of the scores of the examinee group (i.e., the greater the individual differences in the true level of knowledge and skills of the examinees in the particular group taking a test on a particular occasion), the greater will be the reliability coefficient. If the examinees on a particular occasion have generally similar levels of knowledge and skills, statistical estimates of reliability may tend to be lower.

*Composite tests.* Statistical estimates of reliability for tests that are composites of different types of items (e.g., multiple-choice items and performance assignments) tend to be more relevant when they are calculated on the combined, total test than when they are based on any single component (i.e., multiple-choice items alone or performance assignments alone).

*Test content.* Statistical estimates of reliability tend to be higher for tests that cover narrower, more homogeneous ranges of content than for tests that cover broad, varied ranges of content. Tests for educator licensure typically must test a broad base of knowledge and skills that pertain to licenses that will apply in a wide range of educational settings, grade levels, and teaching assignments.

**Statistical procedures.** One approach to gauging the reliability of a test is through the use of statistical procedures. As is the case with most statistical measures of test score reliability, the estimates to be included will be reported on a scale ranging from zero to one (i.e., 0.00 to 1.00). While there is no fixed standard that distinguishes “reliable” test scores from “unreliable” ones, the U.S. Department of Labor Employment and Training Administration has published in a guide, titled *Testing and Assessment: An Employer’s Guide to Good Practices*, the following general guidelines for interpreting reliability coefficients (U.S. DOL, 1999, p. 3):

<u>Reliability coefficient value</u>	<u>Interpretation</u>
.90 and up	Excellent
.80–.89	Good
.70–.79	Adequate
Below .70	May have limited applicability

*Adequate numbers of examinees.* Statistical reliability estimates, if they are to be interpreted with any degree of confidence, must be based on adequate numbers of examinee scores that may represent some range of examinee knowledge and skill levels and that may provide some variance in examinee score distributions. Statistical reliability estimates based on few examinee scores may be highly dependent on the characteristics of those few examinees and their scores. For this reason, statistical test data are provided in this report only for test fields in which 60 or more examinees take a test at any of the operational test administrations, either paper-based or computer-based, in the program year.

*Statistical measures used.* A number of statistical techniques have been devised for measuring the consistency (i.e., reliability) of test scores; the choice of a specific index is based on its characteristics, precision, and practicability (Berk, 1980). The indices provided in this report are generally recommended for single-test estimation of test reliability and/or for tests comprising performance assignments and multiple-choice items.



Each statistical procedure selected for the Michigan Test for Teacher Certification provides different information about the reliability of the tests. Measures are reported for the total test and, when applicable, for each test section. However, because pass/fail decisions are made based upon the total test score only, total test reliability is the focus of interest; measures of reliability for individual sections of the test are presented for descriptive purposes only. When considering a reliability index for a single test section, it is important to keep in mind that one section of a test is usually less reliable than the total test because the test section contains fewer test items than the total test.

The statistics that are of primary interest, however, are those that describe the consistency of pass/fail decisions on the total test and the error of measurement associated with the total test. These statistics are provided in the Test Statistics Report by Test Form, which provides information on all tests; and the Technical Report Statistics by Test Field, which provides information on tests with performance assignments.

Reliability estimates for the individual sections of the tests (i.e., multiple-choice and performance assignment) are also provided for descriptive purposes only in the Test Statistics Report by Test Form. These reliability estimates should not be used in place of the total test decision consistency estimates provided.

## Organization of the Data

The following reports are presented.

- Technical Report Statistics by Test Form, which provides information for all test fields in order by test field number, and in form order (A, B, C, etc.) within each field where more than one form has been administered. Tests for which no examinees registered during this reporting period will appear in the report with no data provided.
- Technical Report Statistics by Test Field (All Forms): Performance Assignments, which provides information on tests with performance assignments in order by test field number. Tests for which no examinees registered during this reporting period will appear in the report with no data provided.
- Total Scaled Score Distribution by Test Field (All Forms), for all test fields with 10 or more test-takers in order by test field number. Tests for which no examinees registered during this reporting period will not appear in the report.

The table on the following pages comprises a historical list of all MTTC tests in alphabetical order, as of October 1, 2018. Note that some fields, such as 001 Language Arts, are no longer active because they have been replaced due to subsequent changes in the testing program.

### Historical List of MTTC Tests in Alphabetical Order

Field Number	Field Name
33	Accounting
37	Agricultural Education
13	Anthropology
102	Arabic (Modern Standard)
41	Art Education
64	Autism Spectrum Disorder (formerly Autistic)
15	Behavioral Studies
74	Bilingual Arabic
79	Bilingual Chaldean
80	Bilingual Chinese
65	Bilingual French
66	Bilingual German
67	Bilingual Greek
73	Bilingual Hebrew
71	Bilingual Italian
81	Bilingual Japanese
77	Bilingual Korean
75	Bilingual Other
72	Bilingual Polish
69	Bilingual Russian
70	Bilingual Spanish
76	Bilingual Vietnamese
78	Bilingual Yugoslavian
17	Biology
34	Business Administration
32	Business Education
98	Business, Management, Marketing and Technology
18	Chemistry
101	Chinese (Mandarin)
91	Communication Arts (Secondary)
50	Computer Science
14	Cultural Studies
46	Dance
82	Early Childhood Education
106	Early Childhood Education (General and Special Education)
20	Earth/Space Science
7	Economics
103	Elementary Education
83	Elementary Education (Replaced with 103 Elementary Education)
59	Emotional Impairment (formerly Emotionally Impaired)
2	English
86	English as a Second Language

<b>Field Number</b>	<b>Field Name</b>
49	Environmental Studies
40	Family and Consumer Sciences
53	Fine Arts
23	French
8	Geography
24	German
43	Health
42	Health, Physical Education, Recreation
62	Hearing Impaired
9	History
54	Humanities
87	Industrial Technology
93	Integrated Science (Elementary)
94	Integrated Science (Secondary)
29	Italian
100	Japanese
3	Journalism
1	Language Arts
90	Language Arts (Elementary)
26	Latin
63	Learning Disabled
48	Library Media
36	Marketing (Distributive Education)
89	Mathematics (Elementary)
22	Mathematics (Secondary)
56	Mentally Impaired
85	Middle Level
99	Music
39	Music Education
44	Physical Education
97	Physical Science
58	Physically or Otherwise Health Impaired
19	Physics
10	Political Science
296	Professional Readiness Examination (formerly Basic Skills): Mathematics subtest
196	Professional Readiness Examination (formerly Basic Skills): Reading subtest
396	Professional Readiness Examination (formerly Basic Skills): Writing subtest
11	Psychology
5	Reading
92	Reading Specialist
27	Russian
51	School Counselor
16	Science
105	Social Studies (Elementary)

<b>Field Number</b>	<b>Field Name</b>
84	Social Studies (Secondary)
12	Sociology
28	Spanish
4	Speech
57	Speech and Language Impaired
88	Technology and Design
95	Visual Arts Education
61	Visually Impaired

[PAGE INTENTIONALLY LEFT BLANK]

# **MTTC Technical Report**

**Test Statistics: October 1, 2018 – September 30, 2019**

## **Section II: Technical Report Statistics by Test Form and Technical Report Statistics by Test Field**

The Technical Report Statistics by Test Form and Technical Report Statistics by Test Field (All Forms: Performance Assignments) are contained on the Annual Reporting page of the MTTC Faculty Resources Technical Manual at [mttc.nesinc.com](http://mttc.nesinc.com).

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
Test Field	Form								
English (002)	A	336	233	11.6	0.86	--	80	0.85	--
	B	295	228	12.2	0.86	--	80	0.86	--
	C	57	234	--	--	--	80	--	--
	D	54	229	--	--	--	80	--	--
Speech (004)	A	26	259	--	--	--	80	--	--
	B	1	--	--	--	--	80	--	--
Reading (005)	A	27	239	--	--	--	80	--	--
	B	23	237	--	--	--	80	--	--
Economics (007)	A	12	206	--	--	--	80	--	--
Geography (008)	A	11	212	--	--	--	80	--	--
	B	1	--	--	--	--	80	--	--
History (009)	A	131	216	11.2	0.85	--	80	0.87	--
	B	109	213	11.3	0.83	--	80	0.81	--
	C	19	215	--	--	--	80	--	--
	D	12	204	--	--	--	80	--	--



**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
Political Science (010)	A	20	195	--	--	--	80	--	--
	B	1	--	--	--	--	80	--	--
Psychology (011)	A	31	233	--	--	--	80	--	--
	B	28	236	--	--	--	80	--	--
Sociology (012)	A	4	--	--	--	--	80	--	--
	B	1	--	--	--	--	80	--	--
Biology (017)	A	78	227	10.8	0.89	--	80	0.91	--
	B	67	227	10.9	0.82	--	80	0.87	--
	C	12	225	--	--	--	80	--	--
	D	10	233	--	--	--	80	--	--
Chemistry (018)	A	45	231	--	--	--	80	--	--
	B	39	221	--	--	--	80	--	--
	C	3	--	--	--	--	80	--	--
	D	2	--	--	--	--	80	--	--
Physics (019)	A	30	236	--	--	--	80	--	--
Earth/Space Science (020)	A	29	224	--	--	--	80	--	--
	B	2	--	--	--	--	80	--	--

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
<b>Mathematics (Secondary) (022)</b>	<b>A</b>	97	233	11.6	0.86	--	64	0.91	--
	<b>B</b>	85	247	10.3	0.90	--	64	0.94	--
	<b>C</b>	49	240	--	--	--	64	--	--
	<b>D</b>	44	237	--	--	--	64	--	--
	<b>E</b>	37	220	--	--	--	64	--	--
	<b>F</b>	35	229	--	--	--	64	--	--
	<b>G</b>	26	226	--	--	--	64	--	--
	<b>H</b>	23	234	--	--	--	64	--	--
<b>French (023)</b>	<b>A</b>	39	224	--	--	--	64	--	--
	<b>B</b>	7	--	--	--	--	64	--	--
<b>German (024)</b>	<b>A</b>	21	247	--	--	--	64	--	--
	<b>B</b>	4	--	--	--	--	64	--	--
<b>Latin (026)</b>	<b>A</b>	4	--	--	--	--	64	--	--
	<b>B</b>	2	--	--	--	--	64	--	--
<b>Russian (027)</b>	<b>A</b>	3	--	--	--	--	28	--	--
<b>Spanish (028)</b>	<b>A</b>	89	244	11.8	0.90	0.89	64	0.84	0.81
	<b>B</b>	65	253	12.1	0.97	0.85	64	0.79	0.78

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
Italian (029)	A	3	--	--	--	--	80	--	--
Marketing Education (036)	A	1	--	--	--	--	80	--	--
Agricultural Education (037)	A	7	--	--	--	--	64	--	--
Family and Consumer Sciences (040)	A	22	238	--	--	--	80	--	--
Health (043)	A	82	244	11.4	0.91	--	80	0.80	--
	B	72	250	10.9	0.88	--	80	0.85	--
Physical Education (044)	A	133	227	13.4	0.86	--	80	0.84	--
	B	113	217	14.4	0.86	--	80	0.84	--
	C	17	195	--	--	--	80	--	--
	D	16	207	--	--	--	80	--	--
Dance (046)	A	10	234	--	--	--	80	--	--
Library Media (048)	A	15	232	--	--	--	80	--	--
Computer Science (050)	A	5	--	--	--	--	80	--	--
School Counselor (051)	A	90	250	9.9	0.97	--	80	0.86	--
	B	69	241	10.5	0.91	--	80	0.85	--
Fine Arts (053)	A	7	--	--	--	--	80	--	--

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
Cognitive Impairment (056)	A	148	228	12.9	0.83	--	80	0.79	--
	B	147	223	13.0	0.82	--	80	0.83	--
	C	13	223	--	--	--	80	--	--
	D	13	227	--	--	--	80	--	--
Speech and Language Impaired (057)	A	1	--	--	--	--	80	--	--
Physical or Other Health Impairment (058)	A	10	245	--	--	--	80	--	--
Emotional Impairment (059)	A	70	238	11.6	0.87	--	80	0.79	--
	B	55	233	--	--	--	80	--	--
Visually Impaired (061)	A	8	--	--	--	--	80	--	--
	B	1	--	--	--	--	80	--	--
Deaf and Hard of Hearing (062)	A	4	--	--	--	--	80	--	--
Learning Disabilities (063)	A	131	238	11.2	0.87	--	80	0.81	--
	B	108	237	11.3	0.89	--	80	0.84	--
	C	14	232	--	--	--	80	--	--
	D	13	229	--	--	--	80	--	--
Autism Spectrum Disorder (064)	A	67	249	10.8	0.93	--	80	0.70	--
	B	49	248	--	--	--	80	--	--

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
<b>Bilingual Education (075)</b>	A	14	244	--	--	--	80	--	--
<b>Social Studies (Secondary) (084)</b>	A	239	225	10.4	0.78	--	80	0.82	--
	B	232	222	10.3	0.84	--	80	0.84	--
	C	32	221	--	--	--	80	--	--
	D	25	223	--	--	--	80	--	--
<b>Middle Level (085)</b>	A	20	244	--	--	--	80	--	--
<b>English as a Second Language (086)</b>	A	234	240	10.9	0.91	--	80	0.87	--
	B	213	242	11.0	0.85	--	80	0.85	--
<b>Industrial Technology (087)</b>	A	19	231	--	--	--	80	--	--
<b>Technology and Design (088)</b>	A	1	--	--	--	--	80	--	--
<b>Mathematics (Elementary) (089)</b>	A	116	239	11.2	0.93	--	64	0.88	--
	B	103	239	11.0	0.88	--	64	0.90	--
	C	26	227	--	--	--	64	--	--
	D	14	240	--	--	--	64	--	--

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
<b>Language Arts (Elementary) (090)</b>	<b>A</b>	144	232	12.1	0.79	--	80	0.78	--
	<b>B</b>	139	232	12.3	0.88	--	80	0.79	--
	<b>C</b>	72	234	12.1	0.81	--	80	0.83	--
	<b>D</b>	71	234	12.1	0.86	--	80	0.83	--
	<b>E</b>	31	228	--	--	--	80	--	--
	<b>F</b>	30	226	--	--	--	80	--	--
<b>Communication Arts (Secondary) (091)</b>	<b>A</b>	7	--	--	--	--	80	--	--
<b>Reading Specialist (092)</b>	<b>A</b>	62	249	10.5	0.94	--	80	0.75	--
	<b>B</b>	58	245	--	--	--	80	--	--
<b>Integrated Science (Elementary) (093)</b>	<b>A</b>	57	230	--	--	--	80	--	--
	<b>B</b>	57	237	--	--	--	80	--	--
	<b>C</b>	38	229	--	--	--	80	--	--
	<b>D</b>	32	223	--	--	--	80	--	--
	<b>E</b>	17	239	--	--	--	80	--	--
	<b>F</b>	15	228	--	--	--	80	--	--

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
<b>Integrated Science (Secondary) (094)</b>	<b>A</b>	124	224	11.1	0.91	--	80	0.89	--
	<b>B</b>	107	215	11.4	0.81	--	80	0.87	--
	<b>C</b>	23	224	--	--	--	80	--	--
	<b>D</b>	22	229	--	--	--	80	--	--
<b>Visual Arts Education (095)</b>	<b>A</b>	95	234	10.6	0.78	--	80	0.81	--
	<b>B</b>	64	237	10.7	0.83	--	80	0.81	--
	<b>C</b>	21	219	--	--	--	80	--	--
<b>Physical Science (097)</b>	<b>A</b>	8	--	--	--	--	80	--	--
<b>Business, Management, Marketing, &amp; Tech. (098)</b>	<b>A</b>	56	224	--	--	--	80	--	--
<b>Music Education (099)</b>	<b>A</b>	108	241	9.6	0.87	--	80	0.80	--
	<b>B</b>	101	244	9.6	0.90	--	80	0.85	--
	<b>C</b>	12	226	--	--	--	80	--	--
	<b>D</b>	10	229	--	--	--	80	--	--
<b>Japanese (100)</b>	<b>A</b>	3	--	--	--	--	28	--	--
<b>Chinese (Mandarin) (101)</b>	<b>A</b>	29	246	--	--	--	28	--	--
	<b>B</b>	7	--	--	--	--	28	--	--

**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)**

**October 1, 2018 - September 30, 2019**

**Technical Report Statistics by Test Form**

October 1, 2018 - September 30, 2019		Number of Tests Taken	Total Test Scaled Score Indices				Multiple-Choice Section		Performance Assignment Section
			Mean	SEM	Decision Consistency	Stratified Alpha	Length	KR20	G Coefficient
Arabic (Modern Standard) (102)	A	38	215	--	--	--	28	--	--
	B	10	209	--	--	--	28	--	--
Elementary Education (103)	A	588	227	9.6	0.86	--	120	0.90	--
	B	546	223	9.7	0.85	--	120	0.90	--
	C	543	224	9.3	0.86	--	120	0.92	--
	D	499	223	9.6	0.85	--	120	0.91	--
	E	464	227	9.0	0.85	--	120	0.90	--
	F	326	222	9.3	0.83	--	120	0.91	--
	G	166	225	9.4	0.88	--	120	0.92	--
	H	157	222	9.2	0.83	--	120	0.92	--
	J	81	229	9.0	0.84	--	120	0.92	--
Social Studies (Elementary) (105)	A	74	223	10.5	0.86	--	80	0.85	--
	B	74	229	10.6	0.84	--	80	0.83	--
Early Childhood Education (General and Special Education) (106)	A	178	217	15.6	0.72	--	80	0.82	--
	B	174	222	15.4	0.79	--	80	0.81	--
	C	47	237	--	--	--	80	--	--
	D	40	222	--	--	--	80	--	--



**CONFIDENTIAL: NOT FOR DISTRIBUTION**

**Michigan Test For Teacher Certification (MTTC)  
October 1, 2018 - September 30, 2019  
Technical Report Statistics by Test Field (All Forms)**

Test and Item(s)		Number of Tests Taken	Number of Scorable Responses	Performance Assignments			
				Scorer Agreement (%)			Inter-rater Reliability
				Total	Exact	Adjacent	
Spanish (028)	1	154	153	100.0	82.4	17.6	0.89
	2	154	151	99.3	81.5	17.9	0.89

# **MTTC Technical Report**

**Test Statistics: October 1, 2018 – September 30, 2019**

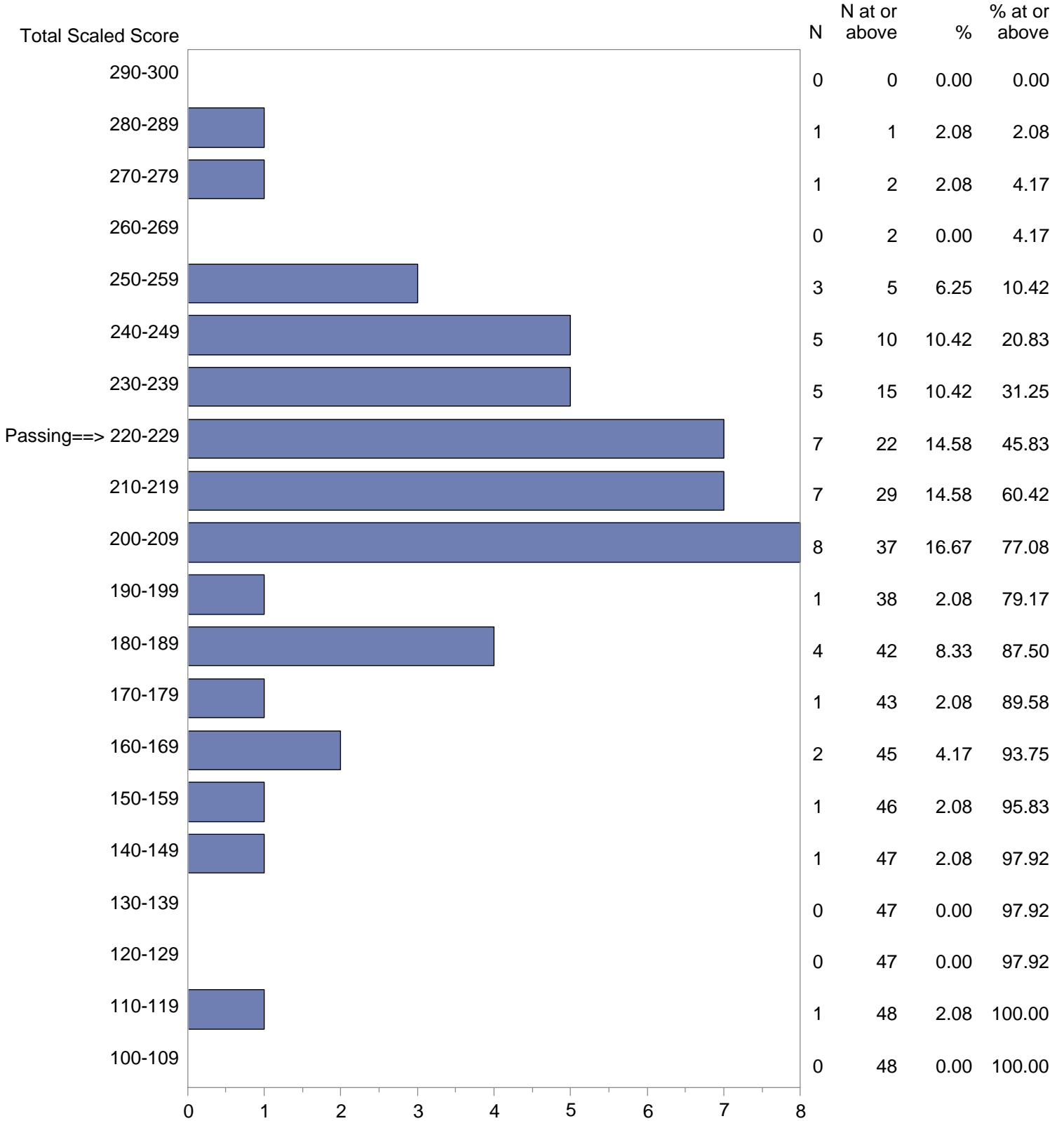
## **Section III: Total Scaled Score Distribution by Test Field**

The Total Scaled Score Distribution by Test Field report is contained on the Annual Reporting page of the MTTC Faculty Resources Technical Manual at [mttc.nesinc.com](http://mttc.nesinc.com).

CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

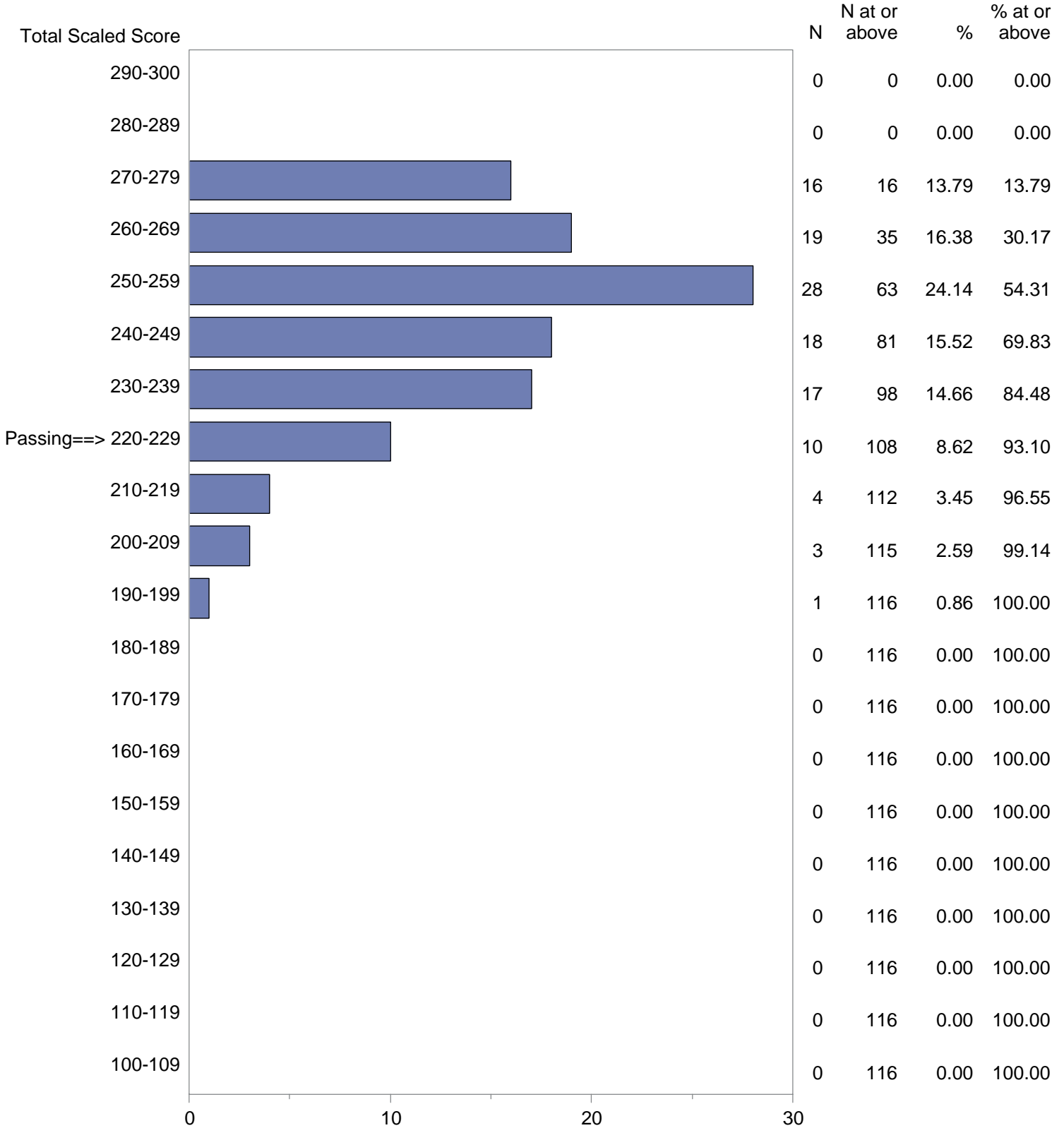
Test Field=Arabic (Modern Standard) (102)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

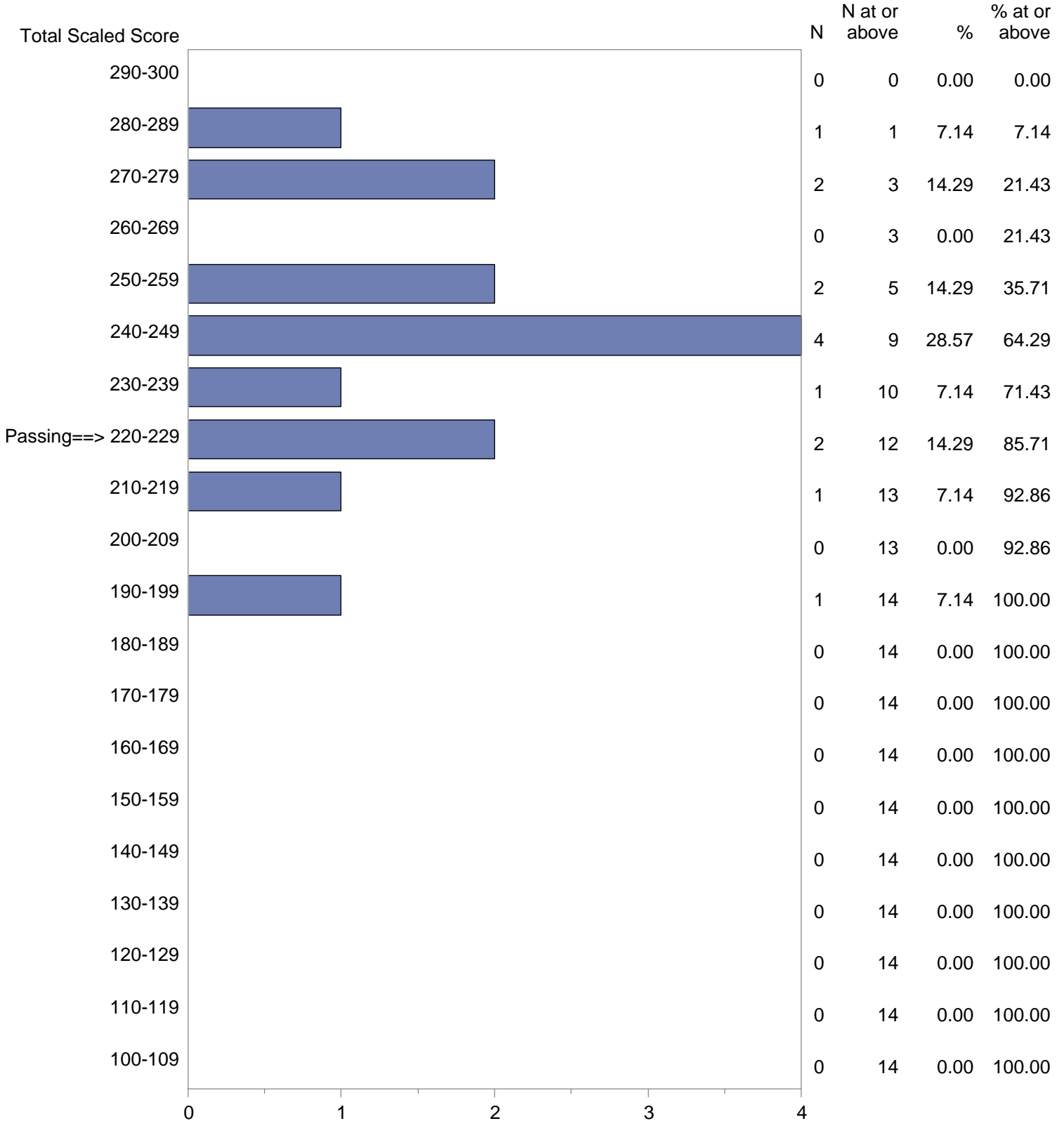
Test Field=Autism Spectrum Disorder (064)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

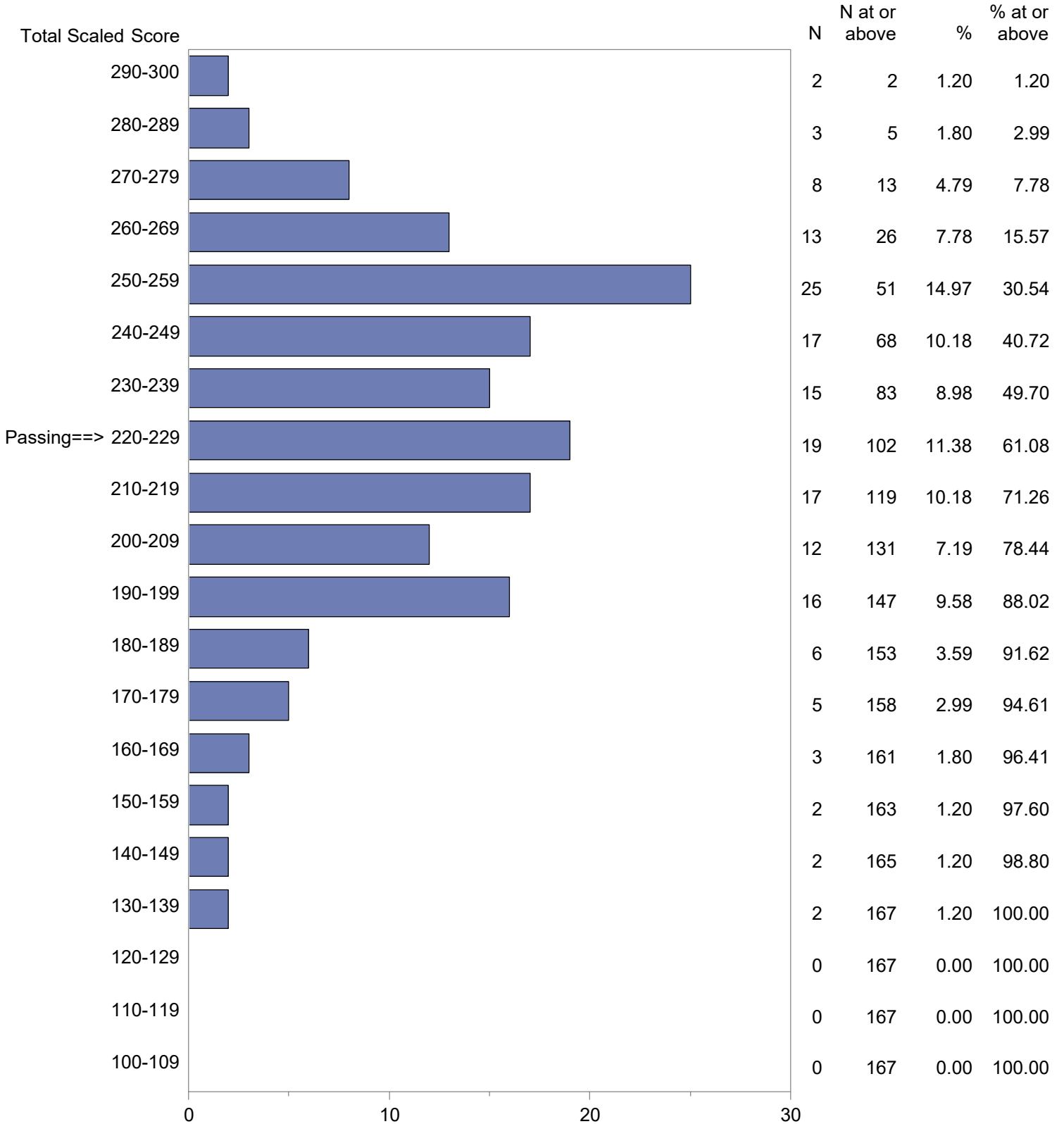
Test Field=Bilingual Education (075)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

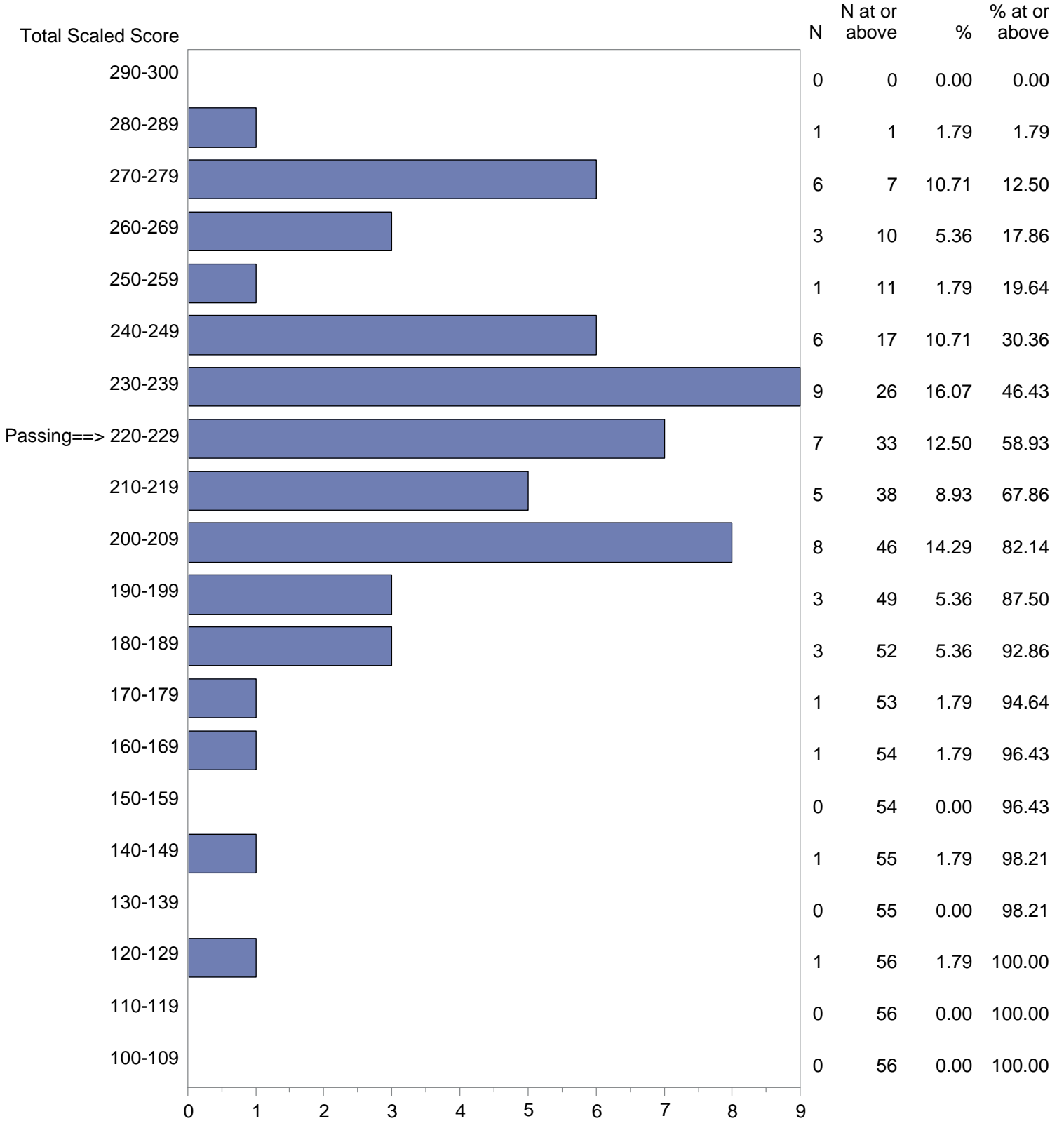
Test Field=Biology (017)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

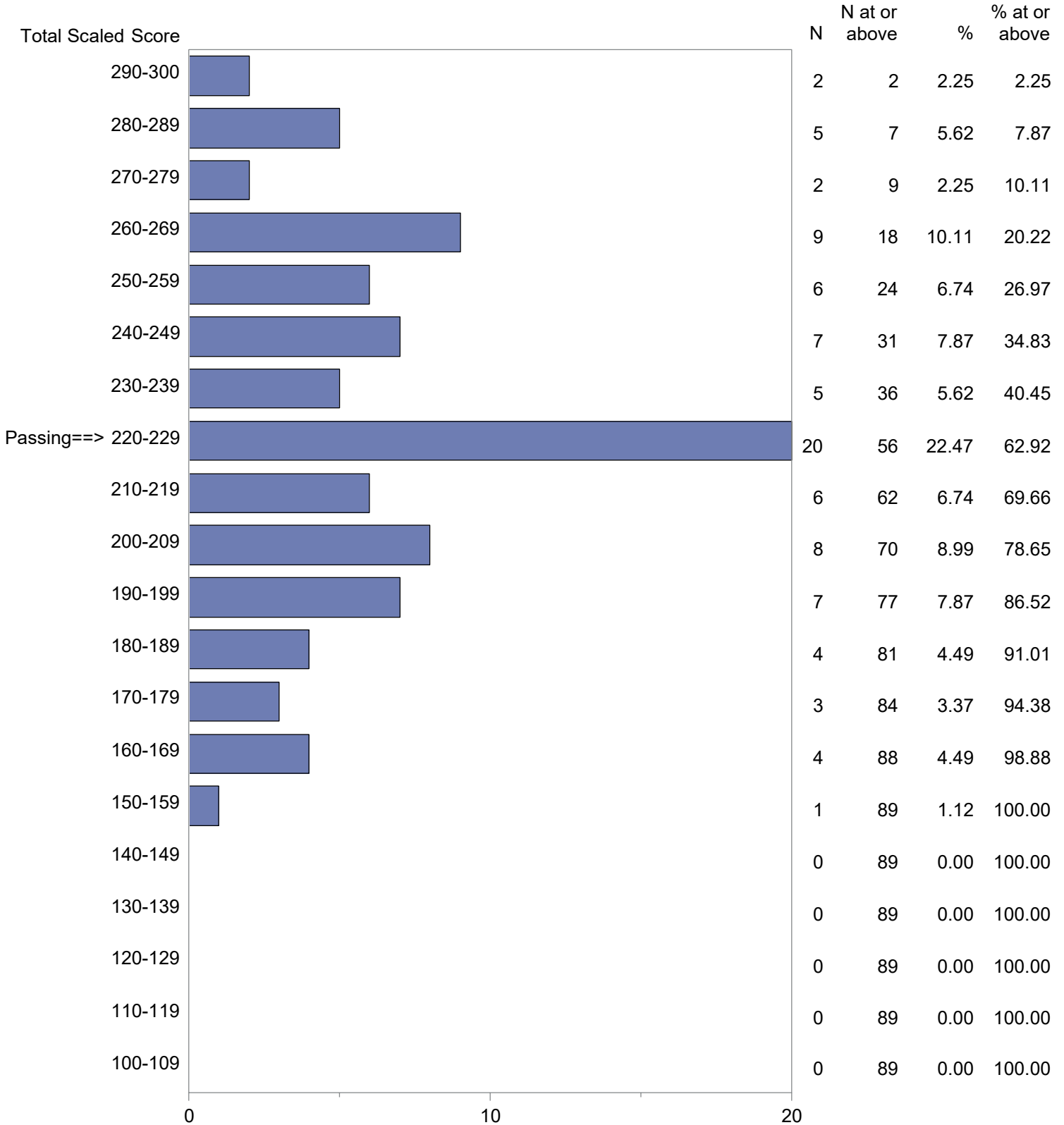
Test Field=Business, Management, Marketing, & Tech. (098)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=Chemistry (018)

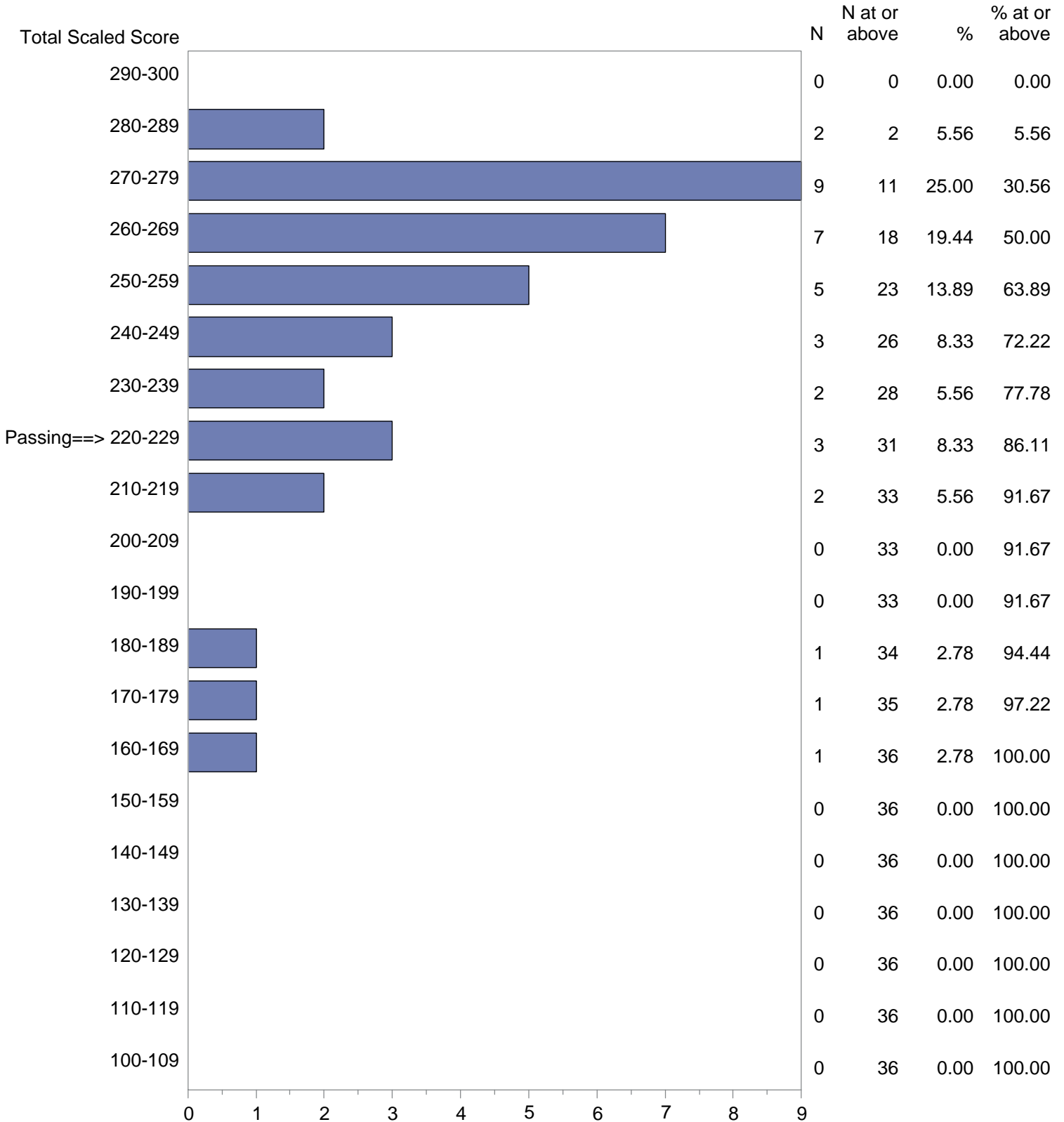




CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

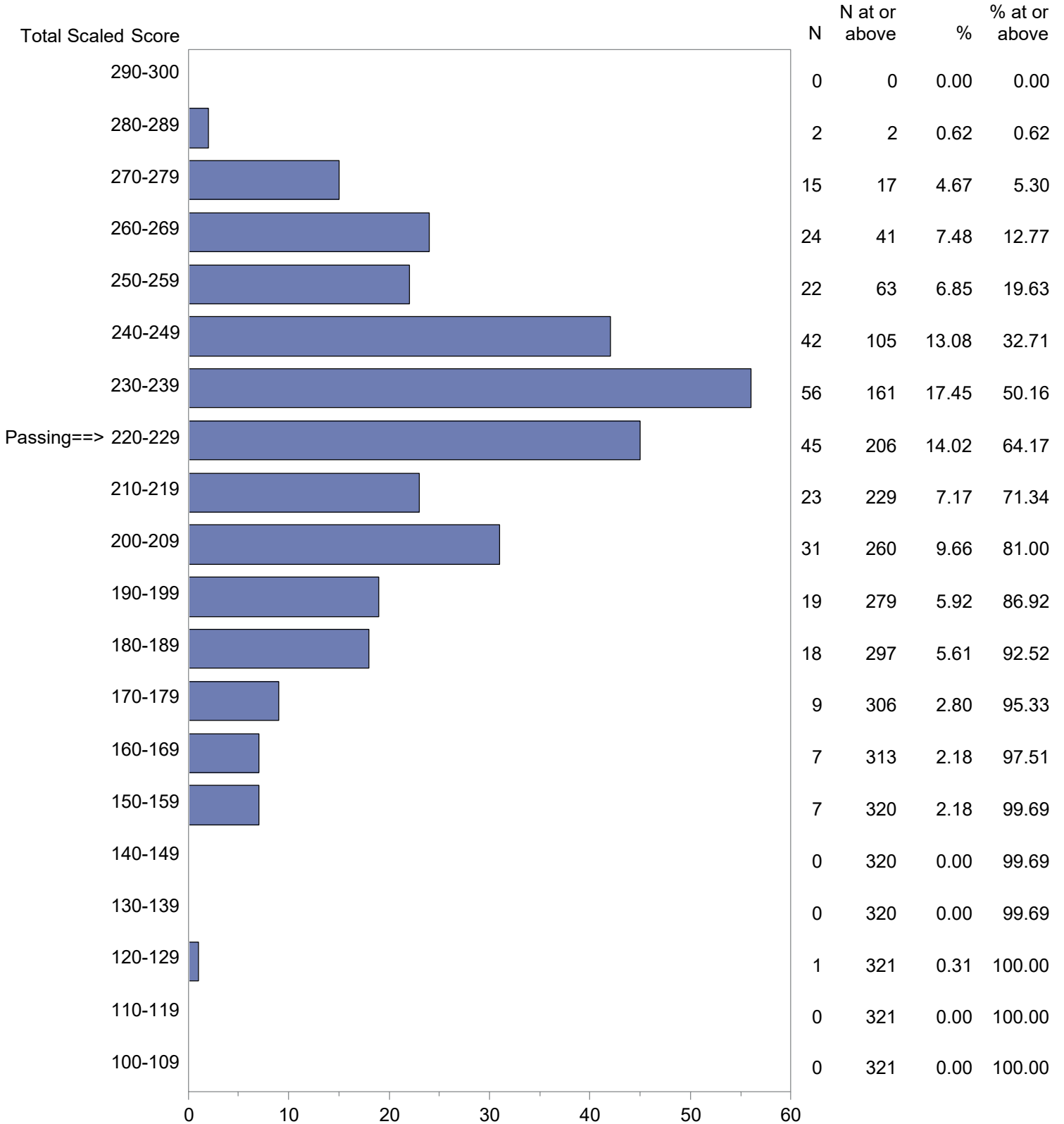
Test Field=Chinese (Mandarin) (101)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

