Illinois Accountability Technical Advisory Committee (TAC)

Webinar Meeting: Academic Growth

Center for Assessment

January 23, 3018

Participants

Name	Organization
Rae Clementz	ISBE
Jason Helfer	ISBE
Jeff Broom	Chicago Public Schools
David Conley	University of Oregon, Center for Educational Policy Research
Chris Domaleski	National Center for the Improvement of Educational Assessment
Laura Hamilton	RAND
Erika Landl	National Center for the Improvement of Educational Assessment
Jim Pellegrino	University of Illinois, Chicago
Mike Russell	Boston College
Diana Zaleski	Illinois Education Association

Purpose and Overview

- Primary purpose is to help ISBE make good decisions about the design and implementation of the state, school accountability system under ESSA
- We will focus on identify decisions in support of ISBE's policy priorities that are **technically defensible** and **operationally feasible**
- Feedback from the TAC will be documented in a memorandum and subsequent report to the Illinois State Board of Education
- TAC's feedback will serve as recommendations to the ISBE

January Meeting Agenda

- Welcome and Introductions
- Review December Meeting Notes
- Growth Model Analyses
  - Presentation of data analyses
  - Discussion of findings and implications
- Public Comment
- Review future meeting schedule
- Adjourn

Growth Model Analyses

Growth Model Selection: Key Considerations

- The theory of action driving the inclusion of growth in the accountability model.
- The type of inference you want (or need) to make about growth to support the TOA and intended use of reported growth measures.
- Required data and technical features
- Resource and logistical factors
- Stakeholder priorities

Model Evaluation Framework

*Slide taken from a CCSSO presentation by D'Brot, J. & Goldschmidt, P., 2017

- Policy-based Criteria
  - **Policy Goals/ Purpose**: *Alignment with Theory of Action. Why include growth?*
  - **Interpretation/ Inference Supported**: *What does the model tell us? Does it extrapolate beyond observed data?*
  - **Equity**: *Does the model expand our view of school quality fairly?*
  - **Resistance to Corruptibility**: *How "gameable" are prior scores?*
  - **Cost:** *How much does this thing cost to run?*
  - **Utility**: *Is if useful? Does it support changes in behavior?*

- Technically-based Criteria
  - **Technical Goals/Purpose**: *How well does it differentiate individually and as part of the system?*
  - **Analytical Approach**: *What is the underlying computation for the model?*
  - **Data Availability**: *What are the data requirements of the model?*
  - **Consistency**: *What kind of stability does the model support in its classifications (e.g., are we factoring in scale drift)?*
  - **Equity**: *How unrelated are the model outputs to supposedly unrelated data (e.g., school and LEA demographics)*
  - **Complexity**: *How complex are the results to explain to the public? How easily can results be integrated into the accountability system?*

Priorities Identified at December Meeting

- The state should value approaches that:
  - are relatively straightforward to understand and implement
  - teachers perceive as something they can directly influence
  - minimize school level instability due to n-size
  - minimize correlations with prior year status
  - demonstrate availability of the full distribution of growth outcomes to schools of various demographic compositions (e.g., poverty, SWD, and ELL)
  - are sensitive to changes in student achievement, particularly for students at the low end of the test-score distribution
  - minimize ceiling and floor effects
  - are reliable (i.e., provide for stable results across years in cases where the underlying performance of a school is not changing)
  - minimize punitive aspects
  - detect (not mask) important school level effects
  - are robust to changes in state assessment and differences in test characteristics

It is important to note that the goal of accountability systems is to induce desired change which can promote lack of stability from year to year for low performing schools.

Regression

From IL State Plan

- "Based on comments from the Governor and Stakeholders growth received over two times as much weight as proficiency in the accountability system."
- "Illinois recognizes an emphasis on student growth as a primary driver to close equity gaps. As a result, student growth will represent 50% of the accountability framework for Illinois."
- "ISBE proposes to utilize linear regression (i.e., current test scores are regressed on last year's test scores) to compute student academic growth in grades 3-8."

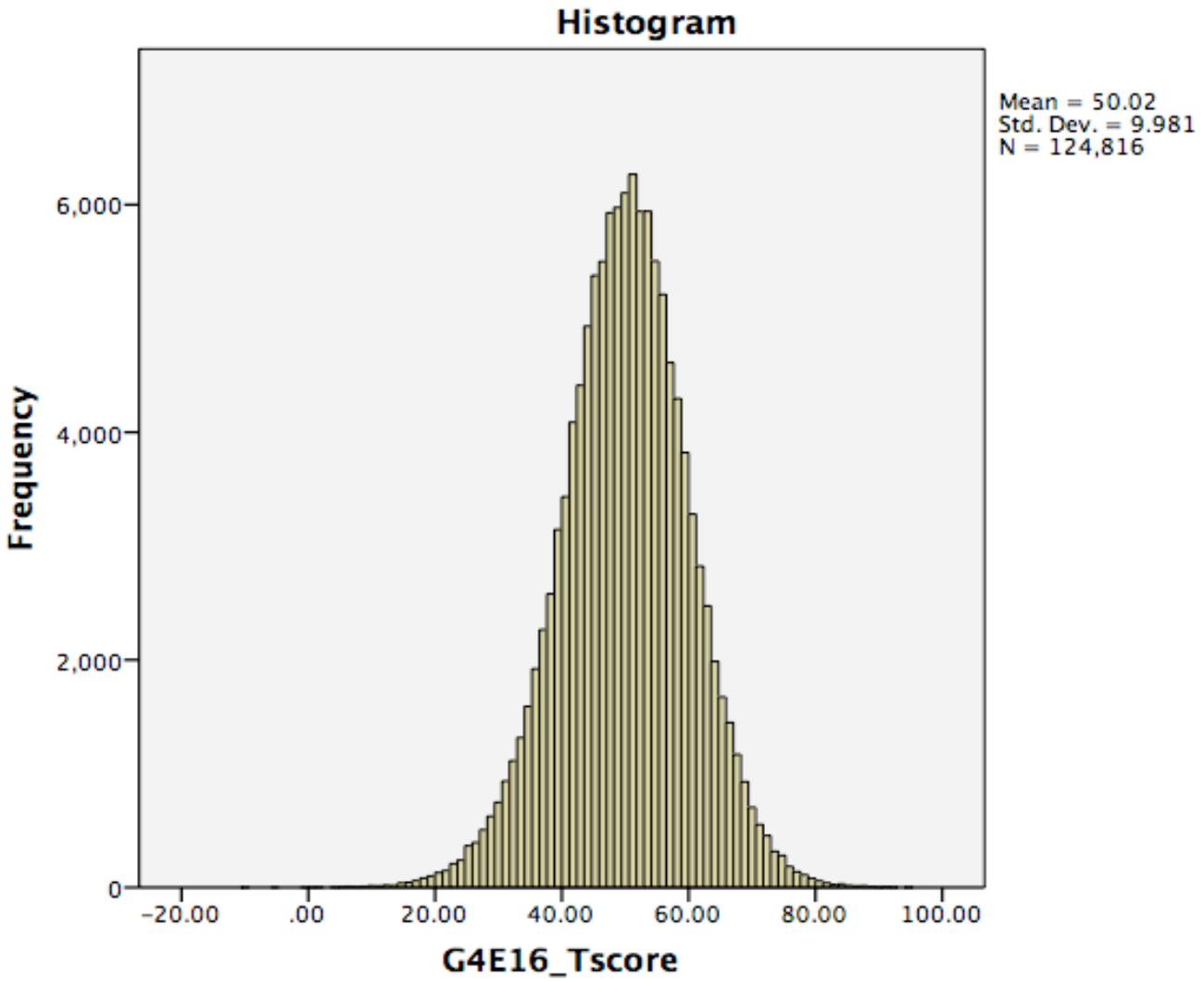
Overview

- Linear regression based growth scores were produced as follows:
  - Regressed year 2 PARCC scale score (e.g. grade 4, 2016) on year 1 PARCC scale score (e.g. grade 3, 2015)
  - Computed standardized residuals for each case
  - Transformed standardized residuals to a T distribution (mean 50, standard deviation 10).
- Data file included:
  - Grade 3, 2015 − ELA and Math
  - Grade 4, 2016 − ELA and Math
  - Grade 5, 2017 − ELA and Math
- Valid cases:
  - Valid PARCC score in both years
  - Full academic year in year 2 (outcome year)
  - School analyses include schools with 20 or more cases

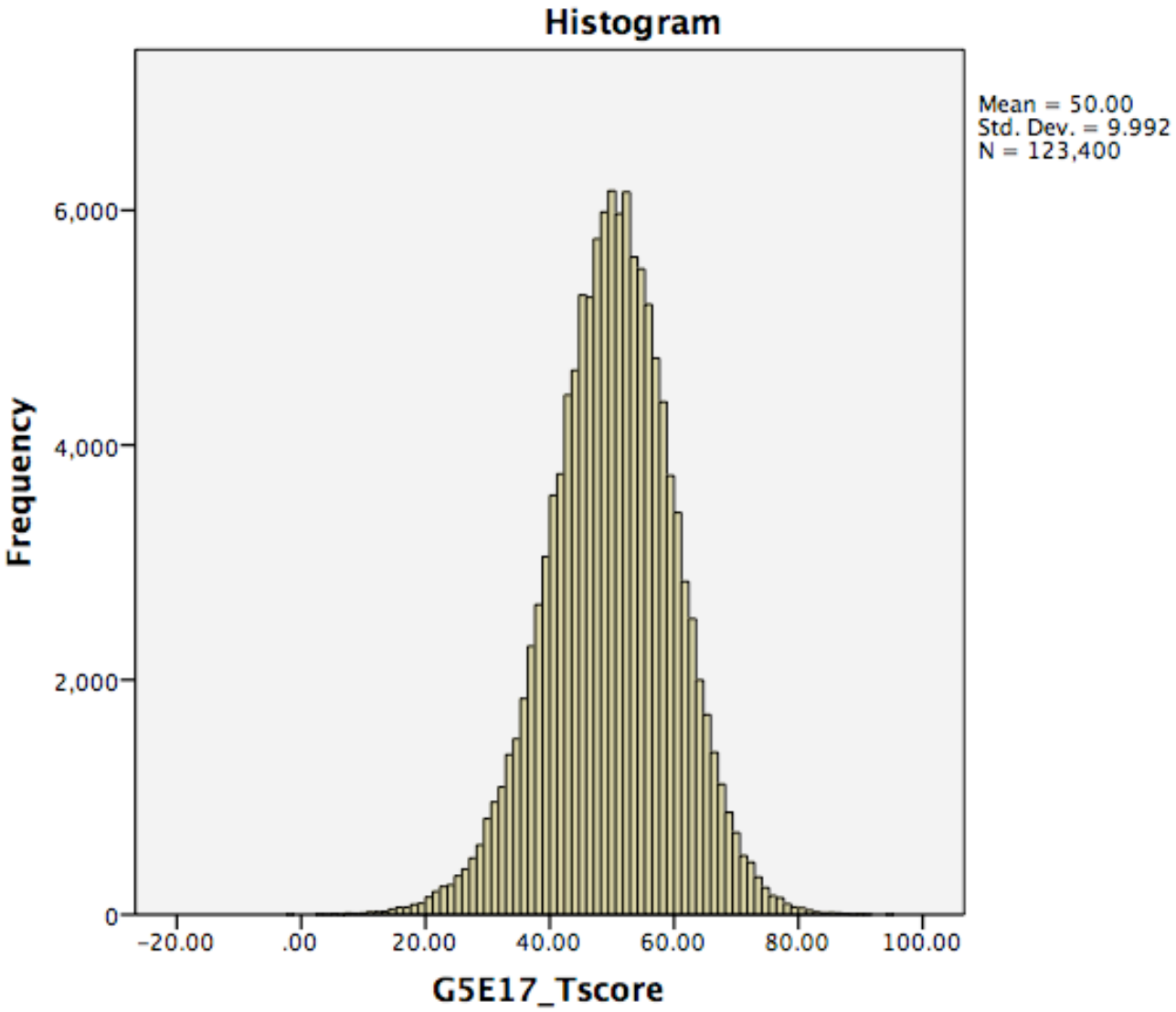
Regression Growth Scores: Descriptive

	N	Minimum	Maximum	Mean	Std. Deviation
Grade 4 ELA 2016	124816	-9.54	94.12	50.0216	9.98134
Grade 5 ELA 2017	123400	-2.05	94.7	49.9954	9.99212
Grade 4 Math 2016	124918	-13.58	115.64	50.0269	9.98863
Grade 5 Math 2017	123168	-16.84	106.73	50.0439	9.97173

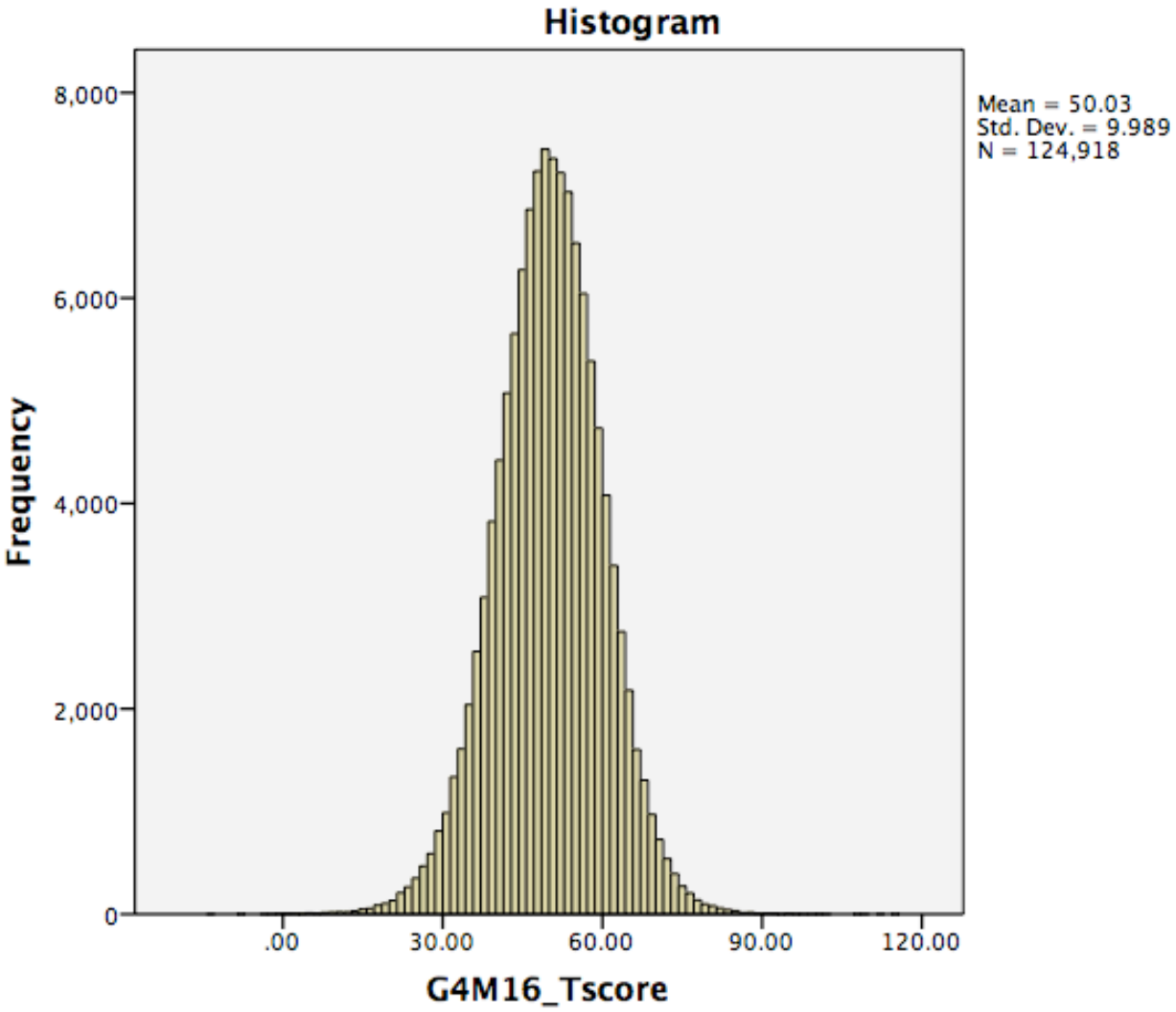
Grade 4 ELA 2016



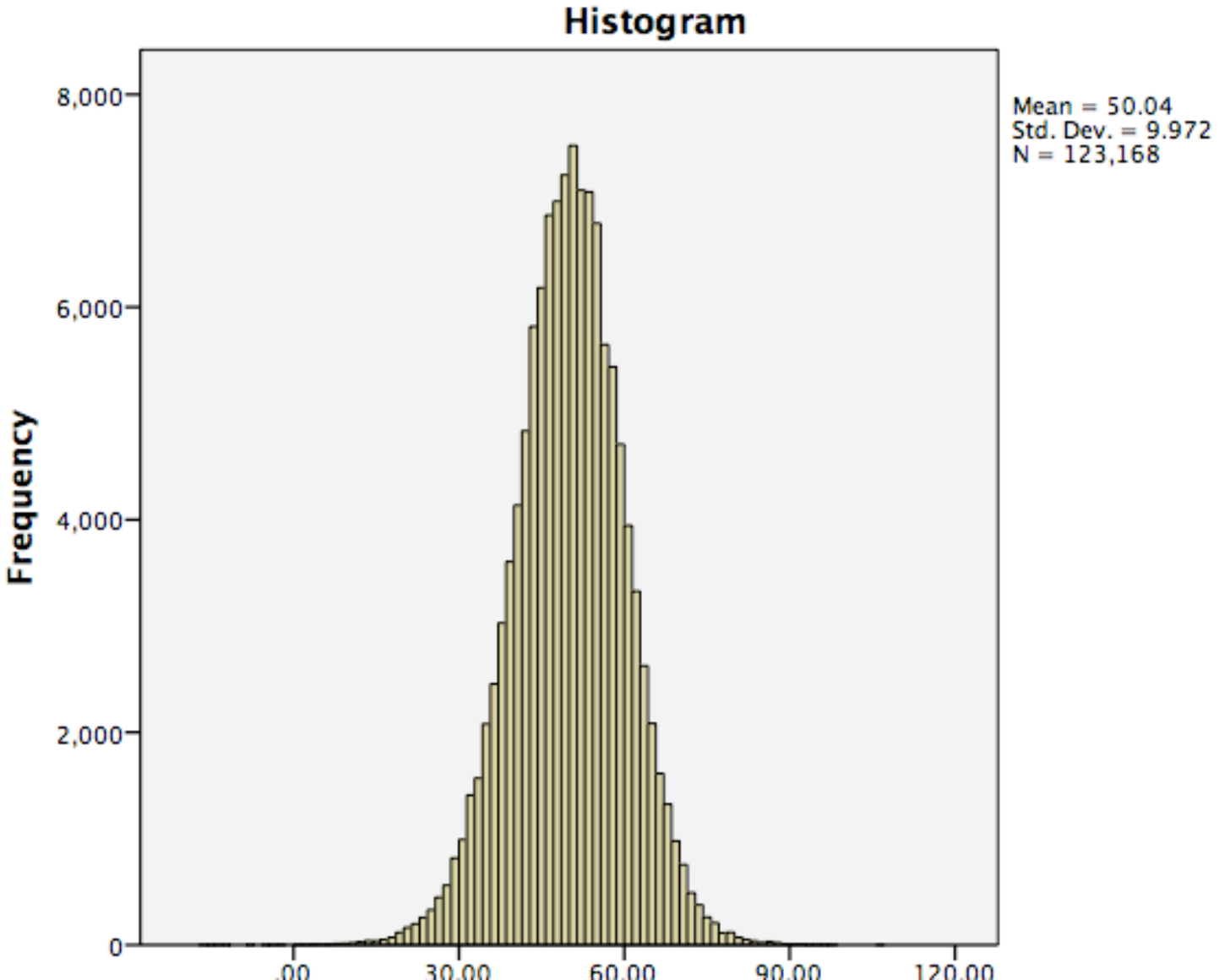
Grade 5 ELA 2017



Grade 4 Math 2016

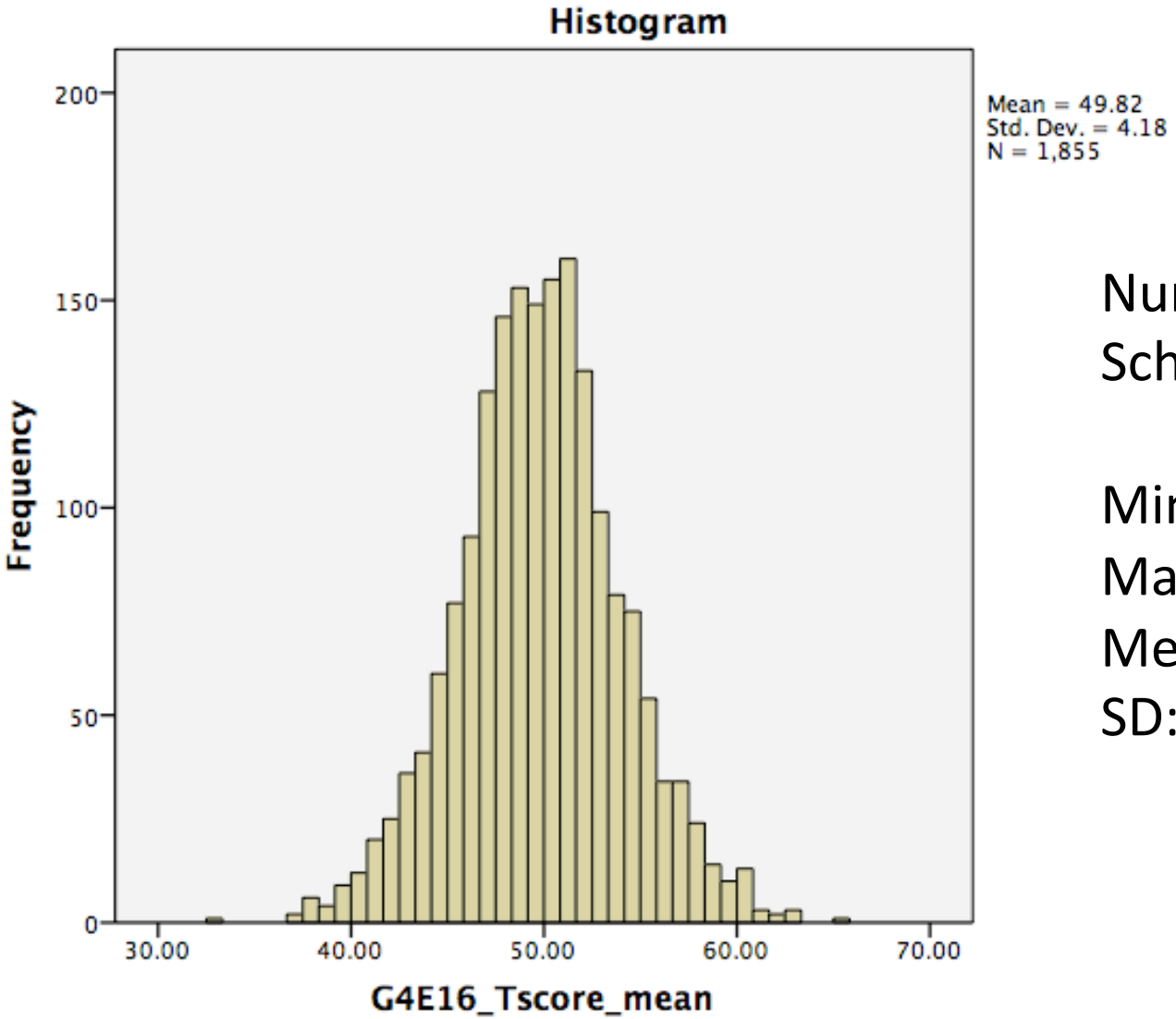


Grade 5 Math 2017



School Level Results
Grade 4 ELA 2016

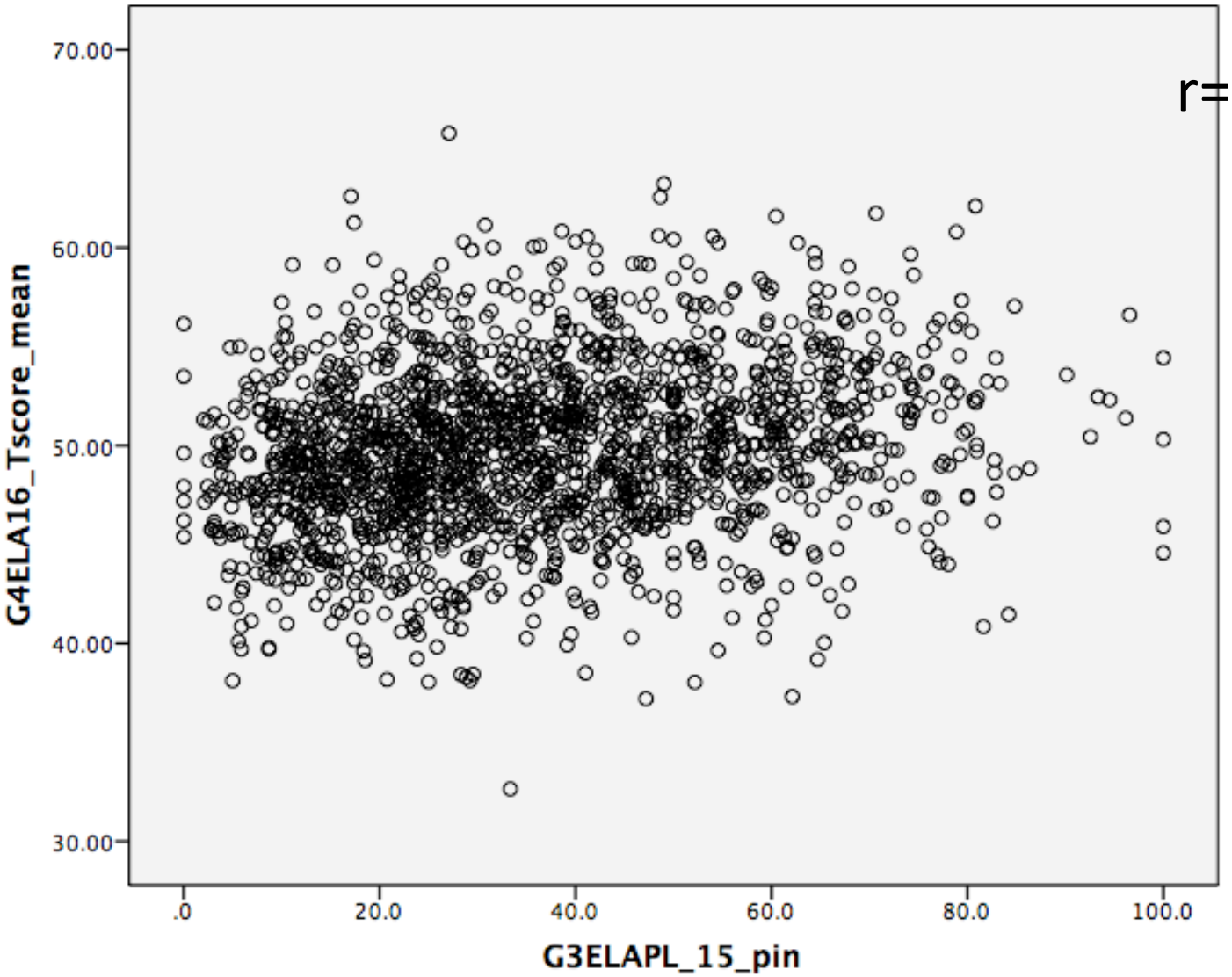
School Level Scores – Grade 4 ELA



Number of Schools: 1855

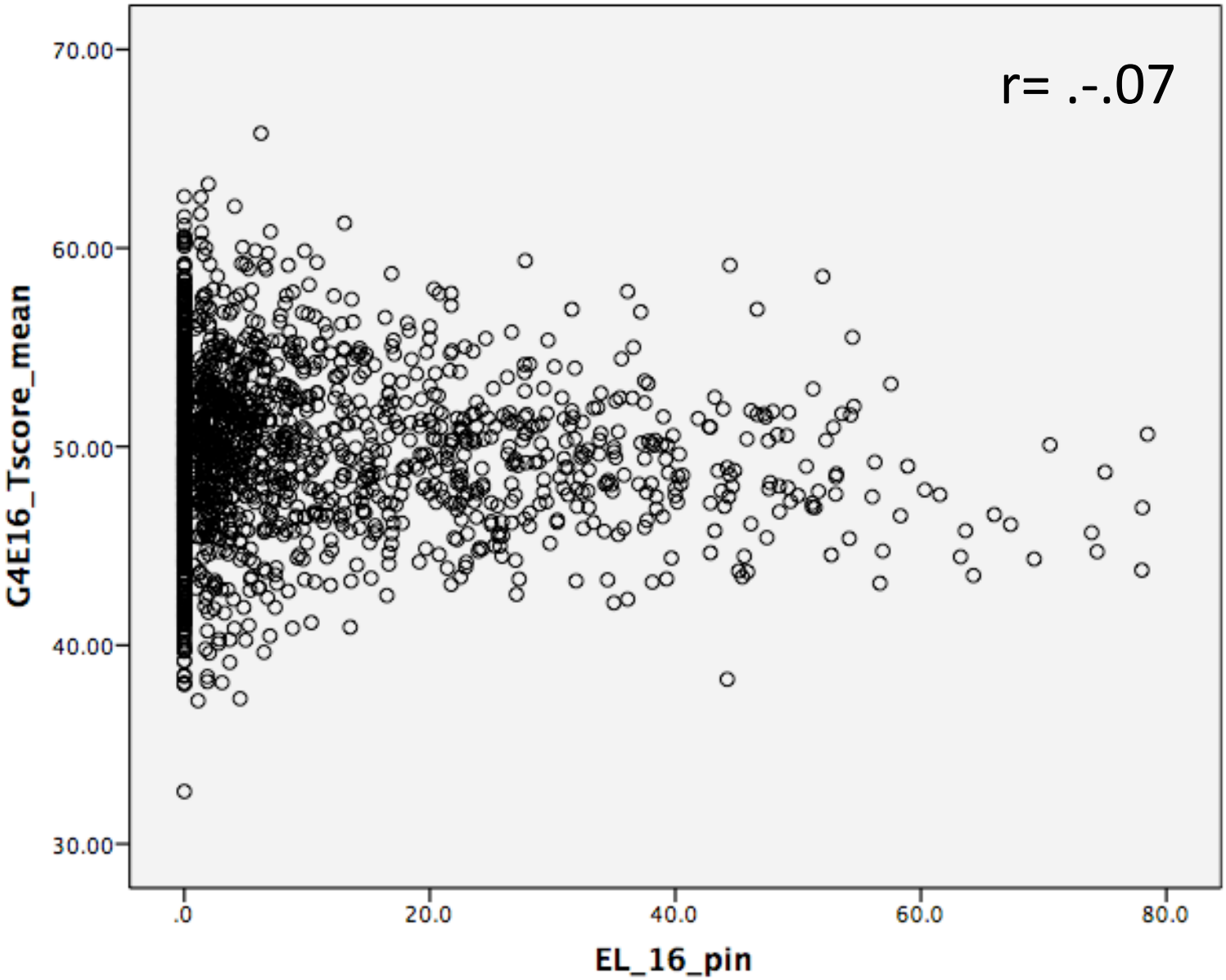
Min: 32.64
Max: 65.78
Mean: 49.82
SD: 4.17

