

## Technical notes and instructions on using data spreadsheet

### Technical notes

*This appendix provides more detail about the data used in this analysis. It also offers guidance on how to interpret the data in the downloadable state spreadsheets.*

#### *Window of data for pass rates*

Nearly all states provided two sets of data: one that aggregated data across a three-year window (September 2015 through August 2018, unless otherwise noted in the state's dashboard Data Notes), and one that captured a single year of data from September 2017 through August 2018. The dashboards and analysis relied on the three-year set of data whenever available. The single year of data can be provided upon request.

For states that received pass rate data from ETS, the three-year window captures all test takers who made their first attempt during the three-year window. It is possible that test takers could first take the test during the three-year window and then ultimately pass the test after that period; they would appear as people who took but did not pass the test in the data. A test taker who initially took the test prior to the three-year window and then passed the test during the three-year window would not be included.

For states that received pass rate data from Pearson, the three-year window captures all test takers who made any attempt during the three-year window. Therefore, a test taker who first took the test prior to the window and then passed it during the window would be included in "best-attempt pass rates" but not "first-attempt pass rates."

#### *Addressing missing data due to small numbers of test takers of color*

In addition to aggregated data for all test takers, states were asked to report pass rates by race/ethnicity along the following categories: "White, non-Hispanic test takers" and "All test takers who do not identify as White, non-Hispanic," broad aggregations designed to minimize the loss of data due to small numbers of test takers in more discretely identified racial and ethnic groups.

However, ETS reported data organized into the following categories: White, Two or more races, No response, and All other ethnicities. For these dashboards, NCTQ combined "Two or more races" and "All other ethnicities" into one category: "Test takers of color."

In the instances where one of these sub-categories included too few test takers to report pass rates (e.g., there were three test takers, and no pass rate data was reported), all test takers in that subcategory were removed from the total.

In the following example, the data for “All other ethnicities” is entirely excluded from the total because including the two test takers without data on whether or not they passed the test could result in under reporting the pass rate.

<b>Subcategory</b>	<b>Number</b>	<b>Number passing</b>
Two or more races	7	5
All other ethnicities	2	*
<b>Total “Test takers of color”</b>	<b>7</b>	<b>5</b>

More information about insufficient data in specific states is available upon request.

### *Calculating percentage of Pell grant recipients*

Data on the proportion of Pell grant recipients at an institution was drawn from the IPEDS database. Data on the proportion of undergraduate students who received Pell grants at the institution was drawn for the academic years 2015–2016 through 2017–2018 and was averaged across years. On average for the time period of interest, 35.3% of undergraduate students received Pell grants (based on data from <https://nces.ed.gov/ipeds/TrendGenerator/app/answer/8/35>). For that reason, institutions are grouped by 35% or fewer undergraduates receiving Pell grants and 36% or more receiving Pell grants.

More precise data on the proportion of students at an institution who received Pell grants is available in the downloadable state spreadsheets.

### *Data on number of attempts*

States were asked to provide data on the number of times test takers took the test (or each subtest). In any test that had subtests, the data was provided at the subtest level, because test takers can retake individual subtests after they take all sections of the test originally.

ETS provided states with mutually exclusive categories for number of attempts (e.g., the number of test takers who took the test *only* once, the number who took the test *only* twice, and so on). Pearson did not provide states with mutually exclusive categories (e.g., Pearson provided data on the number of test takers who took the test *at least* once, *at least* twice, *at least* three times, and so on). In the data provided by Pearson, it was not clear that the “4+ attempts” category counted test takers only once; test takers may have been counted once for each subsequent attempt. States providing data from Pearson were asked to clarify this information with Pearson to ensure that test takers are not double counted in the 4+ attempts category.

The data in the downloadable spreadsheet includes the total number of test takers, walk-away rates, and the proportion of test takers who took the test three or more times. More detailed data (i.e., the number of test takers who took the test once, twice, three times, or four or more times) is available upon request from NCTQ.

### ***Calculating walk-away rates***

To determine the “walk-away rate,” NCTQ first calculated how many people fail on the first attempt (all people who take the test the first time minus those who pass on their first attempt). We then calculate how many people fail the test and do not retake it (the number who take the test only once, based on data on the number of attempts, minus the number who pass on their first attempt). To calculate the “walk-away rate,” or the proportion of test takers who fail the test on their first attempt and do not retake it, we divide the number of test takers who fail the test and do not retake it by the total number who failed on the first attempt. While this calculation is imperfect (because test takers may choose to retake the test after the three-year window and because some states offer alternative means to demonstrate content knowledge besides a licensure test), it offers an approximation of the proportion of aspiring teachers who leave the pathway into the classroom at this point.