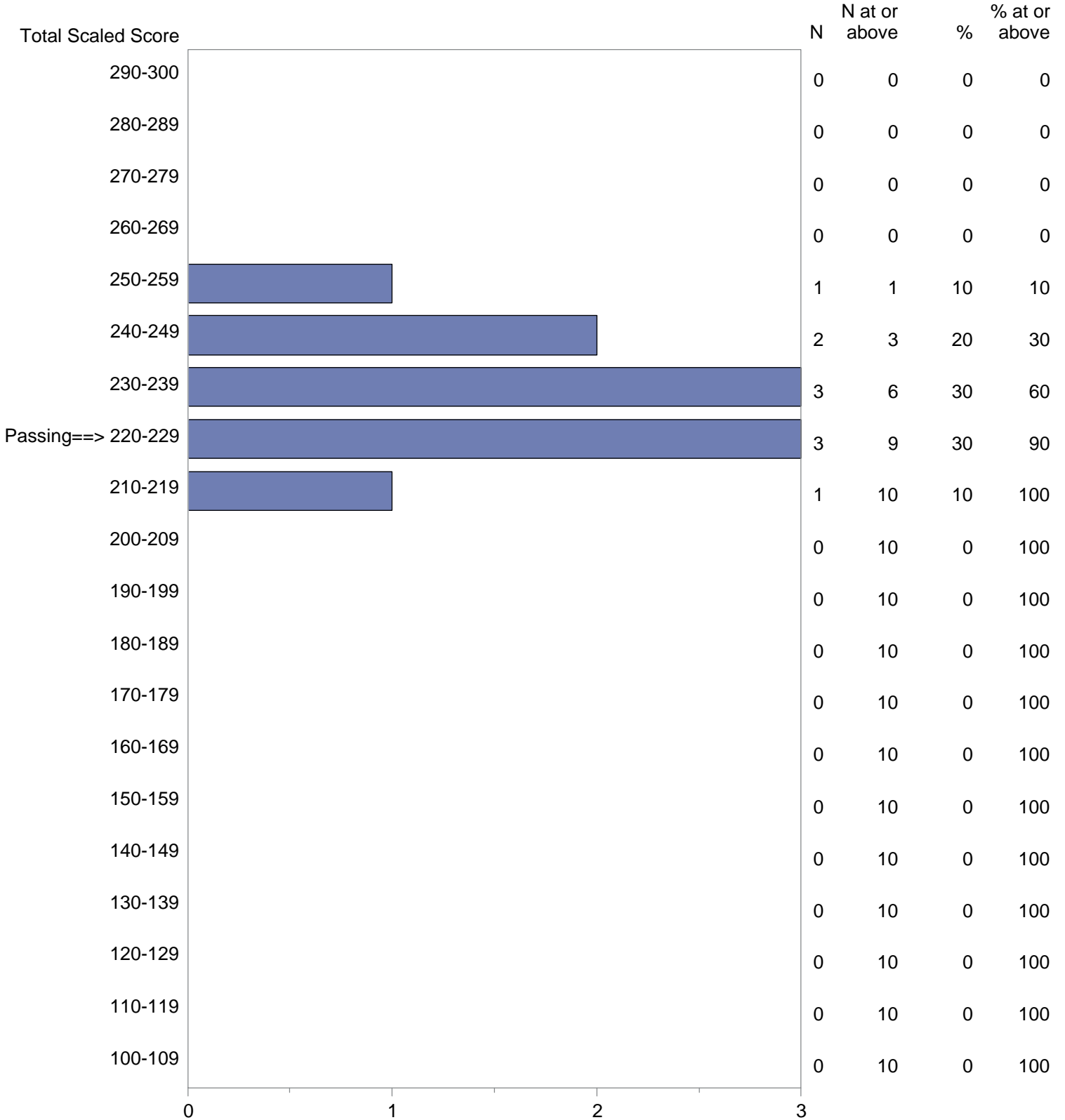
Test Field=Cognitive Impairment (056)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

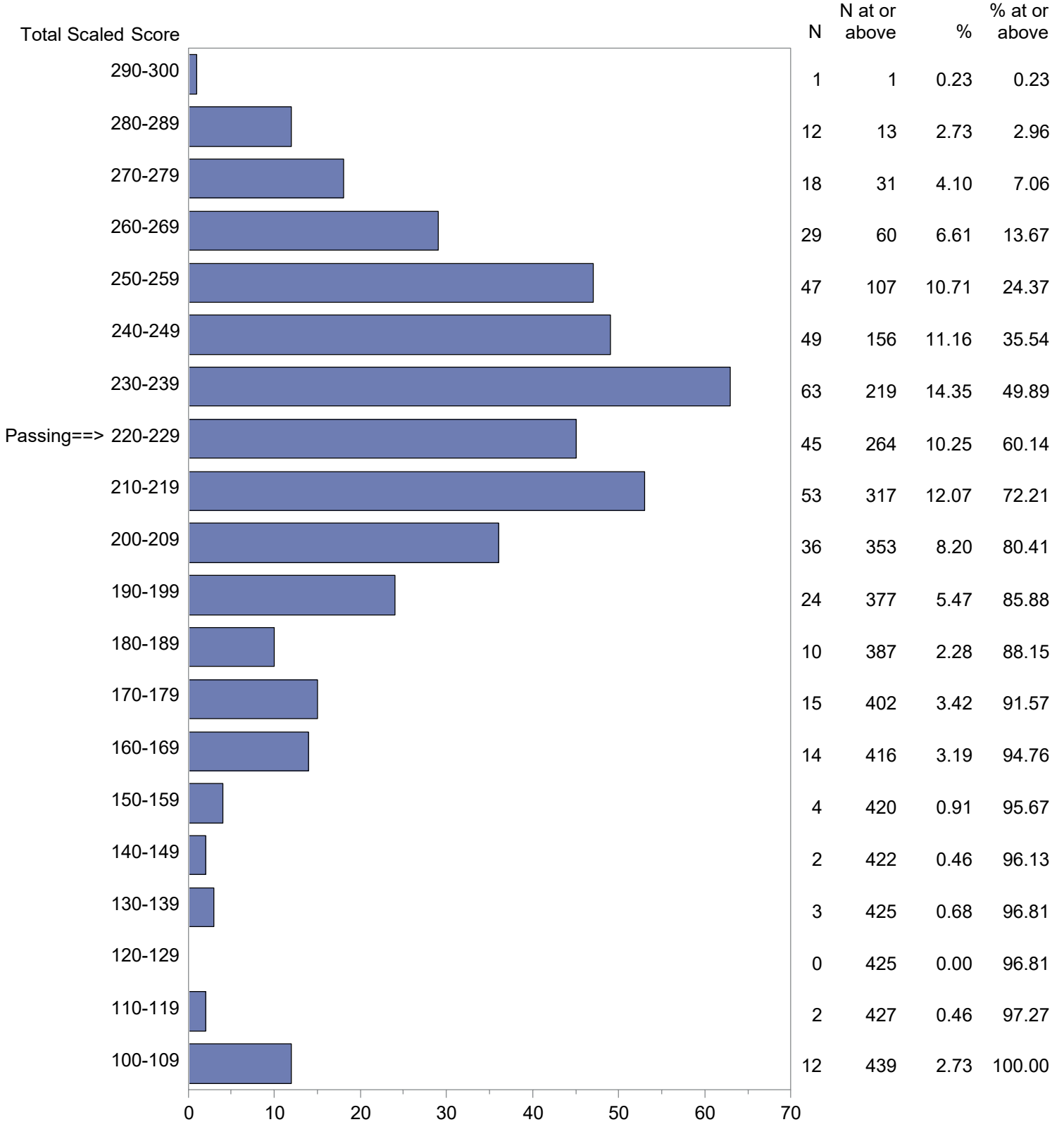
Test Field=Dance (046)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

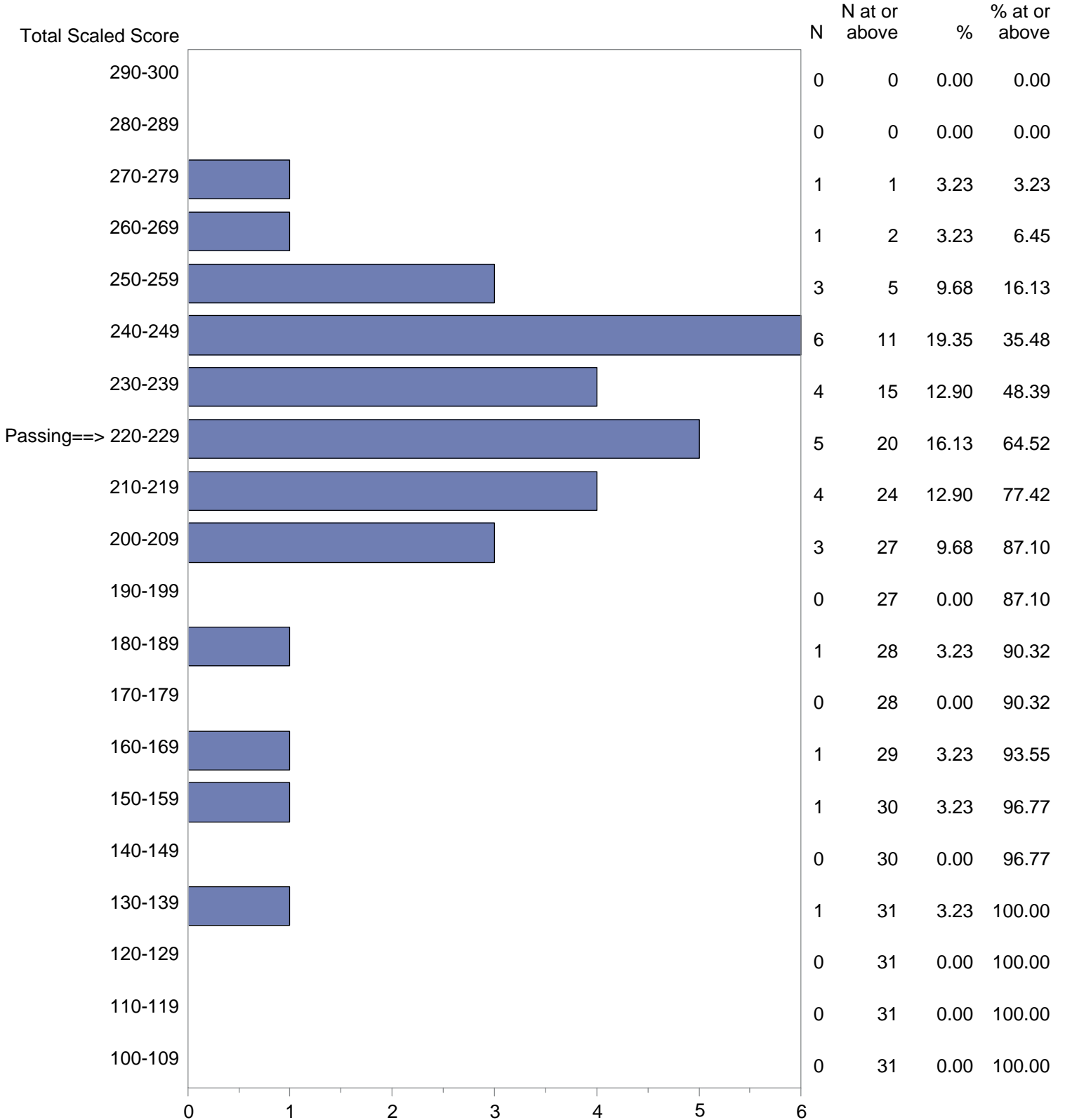
Test Field=Early Childhood Education (General and Special Education) (106)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

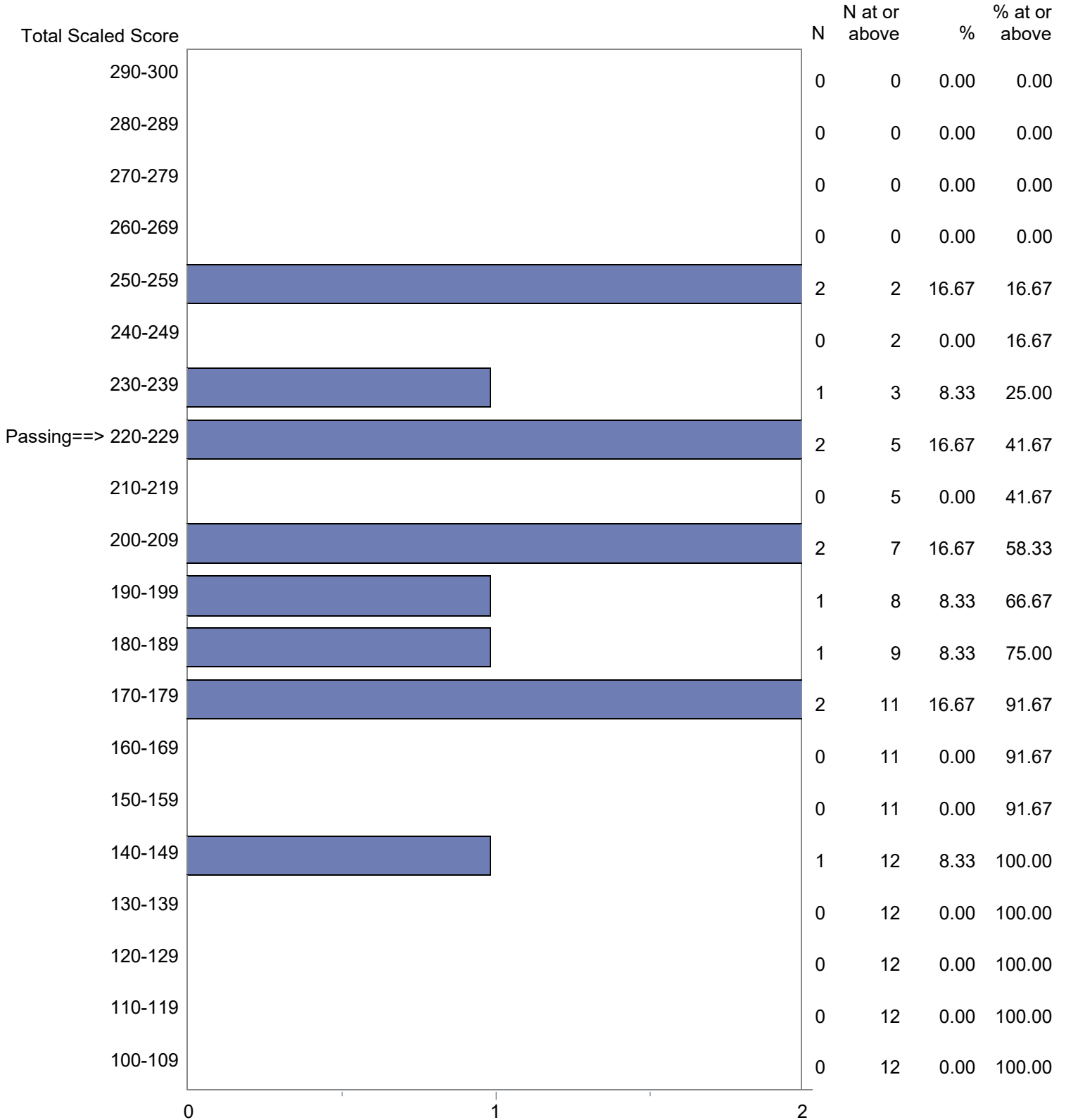
Test Field=Earth/Space Science (020)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

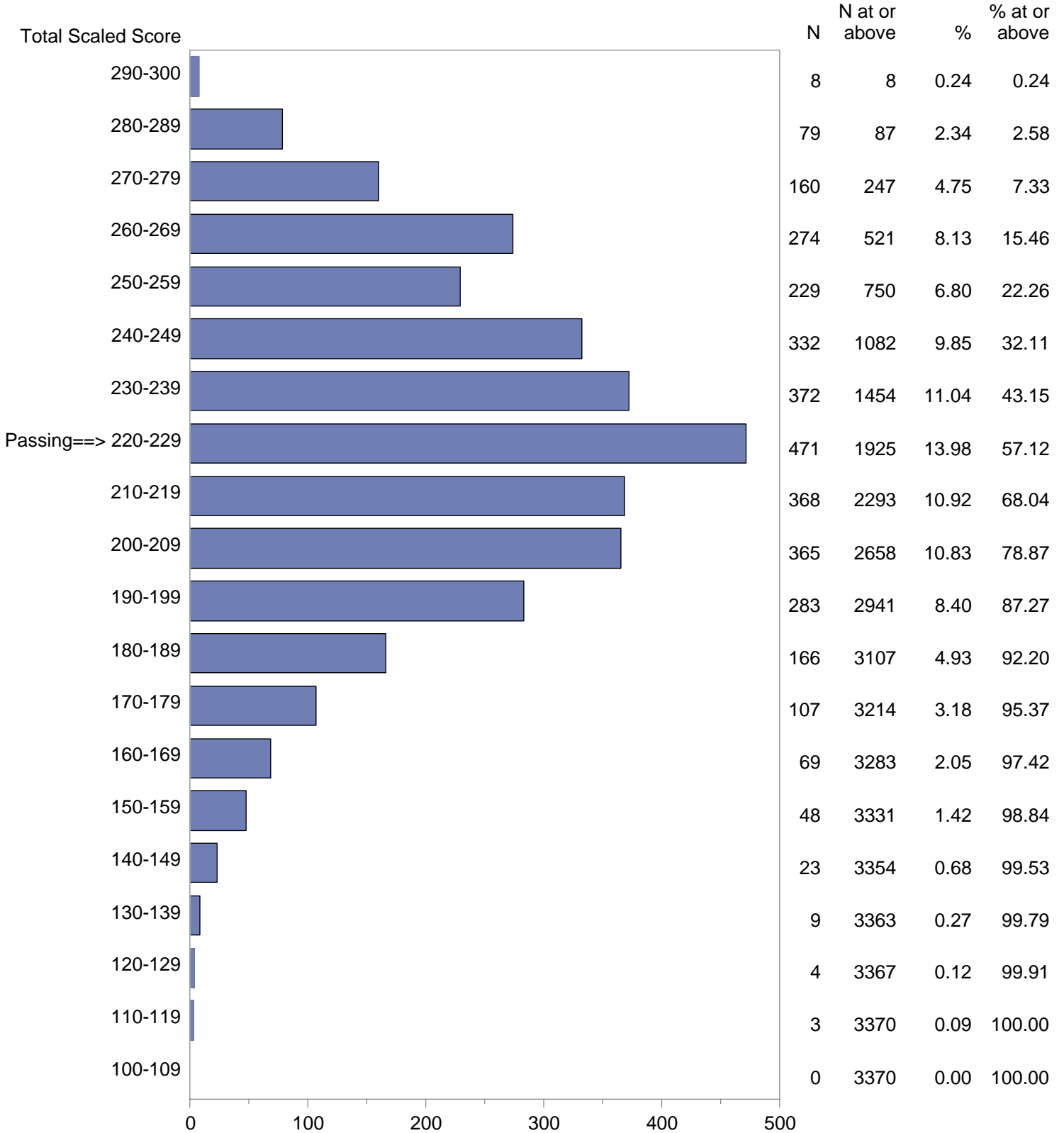
Test Field=Economics (007)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

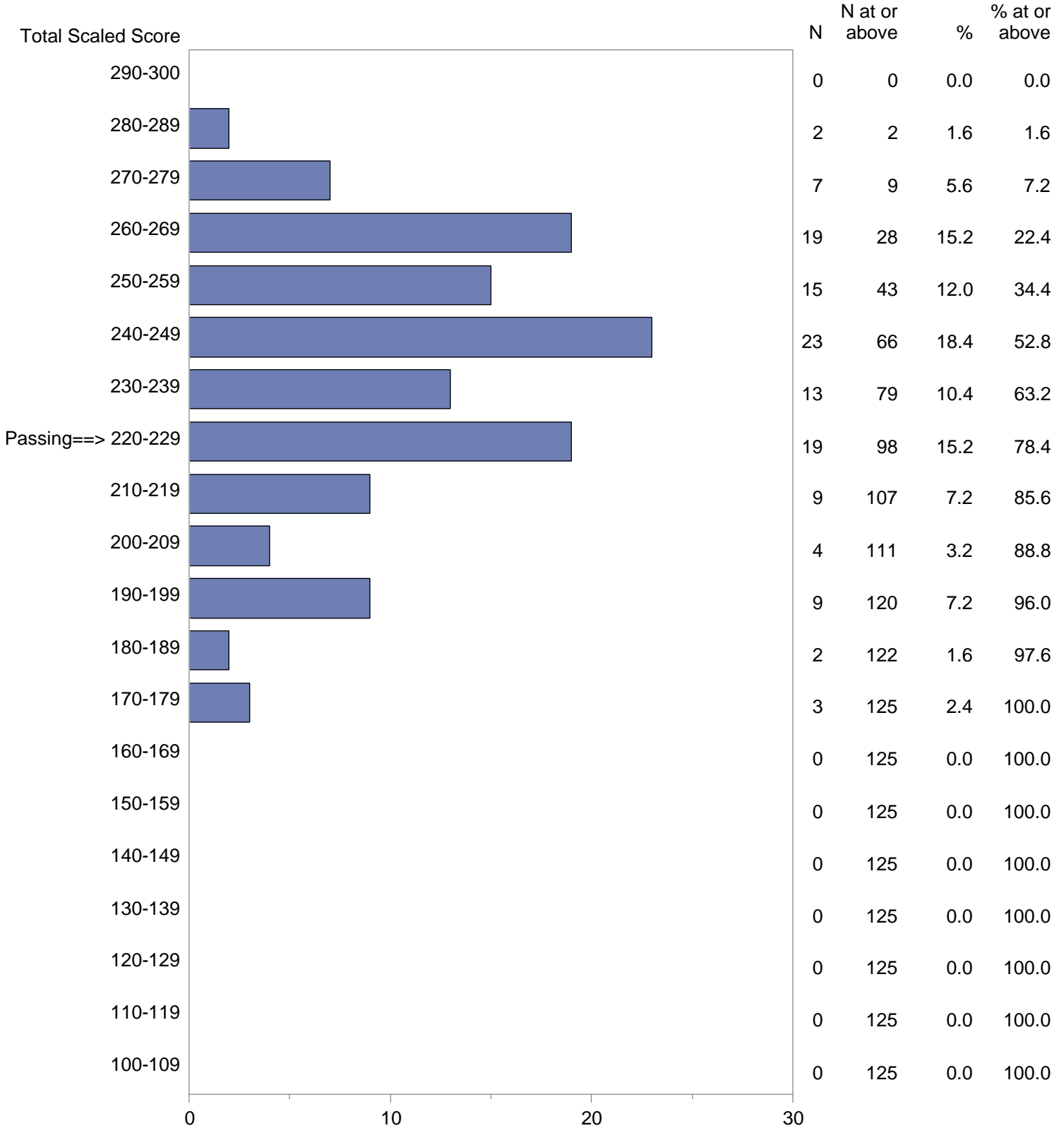
Test Field=Elementary Education (103)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=Emotional Impairment (059)

