



2016 AzMERIT and Historical Trend Data

Scottsdale Unified School District

Dr. Anna McCauley, Ed.D.

Assistant Superintendent of Accountability and Instruction



Scottsdale Unified School District Governing Board 2014 Goal Statements -

1. Academic Achievement

- To establish high expectations for all stakeholders through a commitment to increase academic rigor and relevance that instills a passion for lifelong learning.

$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k}$$

Look Back To Move Forward...



- Why look at trend Data?
 - History of achievement, predictive outcomes, impact on change (program, curriculum, PD, leadership etc.)
 - Do we have a complete understanding?
 - Do we have sufficient data points to draw conclusions?
 - What other variables should we consider?
- How we analyze and interpret the ‘data trends’ plays a very important role in optimizing our next steps.

$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k}$$



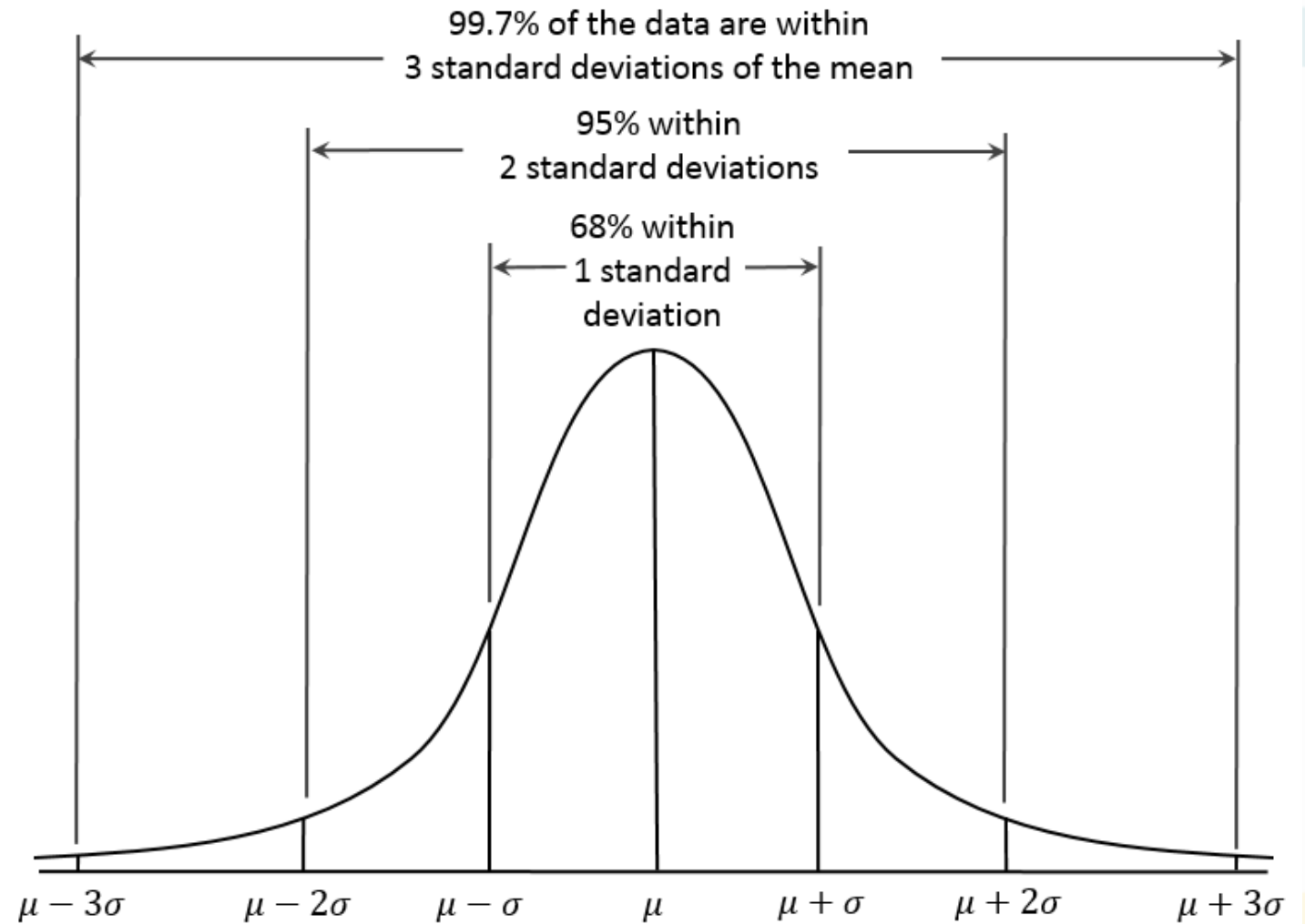
Normal Curve Equivalents

Scores from different administrations and/or different assessments can be equated through score transformation in order to see trends over time.



The Normal Distribution

Scores within 1 standard deviation of the mean comprise 68% of the scores, while scores 2 standard deviations above the mean represent the top and bottom 2%, and scores 3 standard deviations from the mean represent the top and bottom .13%





