Assessment Observations

Visualizations:

[Term Subject and Grade](https://public.tableau.com/views/MAPsFall21-22toFall22-23/TermSubjectGrade?:language=en-US&:display_count=n&:origin=viz_share_link)

[Term Grade and Subject](https://public.tableau.com/views/MAPsTermGradeSubject/TermGradeSubject?:language=en-US&:display_count=n&:origin=viz_share_link)

[Excel Spreadsheet example](#Example)

Summary

* Math Fall 21-22

3rd and 4th are proven above average. This is likely the result of parents helping students because this was the first year the assessment was done and proctoring might not have been implemented properly.

Otherwise, in line with the national average.

* Math Winter 22-23

4th has proven outliers based on Kurtosis and right tailed Skew. Without those outliers it’s possible that 4th grade could be proven below average.

8th is proven above average.

It’s possible 6th was above average.

Otherwise, in line with the national average.

* Math Spring 22-23

4th was possibly below average and has moderate to strong right tailed skew. Given the right tailed skew it’s likely that 4th grade could be proven below average.

Otherwise, in line with the national average.

Over the course of the year Operations and Algebraic thinking did not improve as much as the national average and ended up below the national average in 3-5 grades, but overall scores remained in line with the national average.

* Math Fall 22-23 (this school year)

7th and 8th have moderate left skew so there may be some scores lowering their averages.

Otherwise, in line with the national average.

* LA Fall 21-22 (last school year)

All grades are proven above average except 7th grade, which is still proven above average in two categories.

3rd, 5th, 6th, and 7th all have moderate to strong left skew which indicates possible left tailed outliers. If those were removed then all grades would still be above average.

8th has outliers proven by kurtosis but no proven skew.

* LA Winter 22-23

3rd and 4th are proven above average.

6th, 7th, and 8th have moderate and strong left skew, indicating that there could be left end outliers. If those were removed it’s possible that these grades could be proven above average as well.

Otherwise, in line with the national average.

* LA Spring 22-23

3rd and 6th are proven above average.

7th is close to being proven above average.

Otherwise, in line with the national average.

Over the course of the year 3rd grade was consistently above average and various categories among 4th and 5th grade maintained above average throughout the year. Vocabulary was the most consistently above average score throughout all grades. All grades and categories maintained the national average or were proven above average over the course of the year.

* LA Fall 22-23 (this school year)

3rd grade is proven below average. This could be the result of the pandemic.

8th is proven above average.

4th, 5th, and 6th contain moderate left tailed skew, indicating that they could have left end outliers. If those outliers were removed, then it’s possible that they would be proven above average.

Otherwise, in line with the national average.

Specifics

P value<2.5 is significantly above average (AA)

P value>97.5 is significantly below average (BA)

Kurtosis>3 is significant amount of values far from the mean (yes)

Skew<-.5 is moderate left skewed (ML) <-1 is strong left skew (SL)

Skew>.5 is moderate right skewed (MR) >1 is strong right skew (SR)

Math:

The math category names changed between 21-22 and 22-23 so individual categories are not necessarily comparable year to year.

Math scores were on average above the national mean in Fall 21-22, but then did not keep pace with the national mean for the rest of the year except in 8th grade. The only ones to fall below the 40th percentile were 4th grade in Winter and Spring. The only ones above the 60th percentile were 3rd and 4th grade in Fall and those are likely outliers because they immediately fell to the 50th and 40th percentiles during Winter and Spring.

* Conclusion: 4th grade math scores struggled the most overall, but the difference does not seem to be very large as it was at the 39th percentile while other grades were at the 40th to 44th percentile. It’s not preferable to have percentiles lower than the national average, but they aren’t far below. Analysis of the individual scores might reveal areas to focus on improvement.

Individual scores: Math

Fall 21-22 - checked

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry |  |  | AA  AA  AA  AA  AA |
| 4  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry | yes | MR  MR | AA  AA  AA  AA |
| 5  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry |  |  |  |
| 6  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  |  |  |
| 7  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  |  |  |
| 8  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  |  |  |

3rd and 4th are proven above average.

Winter 21-22

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry |  | SL | AA |
| 4  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry | Yes  Yes  Yes  yes | SR  MR |  |
| 5  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry |  |  |  |
| 6  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  | ML | Close to AA  Close to AA  AA |
| 7  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  | ML |  |
| 8  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  | ML | AA  AA  AA  AA |

4th has proven outliers based on Kurtosis and right tailed Skew. Without those outliers it’s possible that 4th grade could be proven below average.

8th is proven above average. It’s possible 6th was above average.

Spring 21-22

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry | yes |  | Close to BA |
| 4  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry | Yes  yes | SR  MR  SR  MR  MR | Close to BA  BA  Close to BA  BA |
| 5  Operations and Algebraic Thinking  Number and Operations  Measurement and Data  Geometry |  | MR  MR | BA  Close to BA |
| 6  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  | MR | Close to BA |
| 7  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  | ML |  |
| 8  Operations and Algebraic Thinking  Real and Complex Number Systems  Statistics and Probability |  | ML |  |

4th was possibly below average and has moderate to strong right tailed skew. Given the right tailed skew it’s likely that 4th grade could be proven below average.