Correlation with prior-year percent proficient

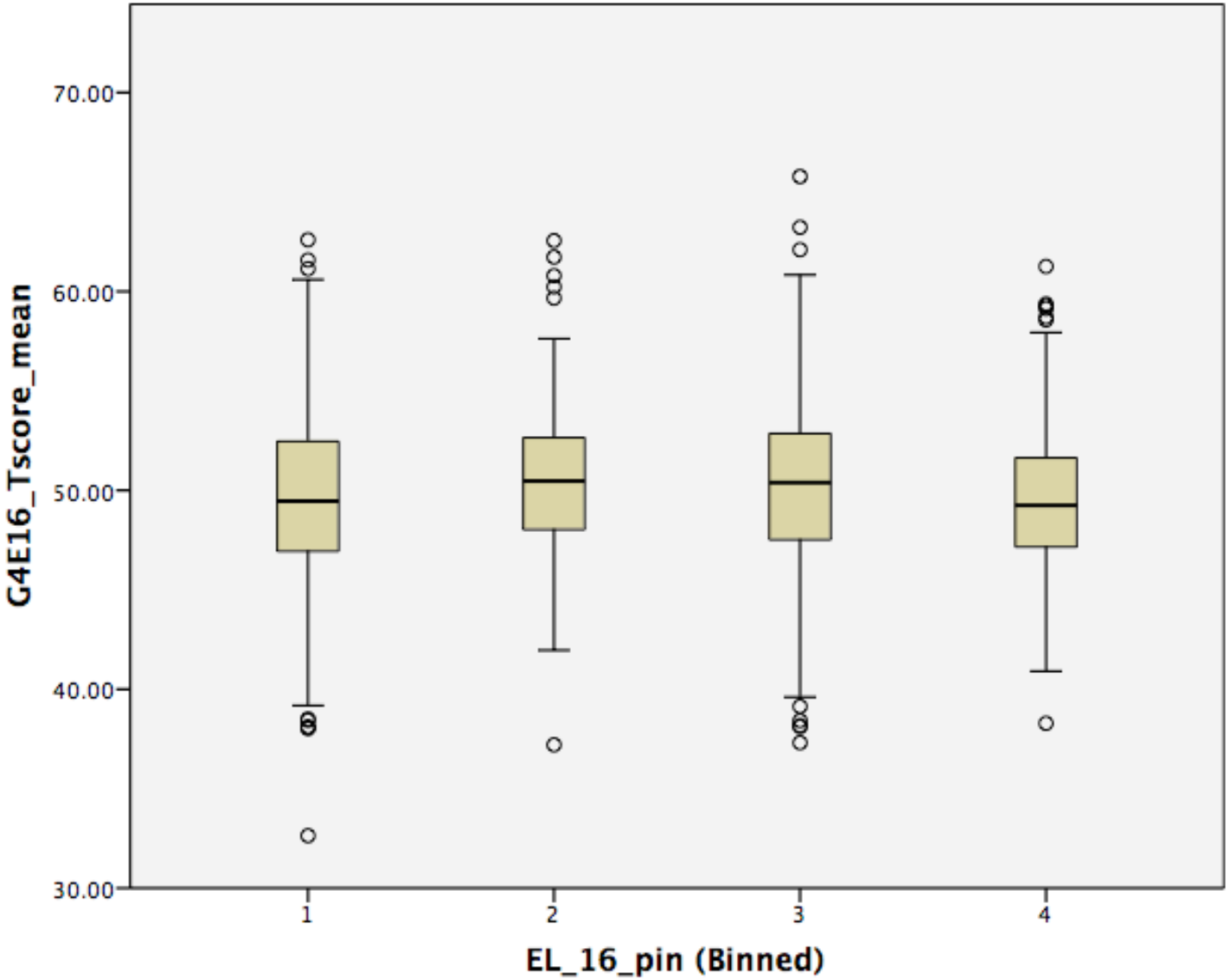


r= .22

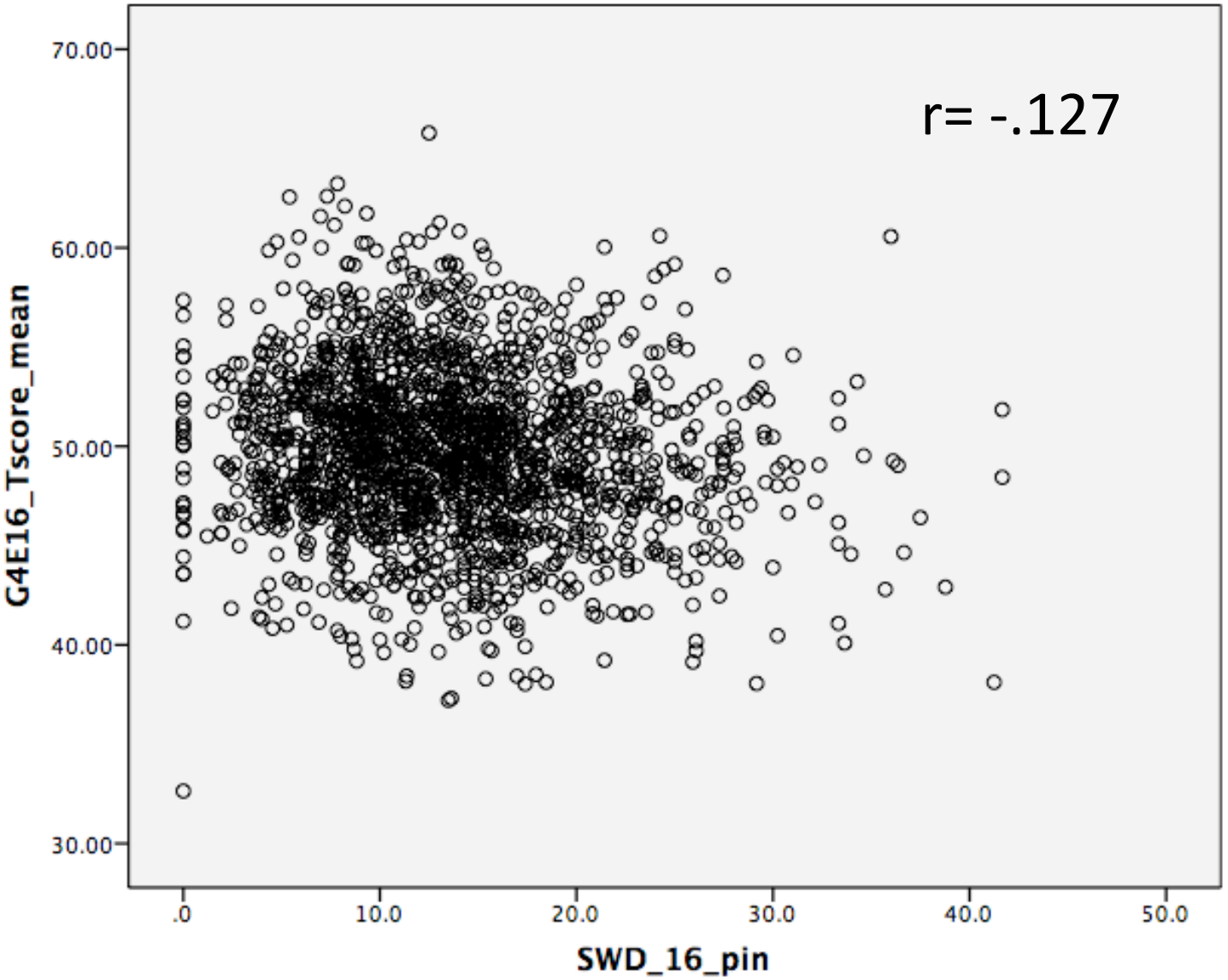
Relationship with percent EL



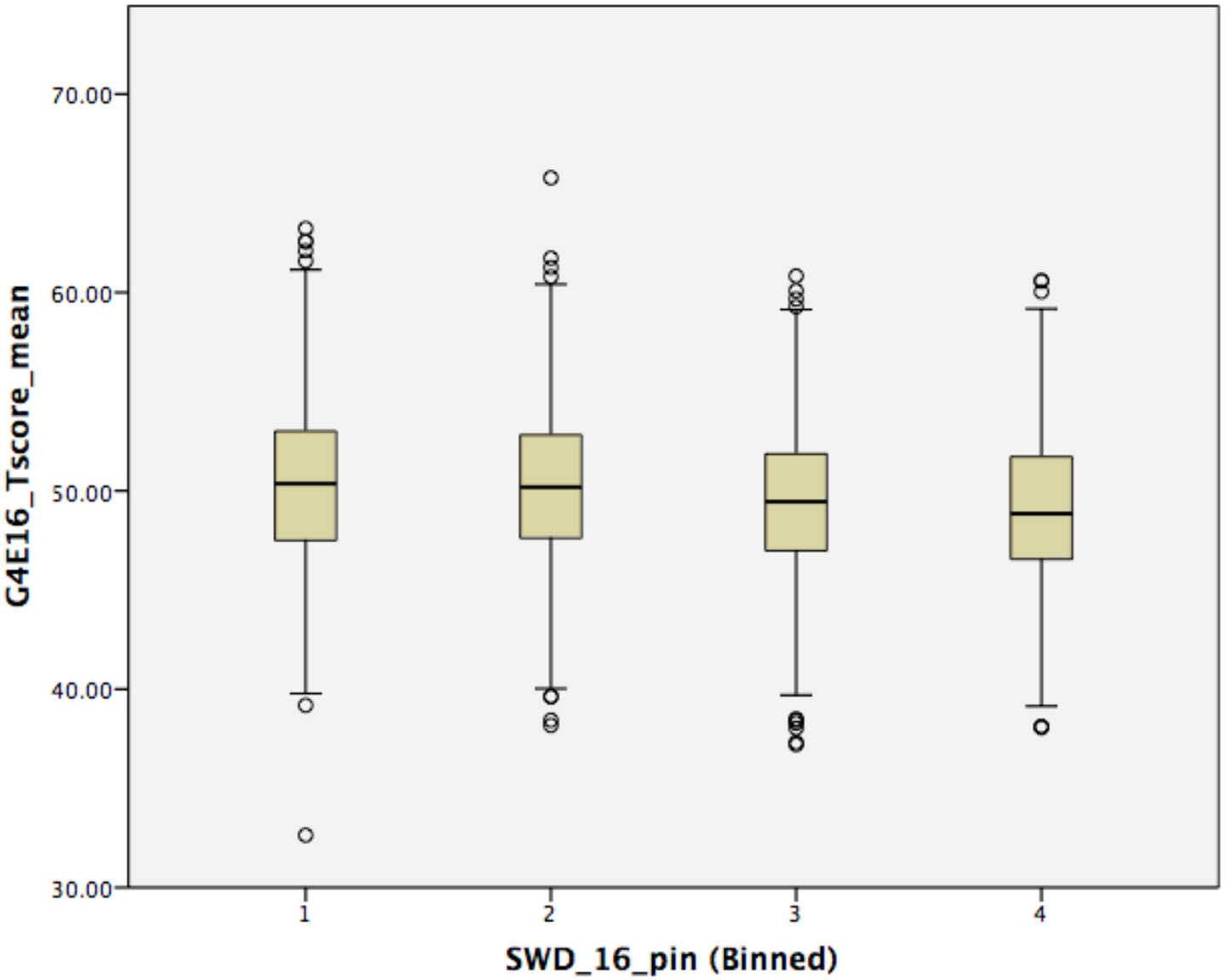
Distribution by EL Quartile



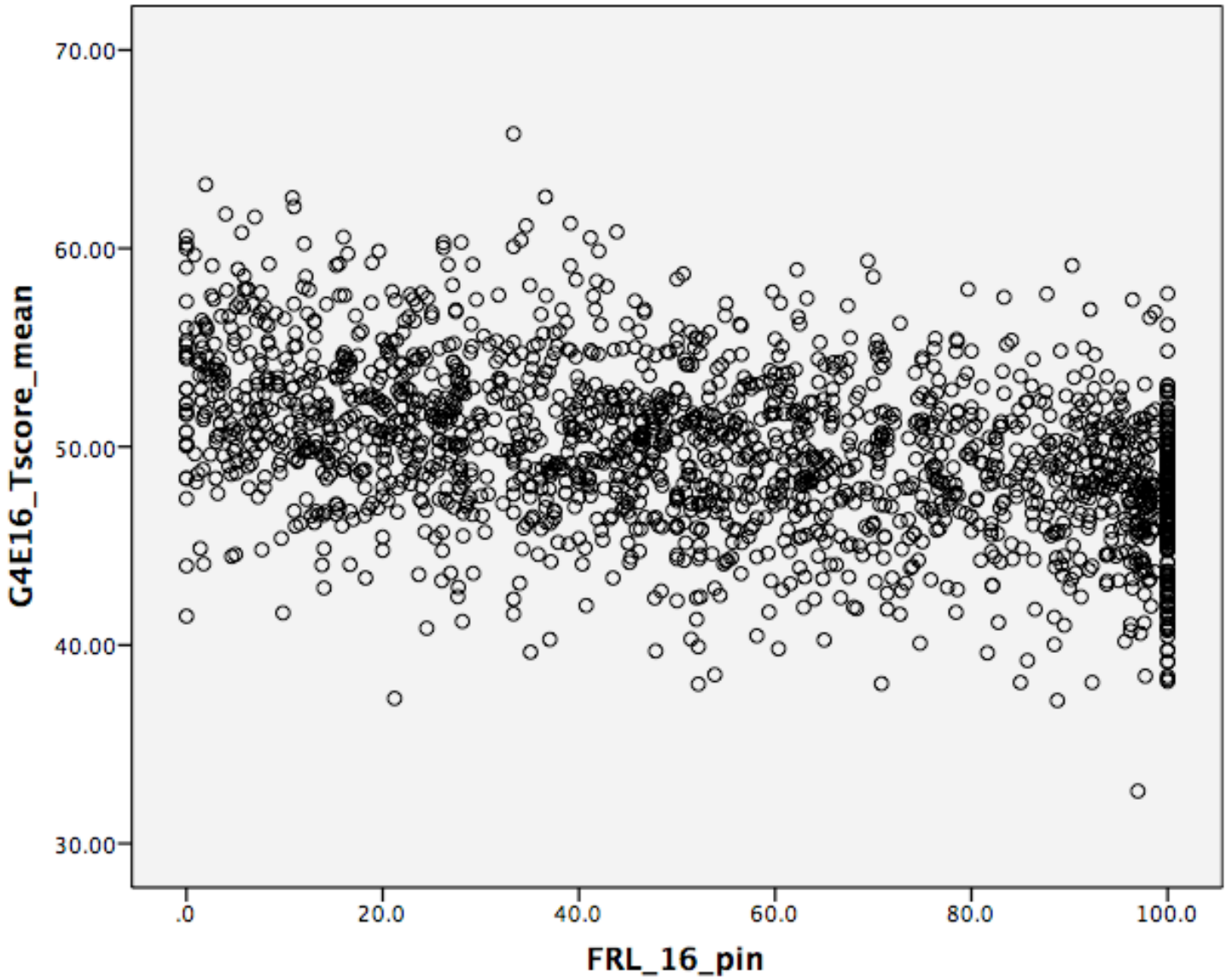
Relationship with Percent SWD



Distribution by SWD Quartile

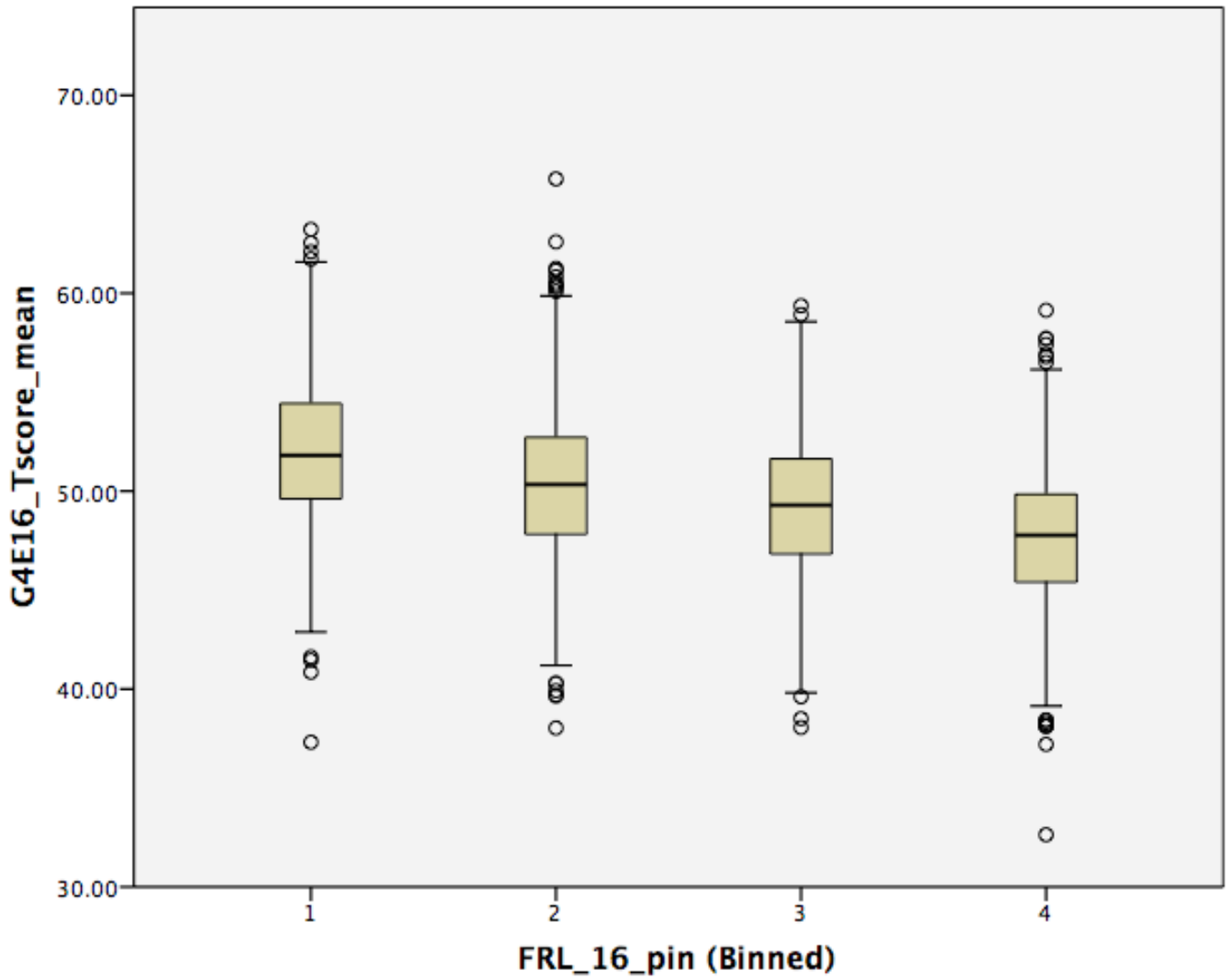


Relationship with percent FRL eligible



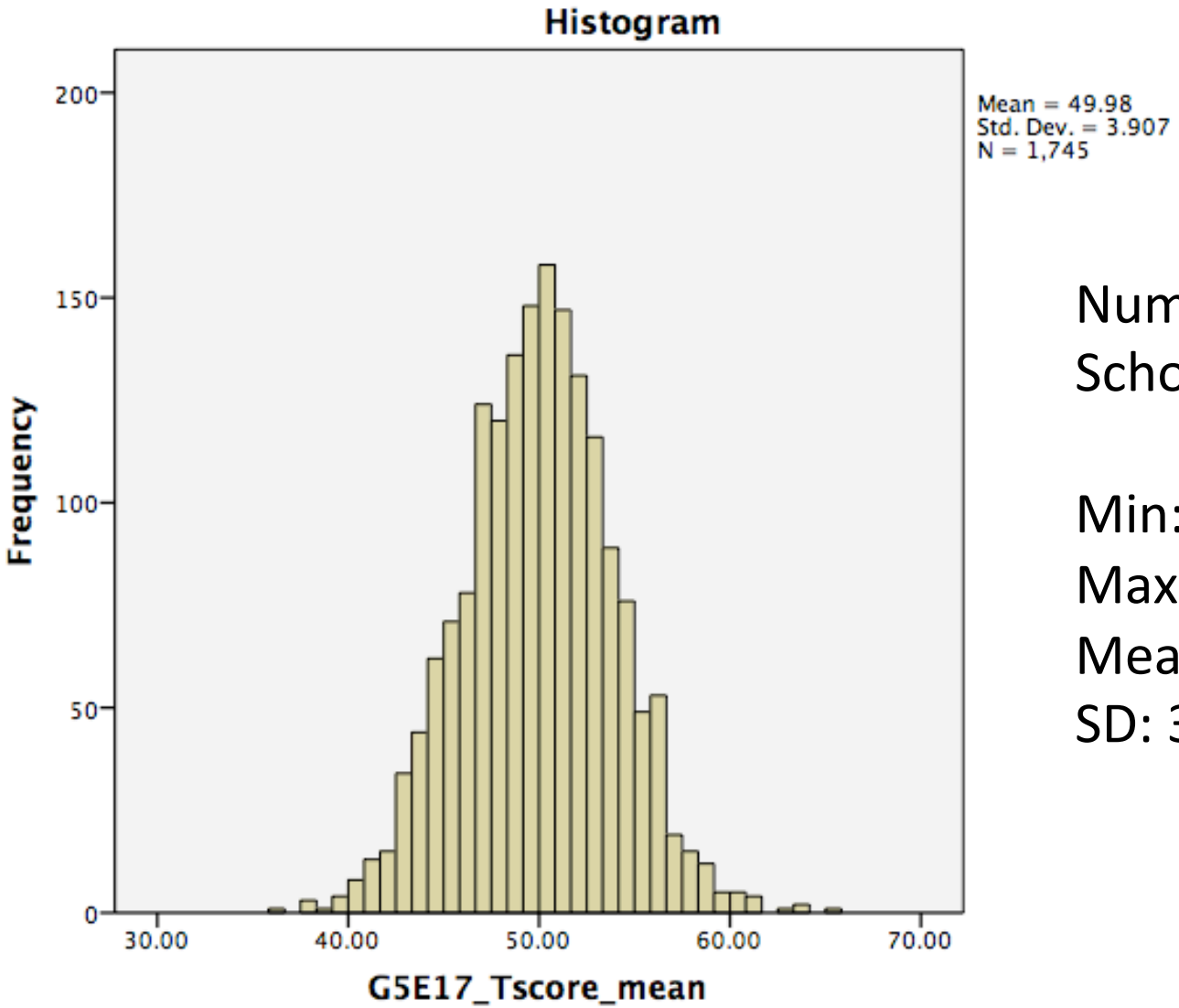
r= -.409

Distribution by FRL Quartile



School Level Results
Grade 5 ELA 2017

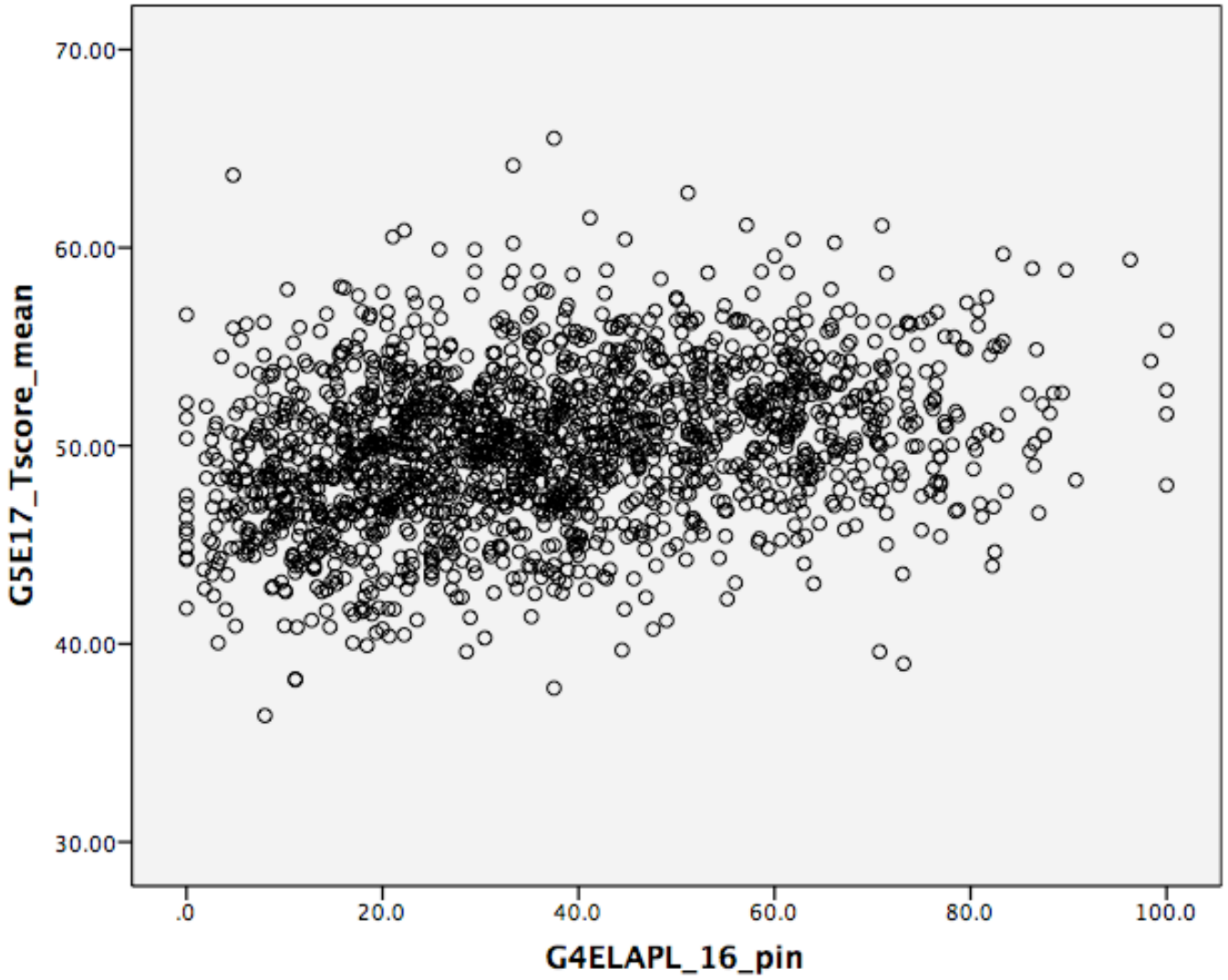
School Level Scores – Grade 5 ELA



Number of Schools: 1745

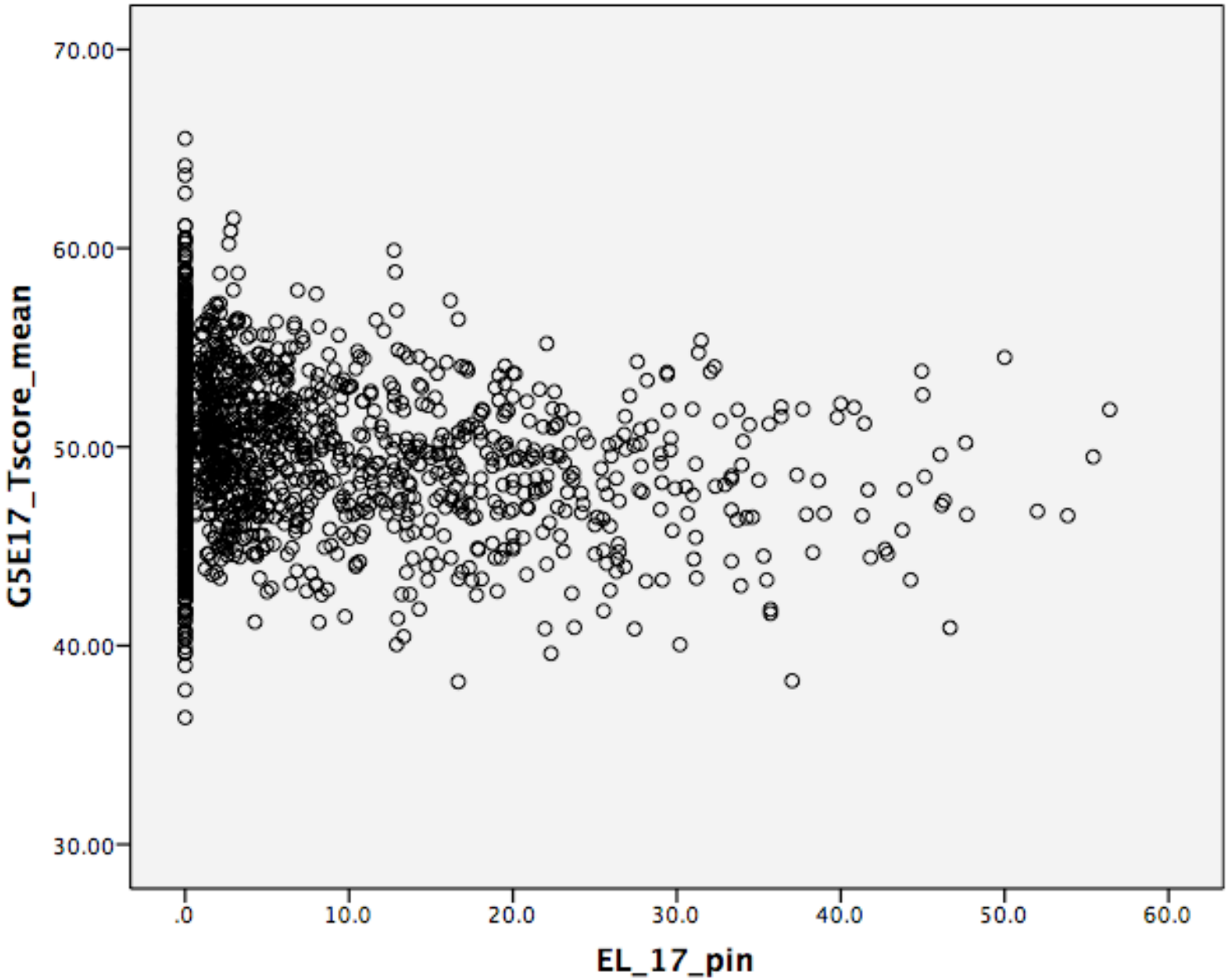
Min: 36.38
Max: 65.52
Mean: 49.98
SD: 3.90

Correlation with prior-year percent proficient



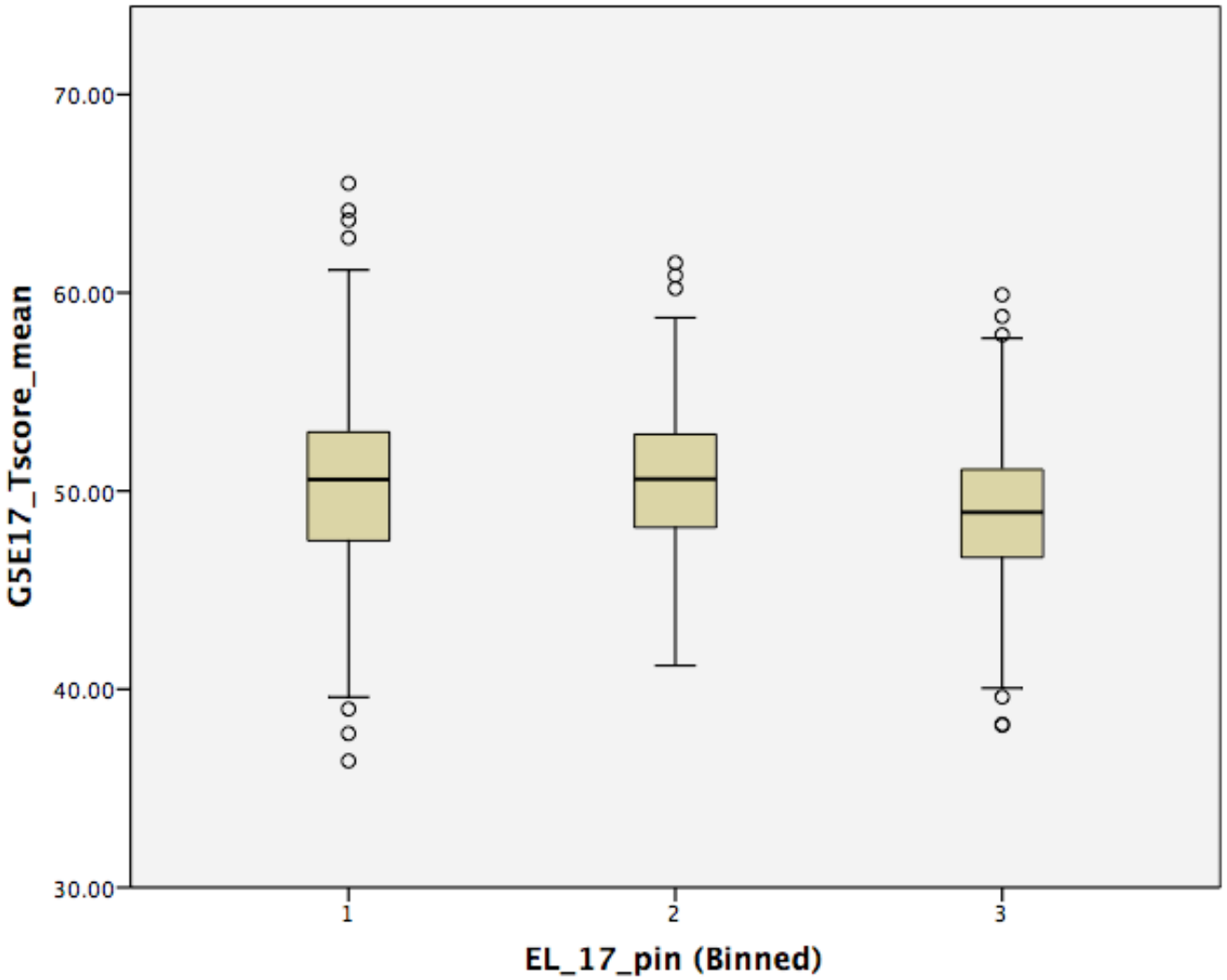
r= .288

Relationship with percent EL



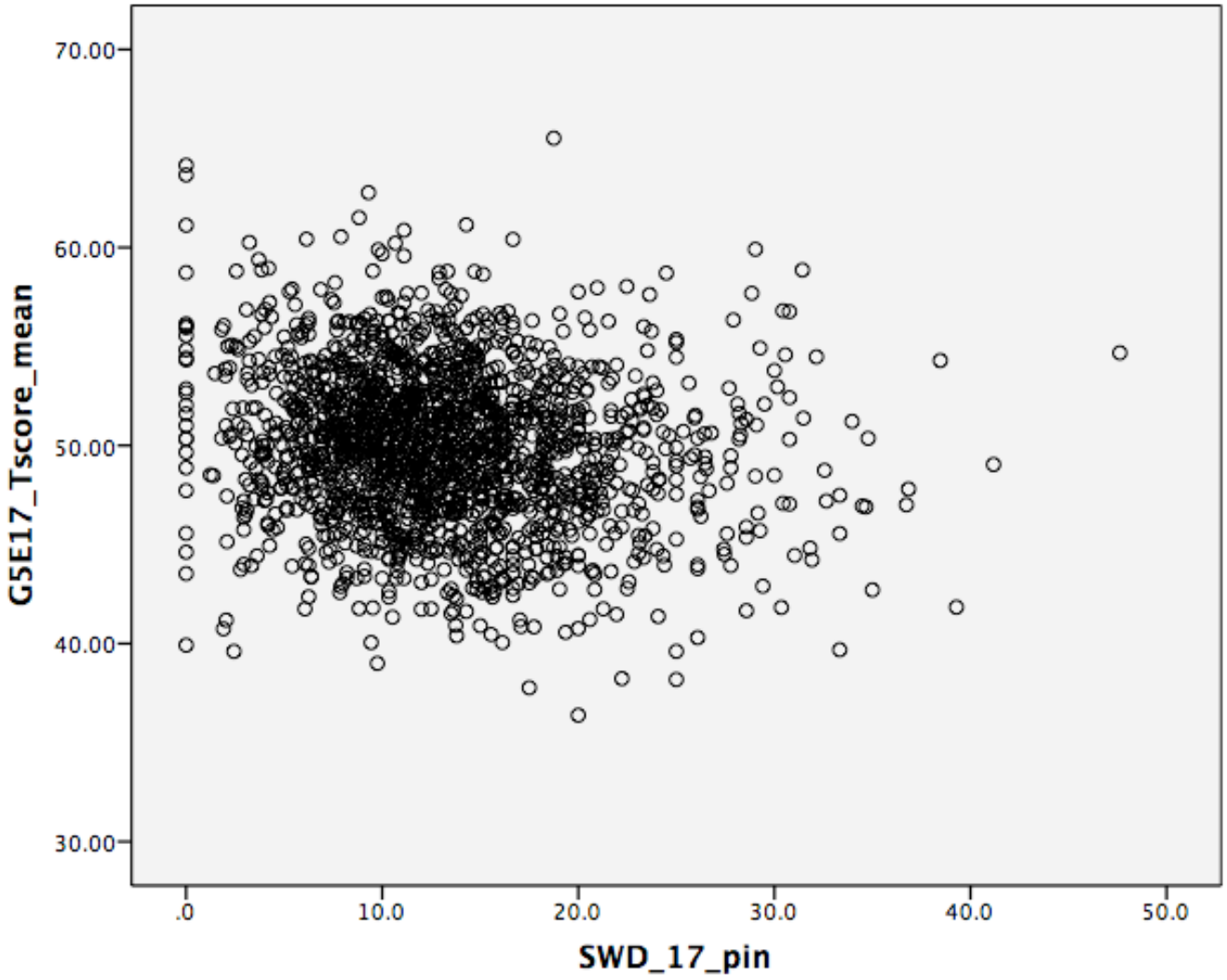
r= -.194

Distribution by EL Groups



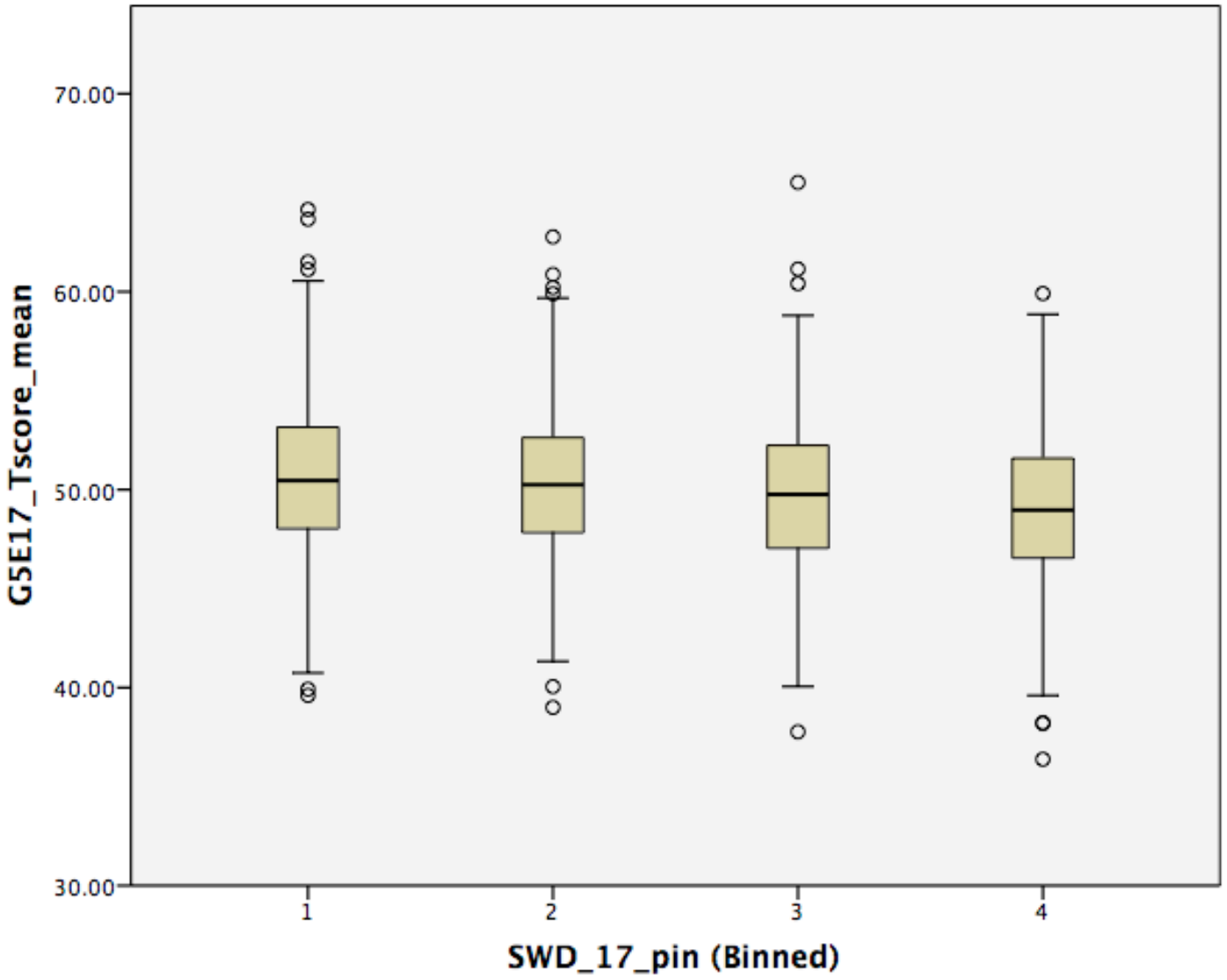
Distribution of percent EL was not sufficiently granular to support 4 groups