Normal Curve Equivalent

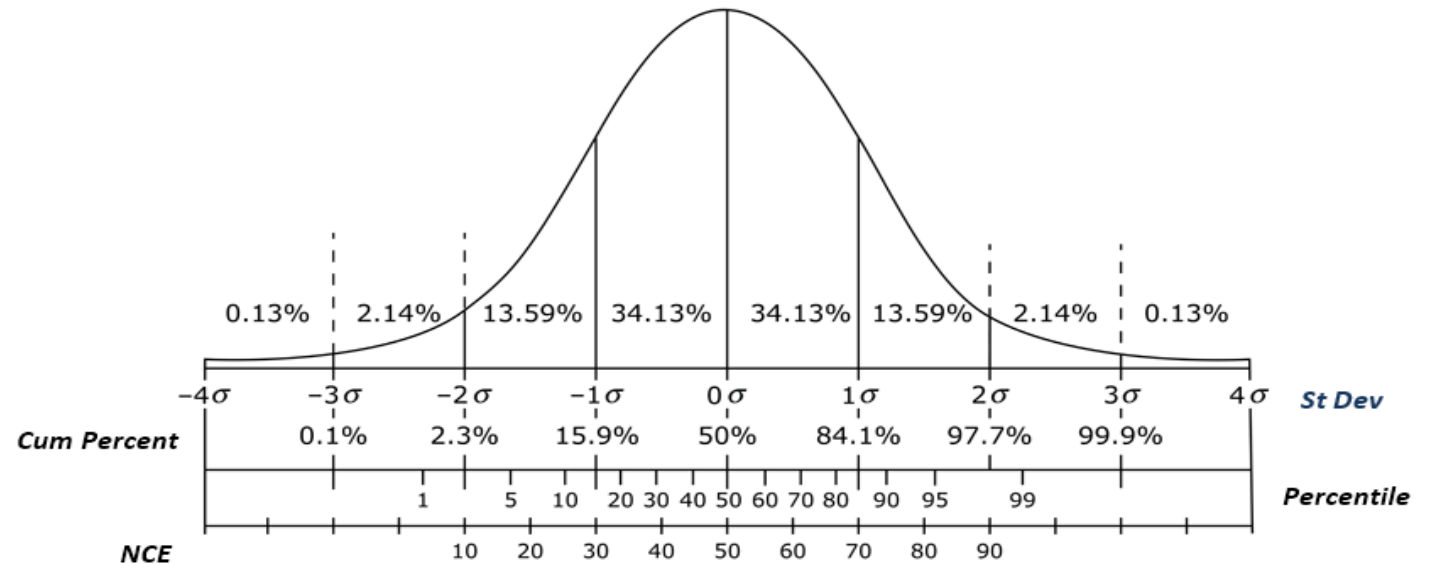
Normal Curve Equivalents (NCE) are normalized scores that place values on a common, equal-interval scale.

Mean = 50

Standard Deviation = 21.063

Therefore,

- 1 SD above the mean ~71
- 1 SD below the mean ~29
- 2 SD above the mean ~92
- 2 SD below the mean ~8





Score Transformation Advantages and Limitations

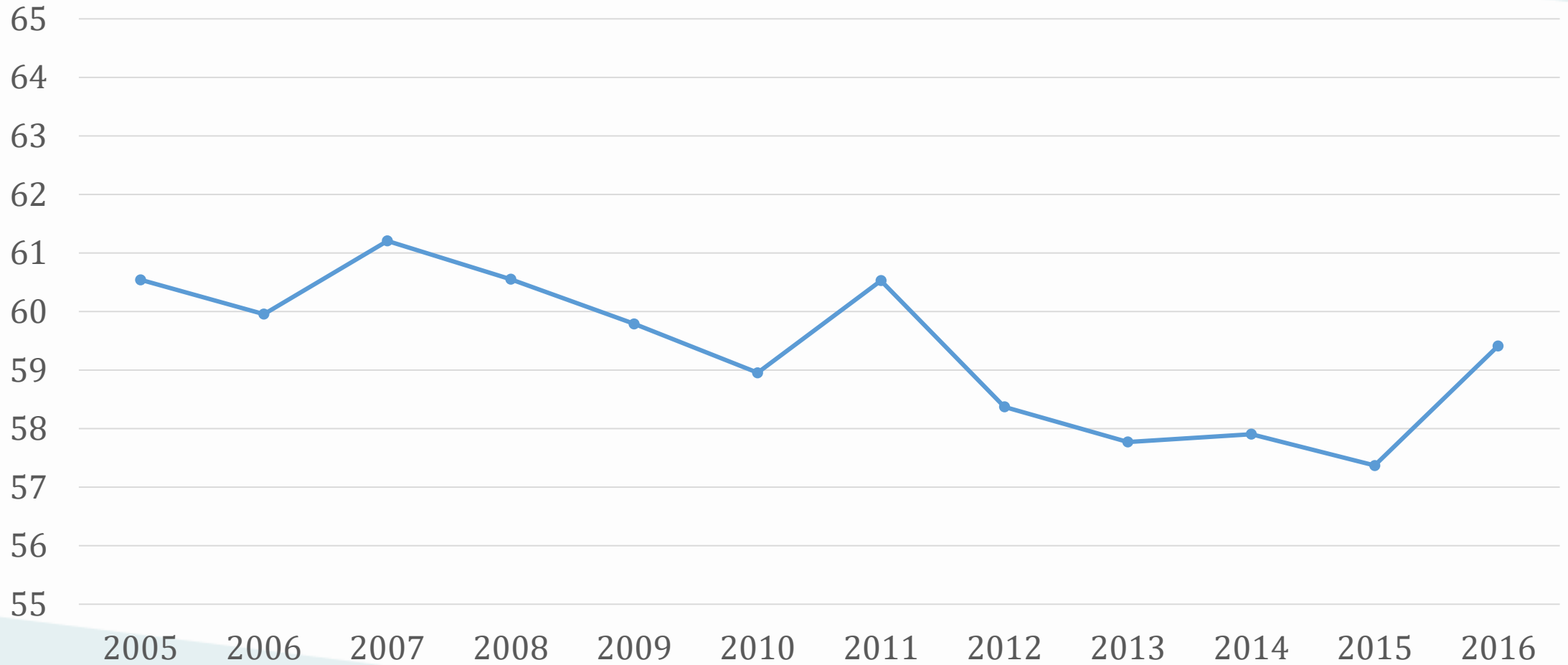
Advantages

- Since on equal-interval scale, NCEs can be added, subtracted, multiplied, and divided, unlike percentile ranks or stanine scores.
- Normal Distributions can be used to approximate multiple distributions in large sample (Central Limit Theorem)
- Scores from different scales can be transformed and equated to show trends across time and assessments