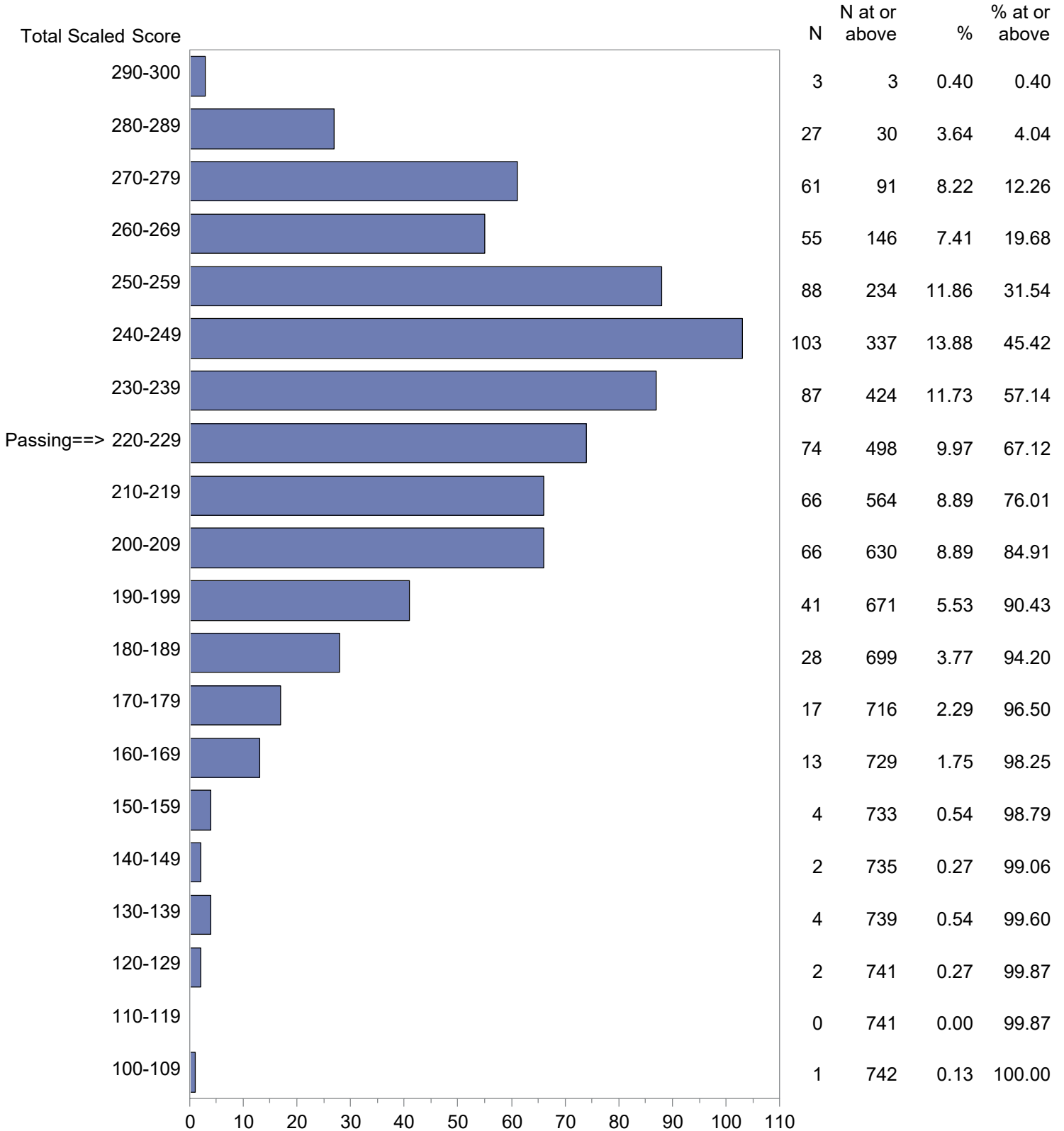




CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

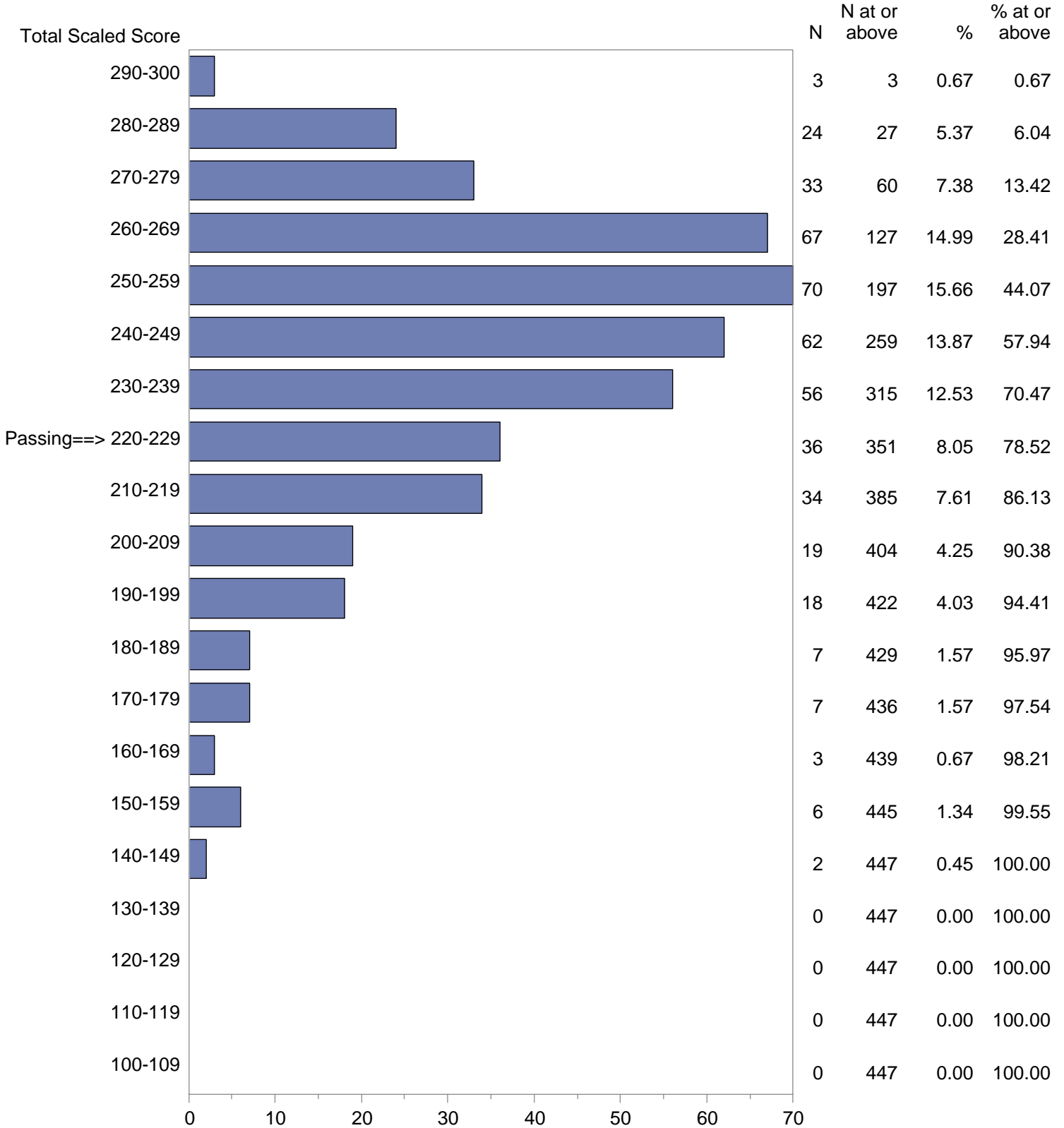
Test Field=English (002)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

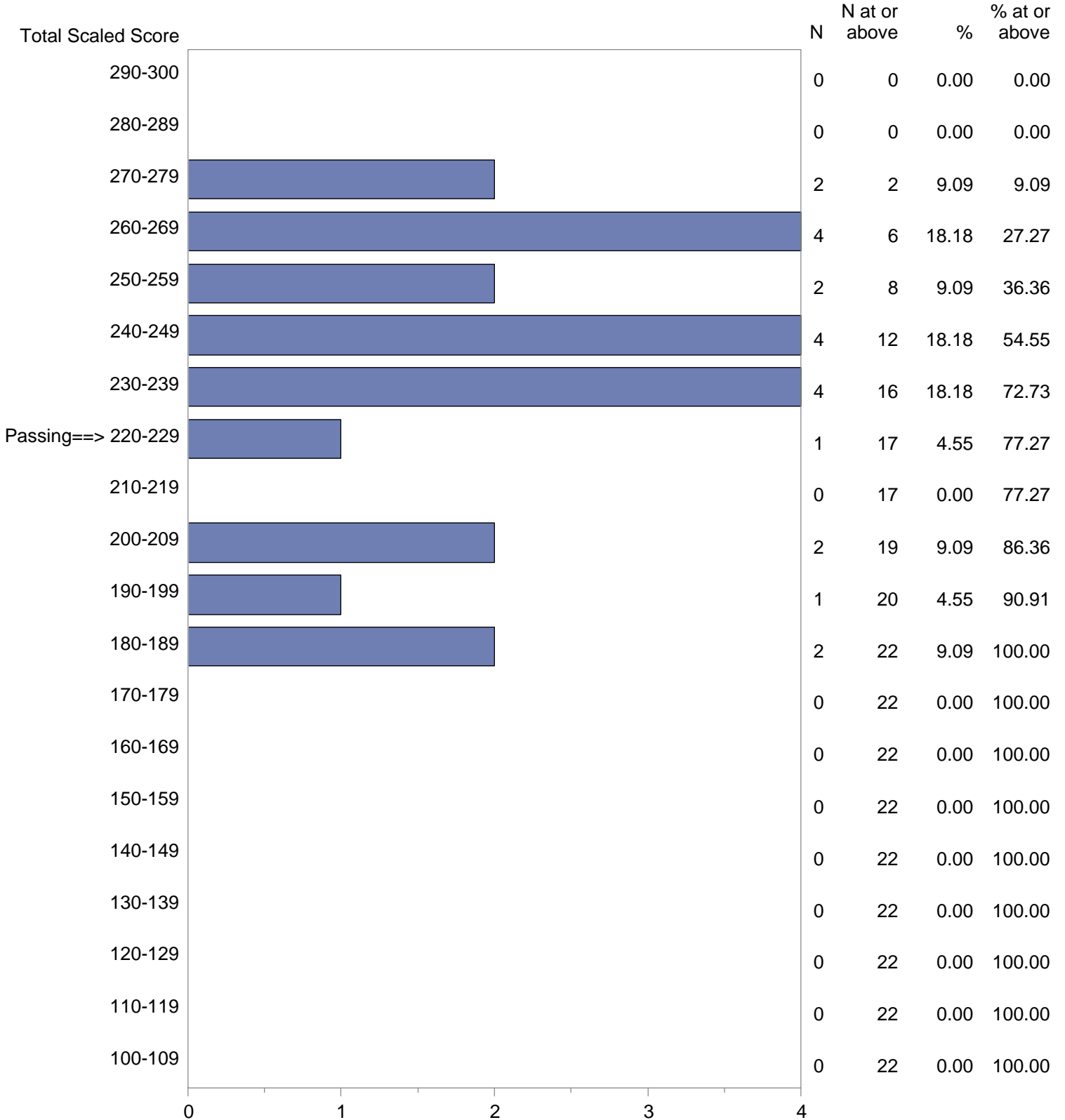
Test Field=English as a Second Language (086)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

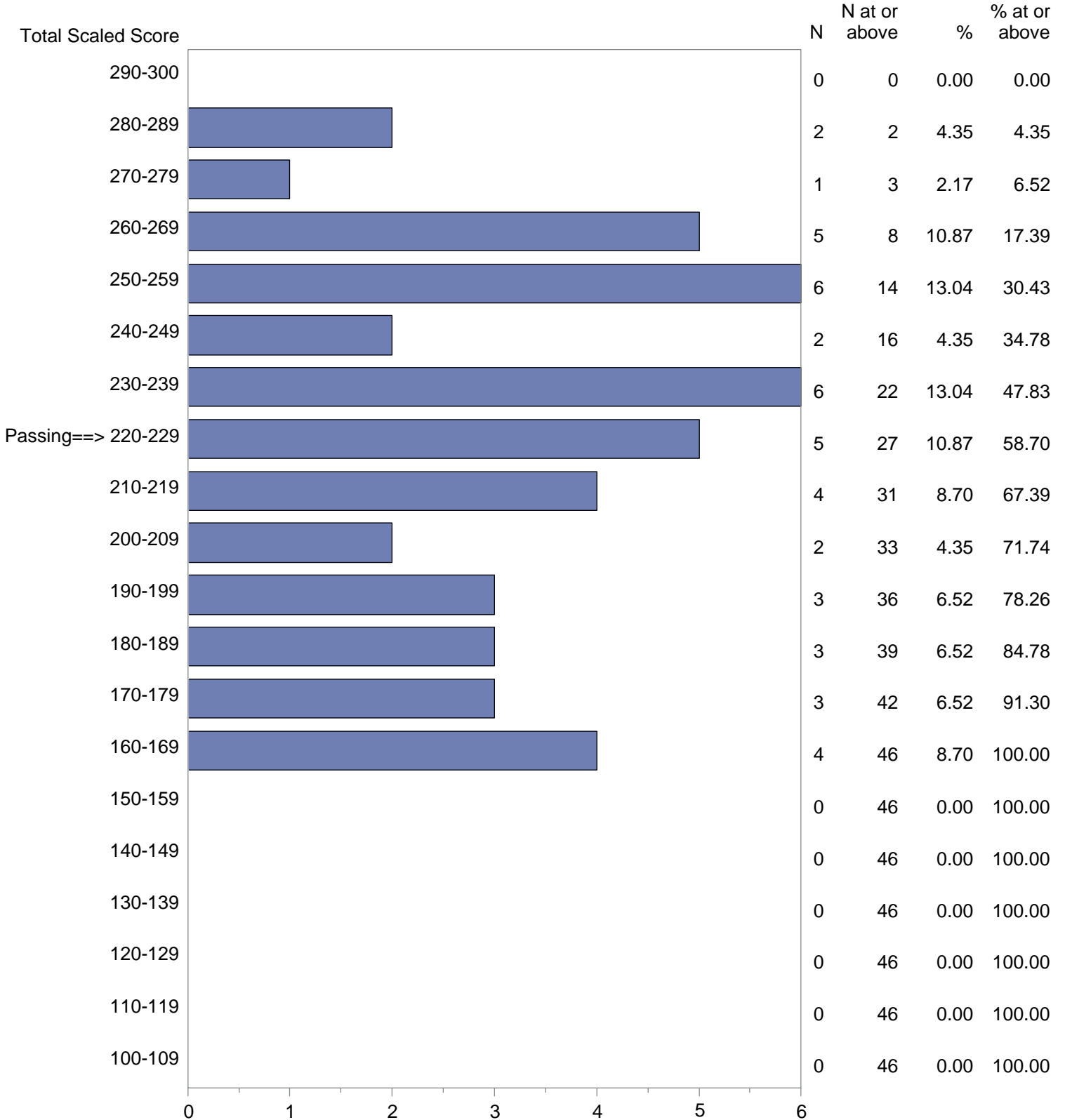
Test Field=Family and Consumer Sciences (040)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

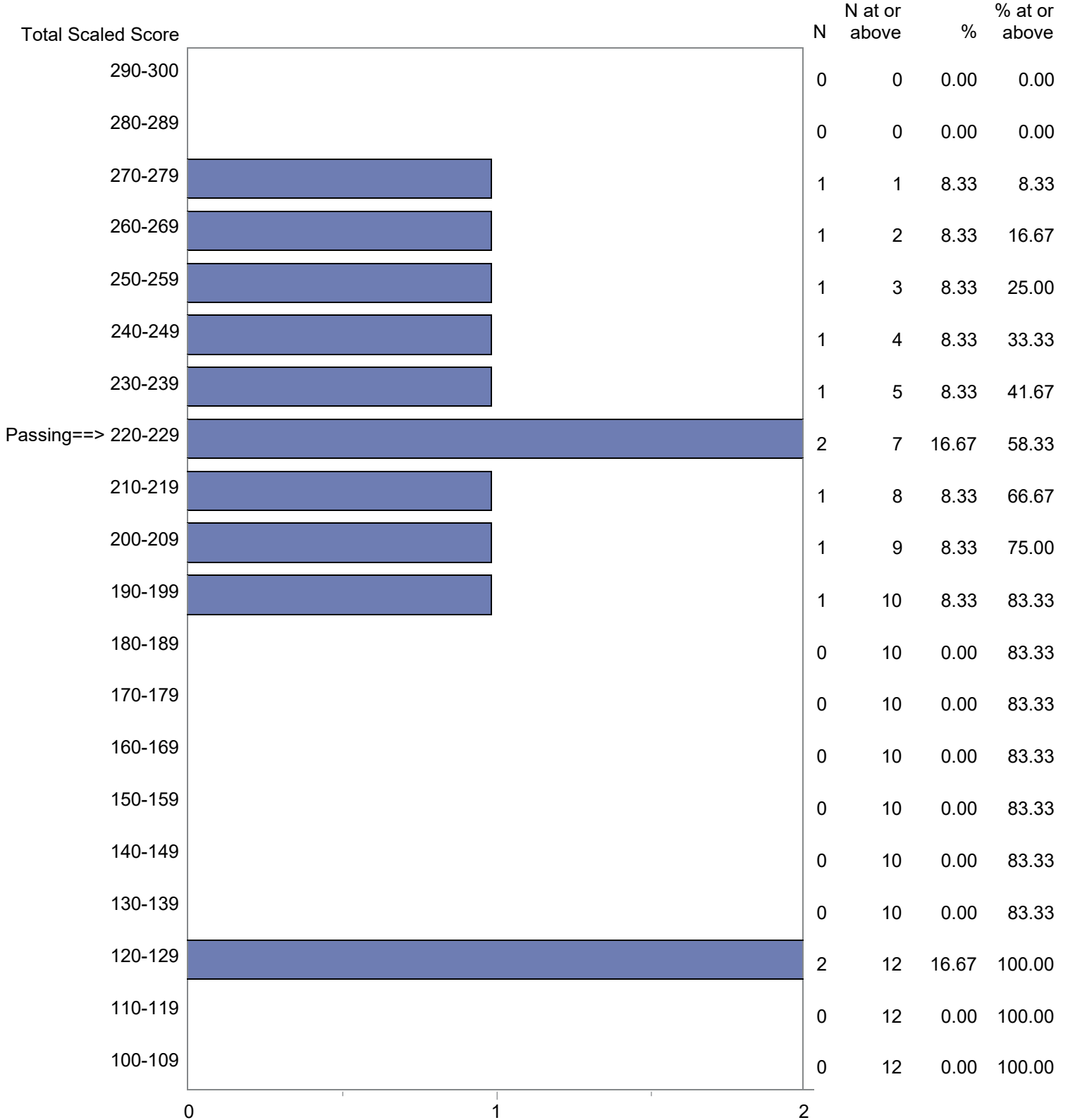
Test Field=French (023)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

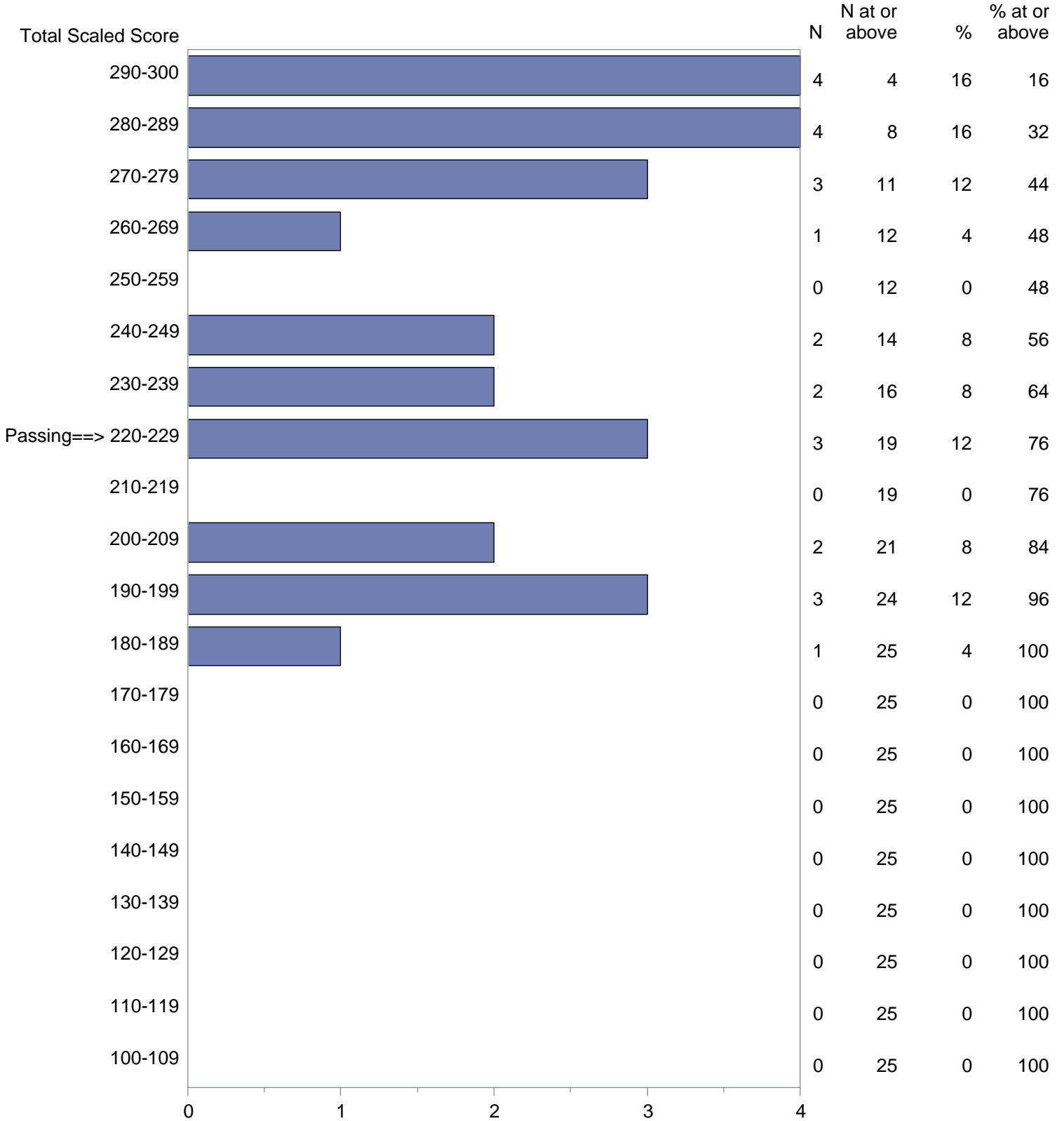
Test Field=Geography (008)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