In some cases, states provided data on number of test takers and first-attempt pass rates in two different spreadsheets: the spreadsheet on first-time pass rates and on number of attempts; in the cases that these differed (generally only by a small amount), walk-away rates are based on data from the “number of attempts” spreadsheet.

In addition, ETS provided data on the number of attempts during the three-year window for which data was requested. For some states, Pearson provided data on the number of attempts across the lifespan of the licensure test, rather than for the specific three-year window. When data on number of attempts was not limited to the three-year window that aligns with pass rate data, “walk-away rates” cannot be calculated.

### ***Out of state institutions***

In the rare instances that states reported pass rate data that labeled some institutions as out of state, those institutions were omitted from institution-level analysis for the state.

### ***How to create additional graphs and calculations***

Several graphs were included in the *Driven by Data* report but not the dashboards. However, these can be created based on data from the downloadable spreadsheet. NCTQ can also provide these graphs for any state upon request. The following notes indicate where to find the relevant data in the downloadable spreadsheet:

*How to create the “Number of test takers of color passing/failing graph”*

- Identify the test or subtest of interest.
- Determine whether you want to use “first-attempt” or “best-attempt” data. In the report, the example graph uses “best-attempt” pass rate data because this represents the number of test takers who would ultimately be eligible for a license.
- Using data from the relevant “pass rate, test takers of color” and “# of test takers of color,” calculate the number of test takers of color who passed the test and the number who did not pass the test. Use these to create a stacked column graph.

*How to create the “pass rates by subtest” graph*

- Determine whether you want to use “first-attempt” or “best-attempt” data. In the report, the example graph uses “first-attempt” pass rate data because this may offer a good proxy of the preparation test takers receive in advance of their licensure test.
- Under each subtest, look for the relevant “first-attempt pass rate” or “best-attempt pass rate” for each institution. Use these to create a clustered column graph.

## **Interpreting the downloadable spreadsheet**

The downloadable spreadsheet (available for each state that has a data dashboard) has a tremendous amount of information about institutional characteristics, number of test takers, pass rates on all subtests, and number of attempts.

All states have the tab titled “Downloadable IHE pass rates,” which reports first-attempt and best-attempt pass rate data. Most states also have the tab titled “Downloadable IHE attempts,” which has data on the number of times test takers took the test, as well as walk-away rates. This second tab may be missing if the state was not able to provide this data.

An institution will be listed in multiple rows to allow for filtering based on subtest, category of test takers, and other features.

A few notes about what is included in the “Institution” column:

- Most of the institutions listed are four-year institutions of higher education.
- If the state provided pass rate data for the state’s department of education (generally provided by states using ETS tests to convey pass rates for all test takers in the state), that department of education is also listed in the “institution” column.
- If the state provided pass rate data for test takers not affiliated with an institution, those are generally categorized as “Unaffiliated,” “N/A,” or with similar labels.

- The list of institutions reflects the full list provided by the state. Unless the state only provided data on teacher candidates rather than on all test takers, the list often includes some institutions that do not house preparation programs such as community colleges (for more on this, see [Appendix D](#)).
- The list of institutions may also include some programs that are not institutions (such as non-institution based alternative certification programs).

The following list provides the column headings from the spreadsheet, as well as brief explanations for some of the headings. Based on the nature of the licensure test(s) used in the state (e.g., the number of subtests), some columns may not have information. Please do not hesitate to reach out to NCTQ with any questions regarding how to use these data fields.

### First tab: Downloadable IHE Pass Rates

Teacher prep institution	Explanation
Name as submitted	This cell indicates the institution or program name used in the data provided by the state. This name was used to link to the formal institution or program name used by sources such as IPEDS.
State	
Institution	Formal institution name (based on IPEDS database, institution website, etc)
IPEDS	Identification code from the IPEDS database
Public/Private College or University	
Prep type	Indicates if the institution or program is traditional, alternative, or other qualifiers. "Alternative (IHE-based)" means that the program is housed in a postsecondary institution; "Alternative (not-IHE based)" means that it is not housed in a postsecondary institution.
Program Type (if specified)	Some states provided program-level data. When available, this column is used to identify what type of program (e.g., undergraduate, graduate).
<b>Institution characteristics</b>	
Minority-Serving	A binary indication of whether the institution is a minority serving institution (MSI), based on data from <a href="https://collegescorecard.ed.gov/data/">https://collegescorecard.ed.gov/data/</a> .
Average Pell Grant Recipients (15-18) Category	A binary indication of whether the institution has more Pell grant recipients or fewer Pell grant recipients than the national average. Values are rounded to the nearest percent.
Admissions Selectivity Score Category	Rating of admissions selectivity, based on NCTQ's <i>Teacher Prep Review</i> Admissions standard. For more on how this standard is scored, visit <a href="https://www.nctq.org/review/standard/Admissions#about">https://www.nctq.org/review/standard/Admissions#about</a> .
<b>Testing summary</b>	
Test Name	The name of the test used to assess elementary teachers' content knowledge. In states that require or allow multiple tests, each test will be listed separately; the column can be filtered to isolate data on one test.  Some states require or give the option of more than one test; this column can be filtered to select a specific test.
Includes subtests?	A binary response to indicate whether the test comprises multiple subtests.
Testing Company	Indicates whether the test is administered by ETS or Pearson.
Testing Period	Indicates the length of time for the data window (typically 3 years).