Limitations

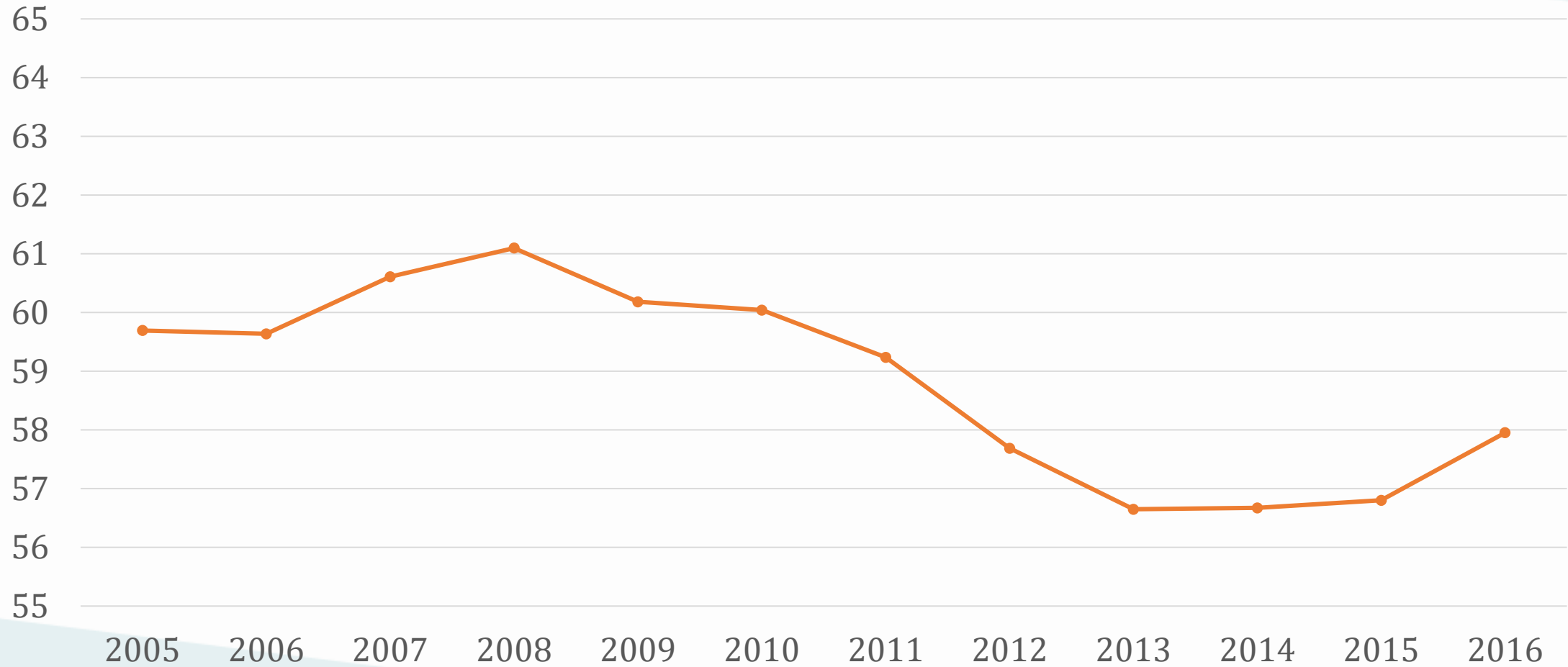
- NCEs are bound between 1 and 99, but z-scores above and below 2.3 produce values outside the bounds and have to be rounded up or down.
- Spikes in standard deviations across test administrations can deflate NCE scores, especially in the initial administration of a new assessment

ELA Normal Curve Equivalent Trend on State Assessment 2005-2016



$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k}$$

Math Normal Curve Equivalent Trend on State Assessment 2005-2016



$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k}$$



Standouts

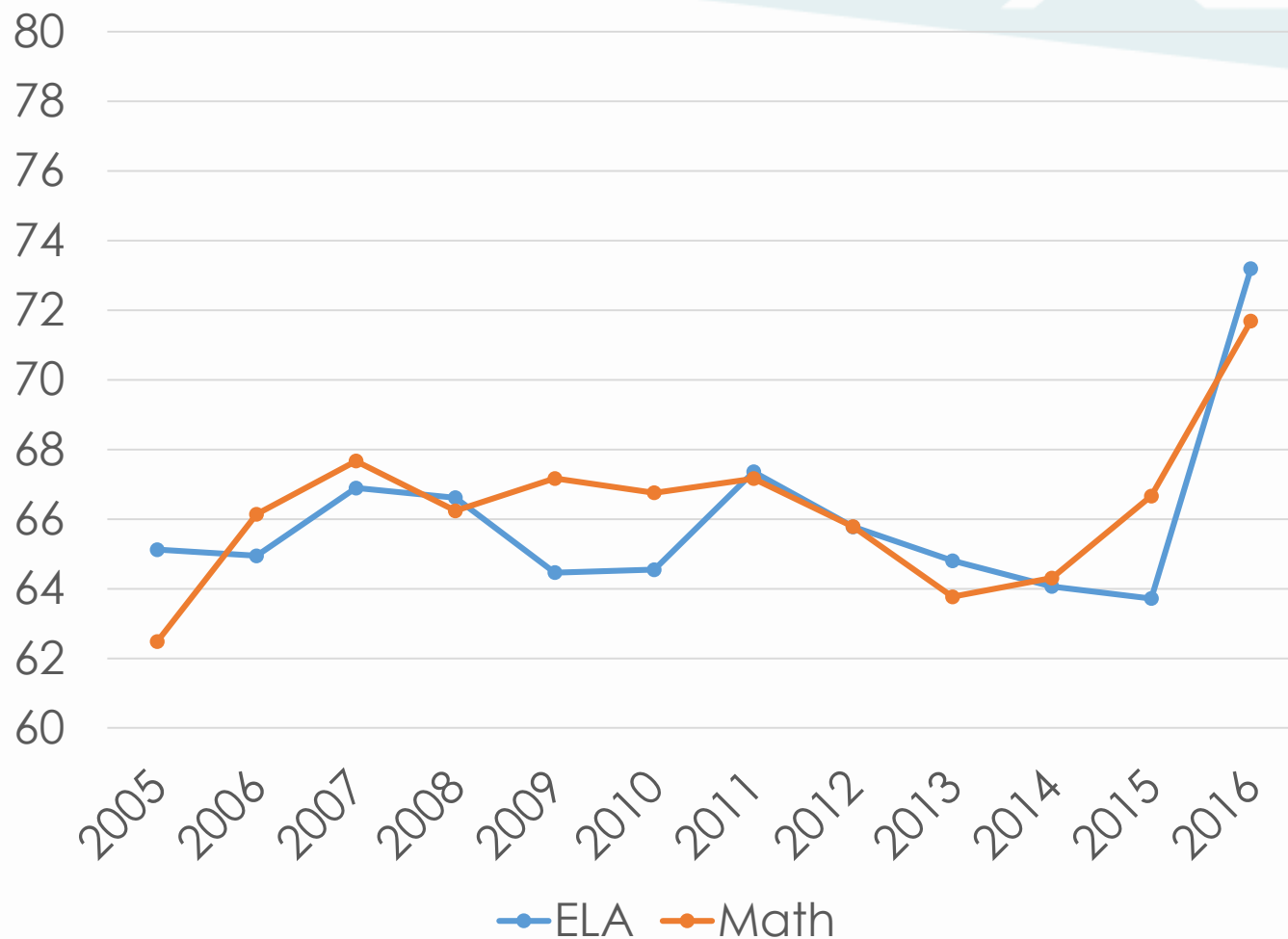
Growing strong...