Relationship with Percent SWD

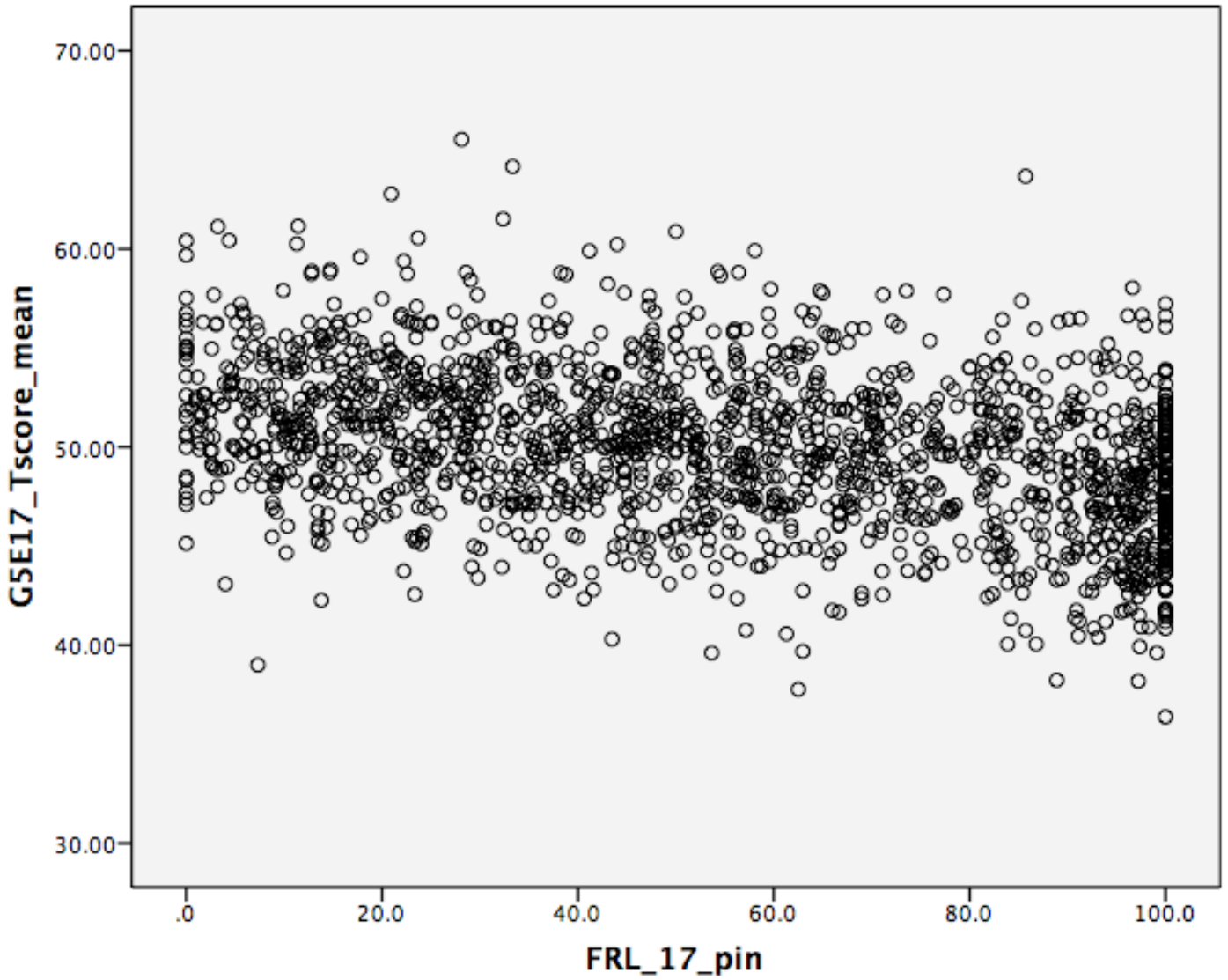


r= -.150

Distribution by SWD Quartile

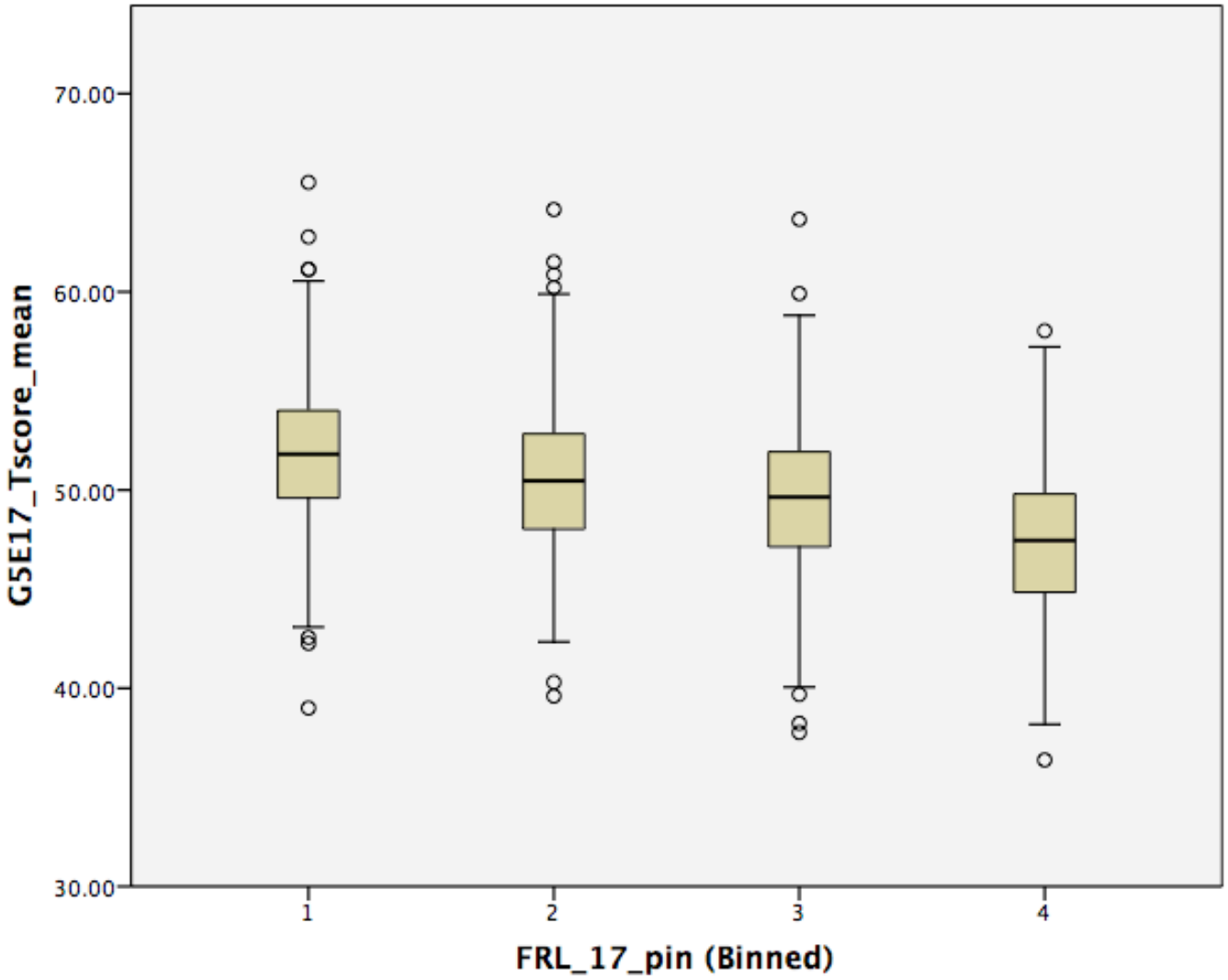


Relationship with percent FRL eligible



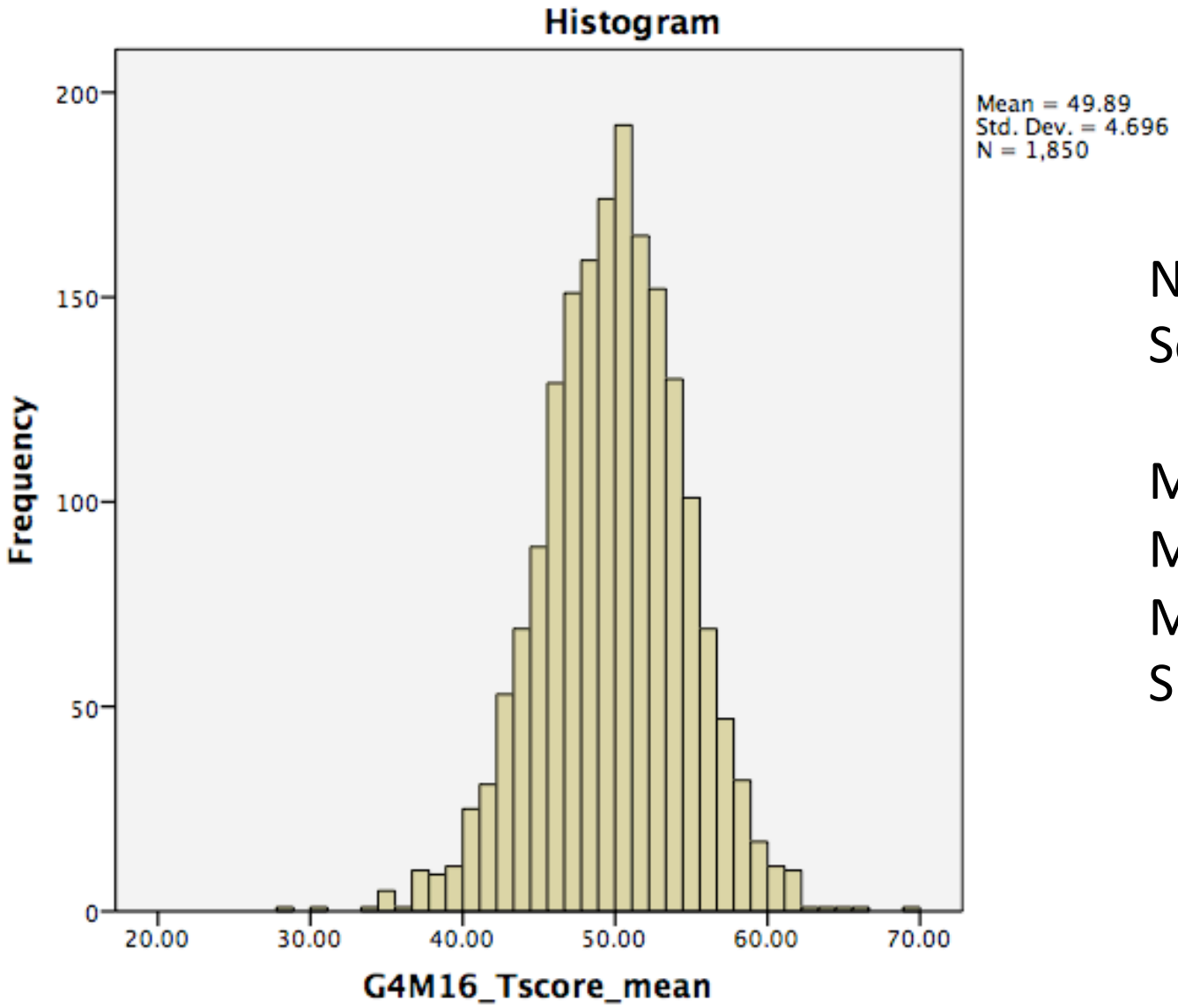
r= -.388

Distribution by FRL Quartile



School Level Results
Grade 4 Math 2016

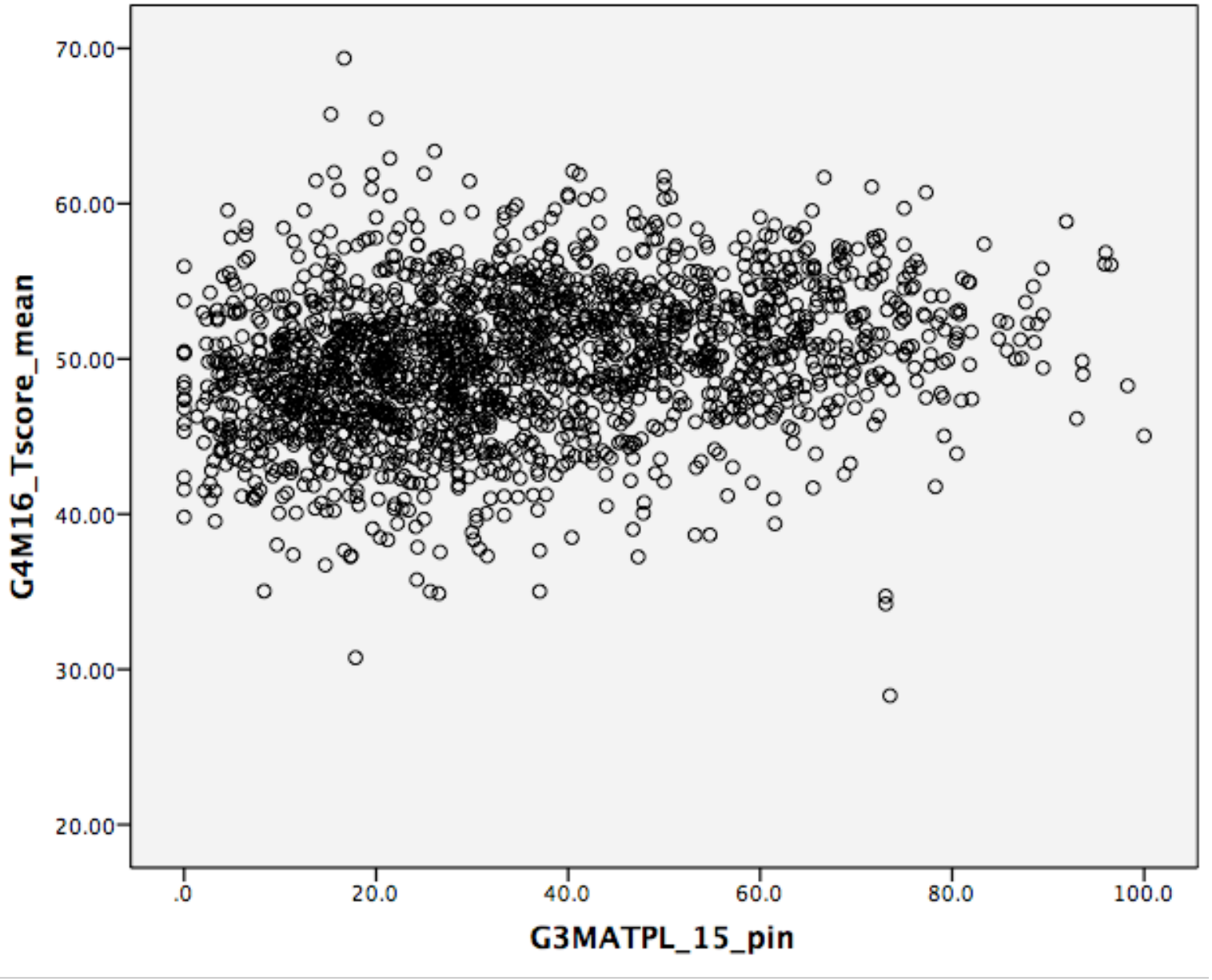
School Level Scores – Grade 4 Math



Number of Schools: 1850

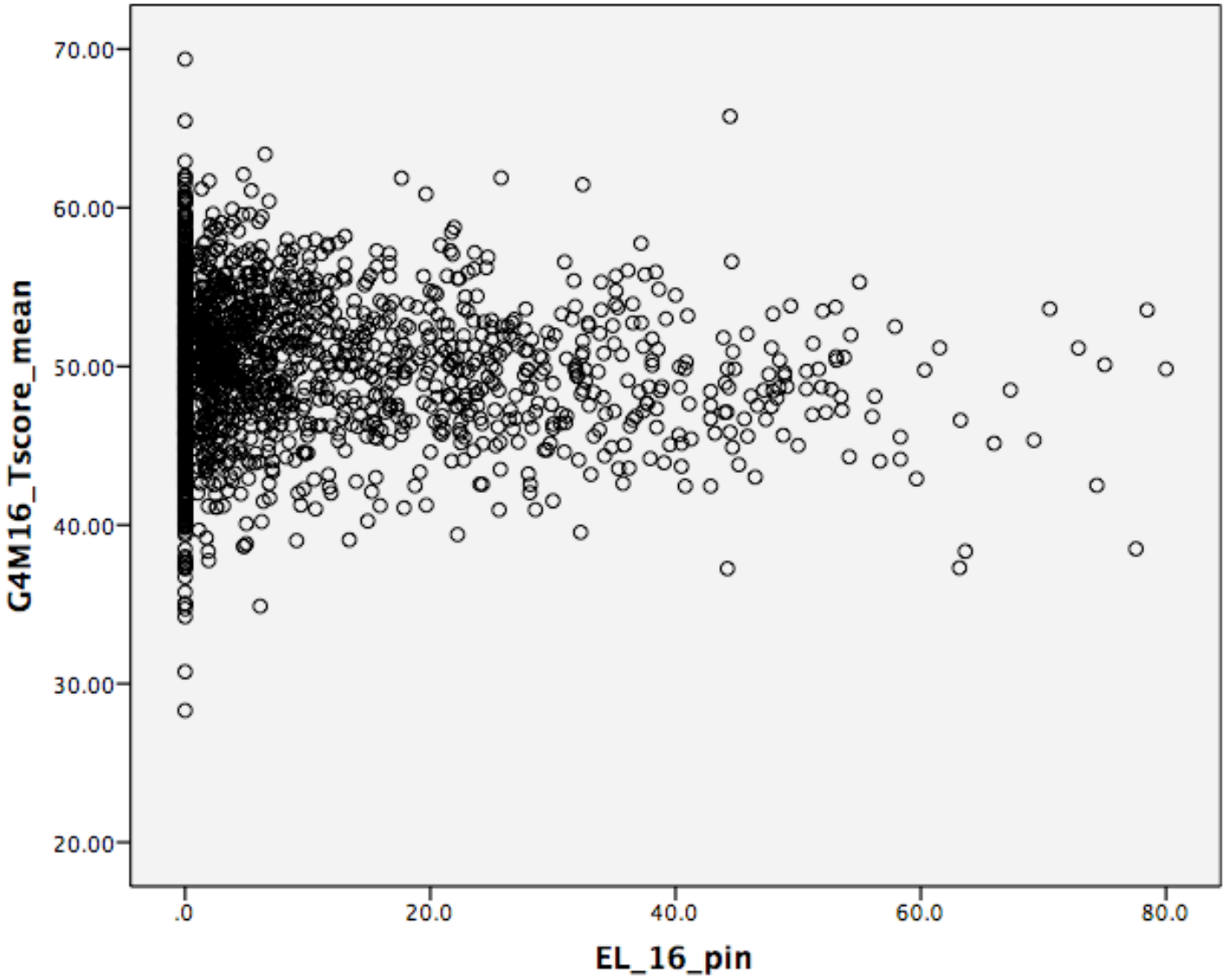
Min: 28.31
Max: 69.36
Mean: 49.89
SD: 4.696