Data time frame	Indicates the data window for the data provided by the state.
Subtest with lowest first time pass rate?	Identifies the subtest with the lowest average first-attempt pass rate. This subtest is used for any analysis that cannot be done on the composite test data (i.e., walk-away rates and percent of test takers making 3 or more attempts) and is used to populate the dashboard in states that could not provide composite pass rate data.
<b>Pass rate overview</b>	
Composite/Test with no subtests, or Subtest?	In states with a composite test (or test with no subtests), this column will only indicate that pass rate data is available at the composite test level.  For states that have a test with multiple subtests, this column can be filtered to show either pass rates for composite test, or to show only subtests. If filtered to show subtests, the following column can be used to filter for a specific subtest.
Test/Subtest Name  (Filter to see any subtests if relevant for this state)	Filter this column to select a specific subtest (in states that have a test with multiple subtests).
Cut Score	The cut score represents the minimum score required to pass the licensure test or subtest in this state. Cut scores are generally based on scale scores, not raw scores (meaning that they do not directly represent the proportion of points earned or questions answered correctly on the licensure test).
Attempt type/Number	<ul style="list-style-type: none"> <li>Filter this column for "First Attempt" to see the first-attempt pass rates for all test takers.</li> <li>Filter this column for "Best Attempt" to see the best-attempt pass rates (pass rates after one or more attempts within the data window) for all test takers.</li> <li>Filter for "First Attempt (Race/Ethnicity)" to see first-attempt pass rates for test takers disaggregated by race/ethnicity.</li> <li>Filter for "Best Attempt (Race/Ethnicity)" to see best-attempt pass rates for test takers disaggregated by race/ethnicity.</li> </ul>
Race/Ethnicity (as submitted)	This column disaggregates data for test takers by race/ethnicity based on the categories provided by the state and their testing company. This column can be filtered to isolate pass rate data for a specific group (e.g., White, All Other Ethnicities).
Race/Ethnicity category	This column provides the category used in NCTQ's dashboard analysis. In some cases, multiple categories of race/ethnicity descriptors were grouped into one Race/Ethnicity category. To match the data in the dashboard, data from multiple rows may need to be combined based on their race/ethnicity category (e.g., an institution's first-attempt pass rates for test takers identified as "All other ethnicities" and "two or more races" would be combined to reflect the "Test Takers of Color" data used in the dashboards.
# of Takers	This column reflects the number of test takers for this row of data. This will represent the number of test takers for the selected institution, subtest, attempt number, and race/ethnicity.
# Pass	This column reflects the number of test takers who passed the test for this row of data. For first-attempt pass rates, this reflects the number who passed on their first attempt. For best-attempt pass rates, this reflects the number who passed after one or more attempts.
% Pass	This column reflects the proportion of test takers who passed the test for this row of data.
# Fail	This column reflects the number of test takers who failed the test for this row of data.
% Fail	This column reflects the proportion of test takers who failed the test for this row of data.
Data Incomplete. Omitted from calculations due to low test taker count	Most states do not provide pass rate numbers when the number of test takers falls below a certain threshold (generally 5 to 10 test takers). This column indicates when the number of test takers who passed was not provided because the total number of test takers was too low, explaining why data in some columns (e.g., "# Pass") are listed as "Low N."

## Second Tab: Downloadable IHE Attempts

Note that the columns under “Teacher Prep Institution,” “Institution Characteristics,” and “Test Summary” are identical to the previous tab. These explanations are not repeated below.

Note that some states that provided data from Pearson provided data on the number of attempts across the lifespan of the test, rather than the three-year data window requested. When this is the case, this is indicated in the “Testing Period” column under the “Test Summary” section.