SCOTTSDALE UNIFIED
SCHOOL DISTRICT



Anasazi

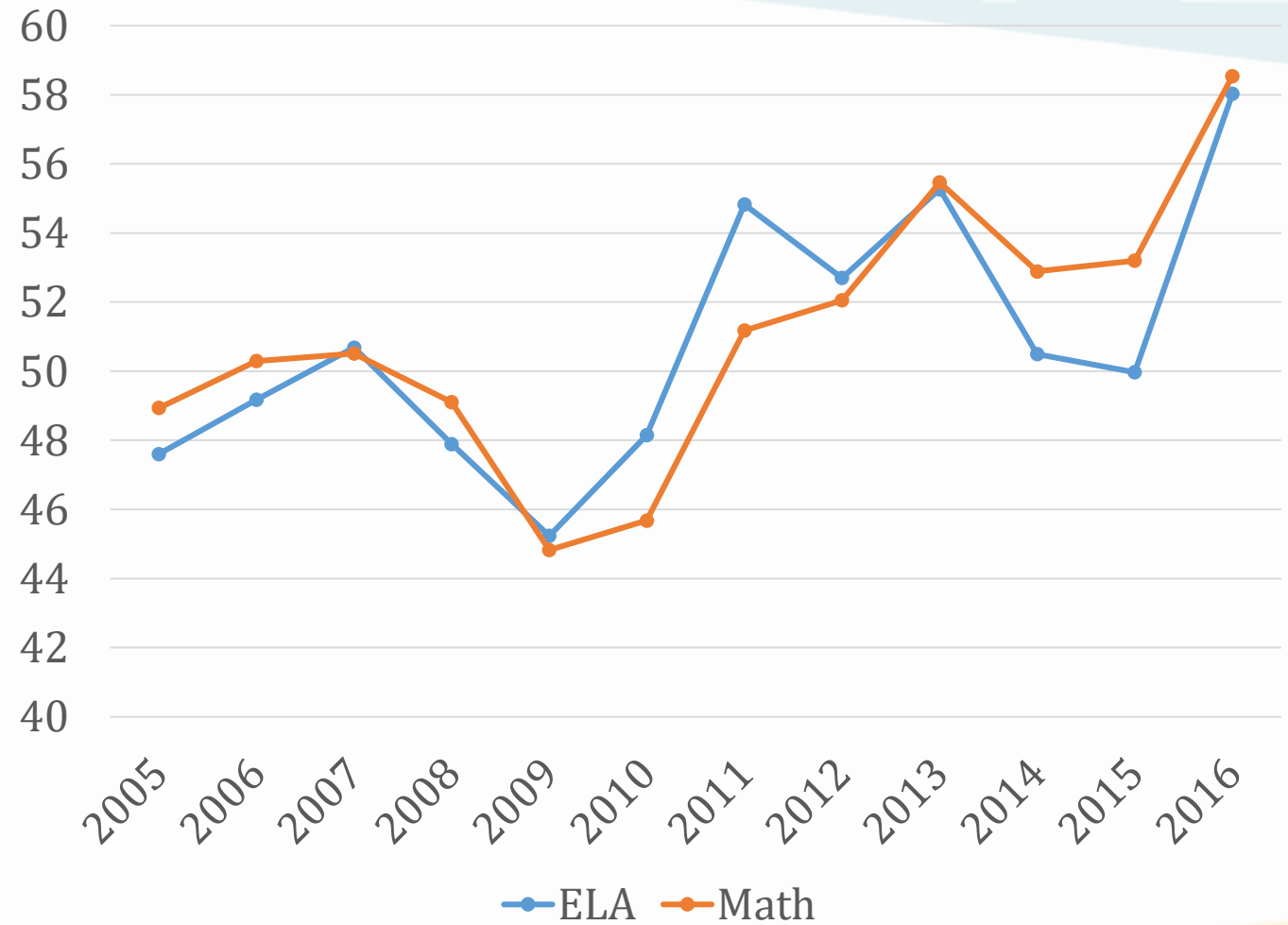
- ELA: +8.07
- Math: +9.21





Hohokam

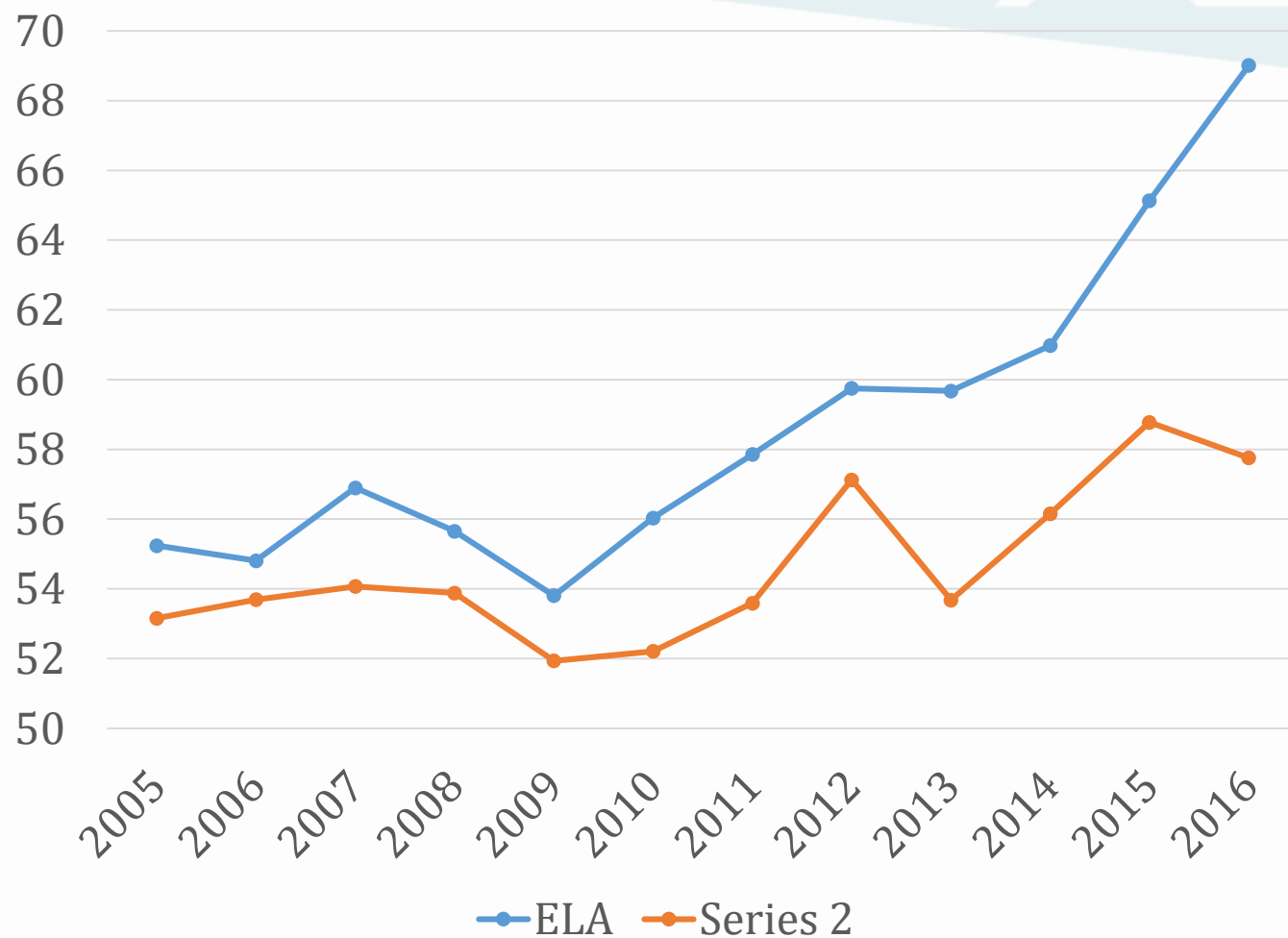
- ELA: +10.43
- Math: +9.61





Pueblo