Correlation with prior-year percent proficient



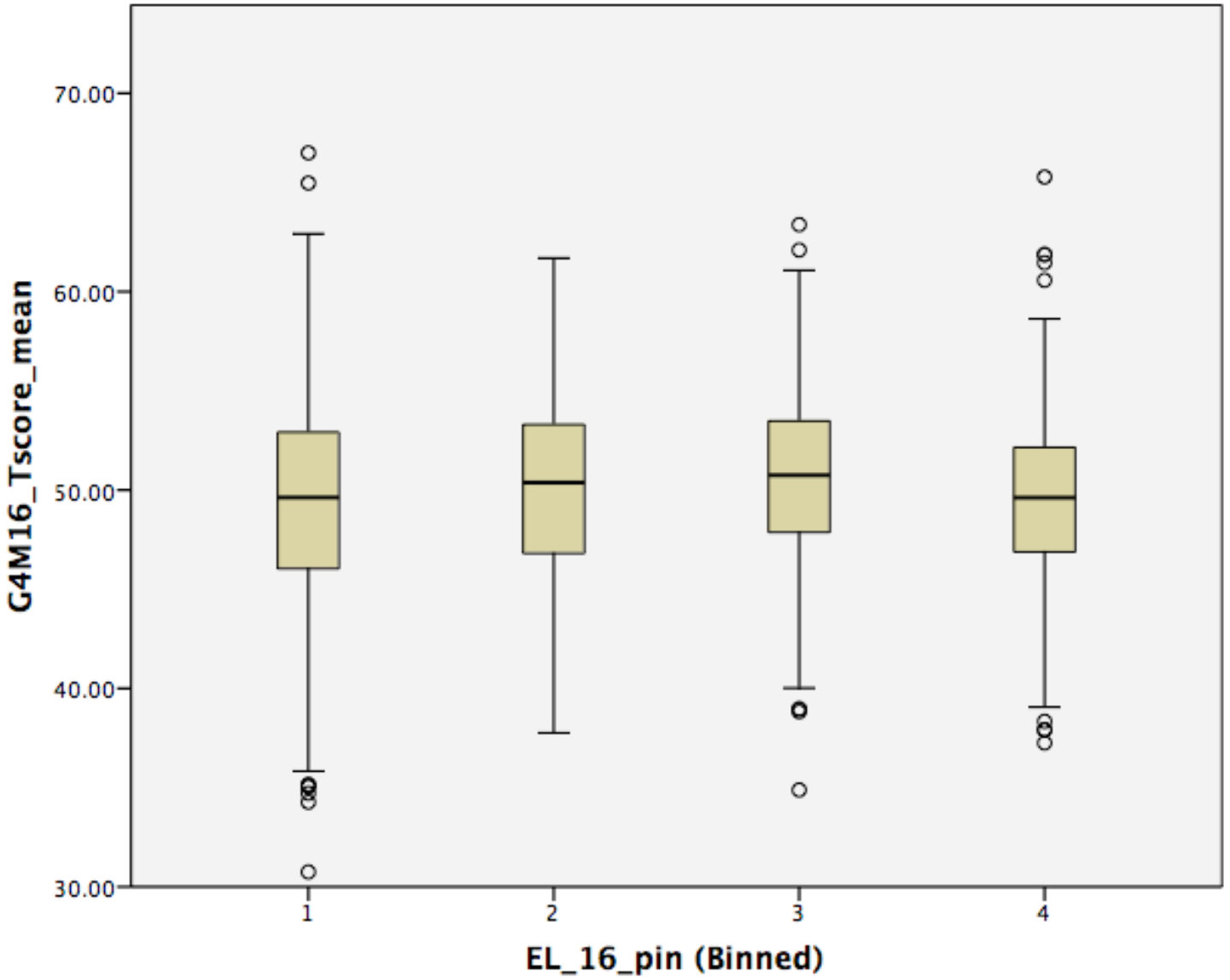
r= .246

Relationship with percent EL

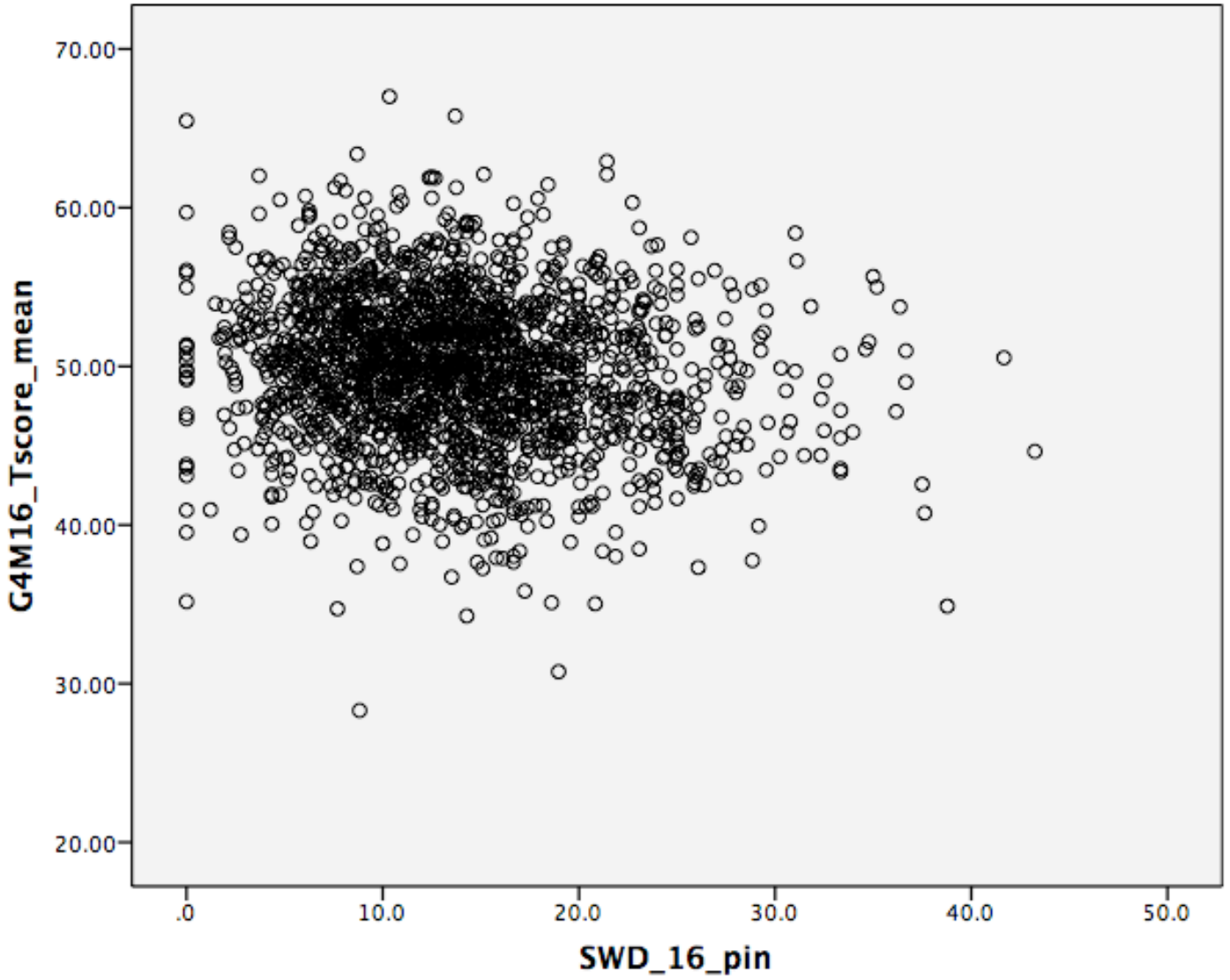


r= -.067

Distribution by EL Quartiles

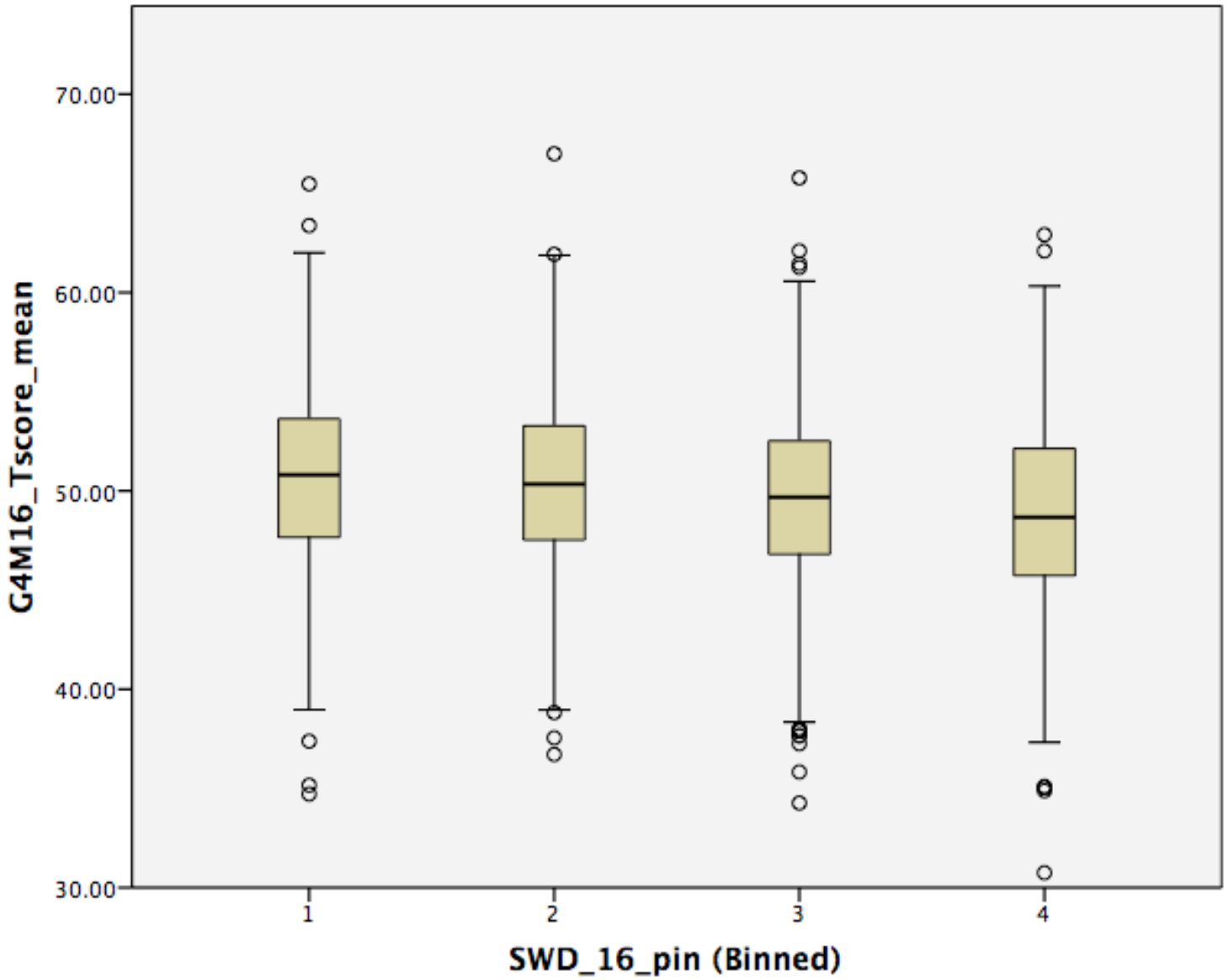


Relationship with Percent SWD

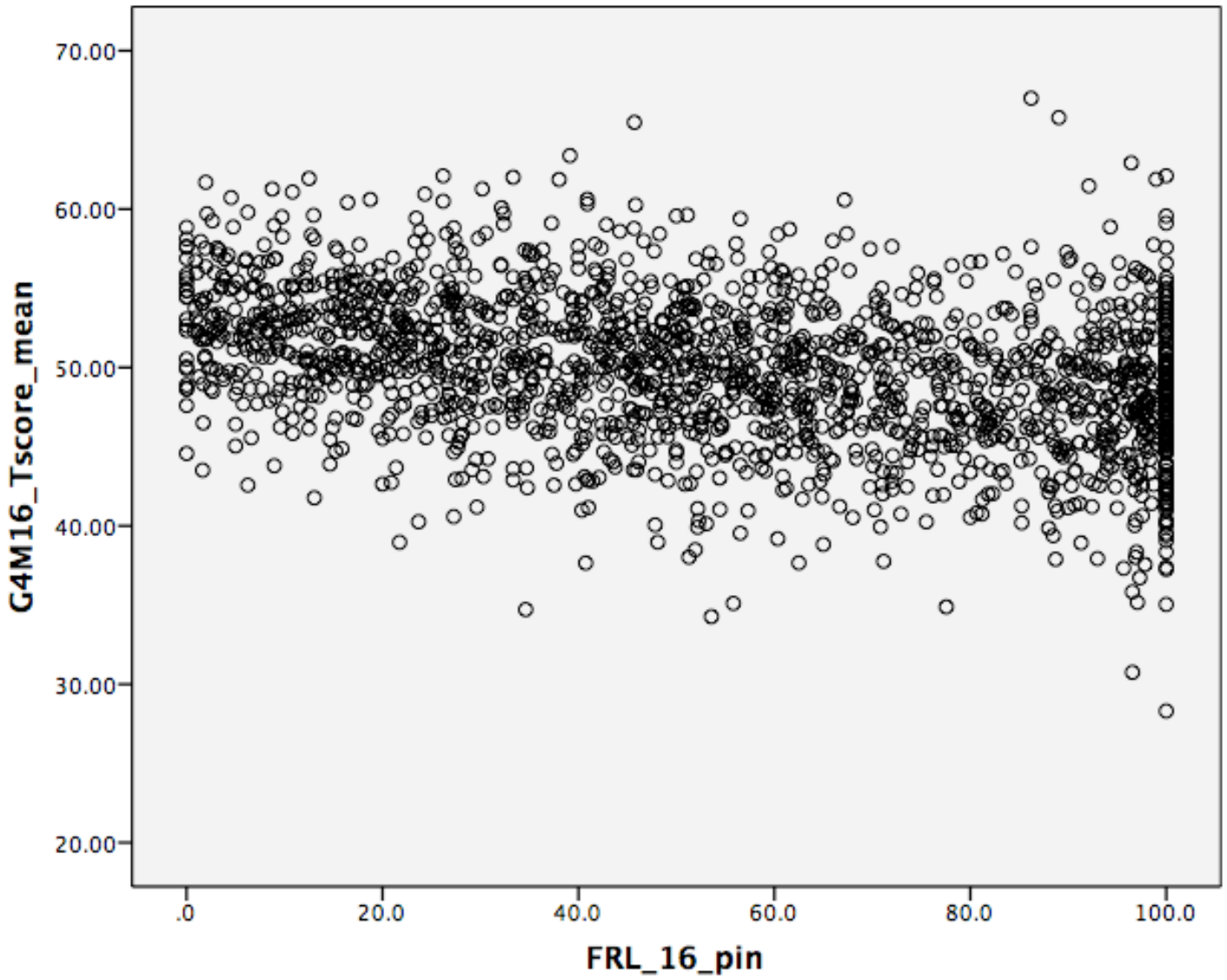


r= -.141

Distribution by SWD Quartile

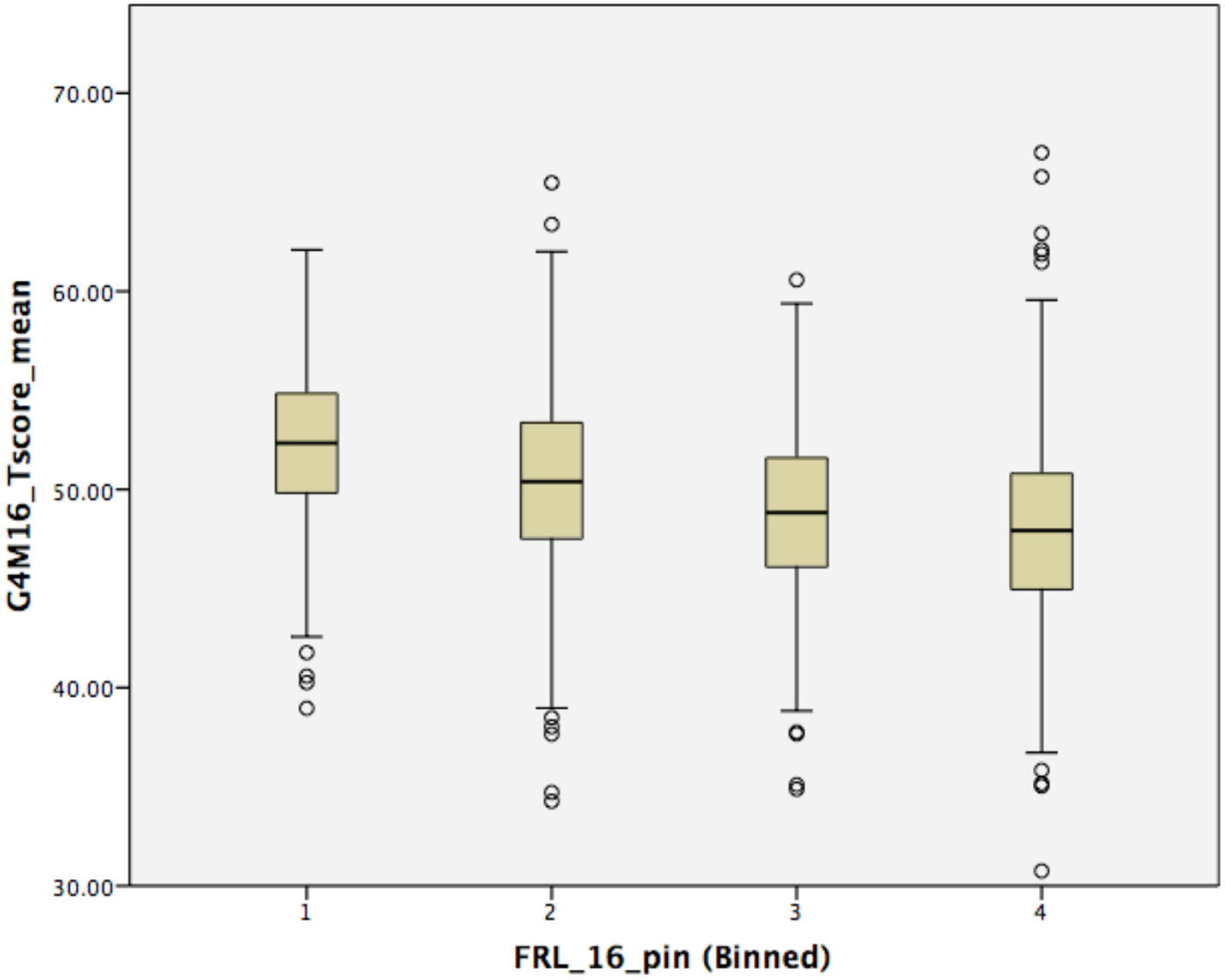


Relationship with percent FRL eligible



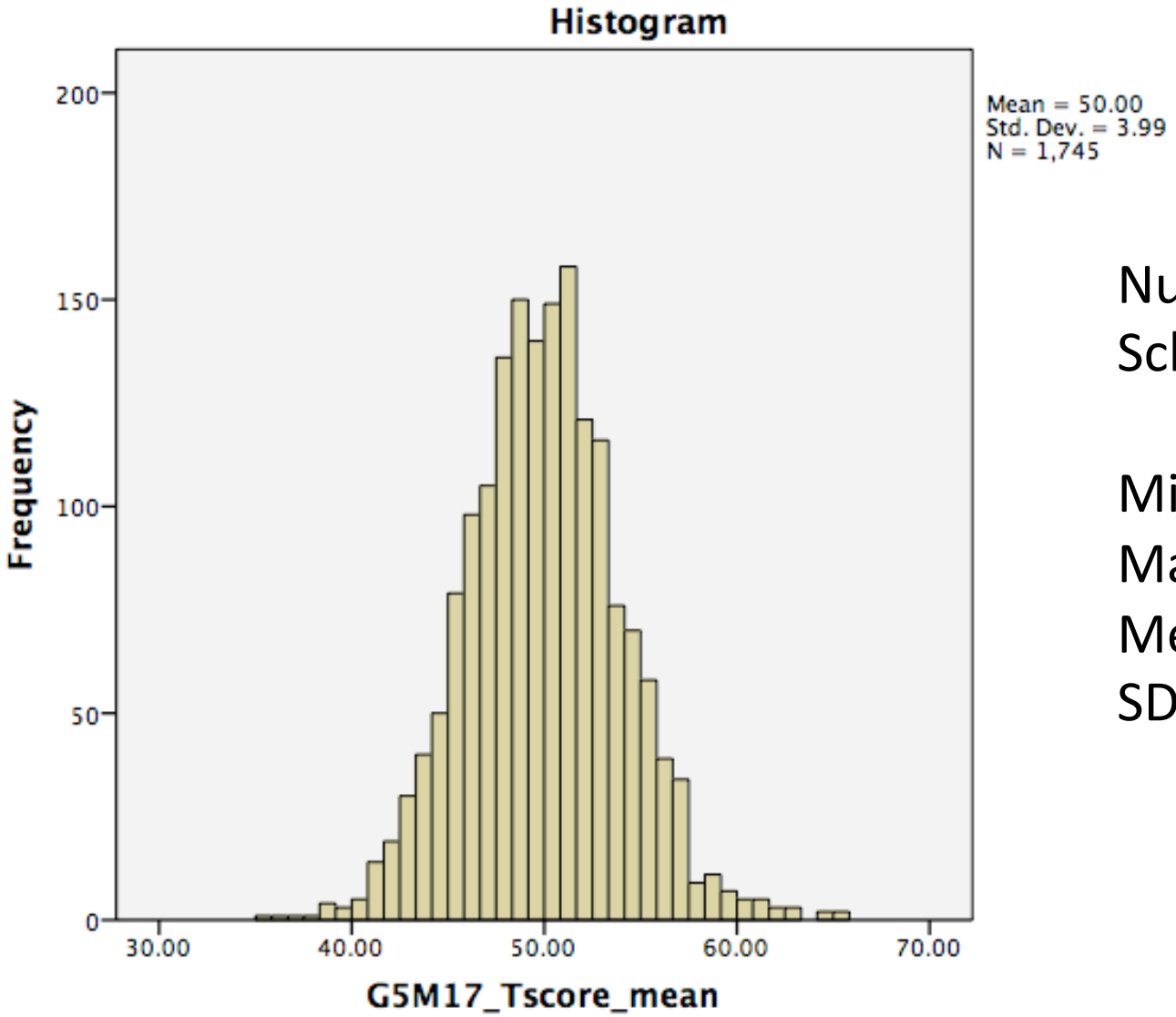
r= -.36

Distribution by FRL Quartile