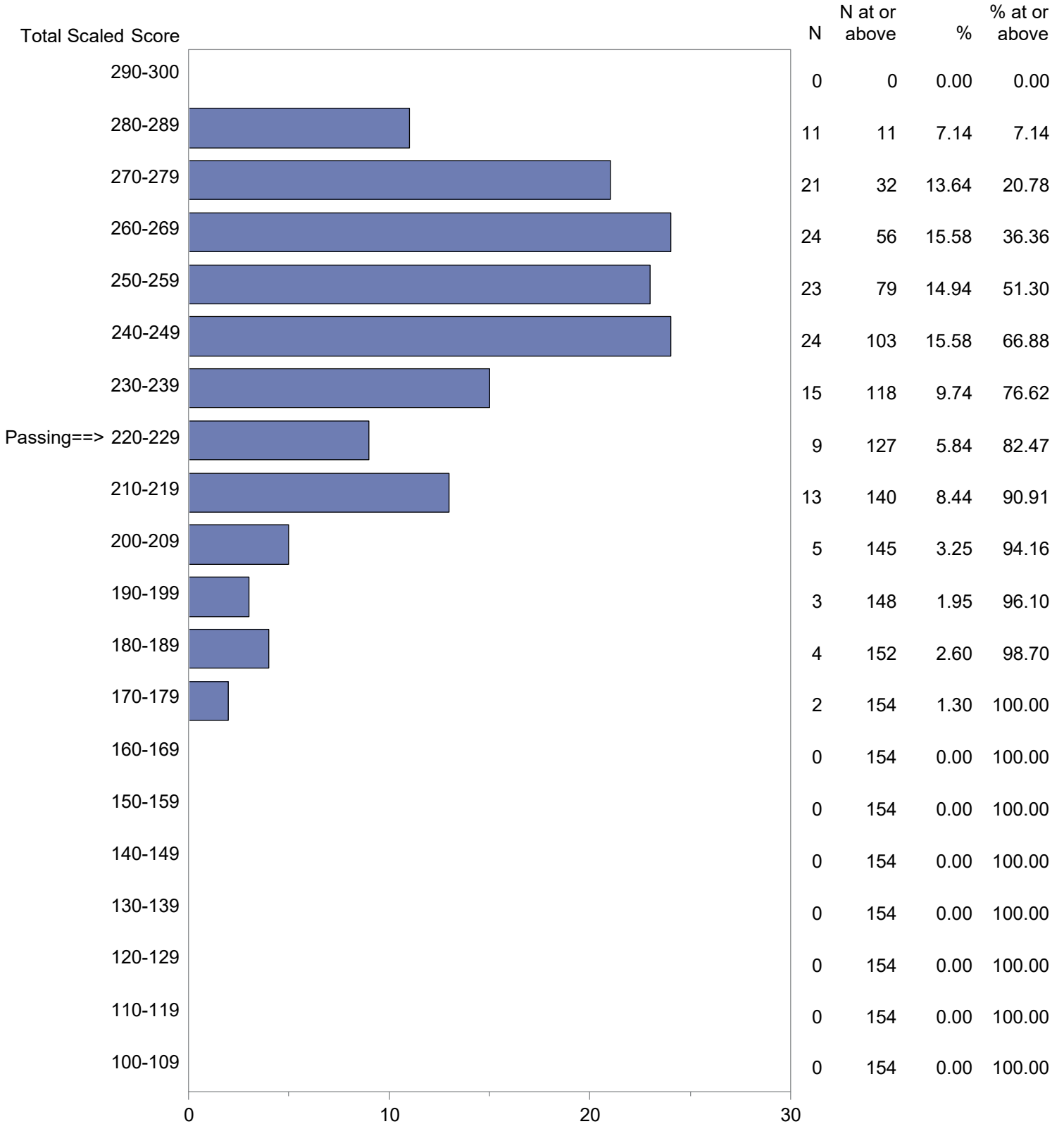
Test Field=German (024)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

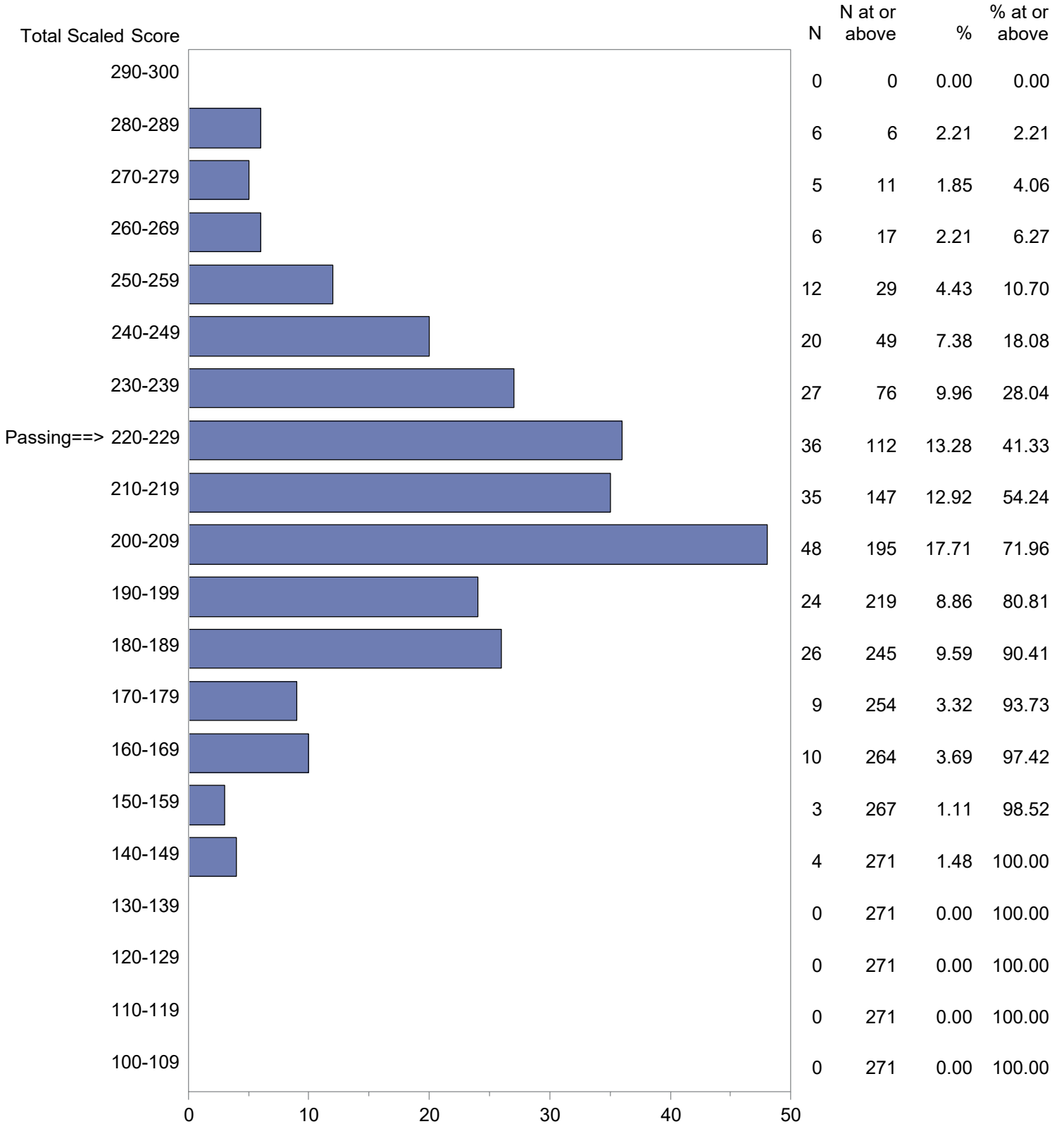
Test Field=Health (043)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=History (009)

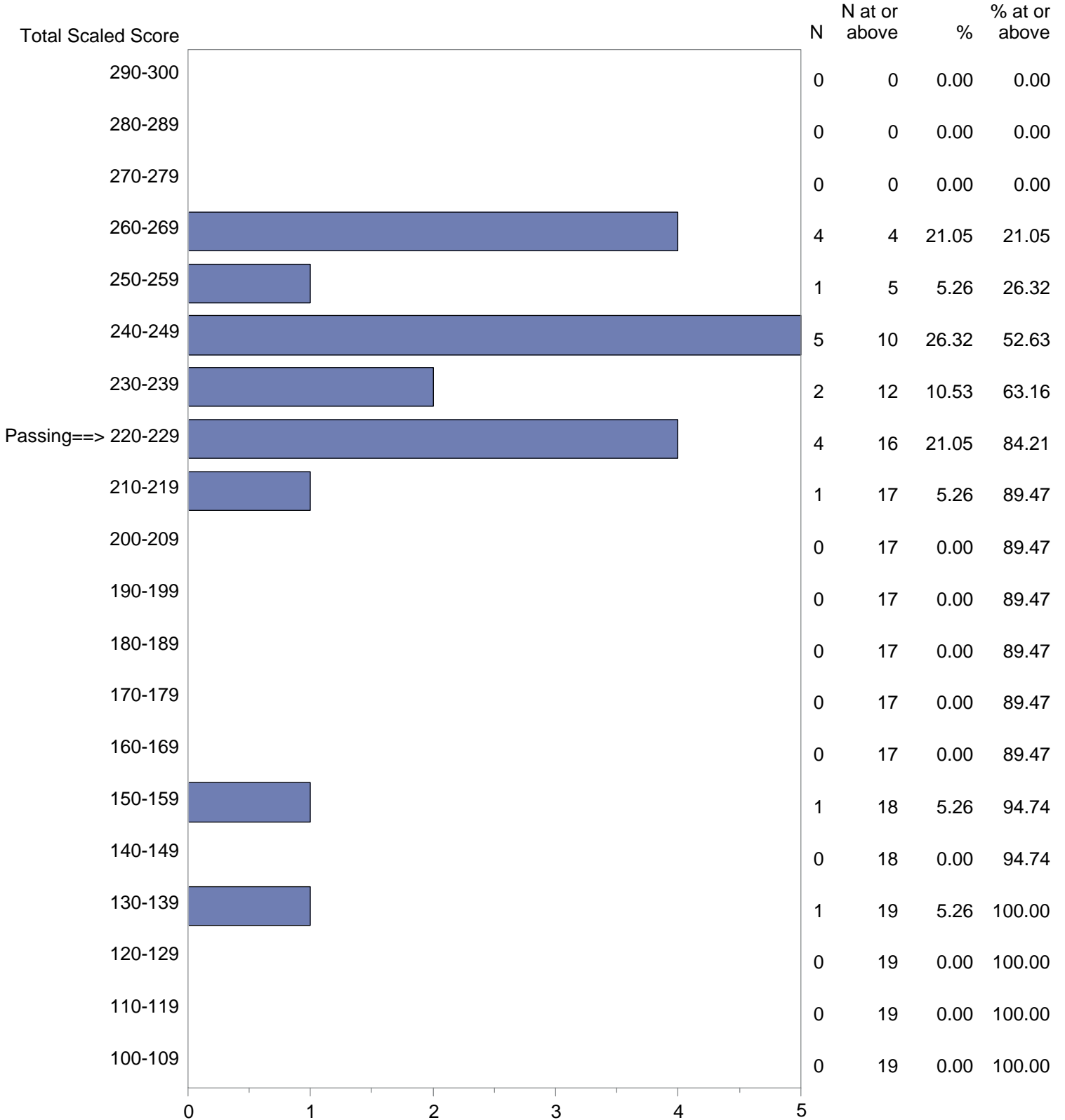




CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

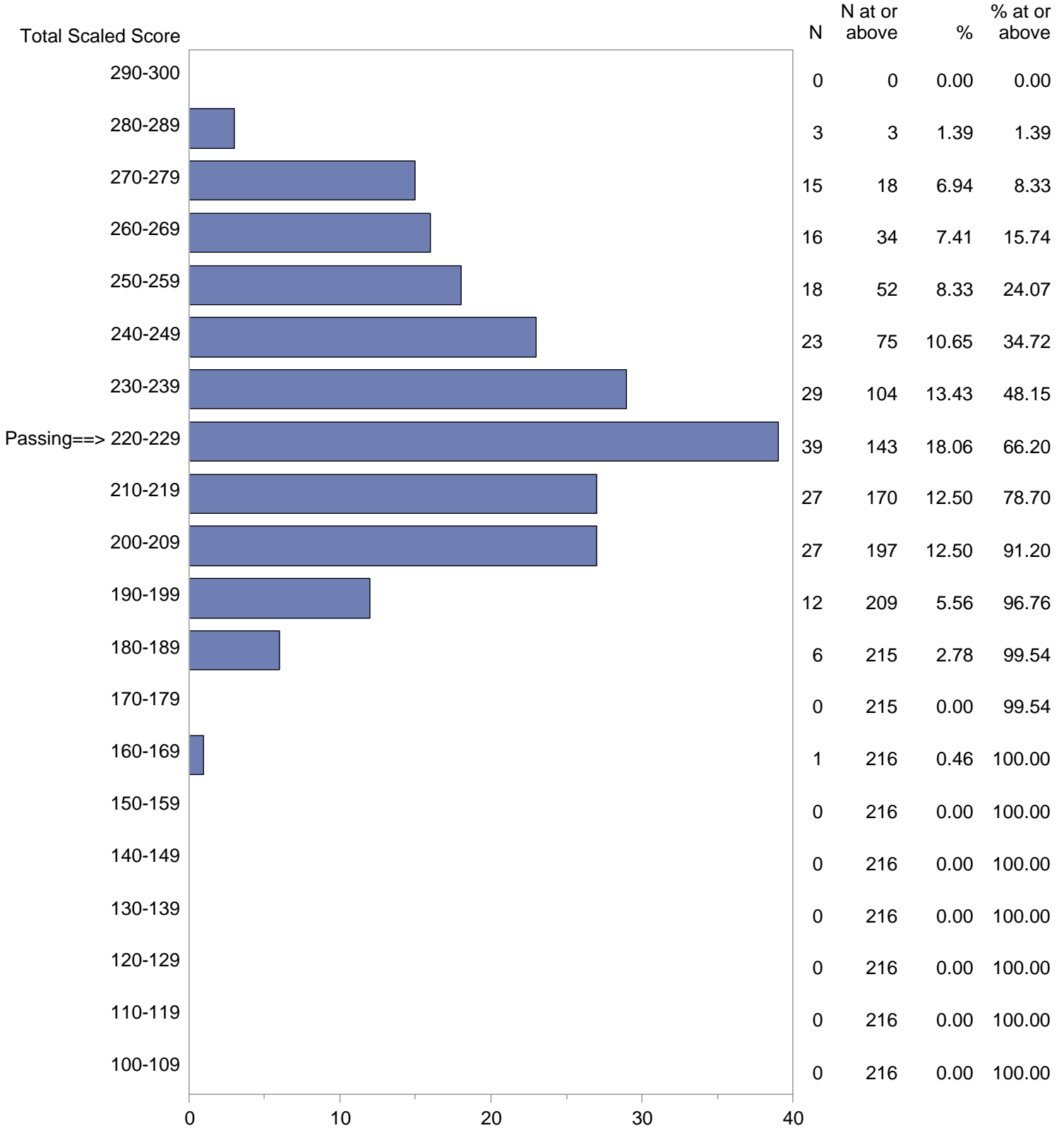
Test Field=Industrial Technology (087)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

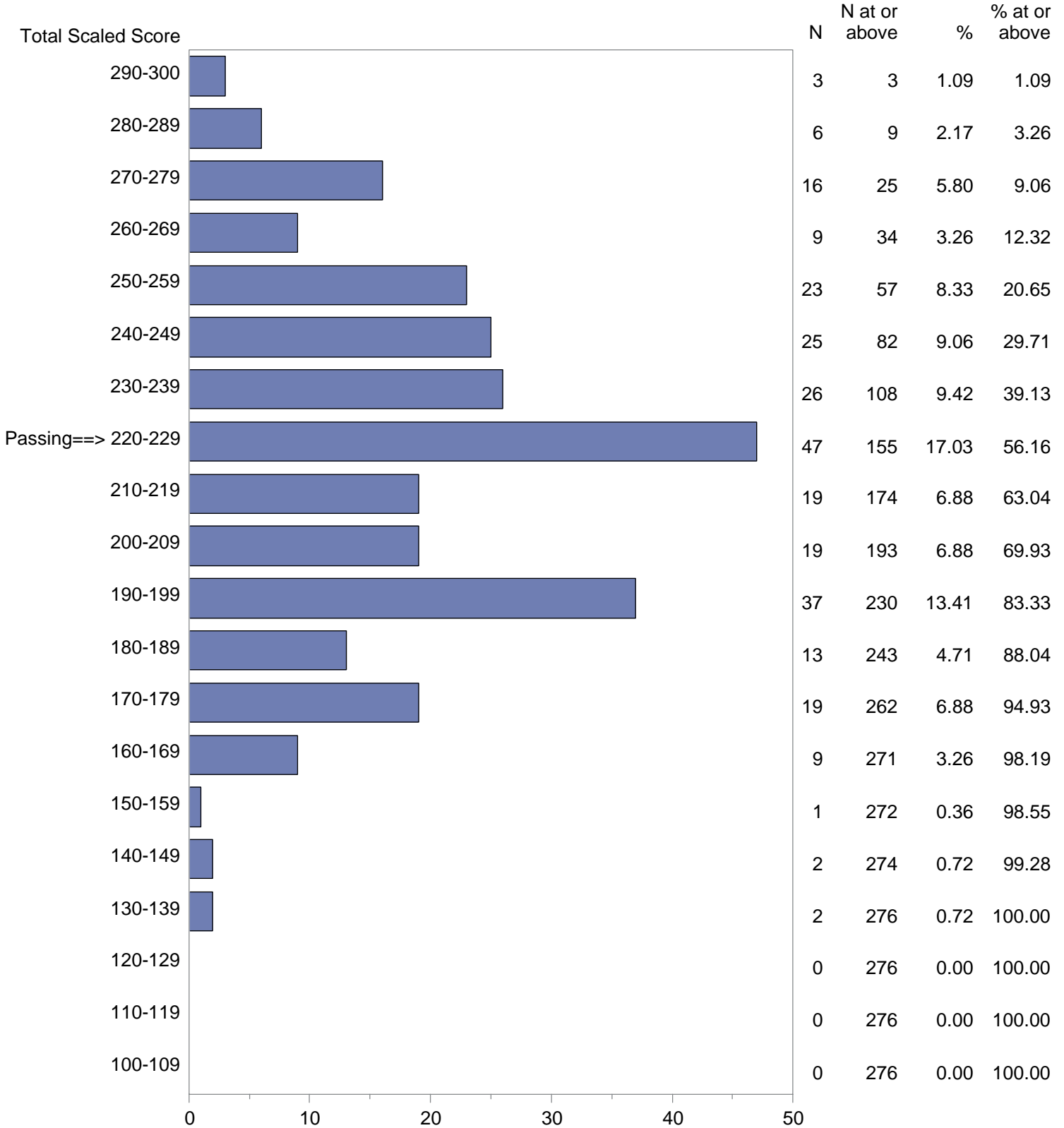
Test Field=Integrated Science (Elementary) (093)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

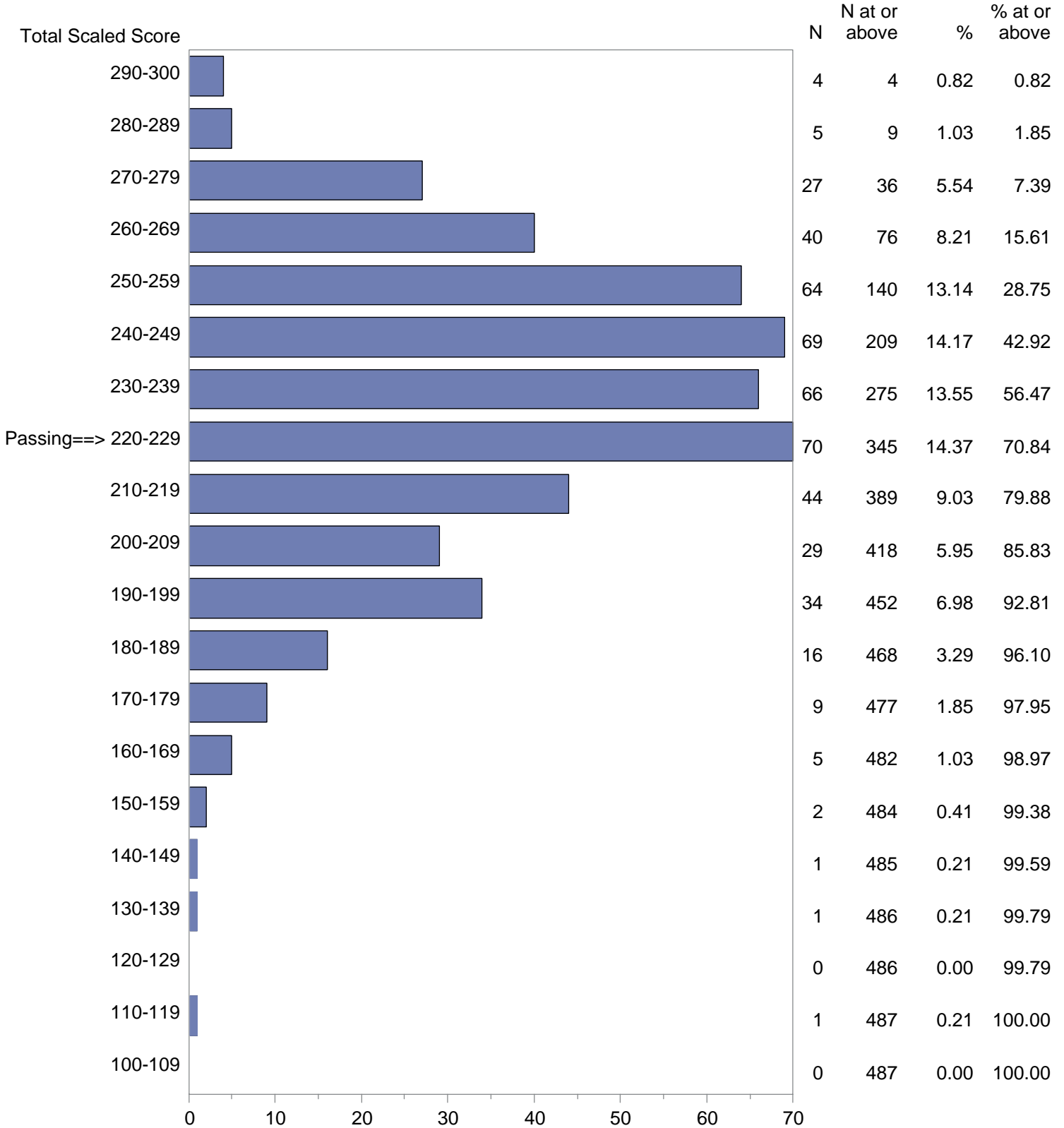
Test Field=Integrated Science (Secondary) (094)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

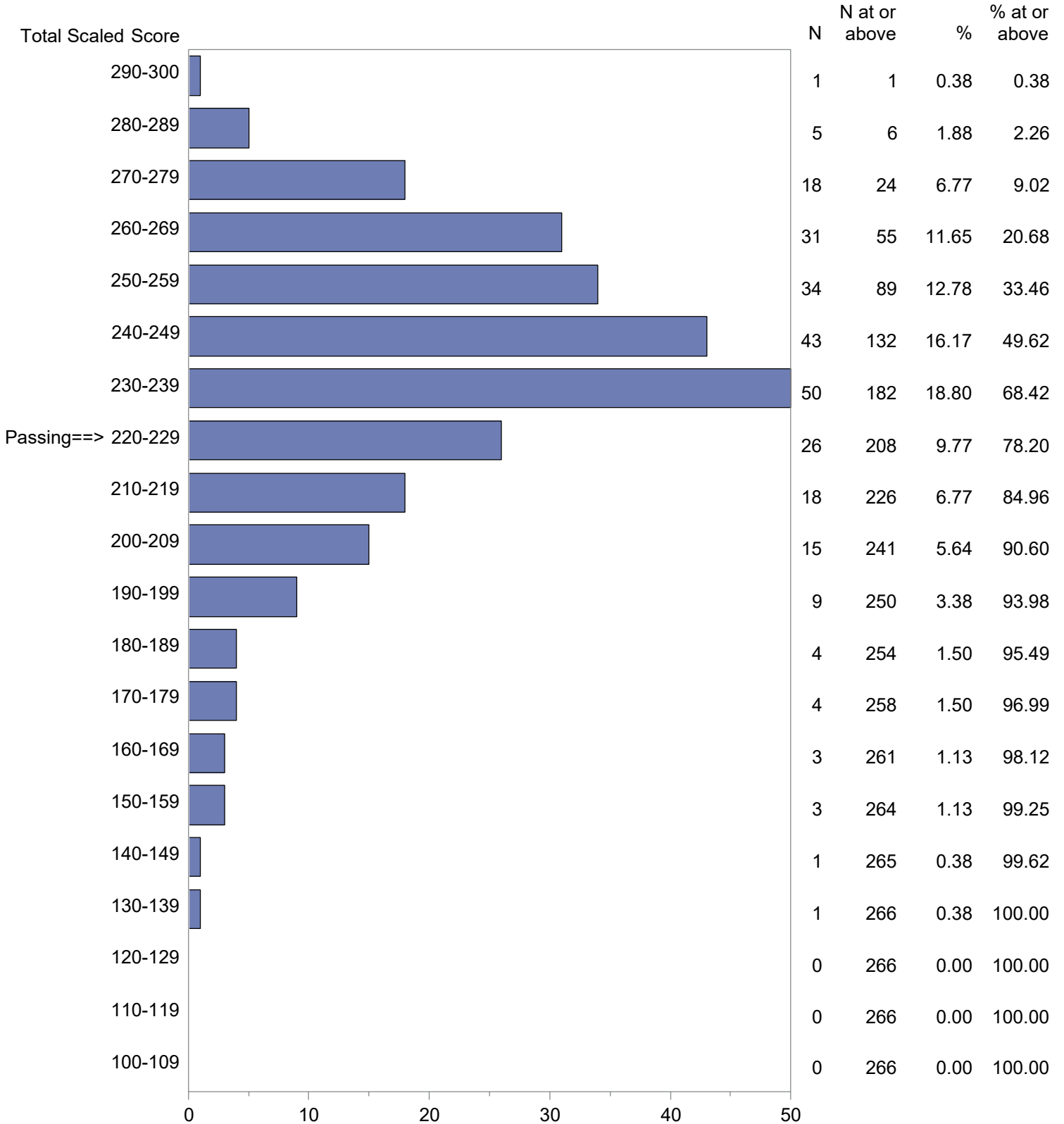
Test Field=Language Arts (Elementary) (090)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