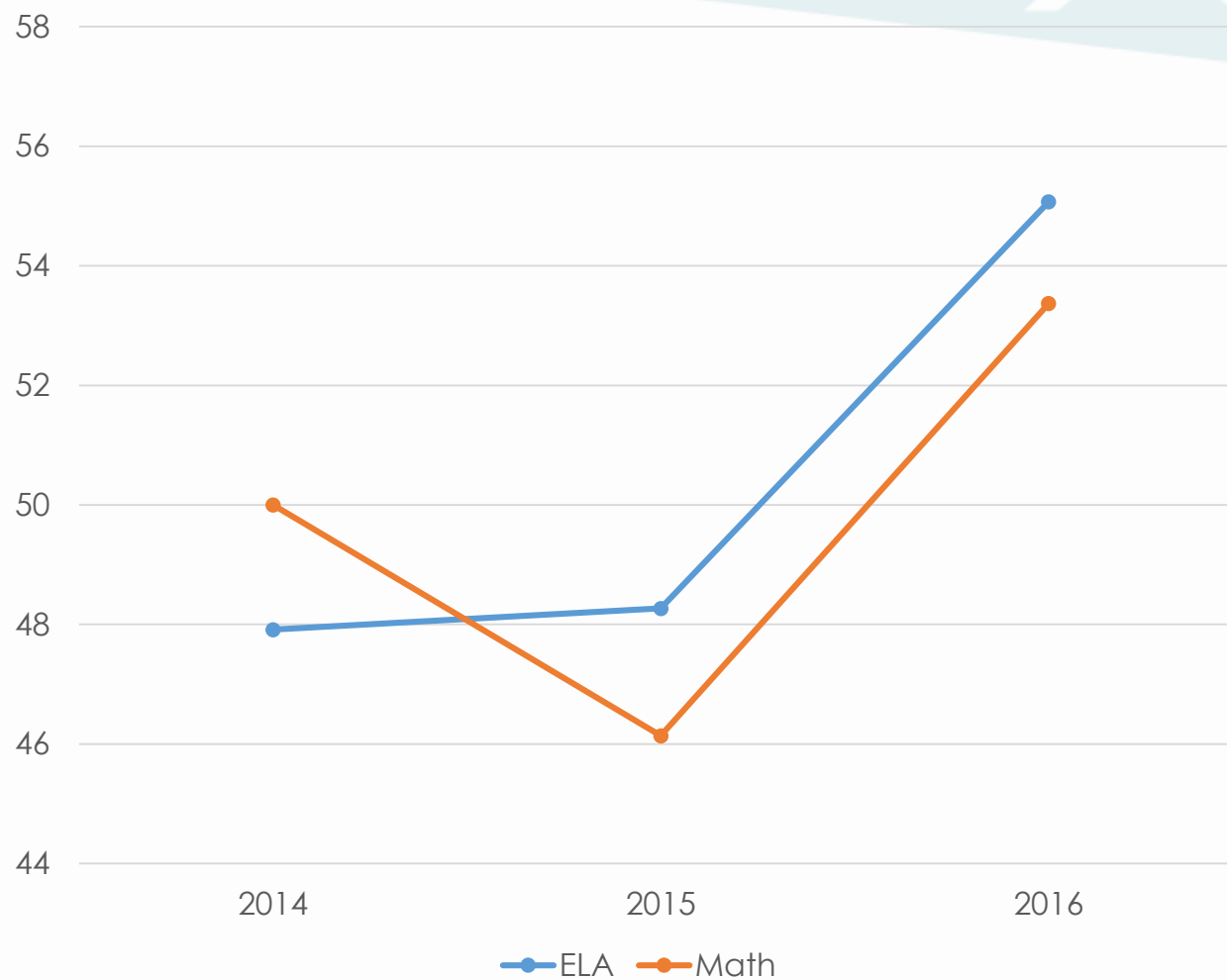
- ELA: +13.77
- Math: +4.60





Tavan*

- ELA: +7.27
- Math: +3.62
- *Chart and gain reflect data for 5th grade students in Tavan during the 2016 school year.