School Level Results
Grade 5 Math 2017

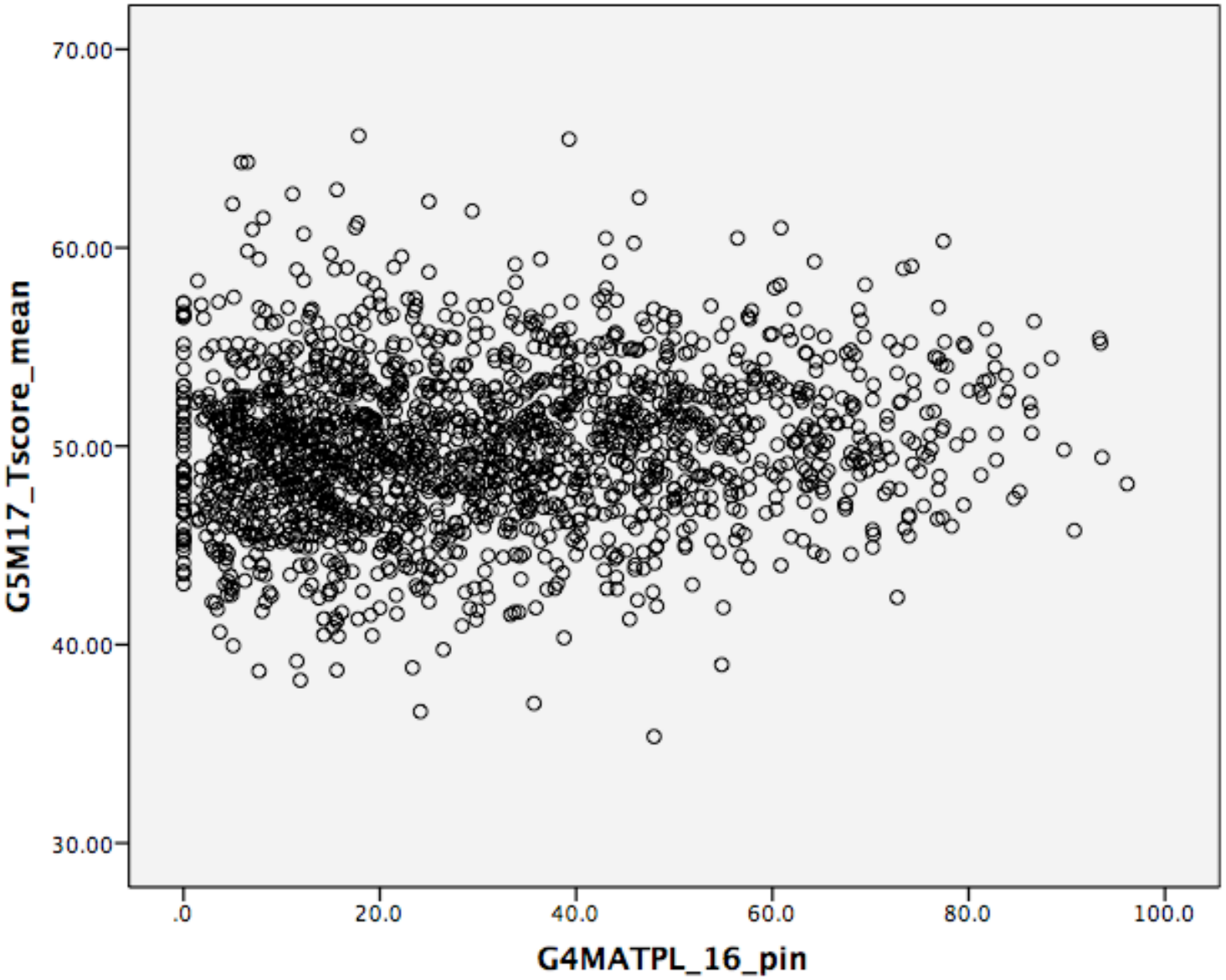
School Level Scores – Grade 5 Math



Number of Schools: 1745

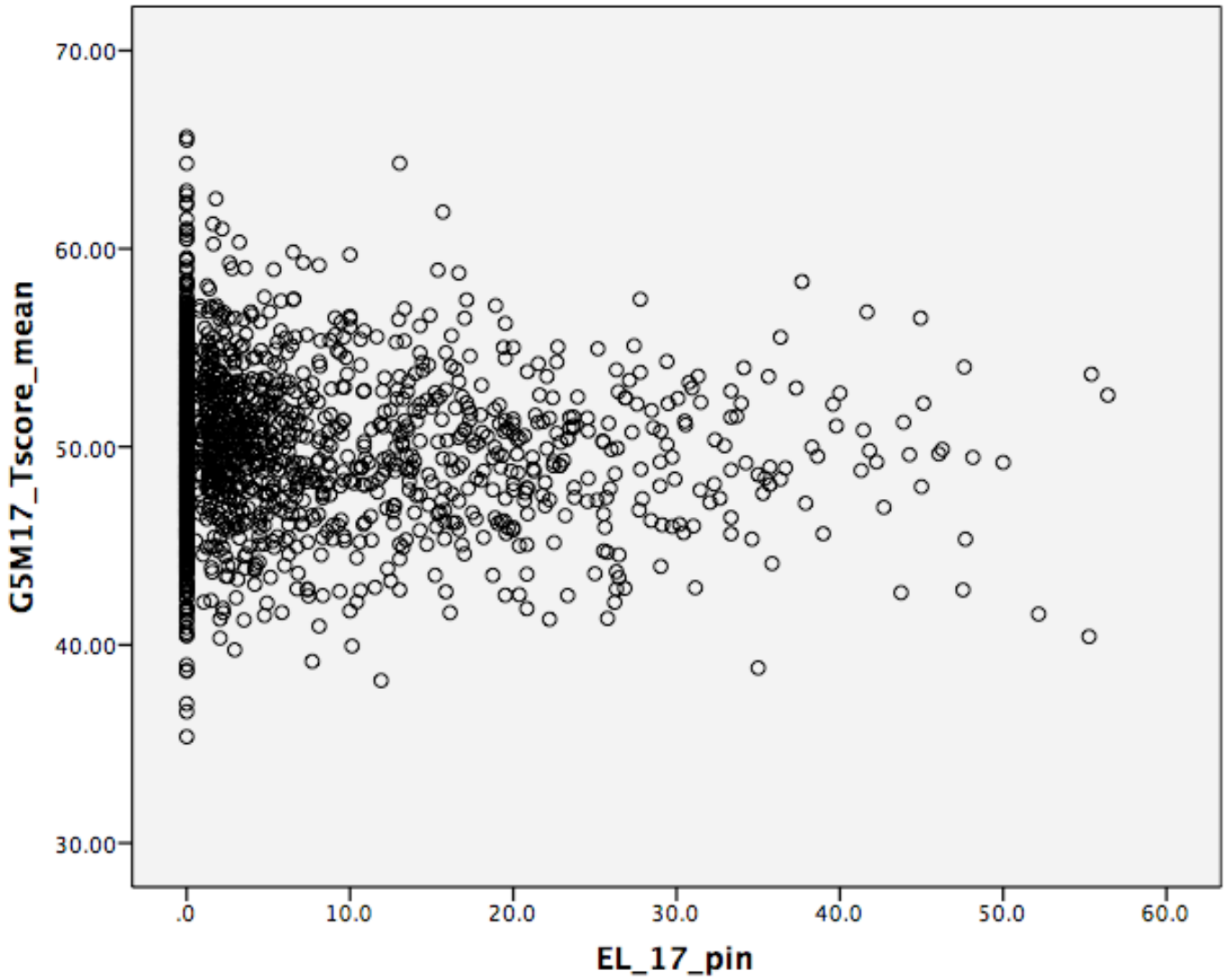
Min: 35.36
Max: 65.65
Mean: 50.00
SD: 3.99

Correlation with prior-year percent proficient



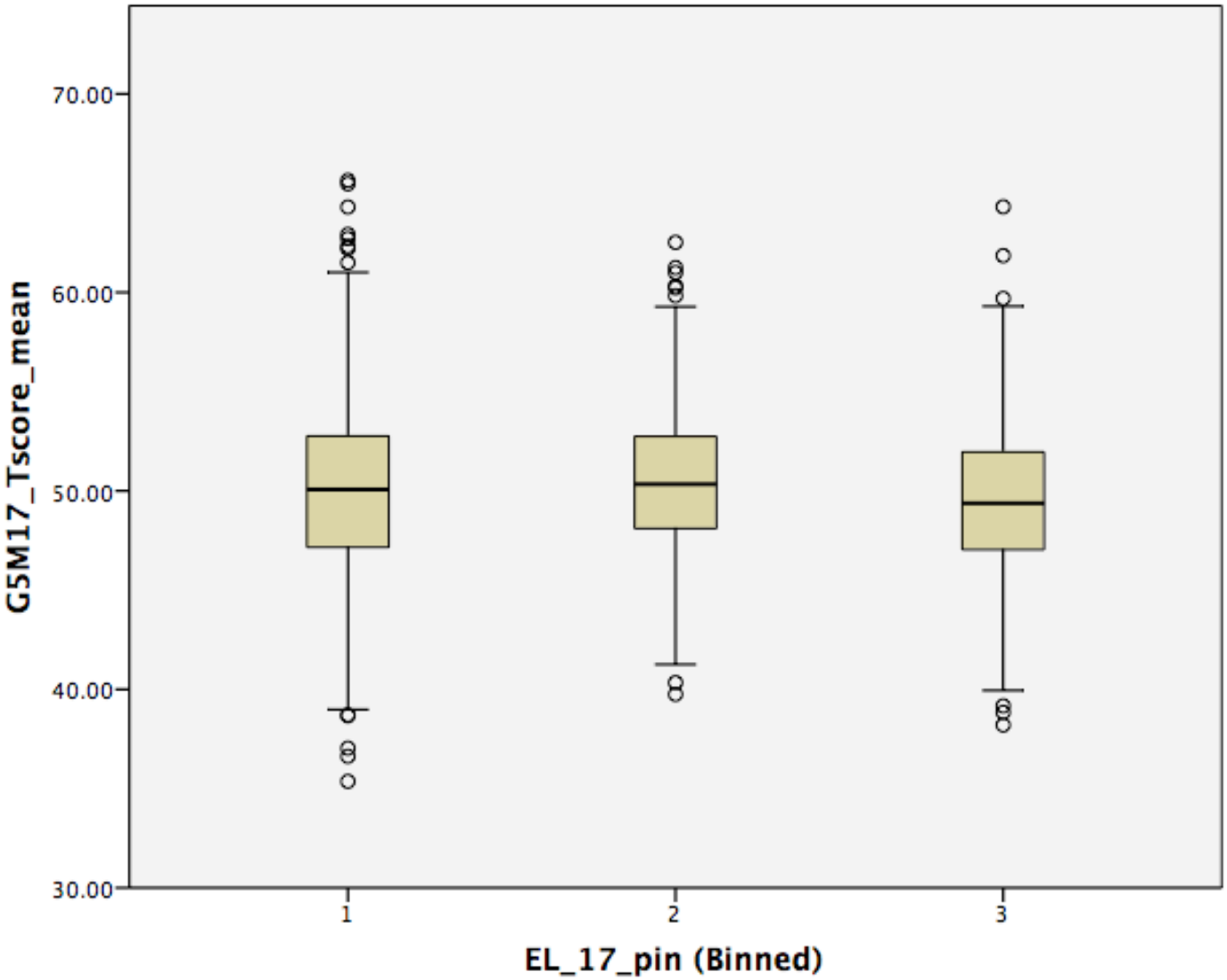
r= .133

Relationship with percent EL



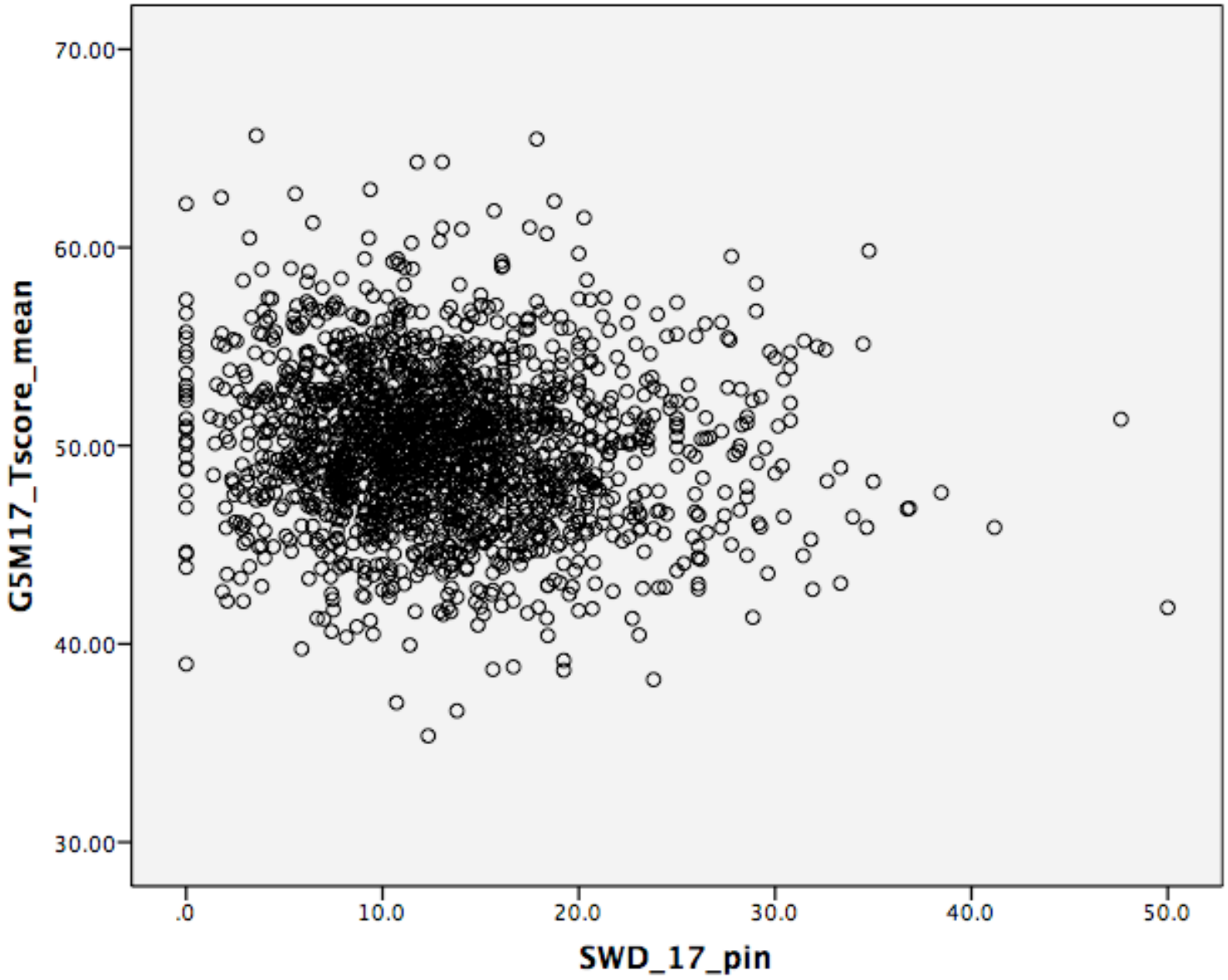
r= -.071

Distribution by EL Groups



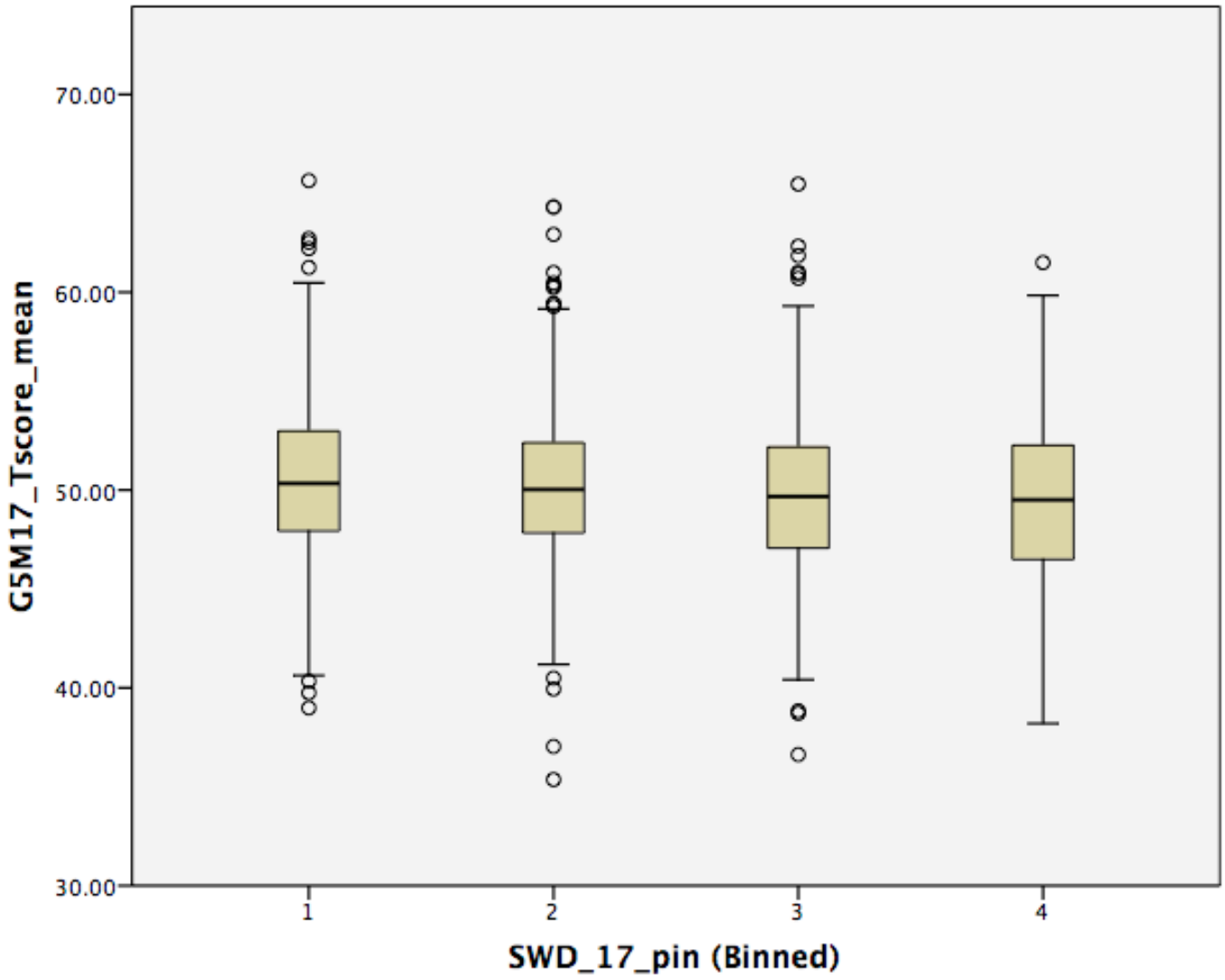
Only 3 groups produced due to lack of granularity in distribution