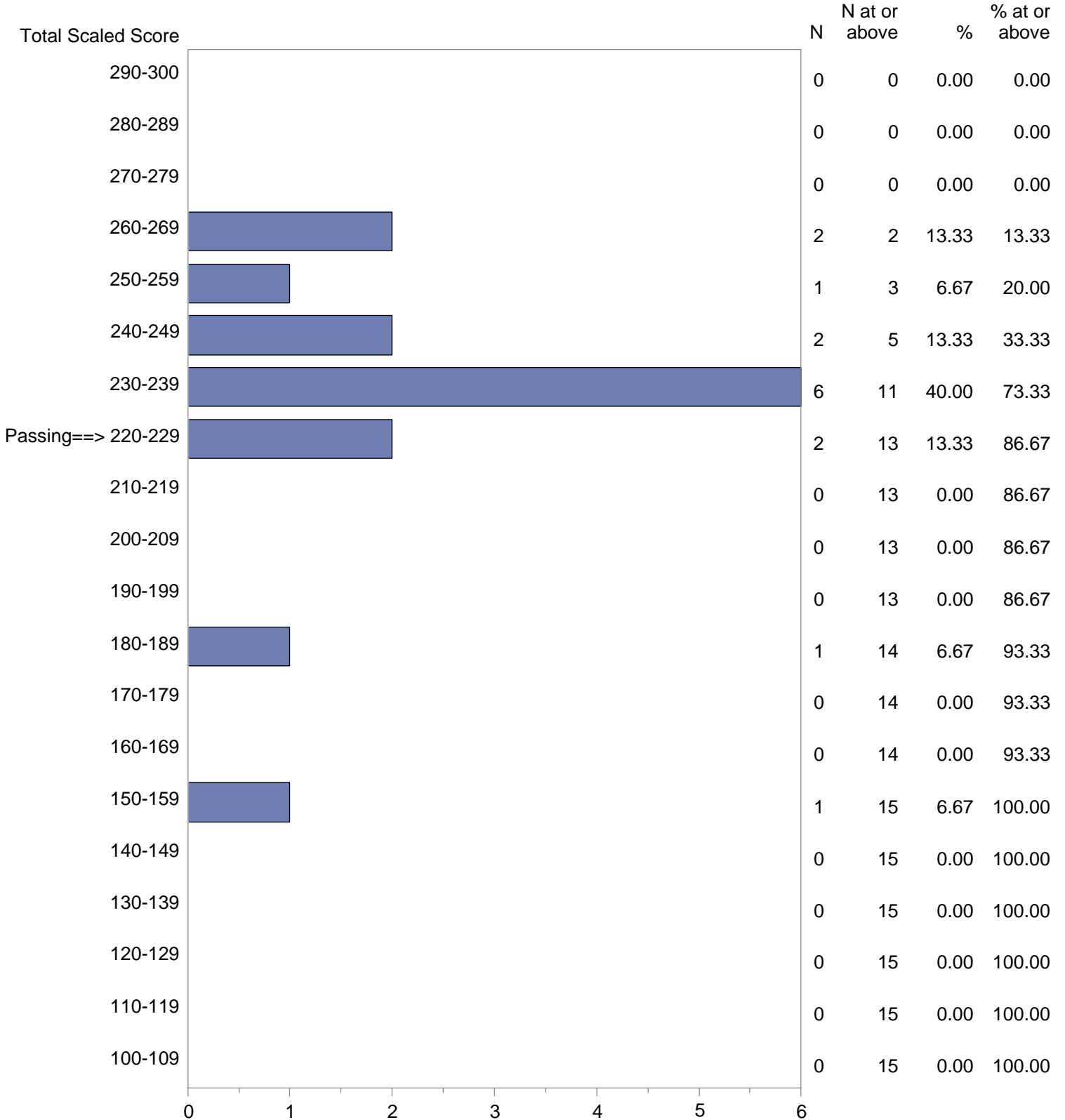
Test Field=Learning Disabilities (063)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

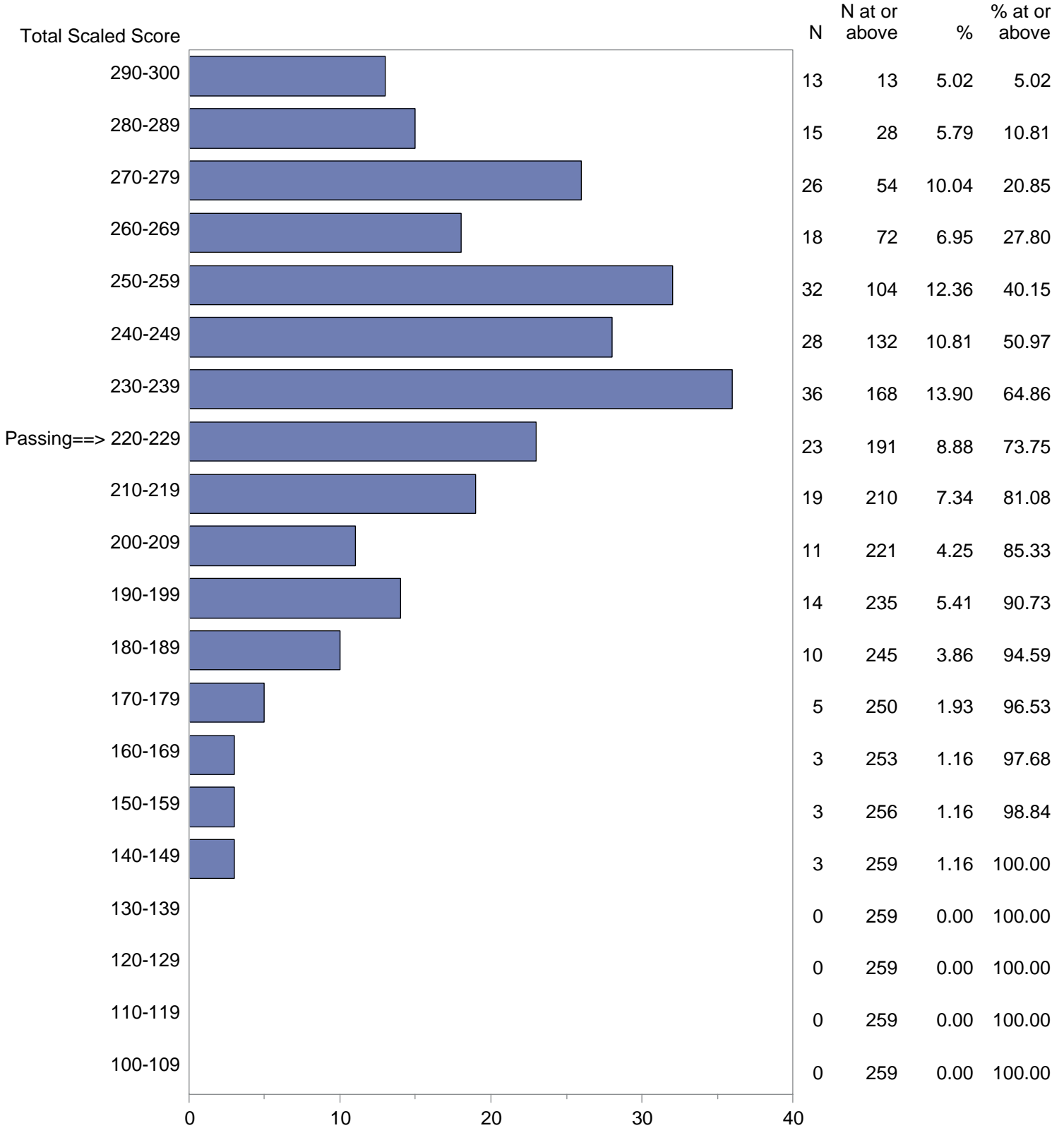
Test Field=Library Media (048)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

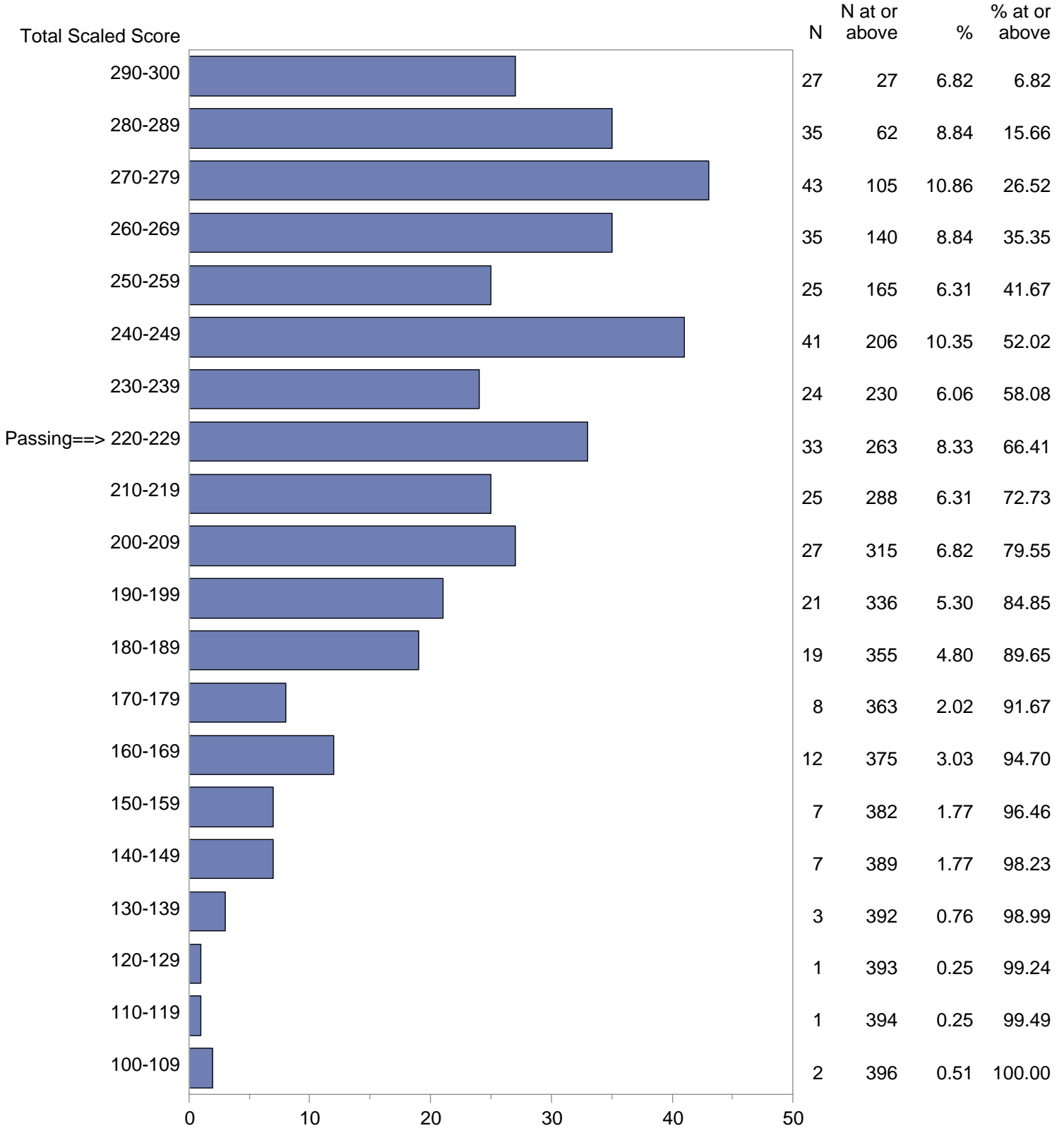
Test Field=Mathematics (Elementary) (089)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=Mathematics (Secondary) (022)

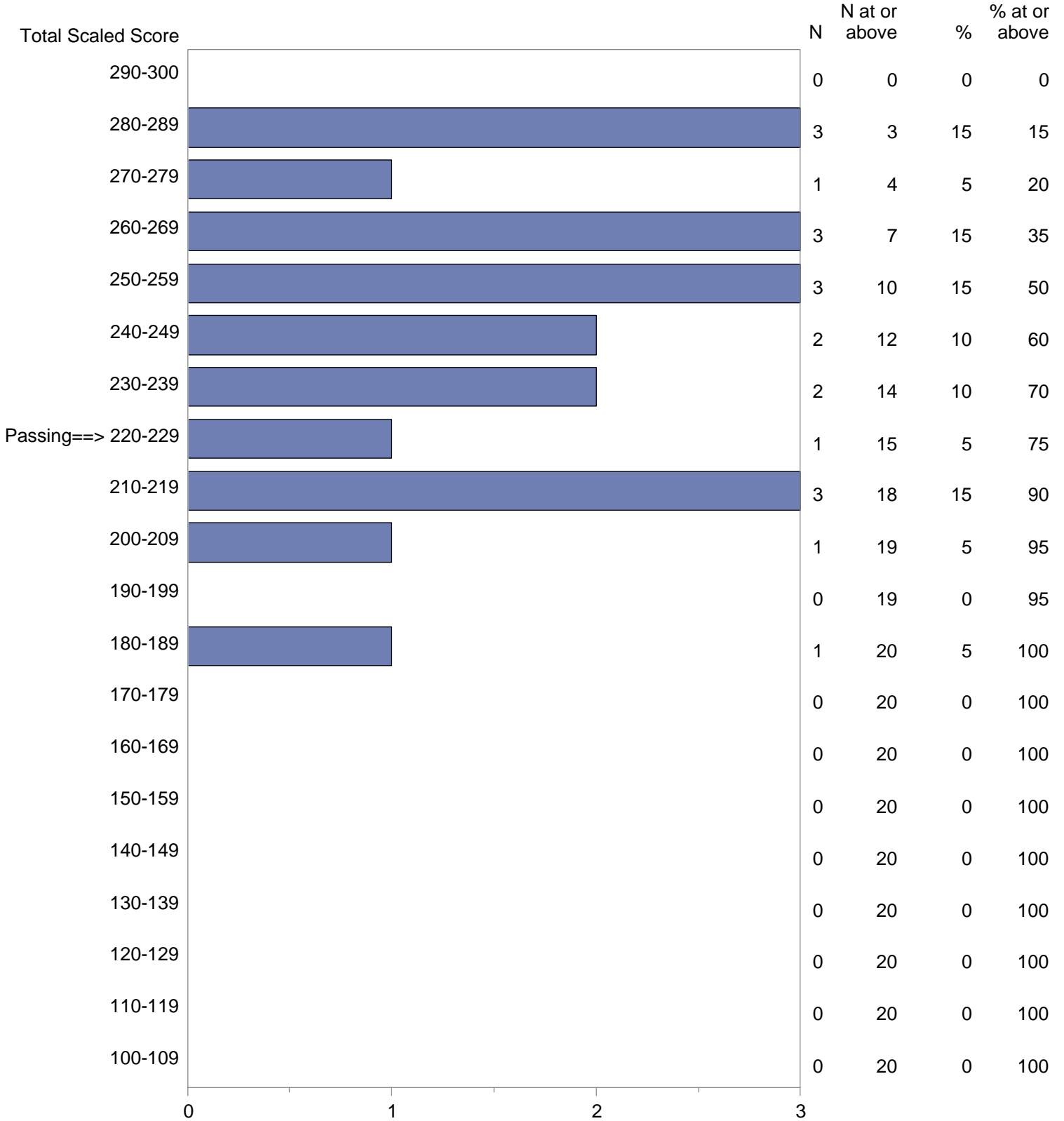




CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

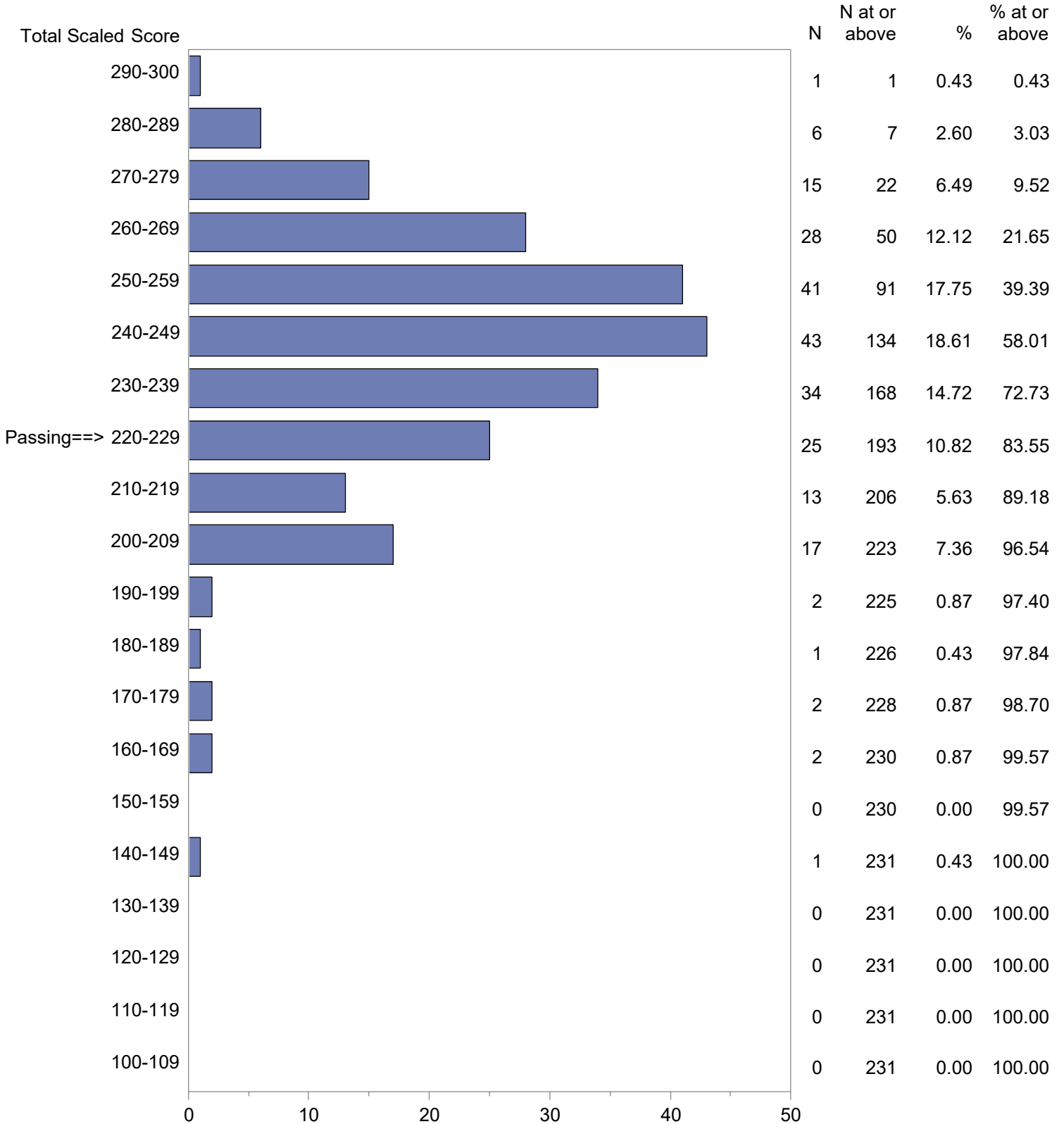
Test Field=Middle Level (085)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

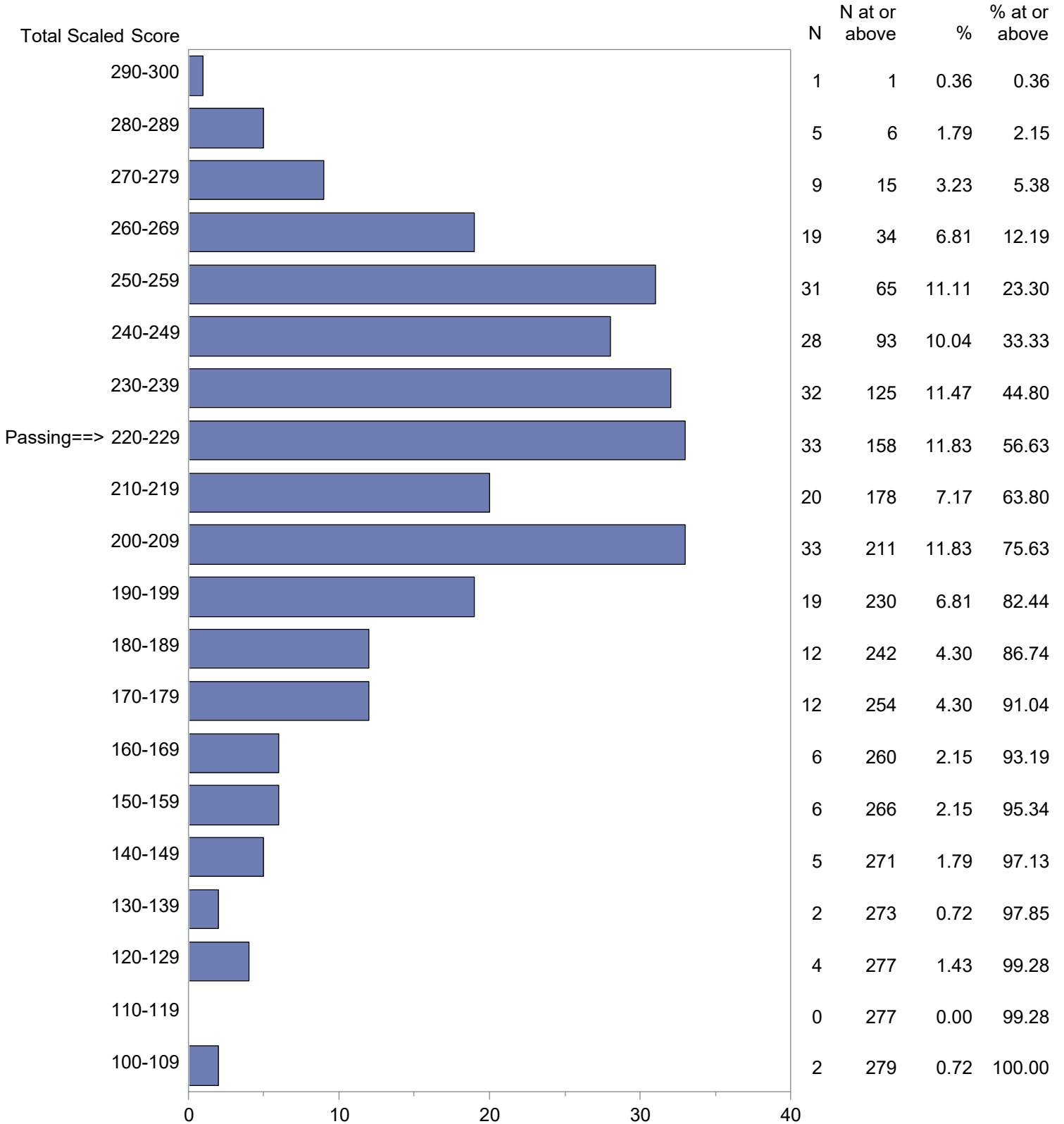
Test Field=Music Education (099)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