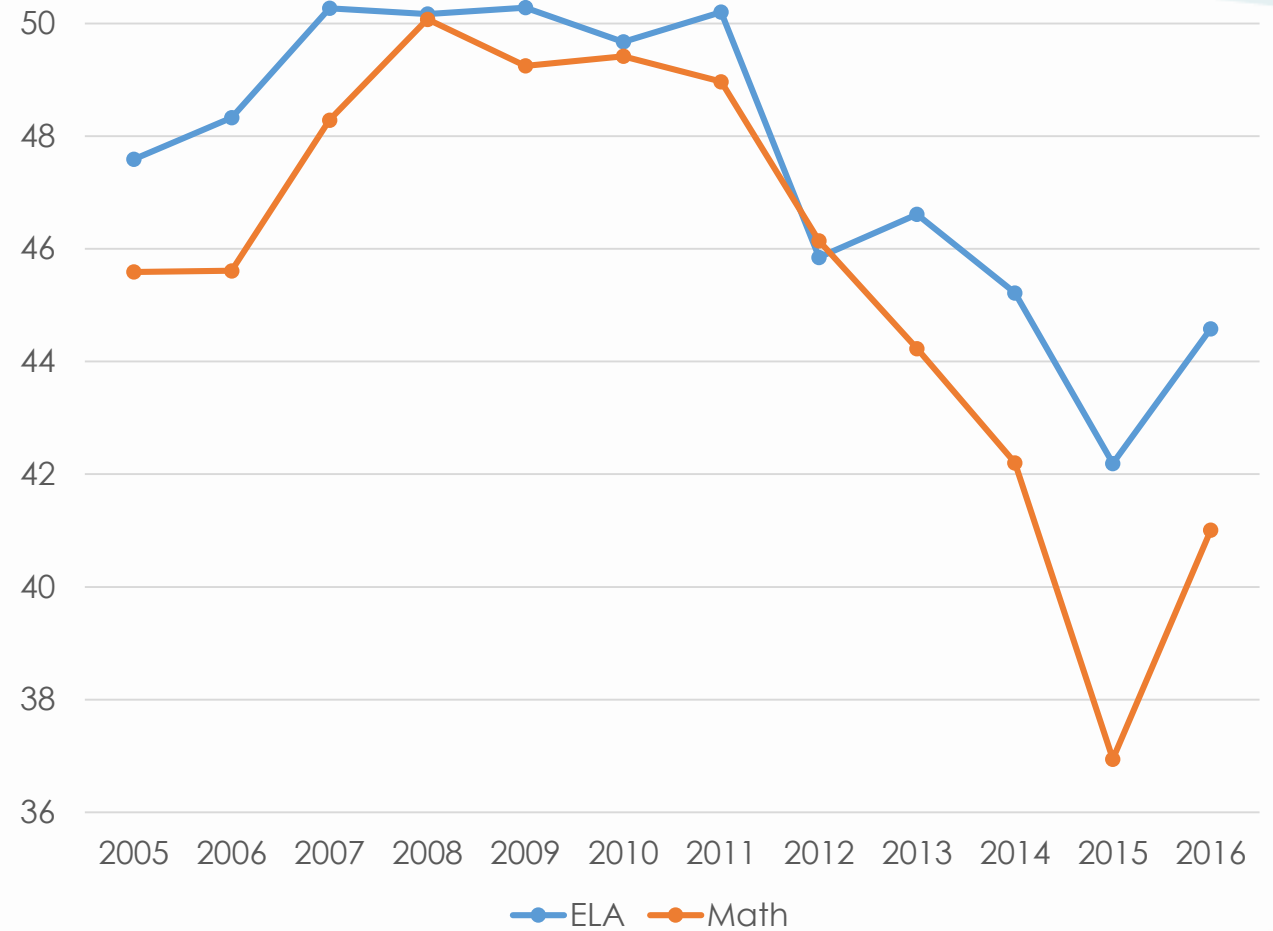


Focus Sites



Tonalea*

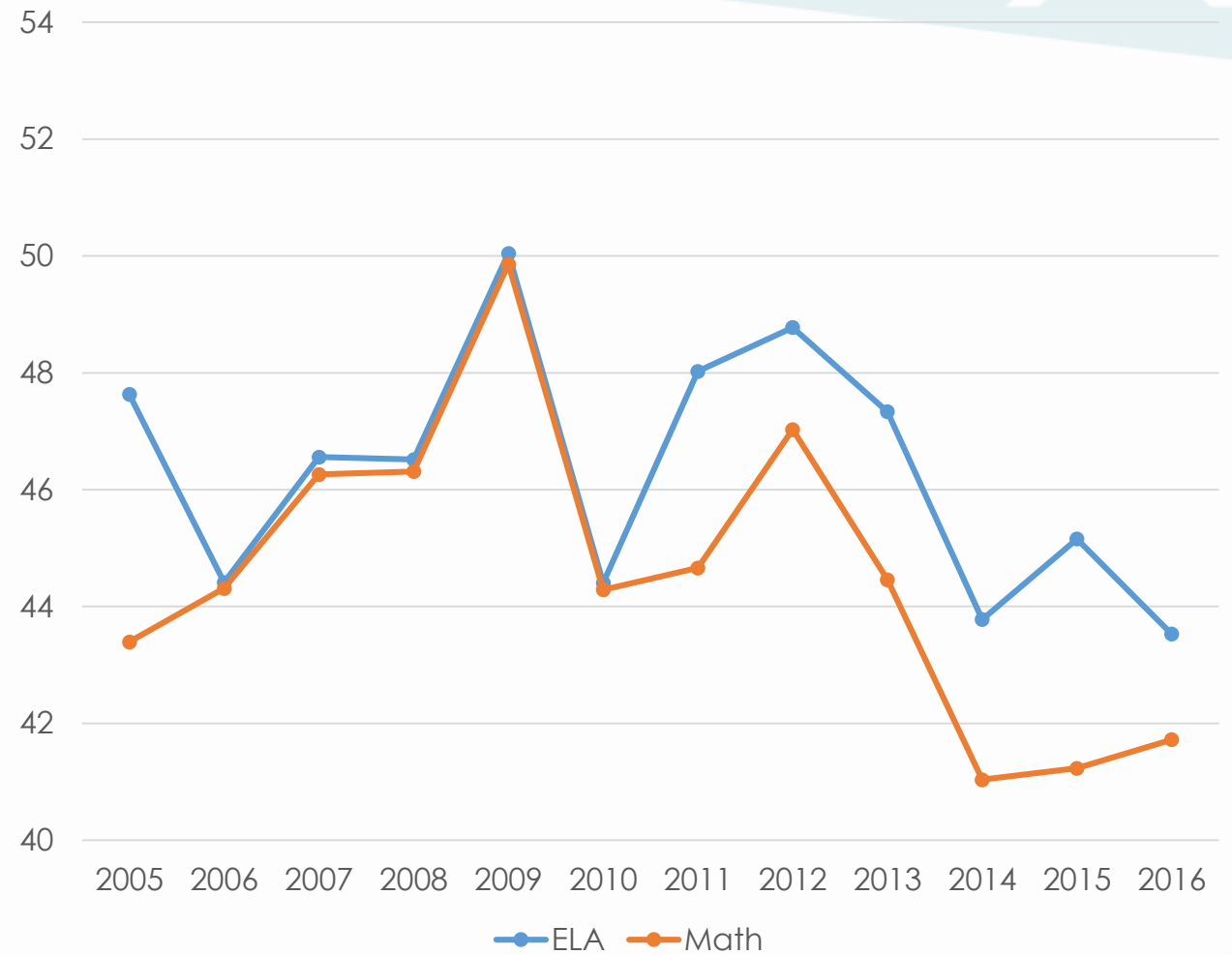
- ELA: -3.01
- Math: -4.58
- *Chart and gain reflect data for 5th grade students in Tavan during the 2016 school year.