Relationship with Percent SWD

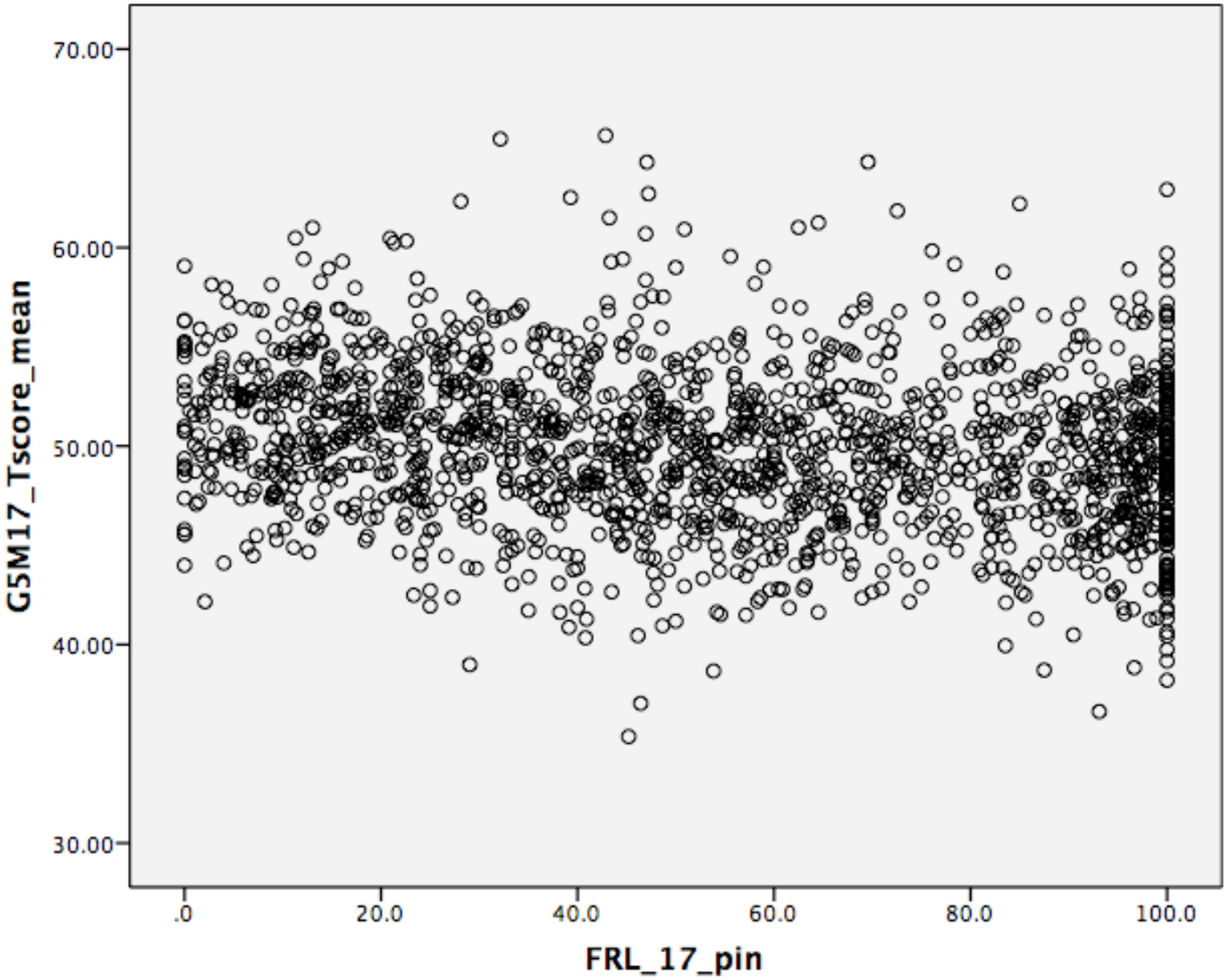


r= -.092

Distribution by SWD Quartile

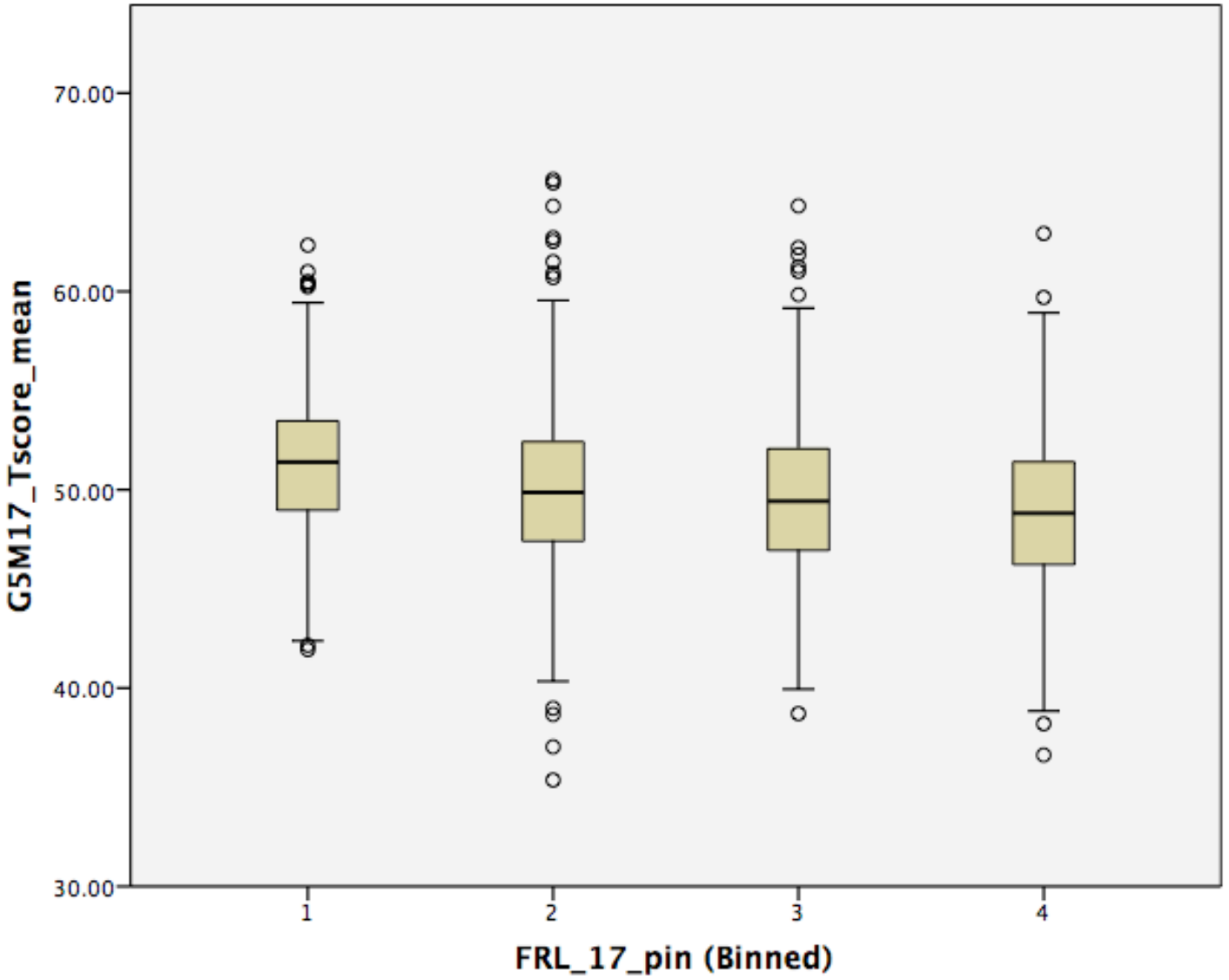


Relationship with percent FRL eligible



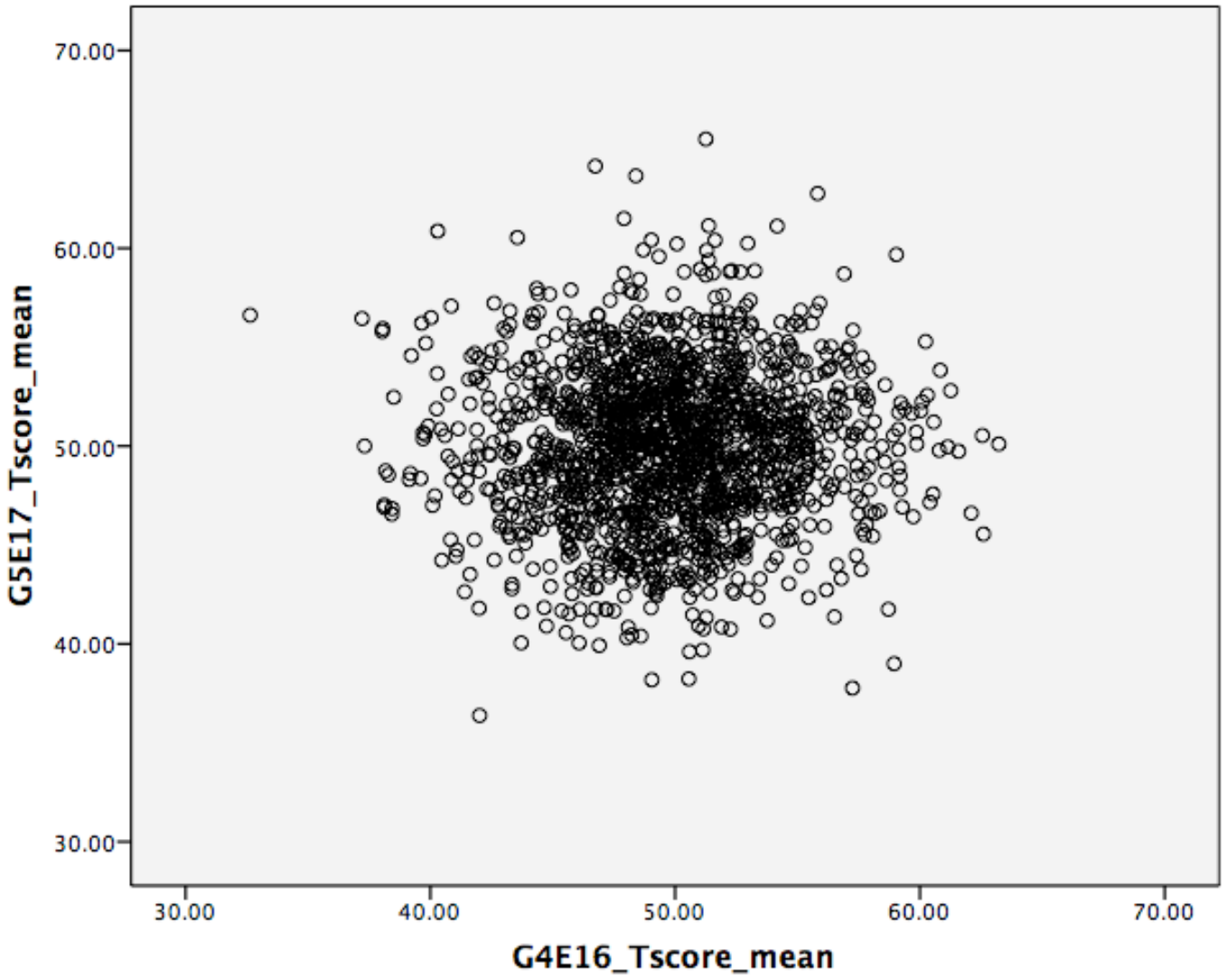
r= -.218

Distribution by FRL Quartile



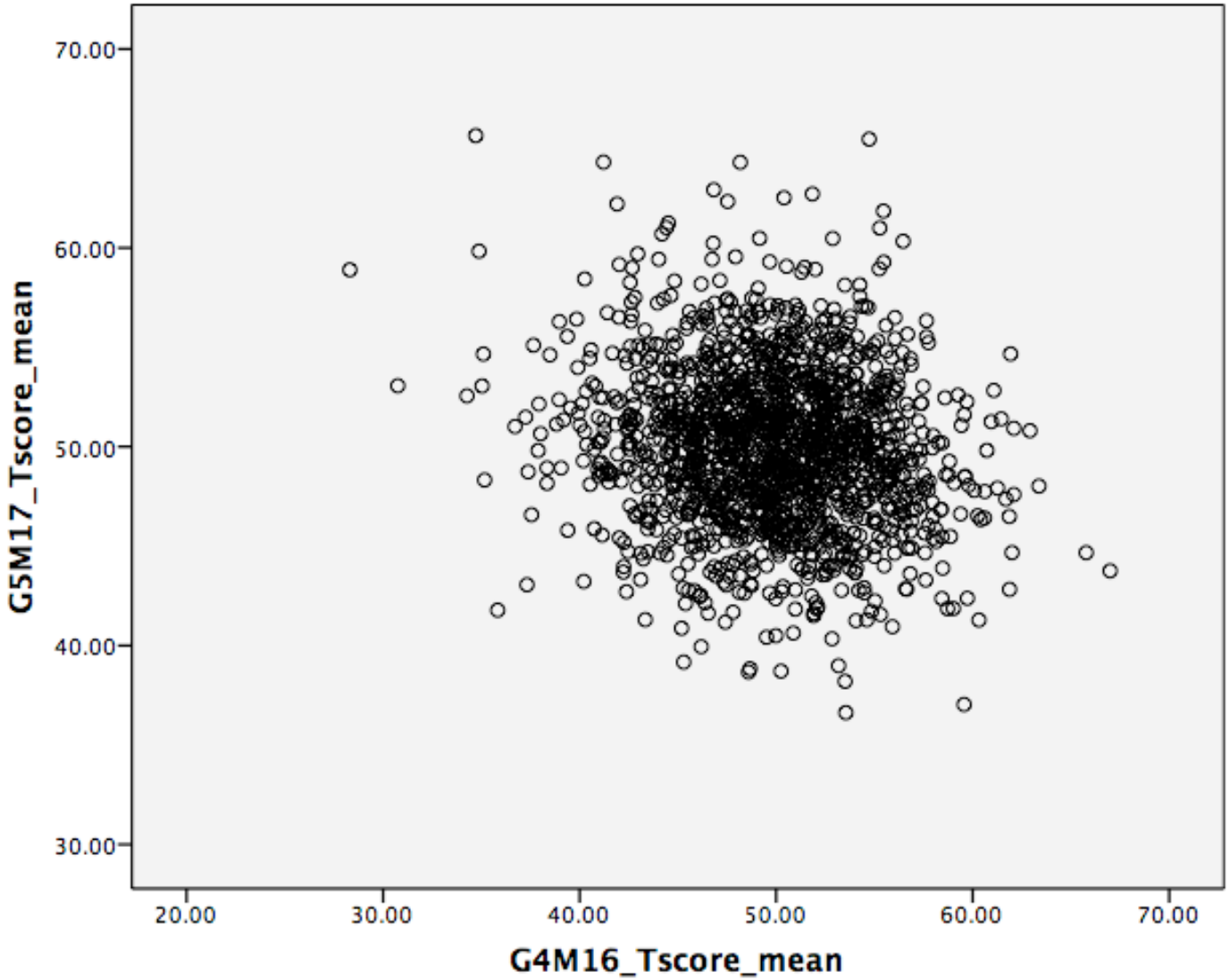
School Level Reliability

Grade 4 ELA 2016 and Grade 5 ELA 2017



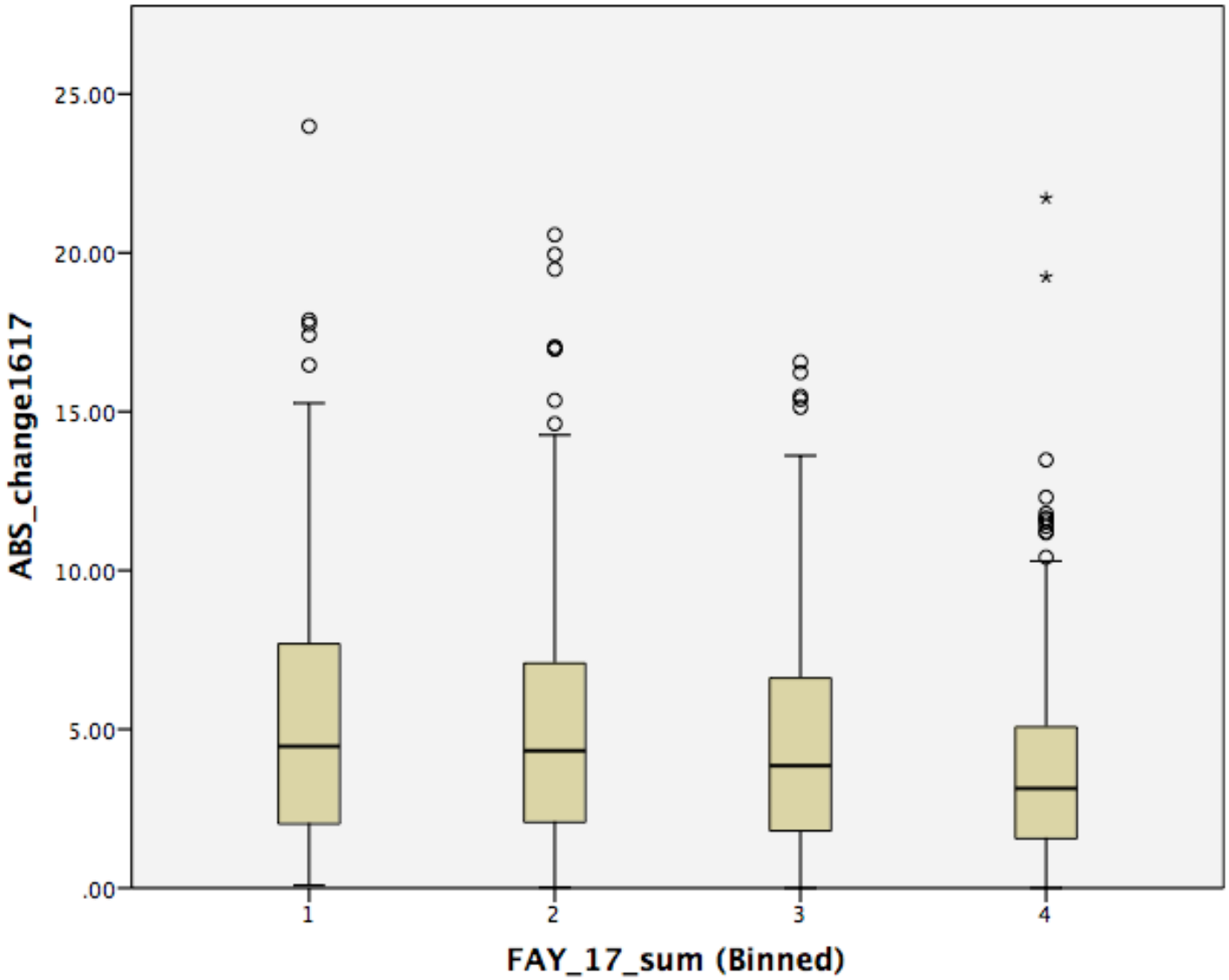
r = .03

Grade 4 Math 2016 and Grade 5 Math 2017



r = -.13

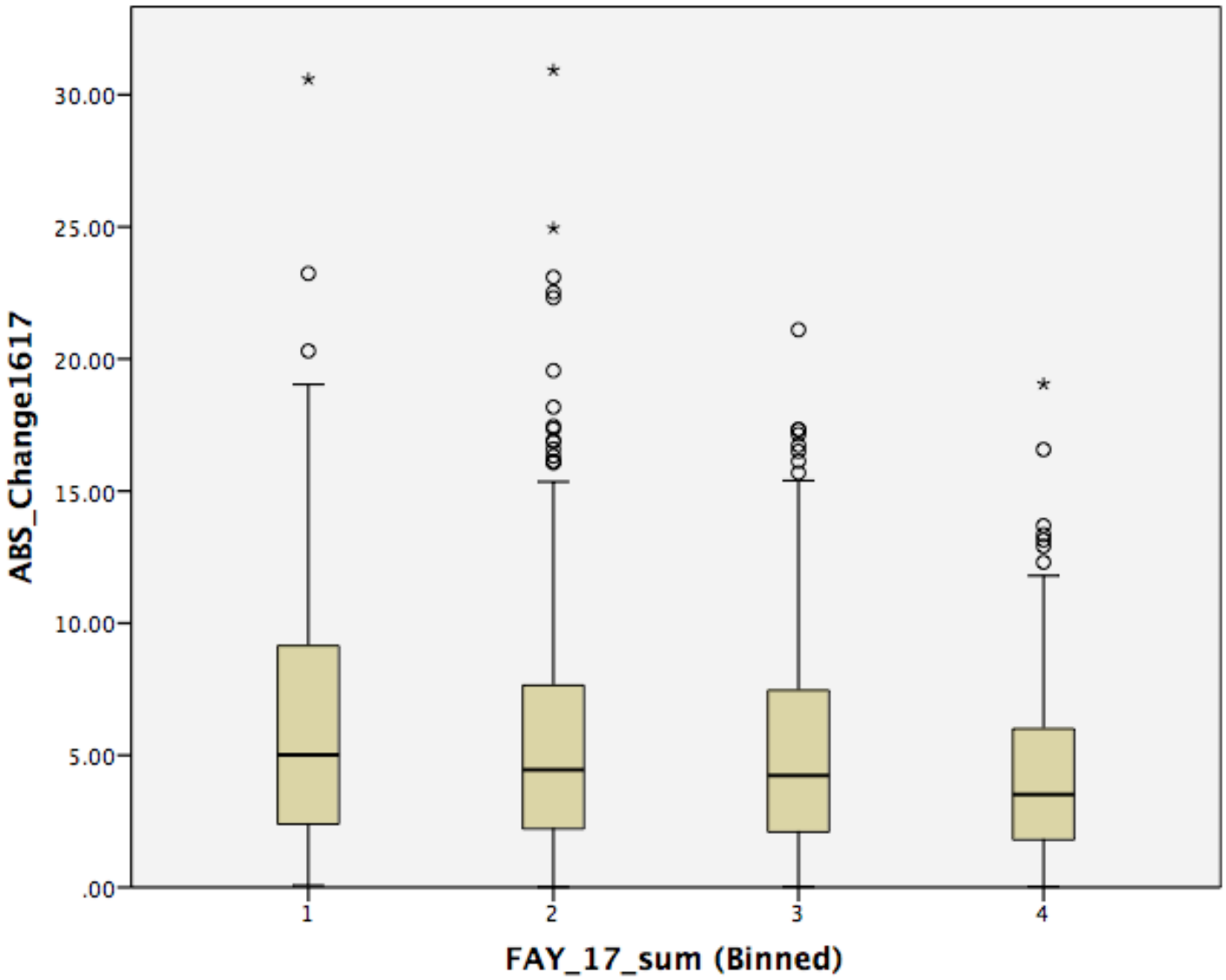
ELA Growth Score Change by n-size



Y axis= absolute value of ELA growth change from 16 to 17

X axis = school size quartiles

Math Growth Score Change by n-size



Y axis= absolute value of math growth change from 16 to 17

X axis = school size quartiles

Value Table

Overview

- Value Table growth scores were produced as follows:
  - Determined score earned by each student using value table look-up
    - Table assigns points based on change in PARCC Performance Level from Year 1 to Year 2. (e.g., Grade 3 to Grade 4 in ELA)
- Data file included:
  - Grade 3, 2015 – ELA and Math
  - Grade 4, 2016 – ELA and Math
  - Grade 5, 2017 – ELA and Math
- Valid cases:
  - Valid PARCC score in both years
  - Full academic year in year 2 (outcome year)
  - School analyses include schools with 20 or more cases

Value Table

			Performance in Year 2									
			Did Not Yet Meet		Partially Met		Approached		Met		Exceeded	
			1a	1b	2a	2b	3a	3b	4a	4b	5a	5b
Performance Level in Year 1	Did not yet meet	1a	50	110	140	160	170	180	190	195	200	200
		1b	25	60	115	145	160	170	180	190	195	200
	Partially Met	2a	20	35	70	115	150	160	170	180	190	195
		2b	10	35	50	80	120	145	155	165	180	195
	Approached	3a	10	30	40	60	90	120	145	160	175	190
		3b	10	25	35	40	70	95	125	145	165	180
	Met	4a	10	20	30	35	50	75	100	130	150	175
		4b	0	10	20	30	45	55	85	110	135	160
	Exceeded	5a	0	0	10	20	35	45	65	95	120	145
		5b	0	0	0	10	25	35	55	75	100	130

Value Table Score Ranges

ELA Score Ranges

Grade	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b
3	650-674	675-699	700-712	713-725	726-737	738-749	750-780	781-809	810-829	830-850
4	650-674	675-699	700-711	712-724	725-736	737-749	750-769	770-789	790-819	820-850
5	650-674	675-699	700-712	713-725	726-737	738-749	750-773	774-798	799-824	825-850

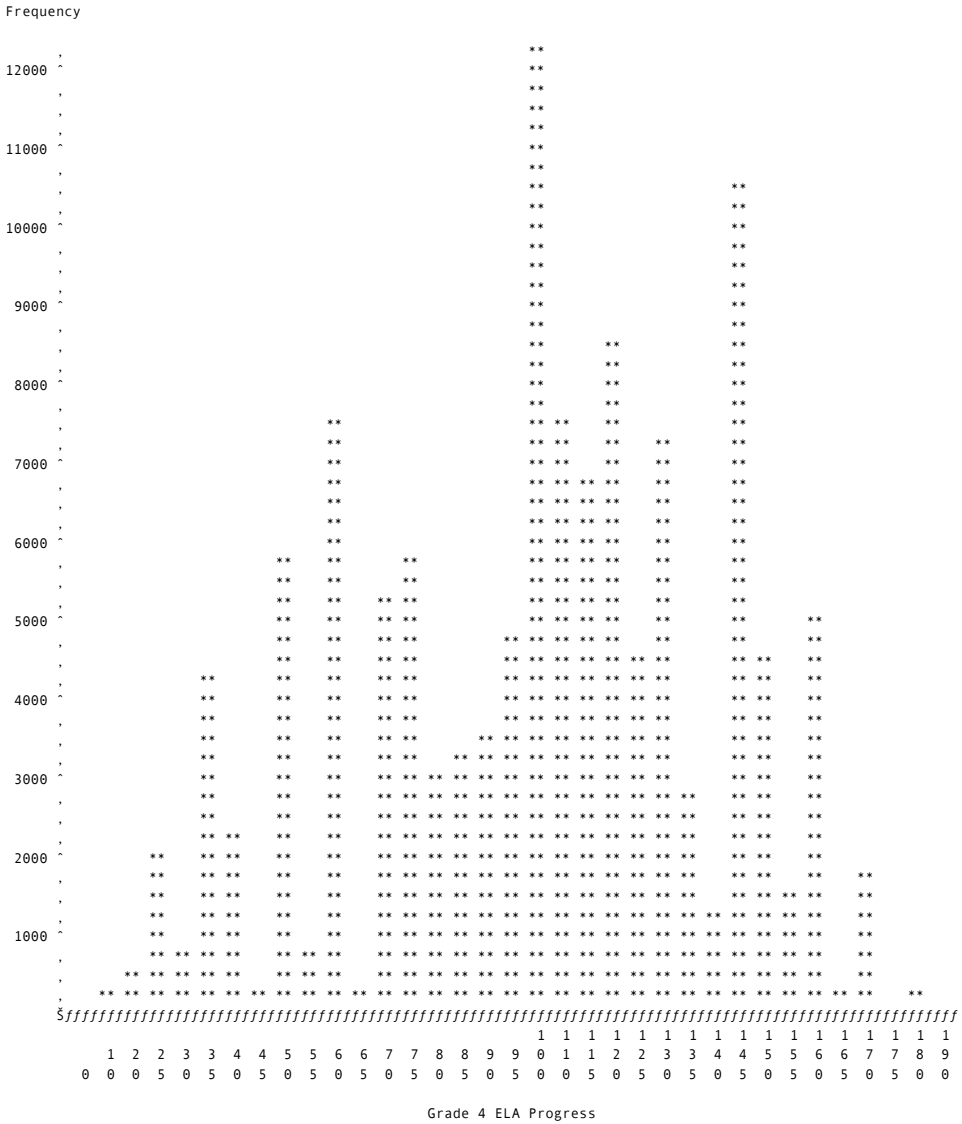
Math Score Ranges

Grade	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b
3	650-674	675-699	700-712	713-726	727-737	738-749	750-769	770-789	790-819	820-850
4	650-674	675-699	700-712	713-726	727-737	738-749	750-772	773-795	796-823	824-850
5	650-674	675-699	700-711	712-724	725-736	737-749	750-769	770-789	790-819	820-850

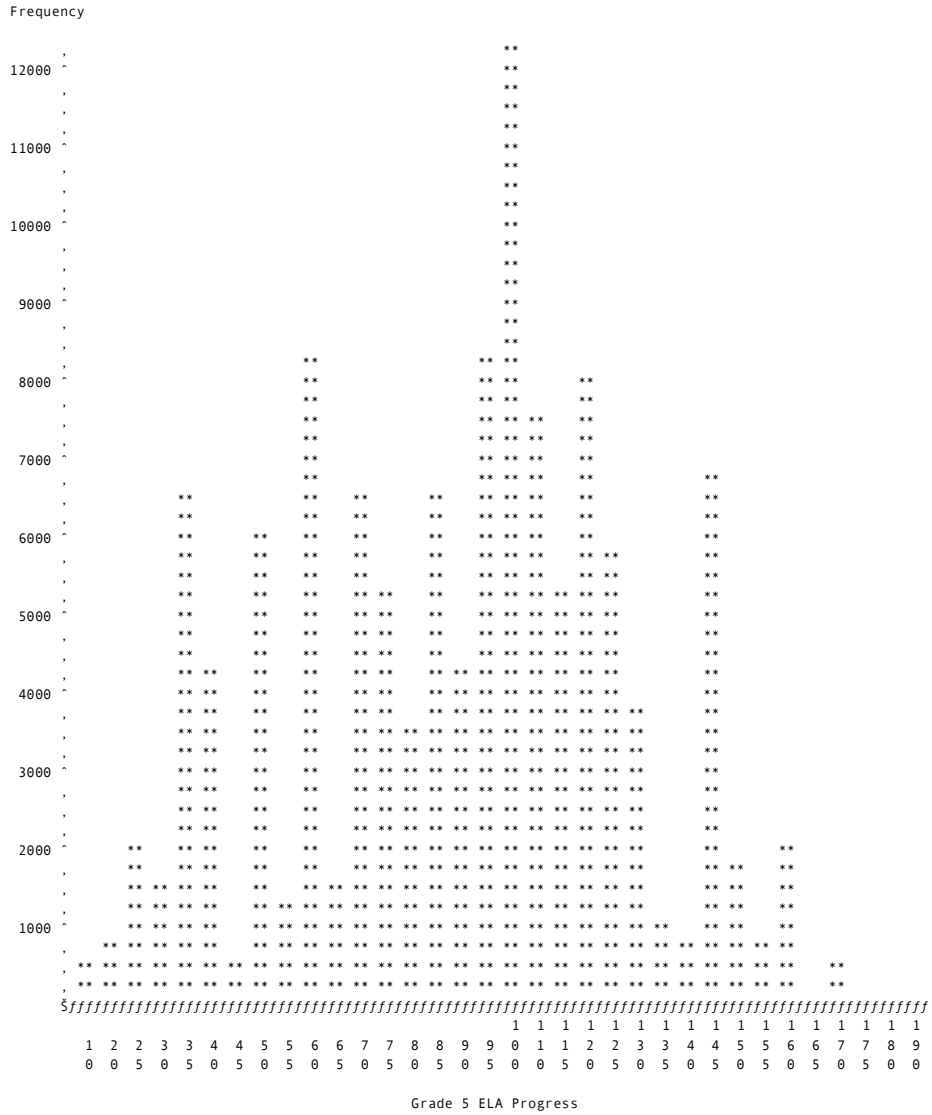
Value Table Growth Scores: Descriptive

	N	Minimum	Maximum	Mean	Std. Deviation
Grade 4 ELA 2016	124816	0	190	102.03	37.50
Grade 5 ELA 2017	123400	10	190	90.93	34.98
Grade 4 Math 2016	124918	0	195	85.12	33.91
Grade 5 Math 2017	123168	0	190	95.16	34.46