Over the course of the year most grade rates of improvement appear to be less than the national average.

21-22 overall

Create regressions to compare each grade and each subscore to the national averages.

Fall 22-23

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Algebraic Reasoning  Numeric Reasoning  Geometric Reasoning  Data Reasoning |  |  | BA  BA |
| 4  Algebraic Reasoning  Numeric Reasoning  Geometric Reasoning  Data Reasoning |  |  | Close to AA |
| 5  Algebraic Reasoning  Numeric Reasoning  Geometric Reasoning  Data Reasoning | yes |  |  |
| 6  Algebraic Reasoning  Proportional and Numerical Reasoning  Geometric Reasoning  Data Reasoning |  |  |  |
| 7  Algebraic Reasoning  Proportional and Numerical Reasoning  Geometric Reasoning  Data Reasoning |  | ML  ML |  |
| 8  Algebraic Reasoning  Proportional and Numerical Reasoning  Geometric Reasoning  Data Reasoning |  | ML  ML  ML  ML |  |

7th and 8th have moderate left skew so there may be some scores lowering their averages.

Reading

Reading scores were

* Conclusion:

Individual scores: Reading

Fall 21-22 - checked

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Literary Text  Information Text  Vocabulary |  | ML  ML  ML | AA  AA  AA  AA |
| 4  Literary Text  Information Text  Vocabulary |  |  | AA  AA  AA  AA |
| 5  Literary Text  Information Text  Vocabulary |  | ML  SL | AA  AA  AA  AA |
| 6  Literary Text  Information Text  Vocabulary |  | ML  ML | AA  AA  Close to AA  AA |
| 7  Literary Text  Information Text  Vocabulary |  | ML  ML | AA  AA |
| 8  Literary Text  Information Text  Vocabulary | Yes  Yes  Yes  Yes |  | AA  AA  AA  AA |

All grades are proven above average except 7th grade, which is still proven above average in two categories.

3rd, 5th, 6th, and 7th all have moderate to strong left skew which indicates possible left tailed outliers. If those were removed then all grades would still be above average.

8th has outliers proven by kurtosis but no proven skew.

Winter 21-22

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Literary Text  Information Text  Vocabulary |  |  | AA  AA  AA  AA |
| 4  Literary Text  Information Text  Vocabulary |  |  | AA  AA  AA  AA |
| 5  Literary Text  Information Text  Vocabulary |  |  | AA  AA |
| 6  Literary Text  Information Text  Vocabulary |  | ML  ML  ML | AA |
| 7  Literary Text  Information Text  Vocabulary | Yes  Yes  yes | SL  SL  SL | Close to BA |
| 8  Literary Text  Information Text  Vocabulary |  | ML  ML  ML |  |

3rd and 4th are proven above average.

6th, 7th, and 8th have moderate and strong left skew, indicating that there could be left end outliers. If those were removed it’s possible that these grades could be proven above average as well.

Spring 21-22

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Literary Text  Information Text  Vocabulary |  |  | AA  AA  AA  AA |
| 4  Literary Text  Information Text  Vocabulary |  |  | Close to AA |
| 5  Literary Text  Information Text  Vocabulary |  | MR | Close to AA  AA |
| 6  Literary Text  Information Text  Vocabulary |  |  | AA  AA  AA  AA |
| 7  Literary Text  Information Text  Vocabulary |  |  | Close to AA  Close to AA  Close to AA |
| 8  Literary Text  Information Text  Vocabulary |  |  | AA |

3rd and 6th are proven above average. 7th is close to being proven above average.

Fall 22-23

|  |  |  |  |
| --- | --- | --- | --- |
|  | Kurtosis | Skew | Difference from Mean |
| 3  Literary Text  Information Text  Vocabulary |  |  | BA  BA  BA |
| 4  Literary Text  Information Text  Vocabulary |  | ML  ML  ML |  |
| 5  Literary Text  Information Text  Vocabulary |  | ML  ML  ML | BA |
| 6  Literary Text  Information Text  Vocabulary |  | ML  ML |  |
| 7  Literary Text  Information Text  Vocabulary |  |  | Close to AA  AA |
| 8  Literary Text  Information Text  Vocabulary |  |  | AA  AA  AA |

3rd grade is proven below average. 8th is proven above average.

4th, 5th, and 6th contain moderate left tailed skew, indicating that they could have left end outliers. If those outliers were removed, then it’s possible that they would be proven above average.

Example of one of the Excel sheets I created to provide the descriptive statistics for this analysis:



Example Excel formulas I used to create these descriptive statistics:

Each of these refers to a Helper sheet which included a column that combined names and subjects into one column to make filtering easier.

Mean:

average(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J5))

Percentile vs national mean:

NORMDIST(B5,B$2,B$3,TRUE)

Z test

z.test(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J5),B$2,B$3)

Max

MAX(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J8))

Median  
MEDIAN(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J9))

Min

MIN(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J10))")

Standard Deviation

STDEV(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J11))

Skew

SKEW(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J12))

Kurtosis

KURT(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J13))

Count

COUNT(INDEX(filter(Helper!$F:$AQ,(Helper!$F:$F=B$1)\*(Helper!$G:$G=$A$1)),0,$J14))