Attempts Overview	Explanation
Composite/Test with no subtests, or Subtest?	In states with a composite test (or test with no subtests), this column will only indicate that pass rate data is available at the composite test level.  For states that have a test with multiple subtests, this column can be filtered to show either pass rates for composite test, or to show only subtests. If filtered to show subtests, the following column can be used to filter for a specific subtest.
Test/Subtest Name	Filter this column to select a specific subtest.  (Filter to see any subtests if relevant for this state)
Cut Score	The cut score represents the minimum score required to pass the licensure test or subtest in this state. Cut scores are generally based on scale scores, not raw scores (meaning that they do not directly represent the proportion of points earned or questions answered correctly on the licensure test).
Attempt type/Number	Filter this column for “First Attempt” to see the first-attempt pass rates for all test takers.  Filter this column for “Best Attempt” to see the best-attempt pass rates (pass rates after one or more attempts within the data window) for all test takers.  Filter for “First Attempt (Race/Ethnicity)” to see first-attempt pass rates for test takers disaggregated by race/ethnicity.  Filter for “Best Attempt (Race/Ethnicity)” to see best-attempt pass rates for test takers disaggregated by race/ethnicity.
Race/Ethnicity	This column disaggregates data for test takers by race/ethnicity based on the categories provided by the state and their testing company. This column can be filtered to isolate pass rate data for a specific group (e.g., White, All Other Ethnicities).
Race/Ethnicity category	This column provides the category used in NCTQ’s dashboard analysis. In some cases, multiple categories of race/ethnicity descriptors were grouped into one Race/Ethnicity category. To match the data in the dashboard, data from multiple rows may need to be combined based on their race/ethnicity category (e.g., an institution’s first-attempt pass rates for test takers identified as “All other ethnicities” and “two or more races” would be combined to reflect the “Test Takers of Color” data used in the dashboards).
Attempt type	States differed in how they provided data on test takers’ number of attempts.  “Max number of attempts made” indicates that the state provided, for example, how many people made only one attempt, only two attempts, and so on.  “At least X number of attempts made” indicates that the state provided data on how many people took the test at least once, at least twice, and so on.

<b>First attempt</b>	This section provides data about test takers' first attempt.
# Takers	If "Attempt type" is "Max number of attempts made," interpret this column as the number of people who made <i>only one attempt</i> during the data window.  If "Attempt type" is "At least X number of attempts made," interpret this column as the number of people who made <i>at least one attempt</i> during the data window. To calculate the number who made only one attempt, subtract the number who made at least two attempts from the number who made at least one attempt.
# Passers	This indicates the number of people who passed on their first attempt. Not all states provided this data, and in some cases the numbers differ slightly from the first-attempt pass rate provided elsewhere.
Percent Passing	This indicates the percentage of people who passed on their first attempt. Not all states provided this data, and in some cases the numbers differ slightly from the first-attempt pass rate provided elsewhere.
<b>Second Attempt</b>	This section provides data about test takers' second attempt.
# Takers	If "Attempt type" is "Max number of attempts made," interpret this column as the number of people who made <i>only two attempts</i> during the data window.  If "Attempt type" is "At least X number of attempts made," interpret this column as the number of people who made <i>at least two attempts</i> during the data window.
# Passers	
Percent Passing	
<b>Third Attempt</b>	This section provides data about test takers' third attempt.
# Takers	
# Passers	
Percent Passing	
<b>Four or More Attempts</b>	This section provides data about test takers' fourth attempt.
# Takers	Note that in some cases, states that provided data supplied by Pearson may count test takers more than once in this category. If a test taker took the test six times, the test taker may be counted once for the fourth time, once for the fifth time, and once for the sixth time. It is not always evident when test takers are being counted more than once, so treat this column of data with caution.  Some states provided data for test takers who take the test five or more times; this is also included in a subsection.
# Passers	
% Pass	
<b>Summary</b>	
Average # of attempts	This value, calculated by NCTQ, is the average number of times test takers took the test.
Total # of takers	This indicates the total number of people represented by the number of attempts data. It should align with the number of people reported for the pass rates data, but some states had small differences.
# Takers making 3+ attempts	This indicates the number of test takers who take the test three or more times. This does not indicate whether the test takers pass at any point.
Percent making 3+ attempts	This indicates the percentage of test takers who take the test three or more times. This does not indicate whether the test takers pass at any point.
# of 1st attempt passers	This indicates the number of test takers who pass on their first attempt (used to calculate the walk-away rate).



# fail first time	This indicates the number of people who fail on their first attempt (used to calculate the walk-away rate).
# took only 1x and failed (walked away)	This is the total number of people who took the test only one time minus those test takers who passed on their first attempt, used to calculate the walk away rate.
Walk away rate	This represents the proportion of people who failed on their first attempt and did not retake the test.  This value, calculated by NCTQ, is calculated by taking the number who failed and did not retake the test (from the previous column) divided by the total number who failed on their first attempt.

If you have any questions about this information, or want any data not included in the spreadsheets, please contact Hannah Putman, [hputman@nctq.org](mailto:hputman@nctq.org).