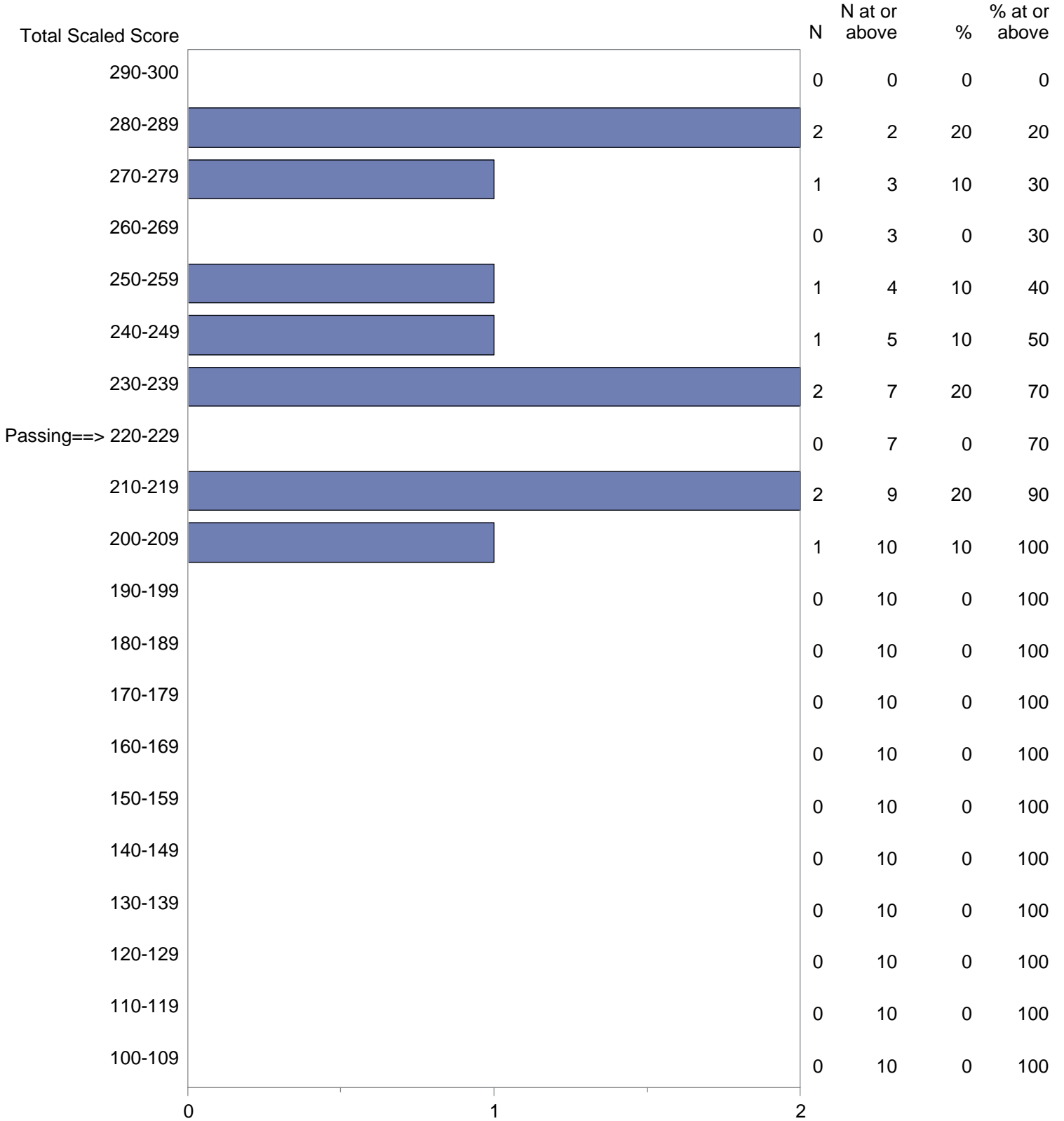
Test Field=Physical Education (044)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

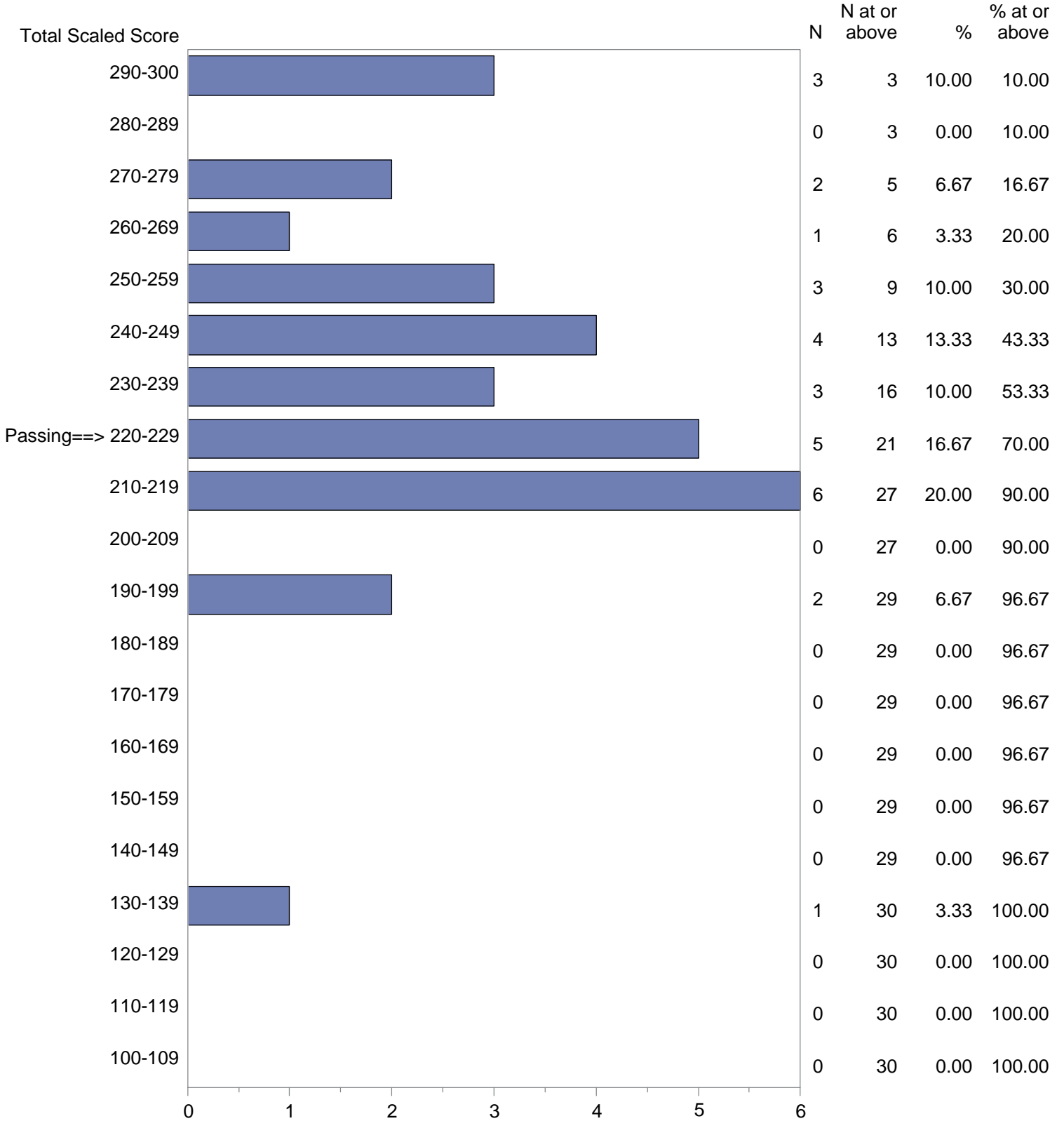
Test Field=Physical or Other Health Impairment (058)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

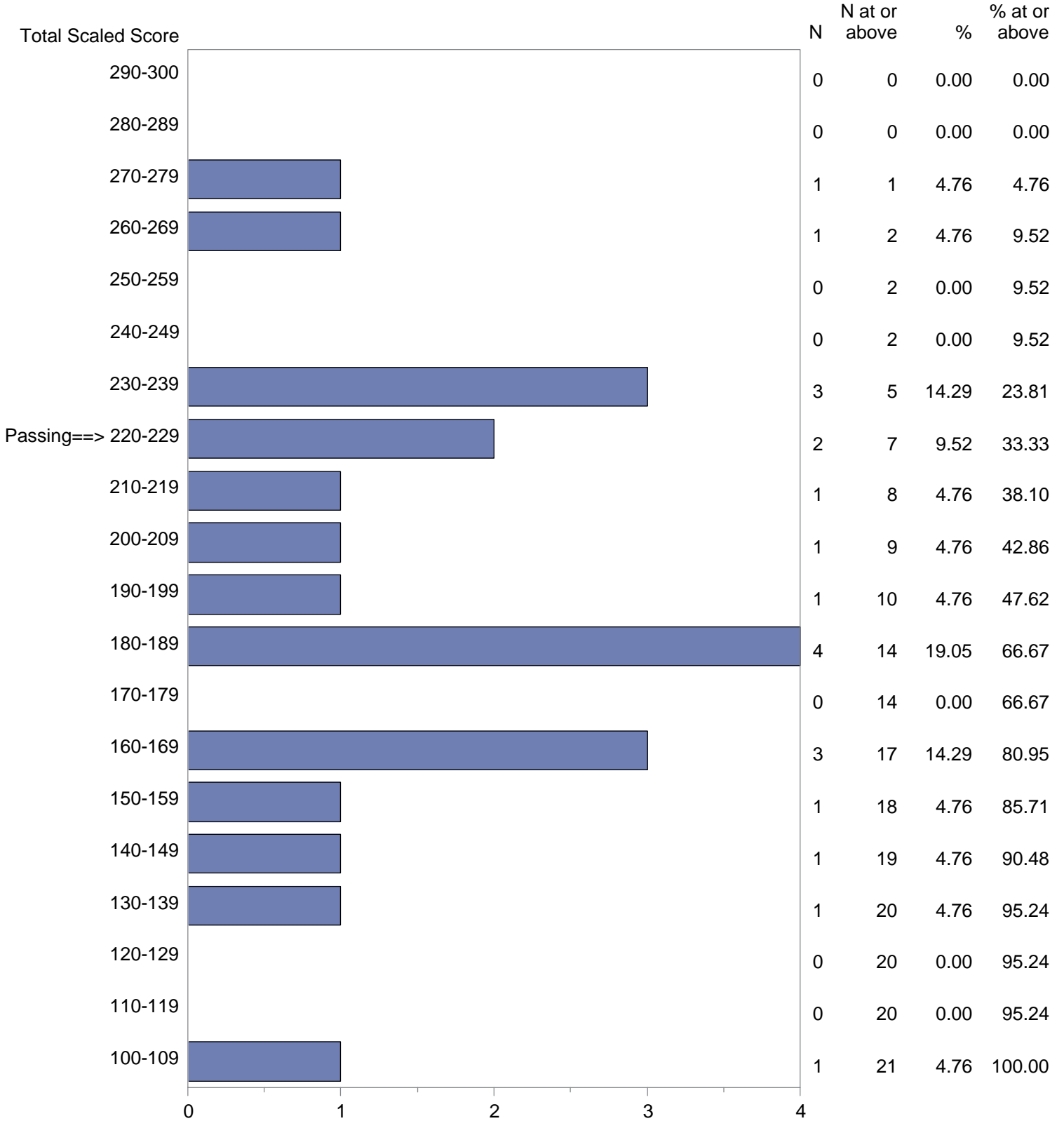
Test Field=Physics (019)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

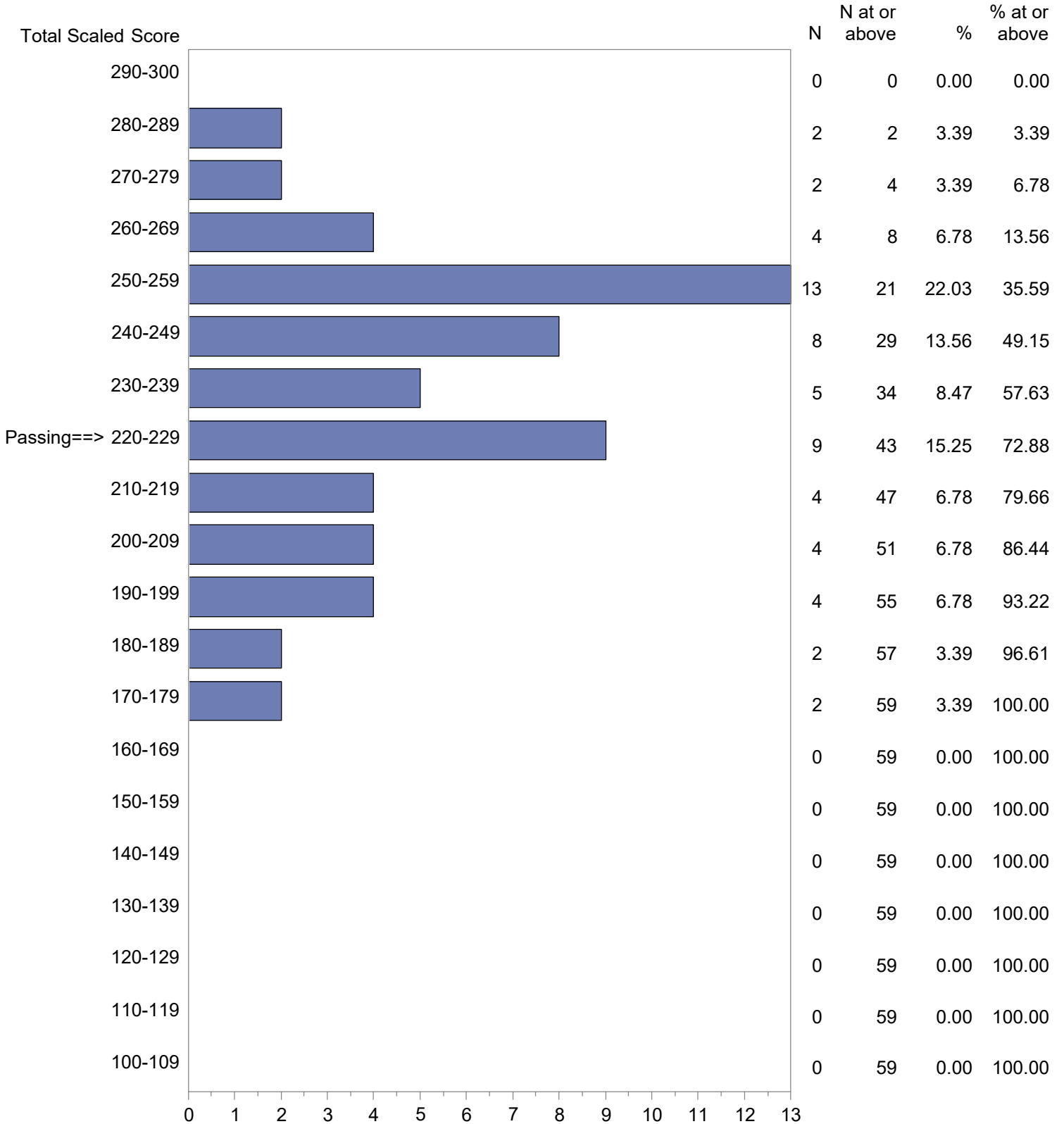
Test Field=Political Science (010)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

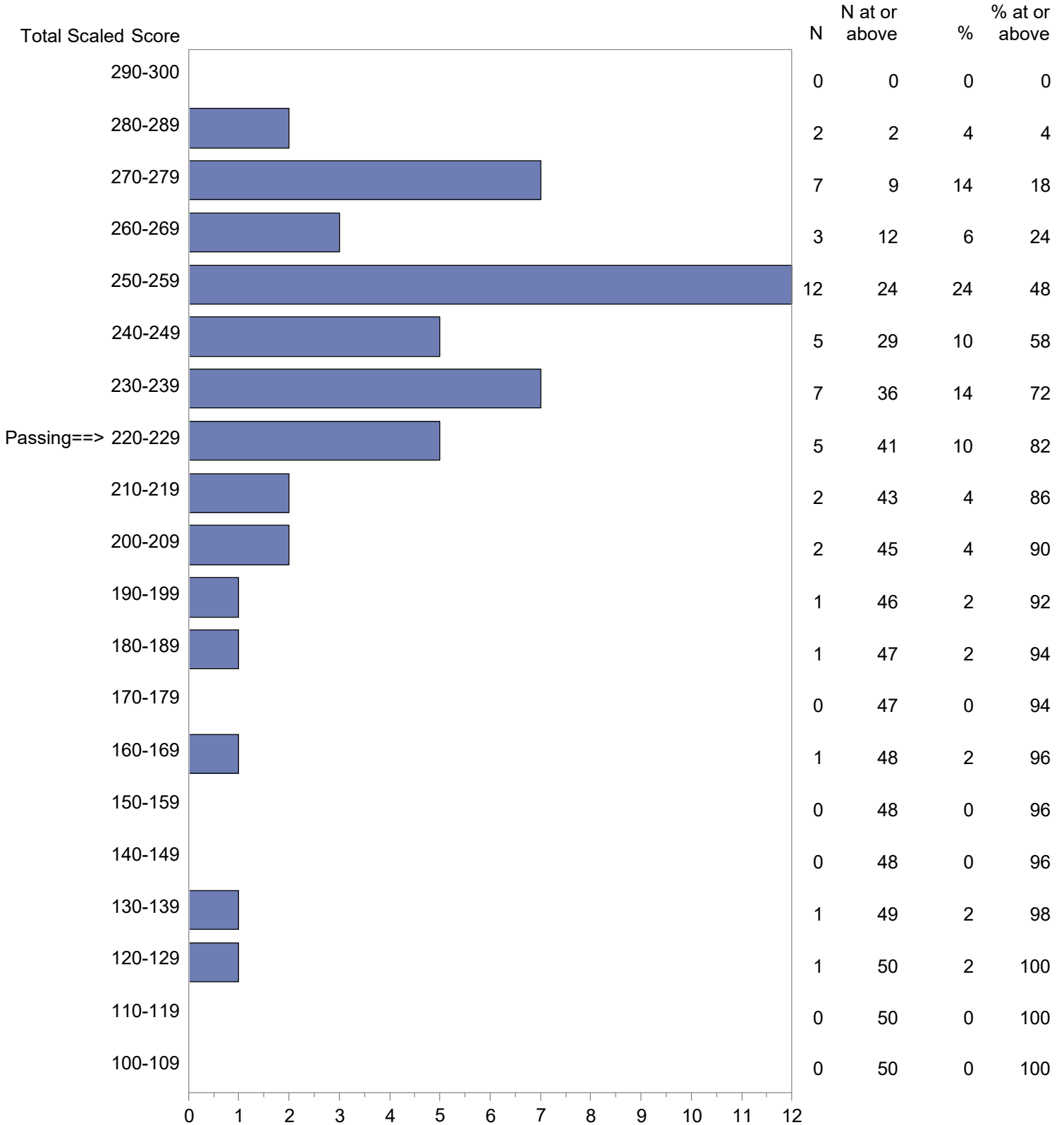
Test Field=Psychology (011)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=Reading (005)

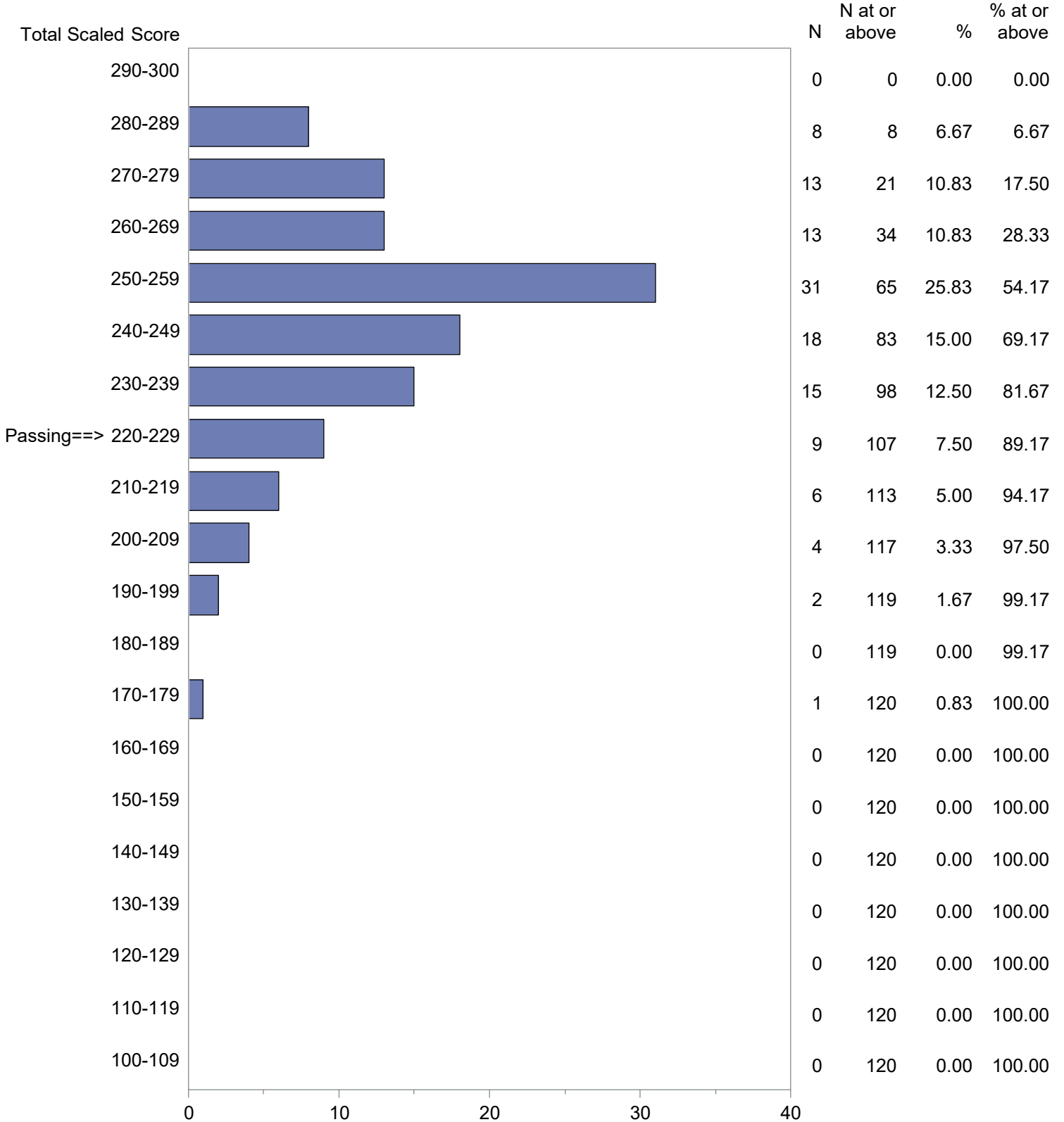




CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

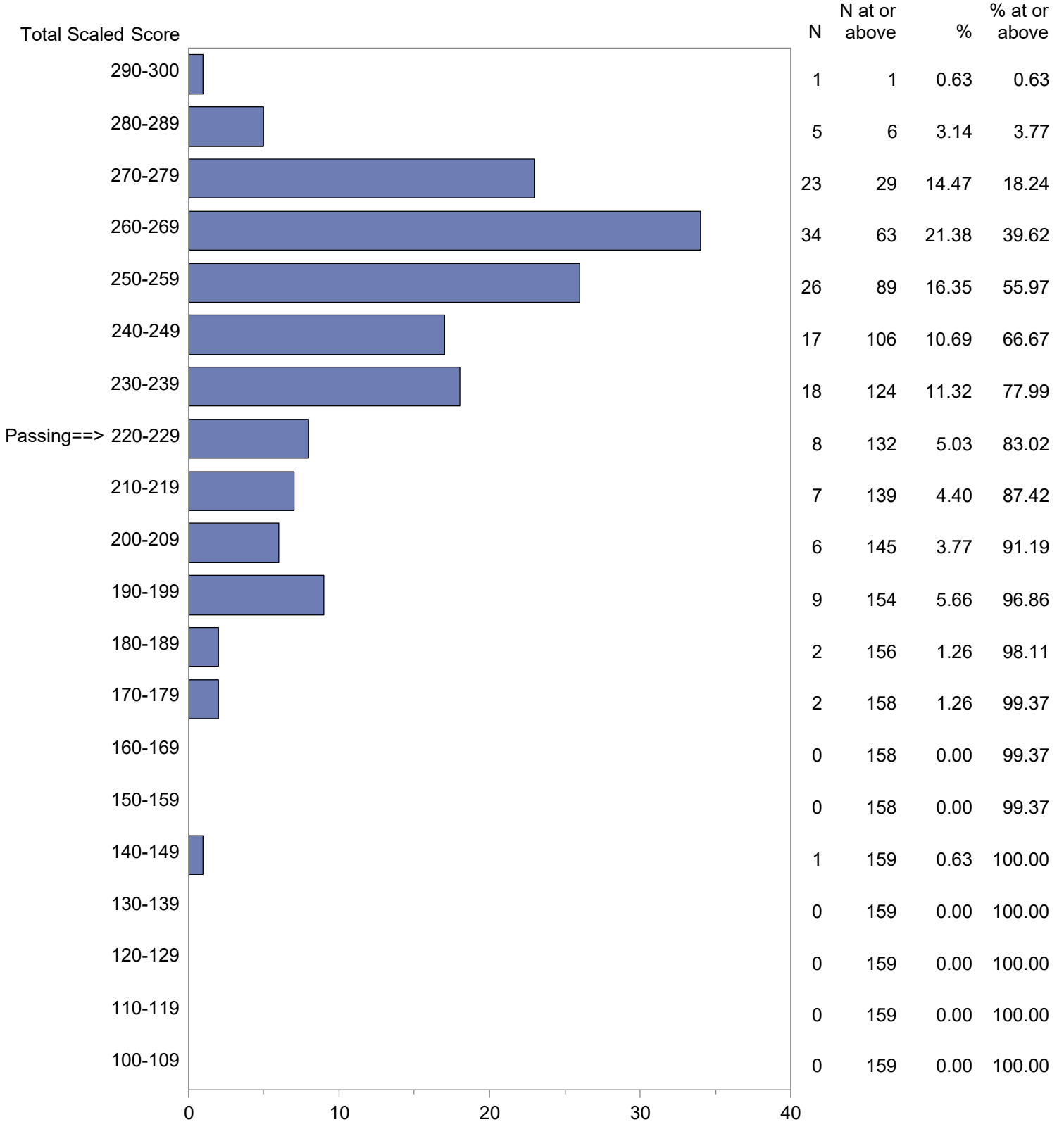
Test Field=Reading Specialist (092)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