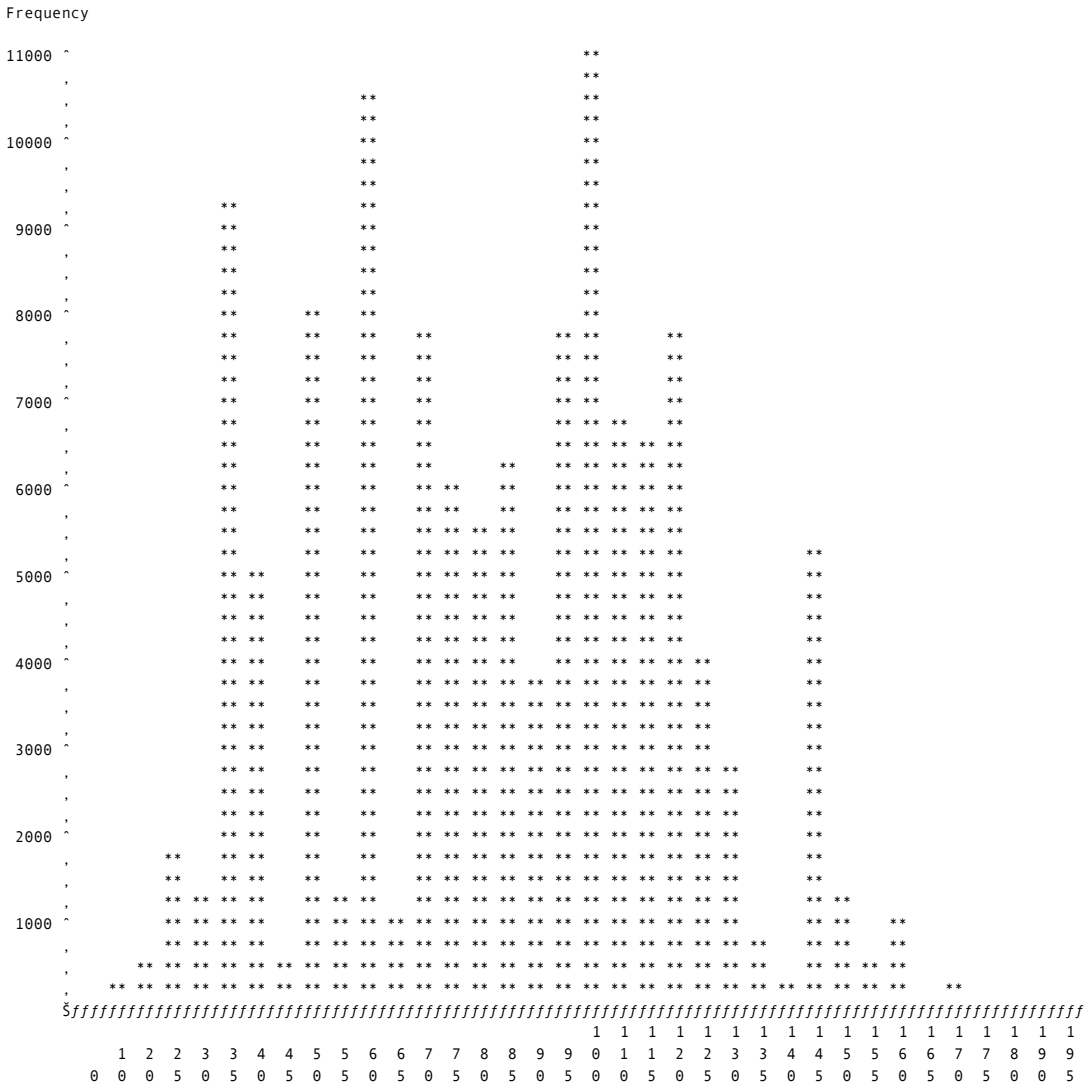
Grade 4 ELA 2016 – Student Growth



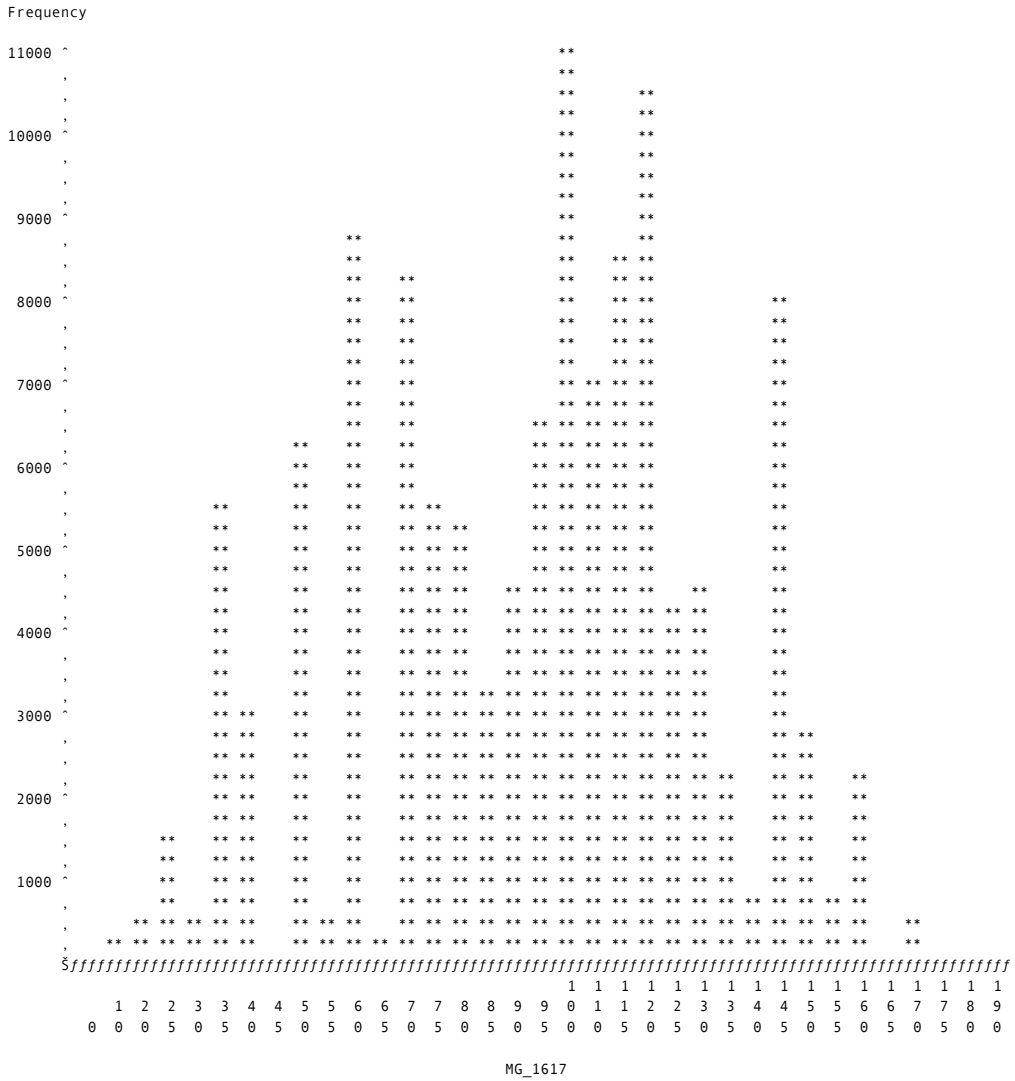
Grade 5 ELA 2017 – Student Growth



Grade 4 Math – Student Growth



Grade 5 Student Growth

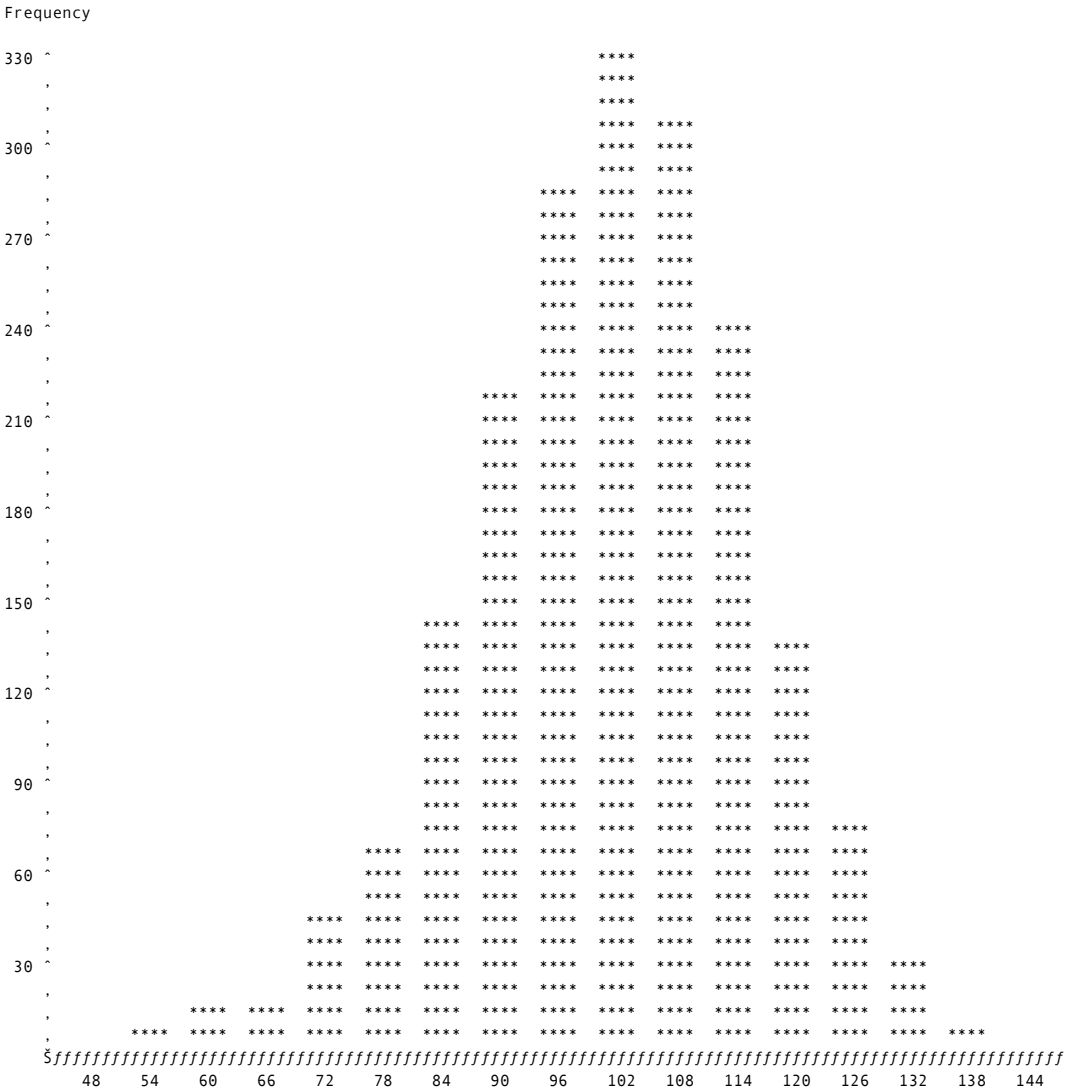


Value Table School Growth: Descriptives

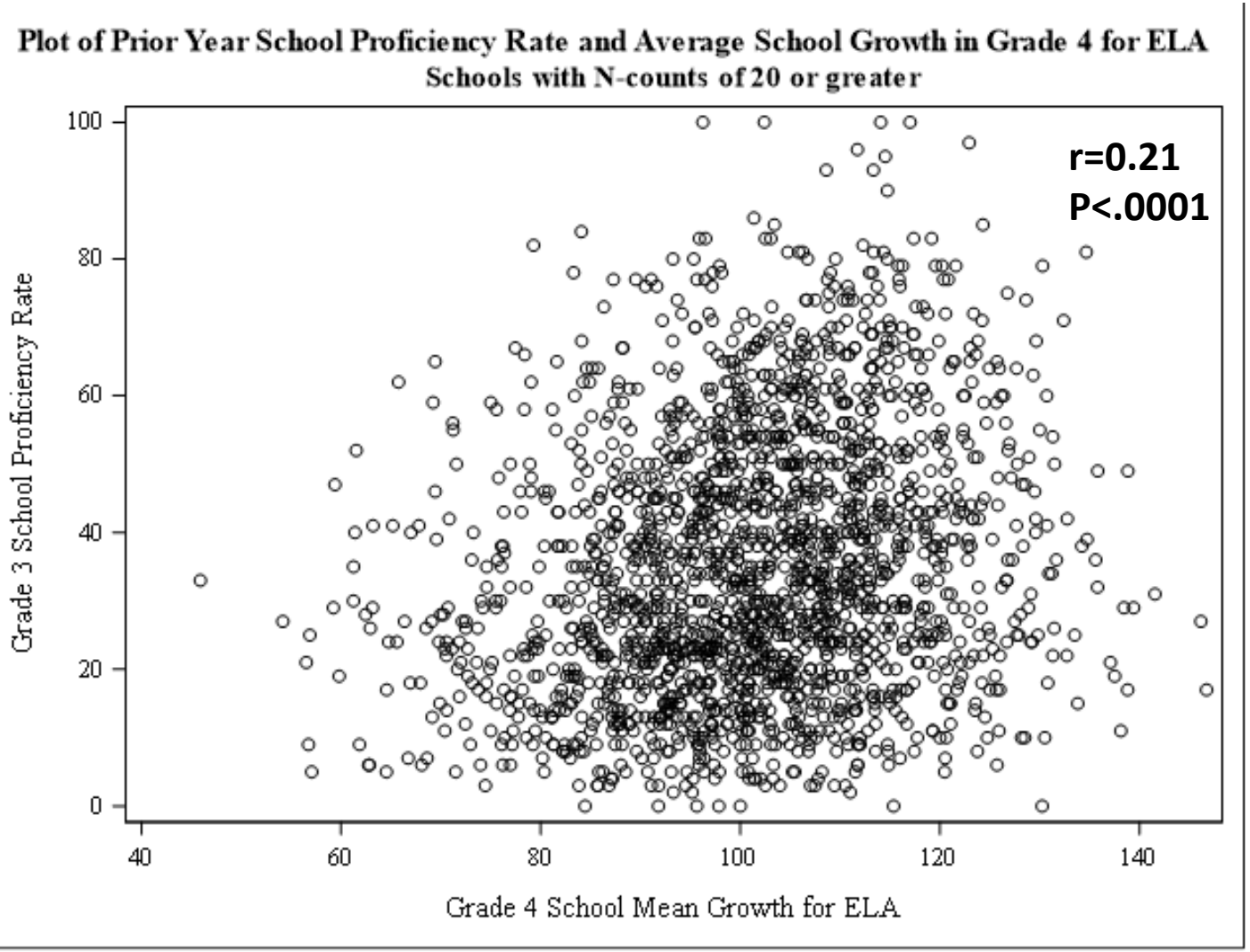
	Schools (N>20)	Minimum	Maximum	Mean	Std. Deviation
Grade 4 ELA 2016	1931	45.90	146.70	101.39	14.42
Grade 5 ELA 2017	1841	45.80	135.71	90.63	12.87
Grade 4 Math 2016	1926	39.55	144.58	84.64	15.24
Grade 5 Math 2017	1840	54.38	141.79	94.83	13.26

School Level Results
Grade 4 ELA 2016

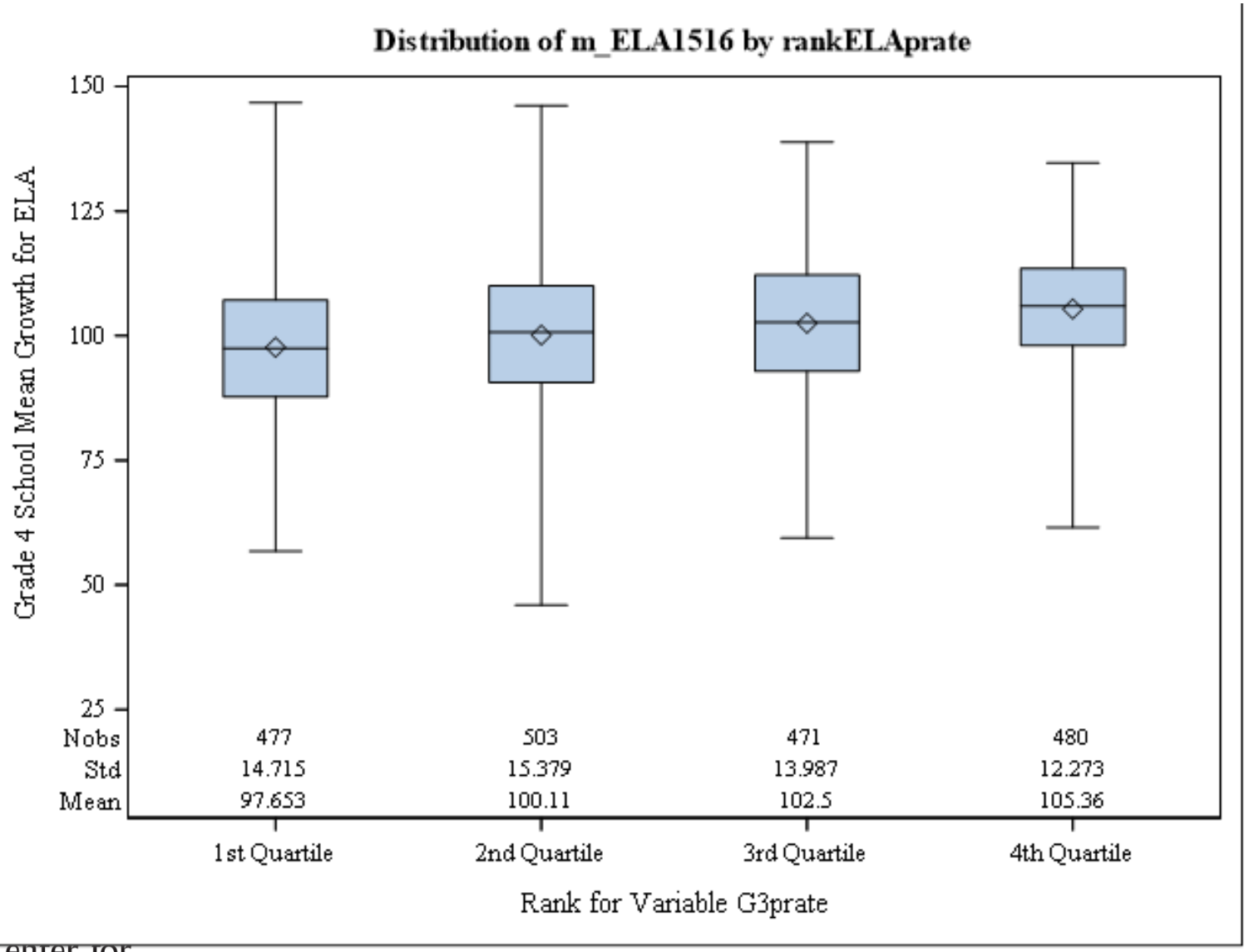
Grade 4 ELA School Growth Distribution



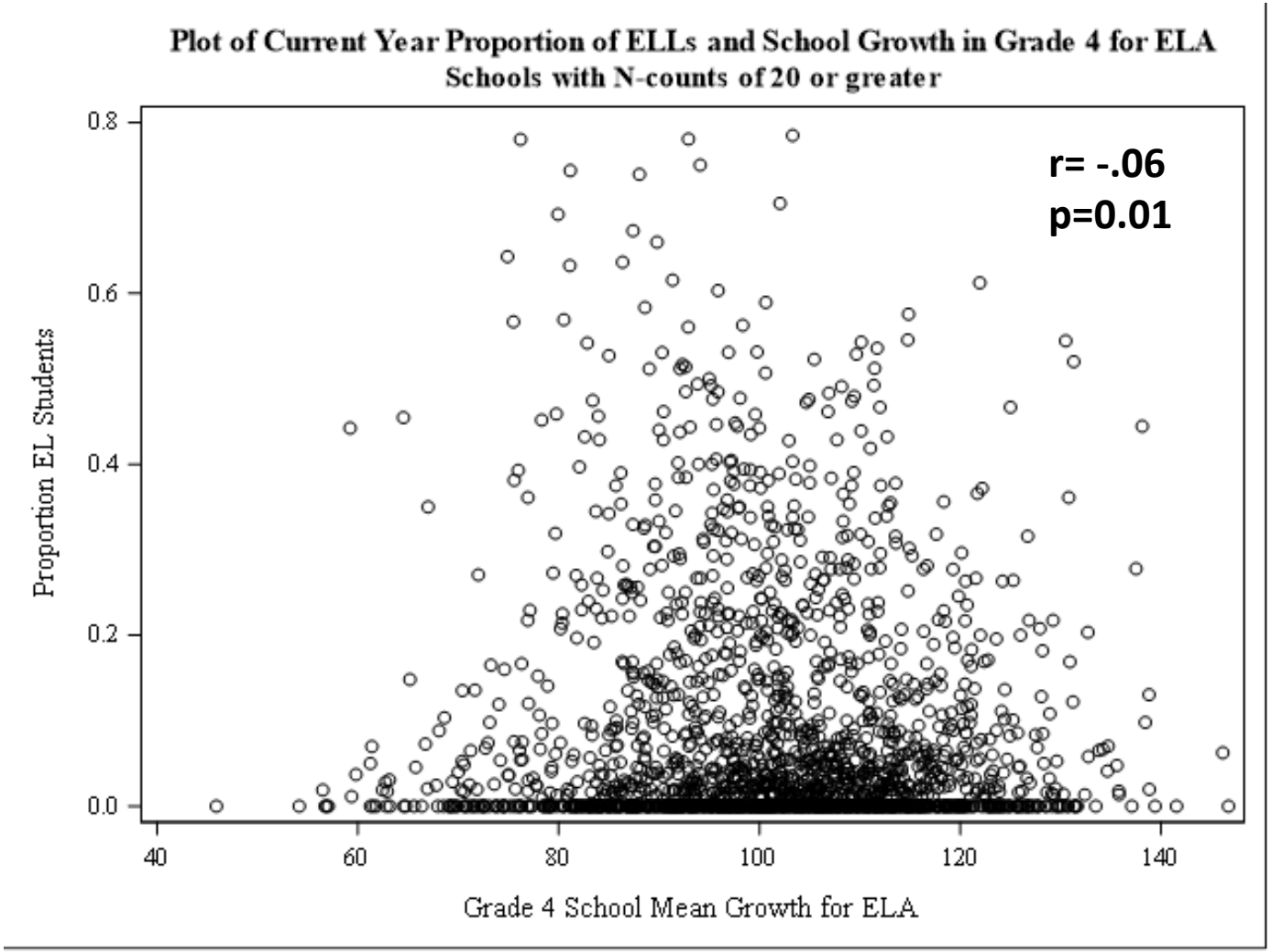
Correlation with Prior Year Percent Proficient



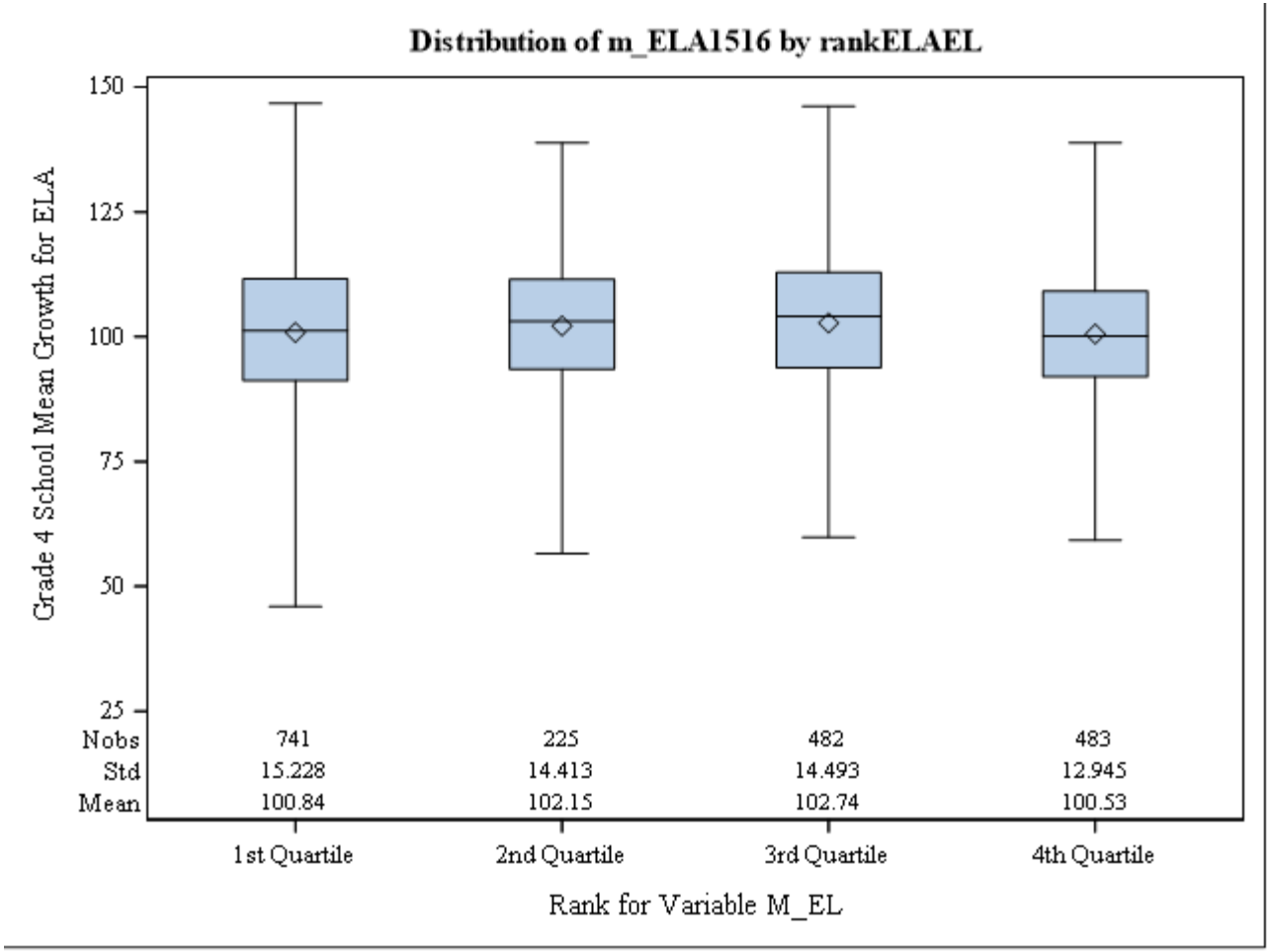
Distribution by Previous Percent Proficient Quartile