Supai

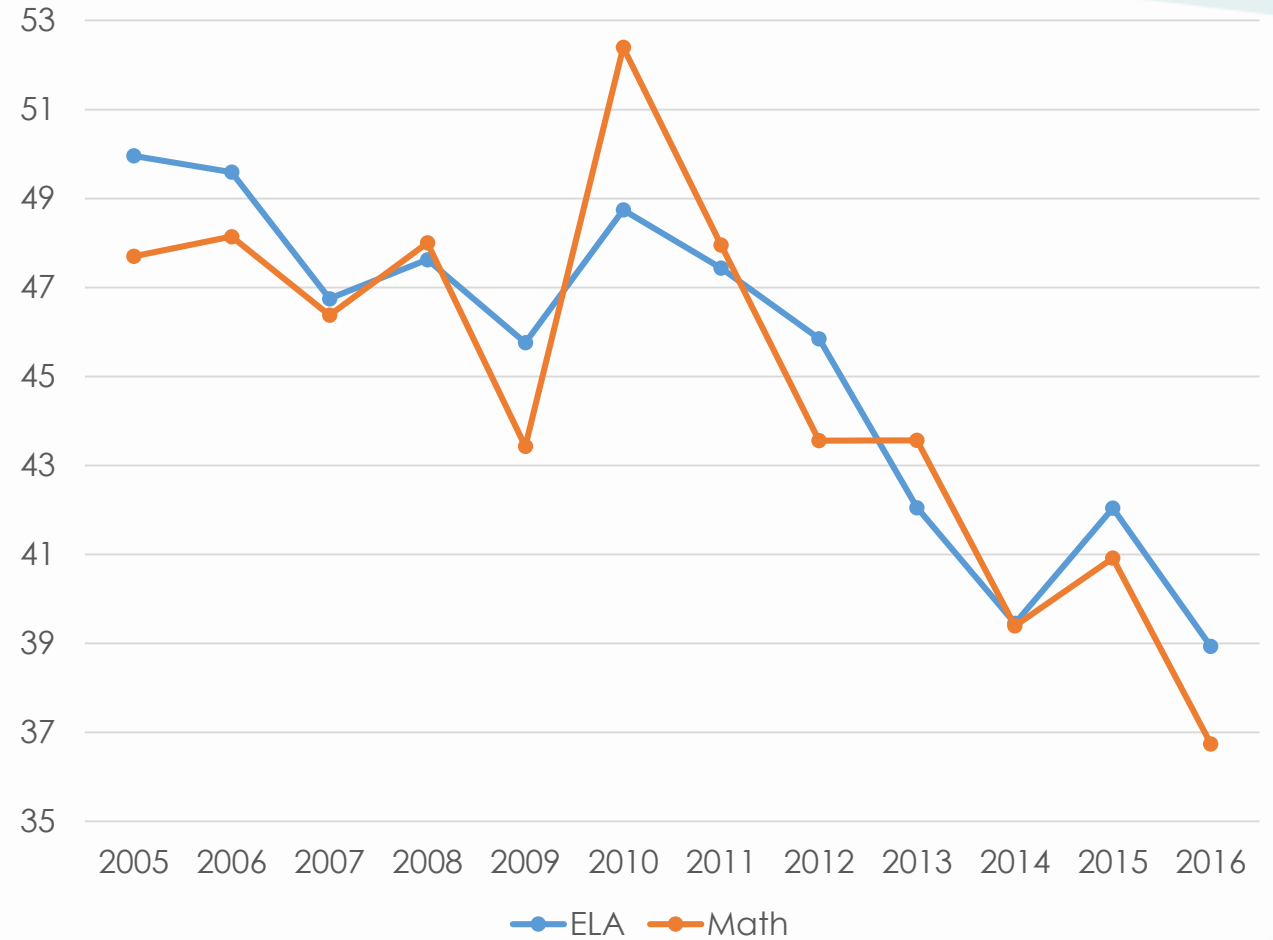
- ELA: -4.10
- Math: -1.67





Coronado High School

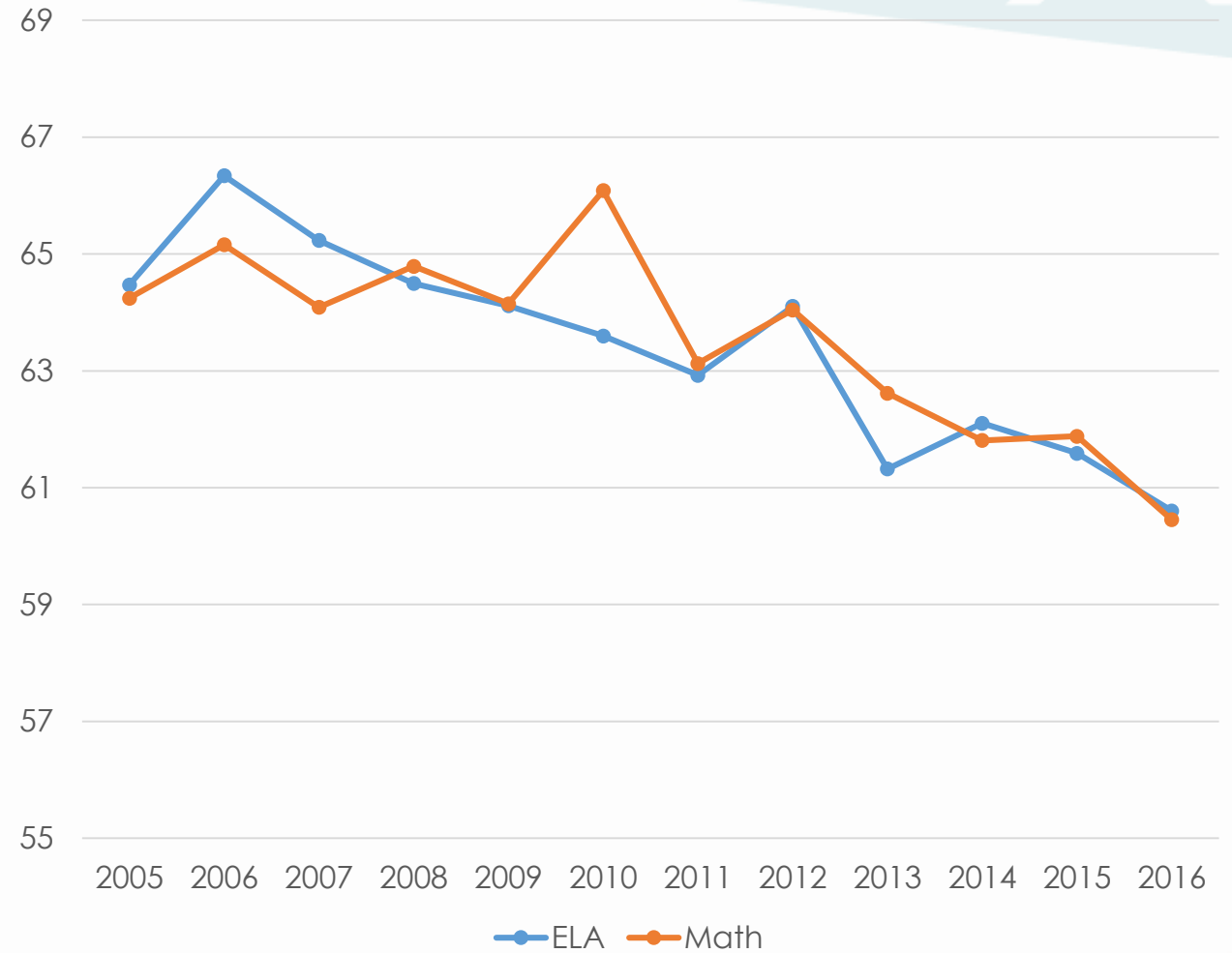
- ELA: -11.03
- Math: -10.96





Desert Mountain High School

- ELA: -3.87
- Math: -3.79





What Next?

More digging...we just scratched the surface and need to identify variables correlated with trends in order to build on those that have evidence of effectiveness and to overhaul those suggesting unacceptable levels of ineffectiveness.



Data-Do List - Variables

Demographics

- Students with Disabilities
- English Learners
- Gifted Learners
- Race/Ethnicity
- Socioeconomic Status
- Gender
- Neighborhood Effects (zip code or grid system)

Student and School Variables

- Student Achievement Quartile
- Marks Earned in EOC
- School Effects
- Open-Enrollment Status
- Years in District
- Programmatic Changes
- Leadership Changes
- Funding Changes

Data To Do List: Analyses



- Tests of growth and significance: t-test (means comparison)
- Predictive modeling:
 - Hierarchical Multiple Linear Regression: Predictive of expected NCE or scale score
 - Binary Logistic Regression & Predictive Probability of Success (Pass/Fail): Predictive of testing proficient or highly proficient
 - Multinomial Logistic Regression & Predictive Probability of Proficiency (Partially Proficient through Highly Proficient): Predictive of proficiency level

$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k}$$



Conclusion

$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k}$$

Questions?



SCOTTSDALE UNIFIED
SCHOOL DISTRICT