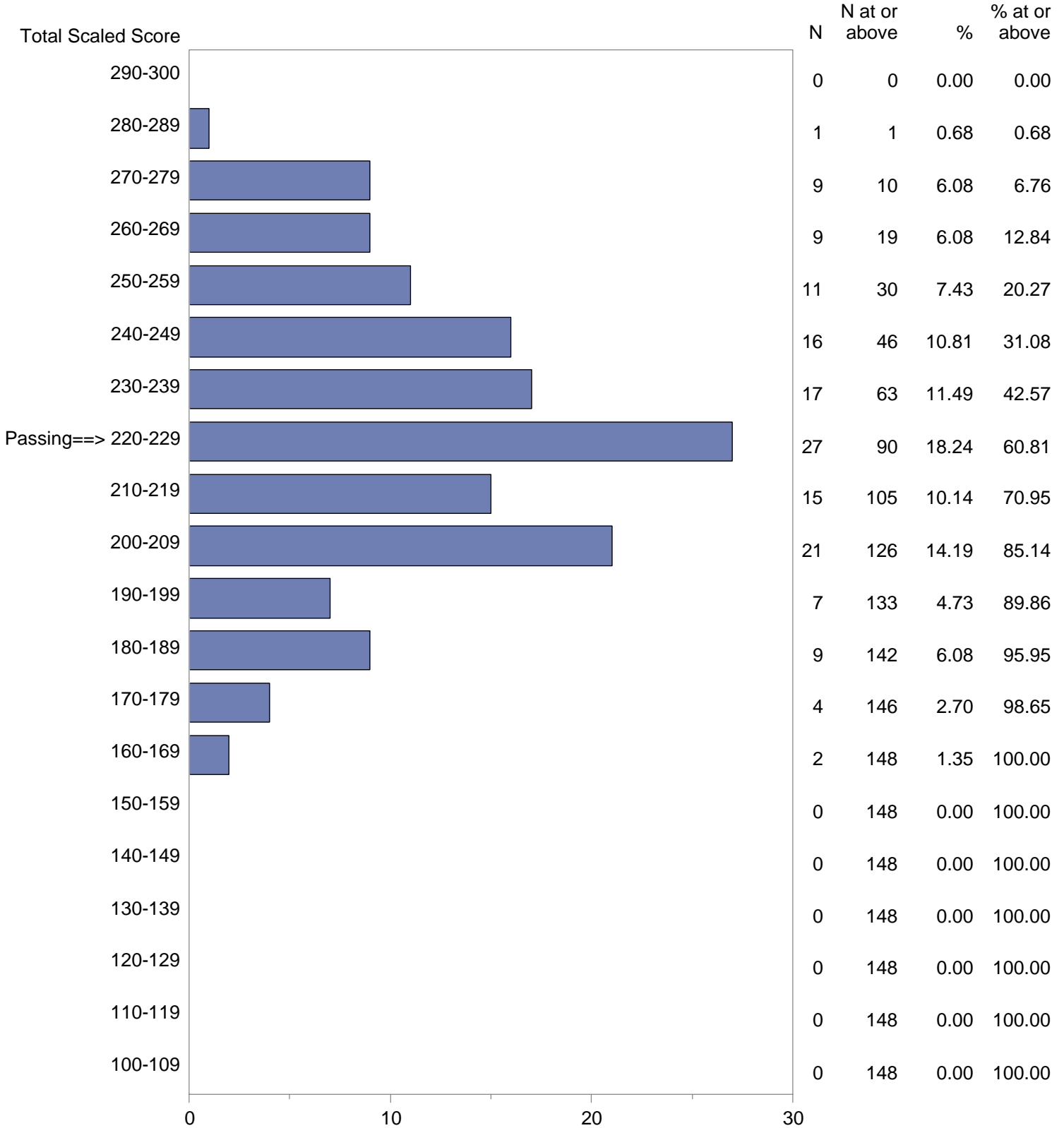
Test Field=School Counselor (051)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

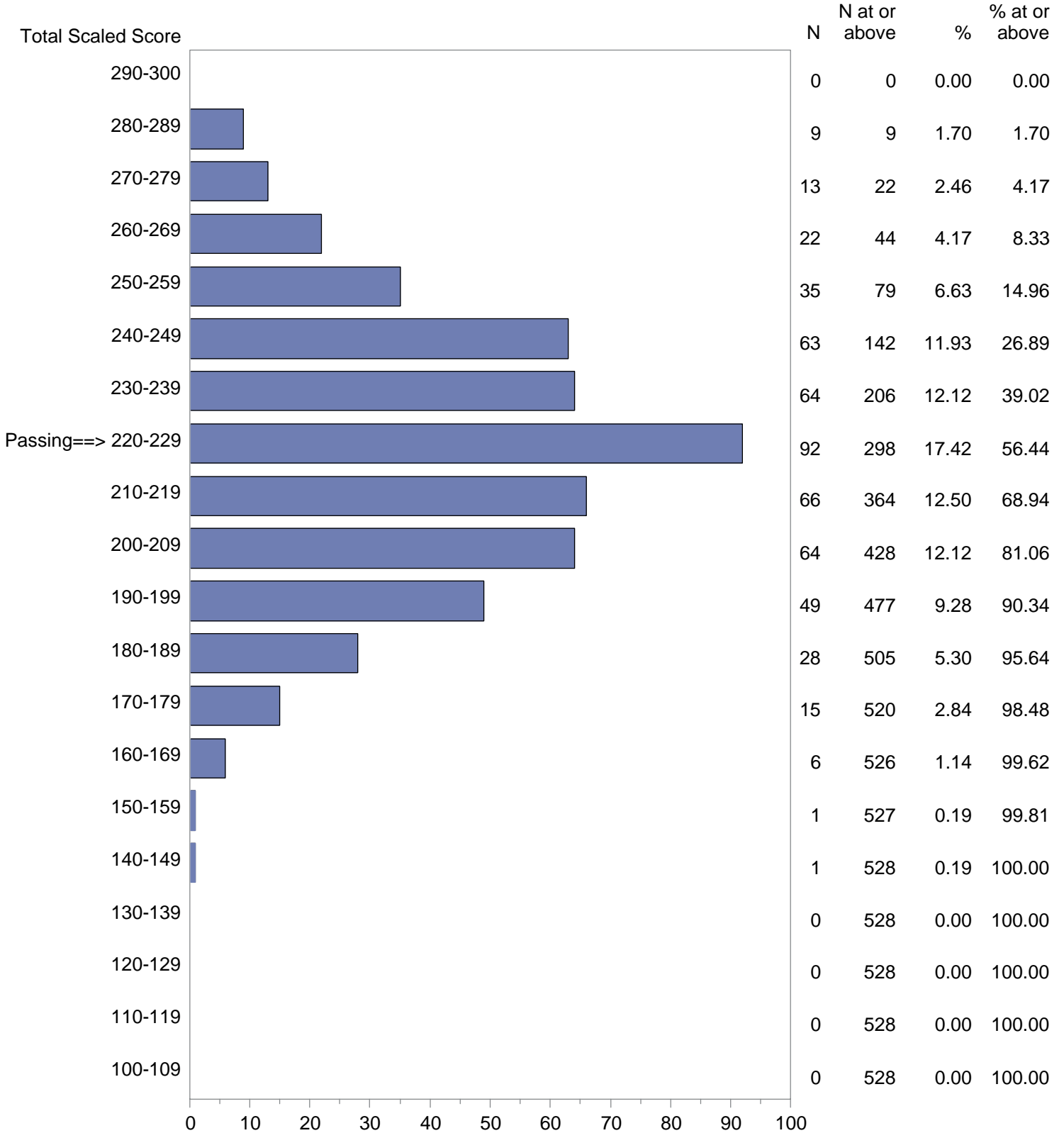
Test Field=Social Studies (Elementary) (105)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

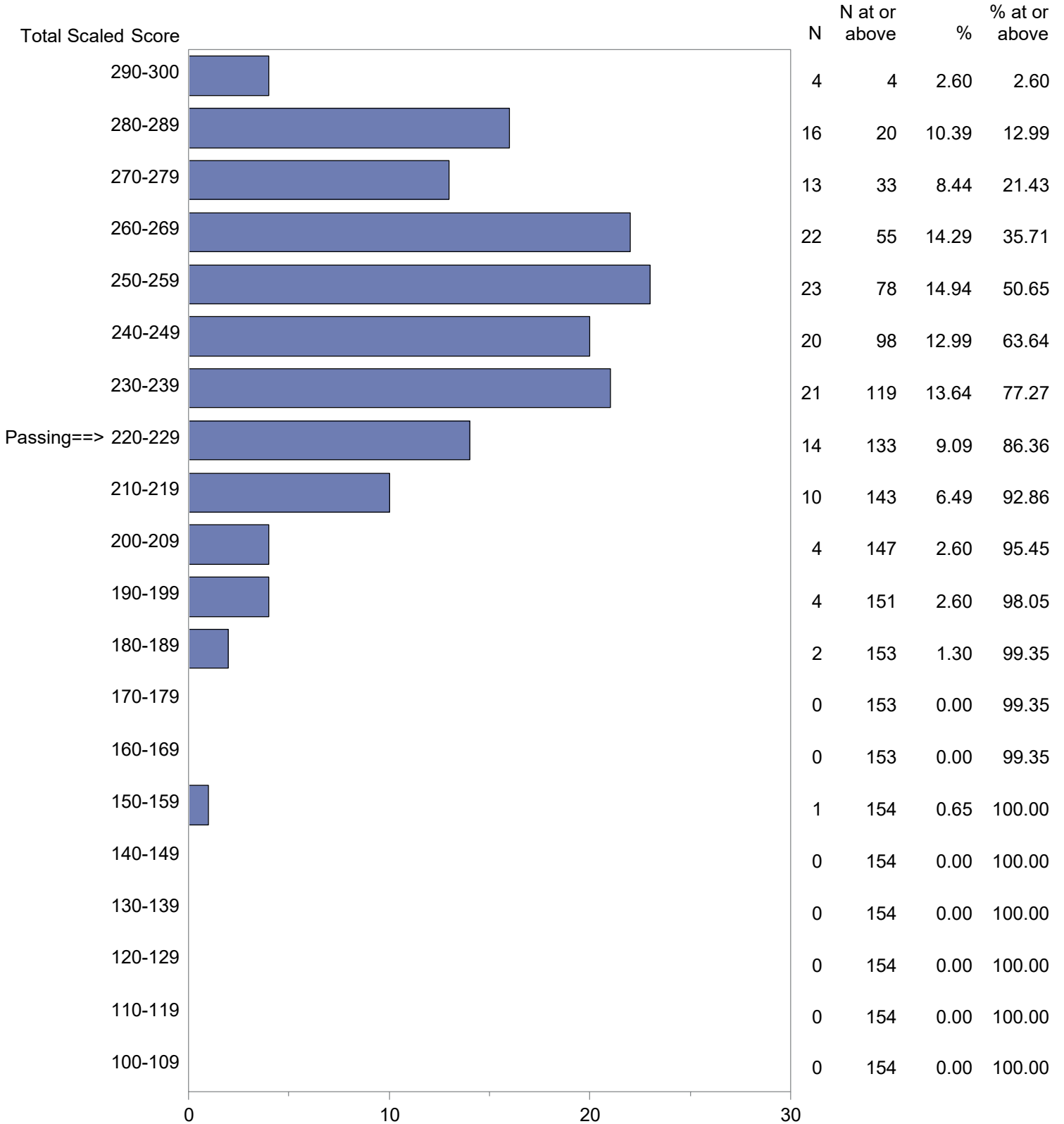
Test Field=Social Studies (Secondary) (084)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

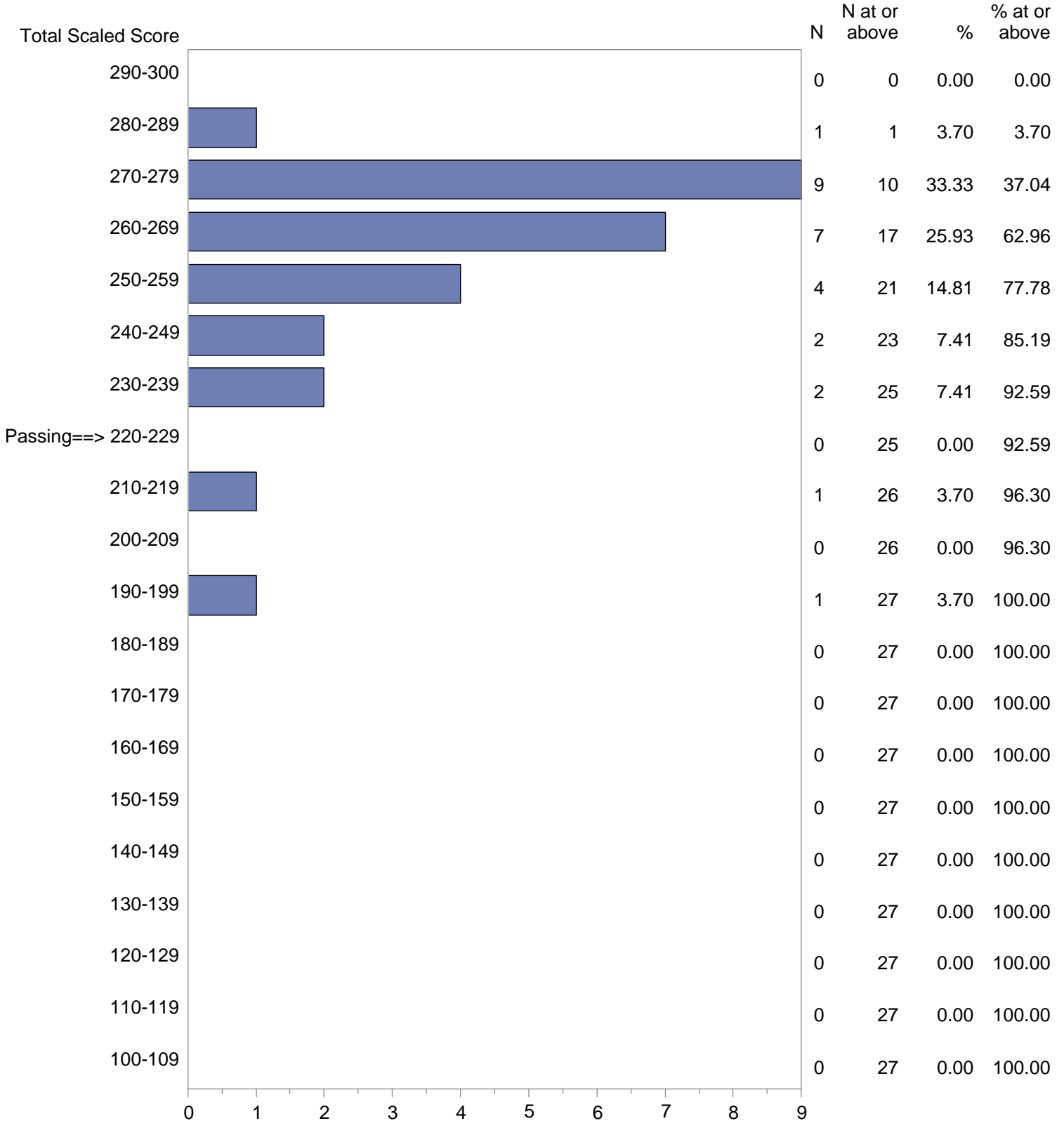
Test Field=Spanish (028)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

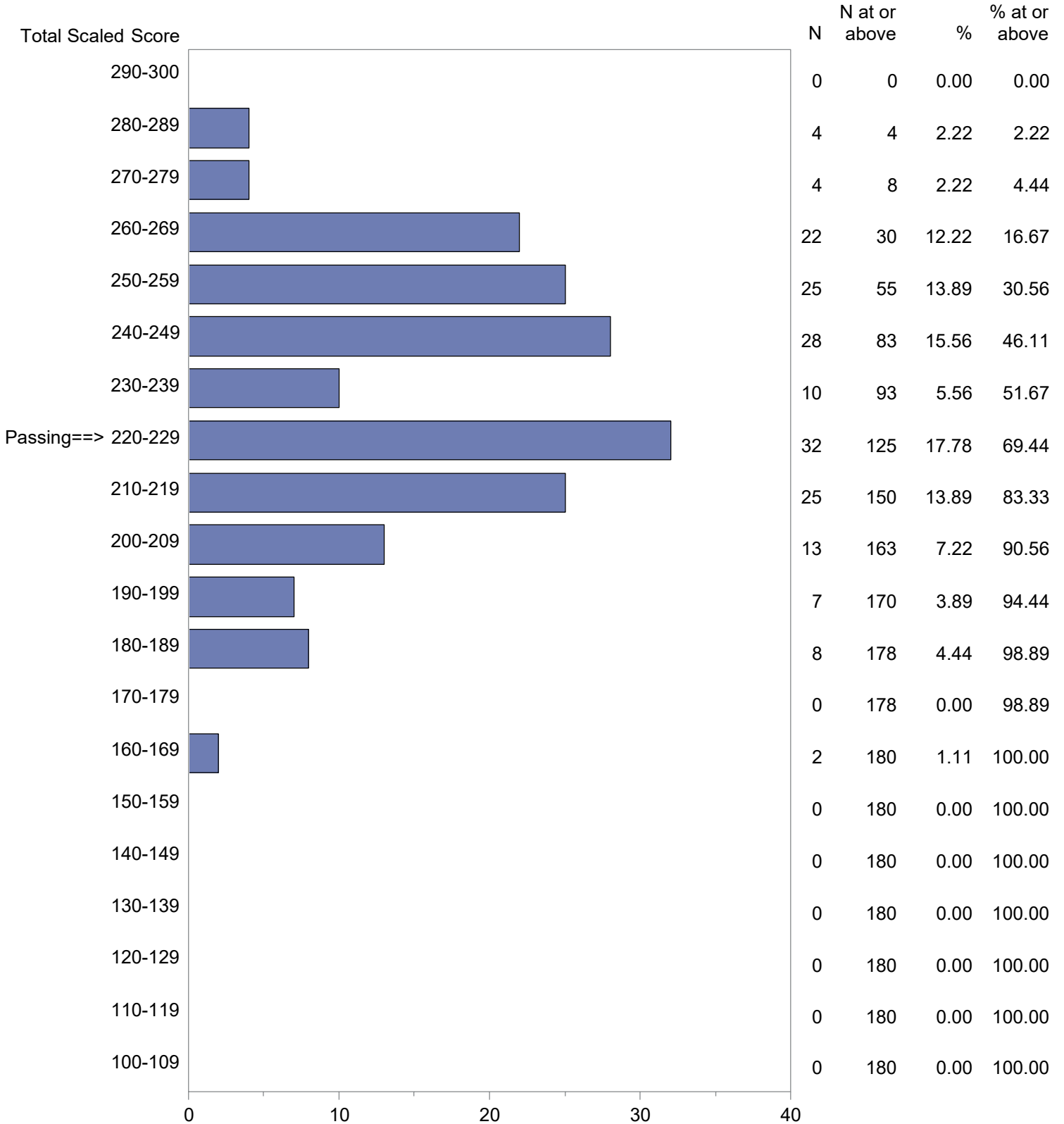
Test Field=Speech (004)



CONFIDENTIAL: NOT FOR DISTRIBUTION

Michigan Test For Teacher Certification (MTTC)  
 October 1, 2018 - September 30, 2019  
 Total Scaled Score Distribution by Test Field (All Forms)

Test Field=Visual Arts Education (095)



# MTTC Technical Report

## Section IV: References

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for Educational and Psychological Testing*. Washington, DC: American Psychological Association.
- Berk, R. A. (1980). A consumer's guide to criterion-referenced test reliability. *Journal of Educational Measurement*, 14(4), 323–349.
- Brennan, R. L. (2001). *Generalizability Theory*. New York: Springer-Verlag.
- Breyer, F., & Lewis, C. (1994). *Pass-Fail Reliability for Tests with Cut Scores: A Simplified Method*. Princeton, New Jersey: Educational Testing Service.
- Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.
- Feldt, L. S., & Brennan, R. L. (1989). Reliability. In R. L. Linn (Ed.), *Educational Measurement* (3<sup>rd</sup> ed.). New York: American Council on Education and Macmillan Publishing Company.
- Kuder, G. F., & Richardson, M.W. (1937). The theory of the estimation of test reliability. *Psychometrika*, 2, 151-160.
- Livingston, S. A. (1972). Criterion-referenced applications of classical test theory. *Journal of Educational Measurement*, 9, 13-26.
- McNemar, Q. (1969). *Psychological Statistics* (4<sup>th</sup> ed.). New York: John Wiley & Sons, Inc.
- Qualls, L. A. (1995). Estimating the Reliability of a Test Containing Multiple Item Formats. *Applied Measurement in Education*. 8(2), 111-120.
- Snedacor, G.W., (1967) *Statistical Methods* (6<sup>th</sup> ed.) Ames, Iowa: The Iowa State University Press
- Subkoviak, M. J. (1976). Estimating reliability from single administration of a mastery test. *Journal of Educational Measurement* 13, 265-76.
- U.S. Department of Labor, Employment and Training Administration. (1999). *Testing and Assessment: An Employer's Guide to Good Practices*. Washington, DC: Author.