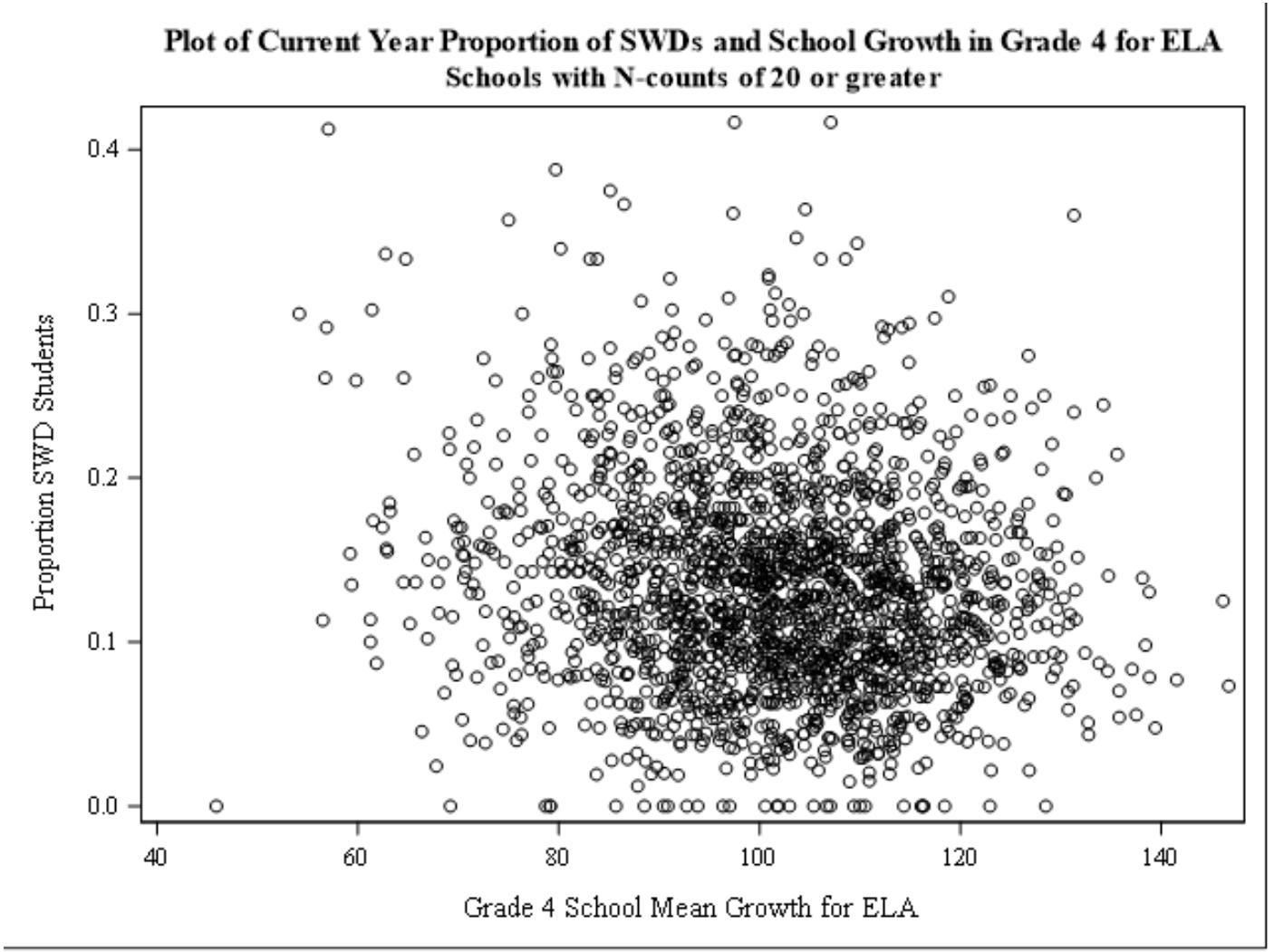
Relationship with EL Representation



Distribution by EL Representation Quartile

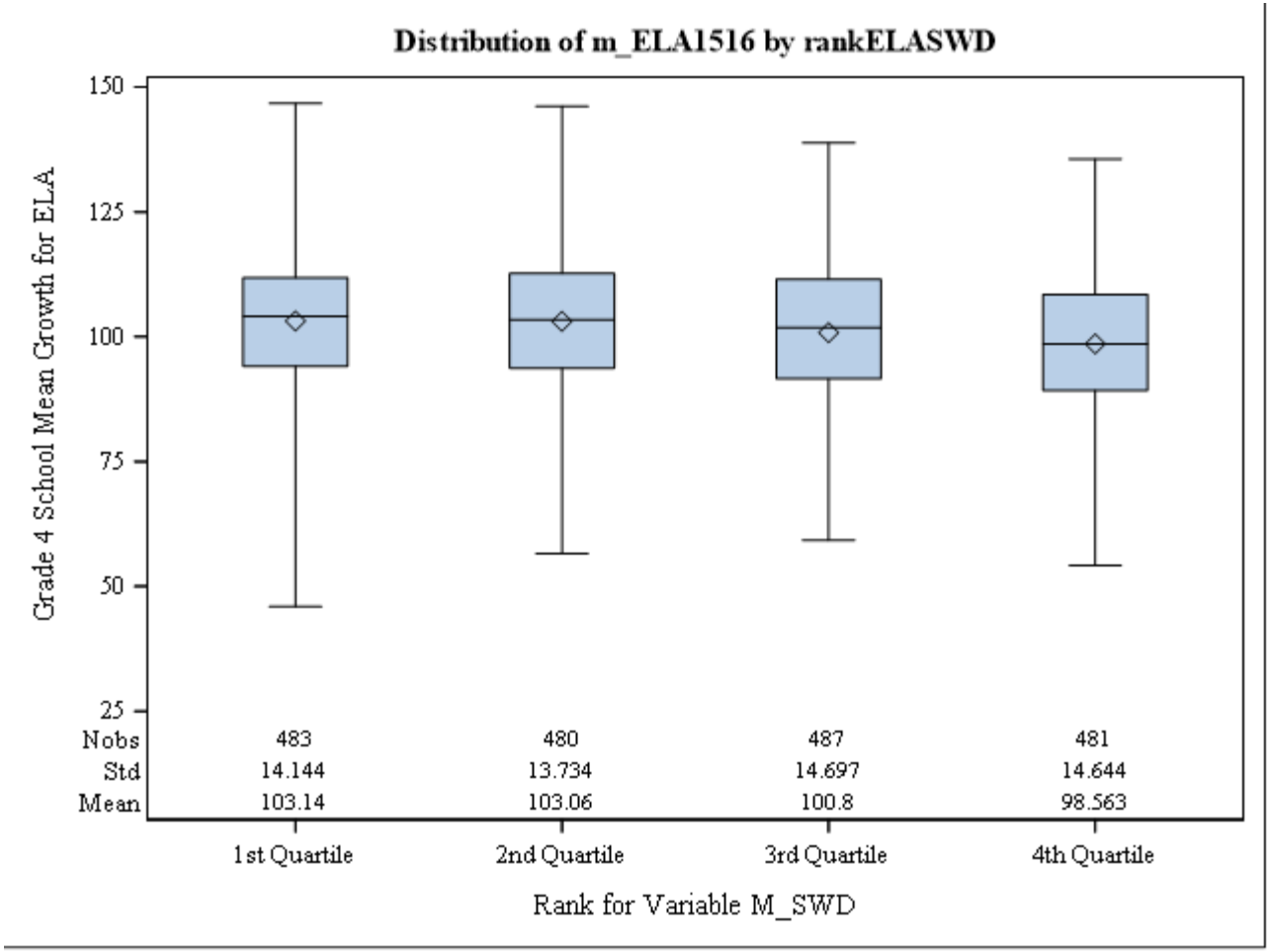


Relationship with SWD Representation

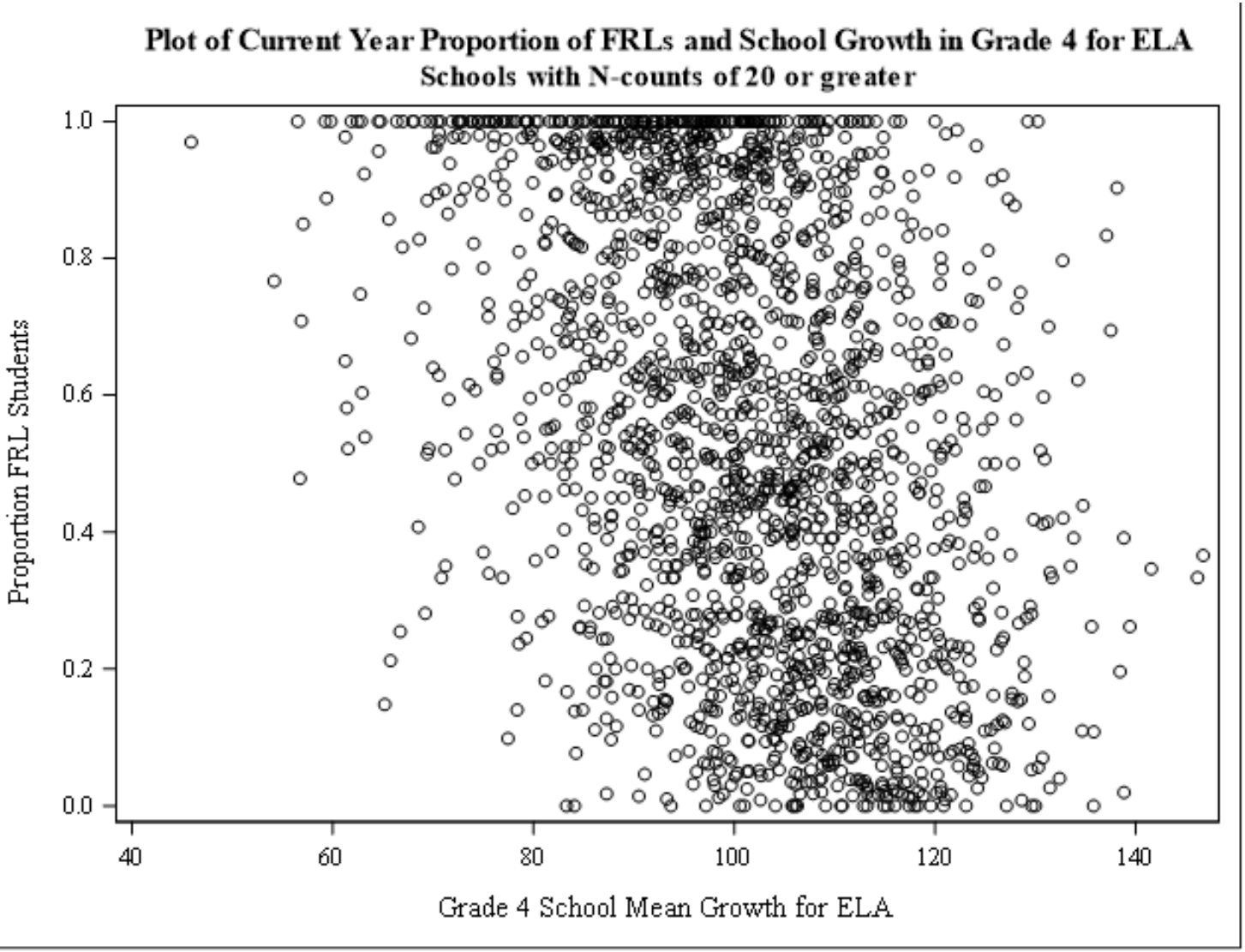


r= -.14
p<.0001

Distribution by SWD Representation Quartile

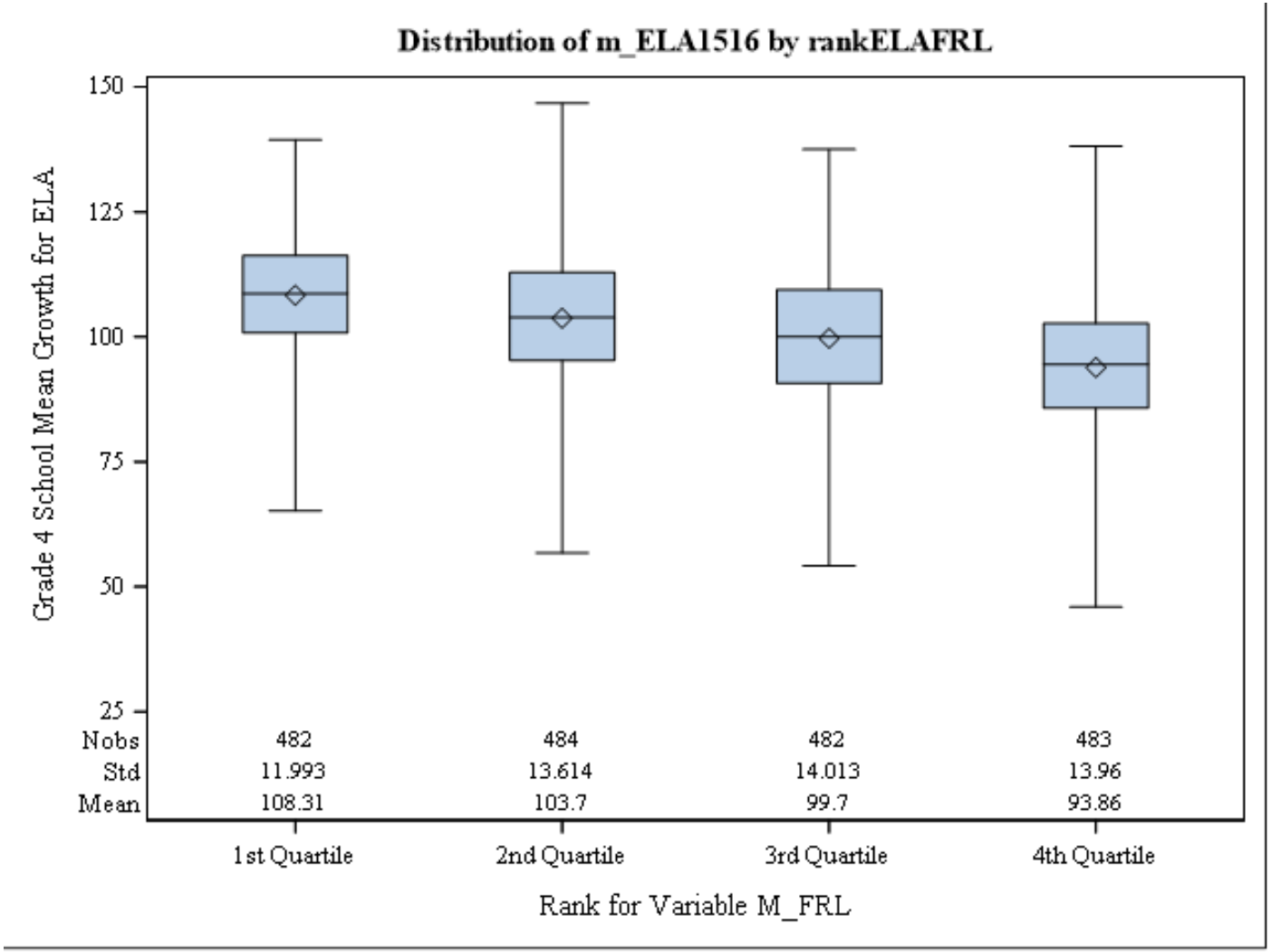


Relationship with FRL Representation



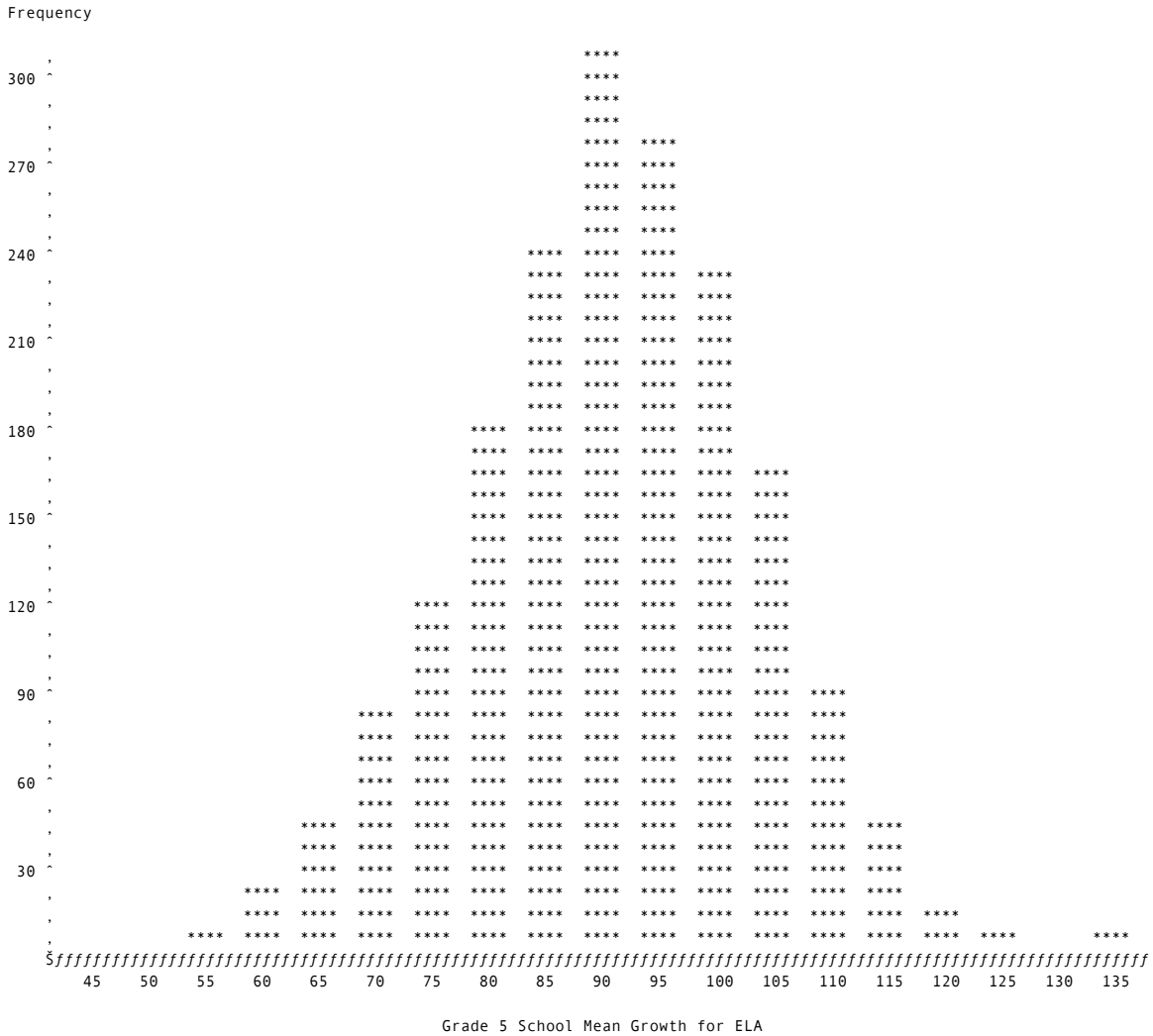
r= -0.39
p<.0001

Distribution by FRL Representation Quartile

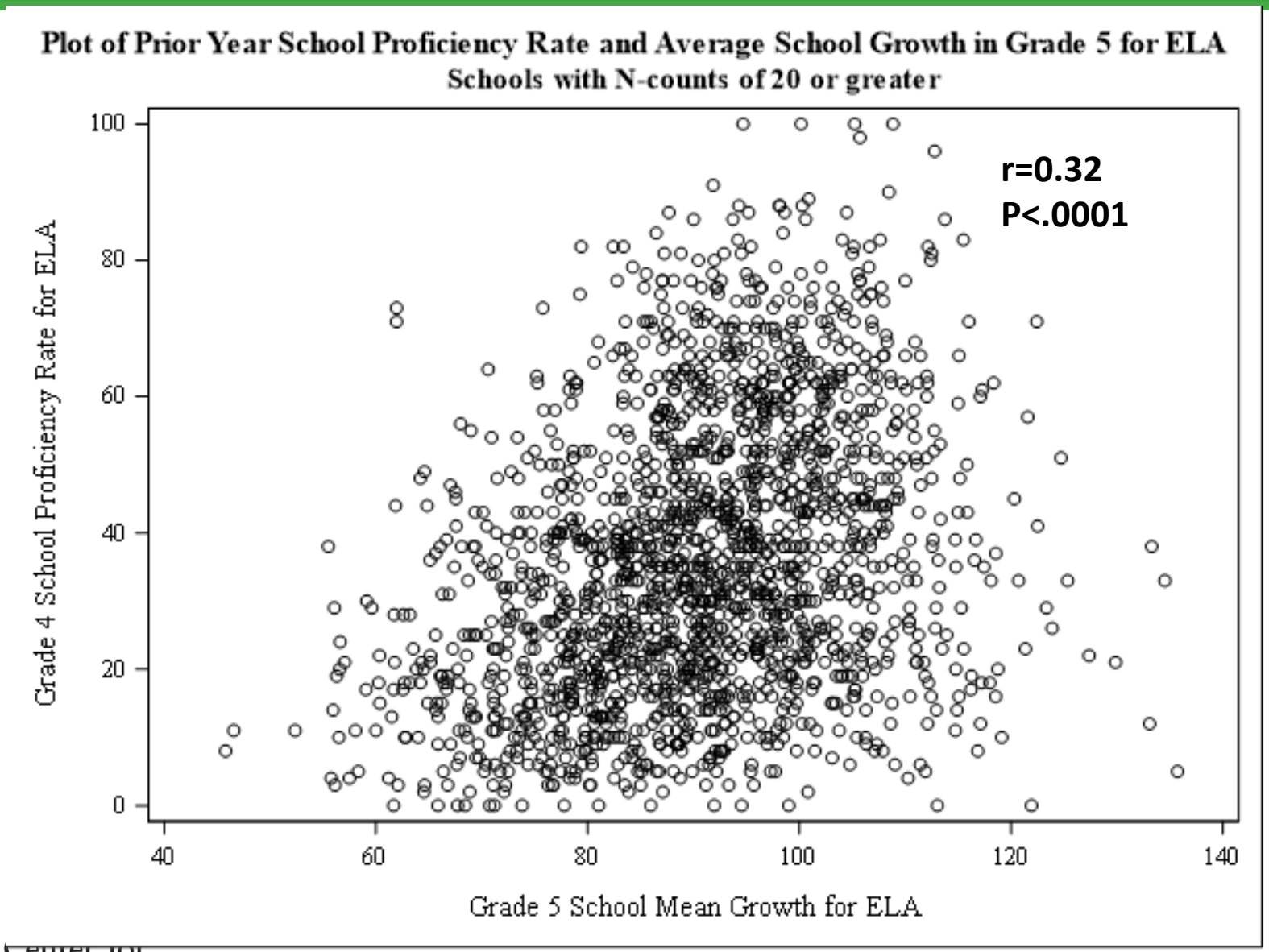


School Level Results
Grade 5 ELA 2016

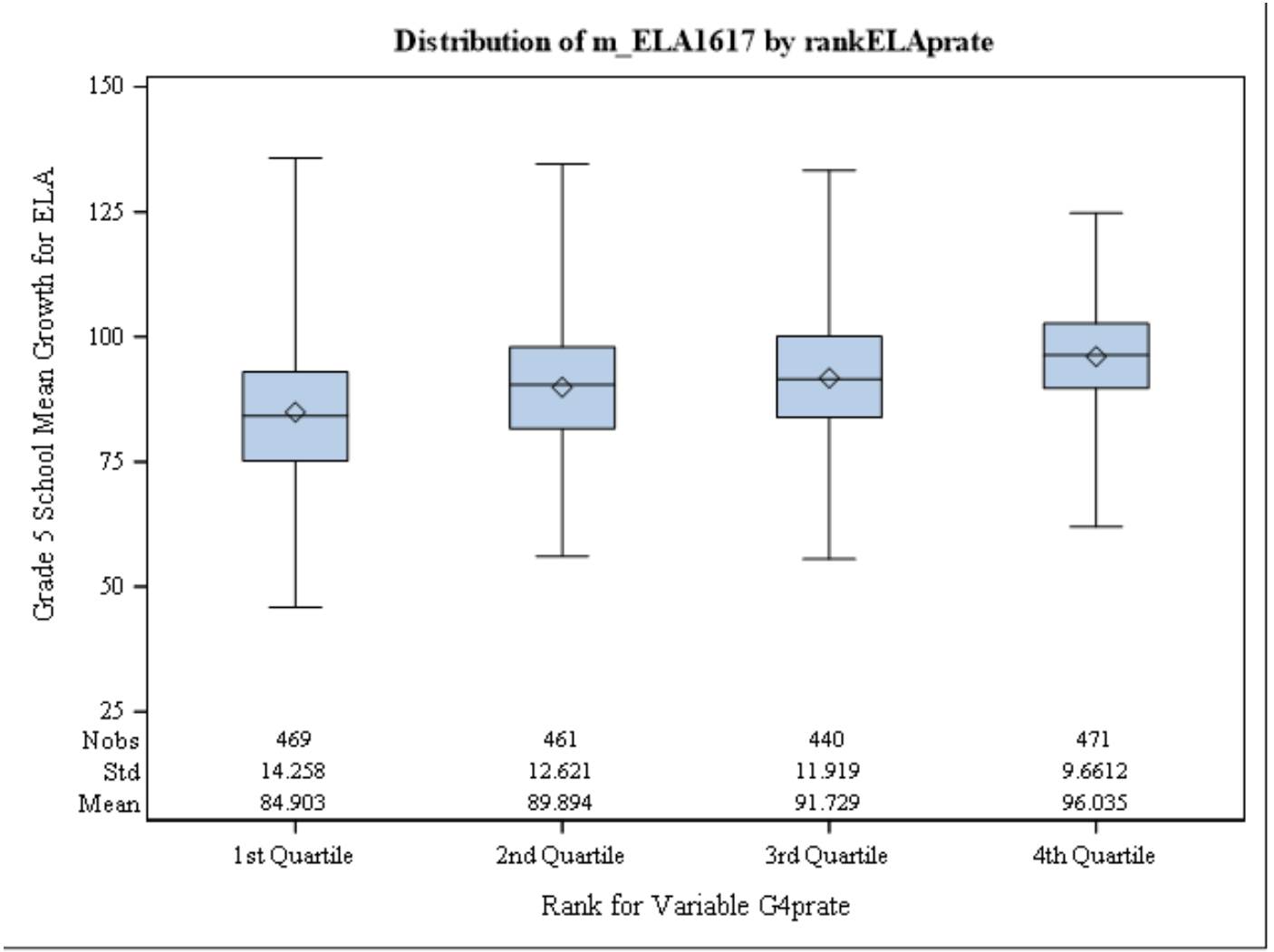
Grade 5 ELA School Growth Distribution



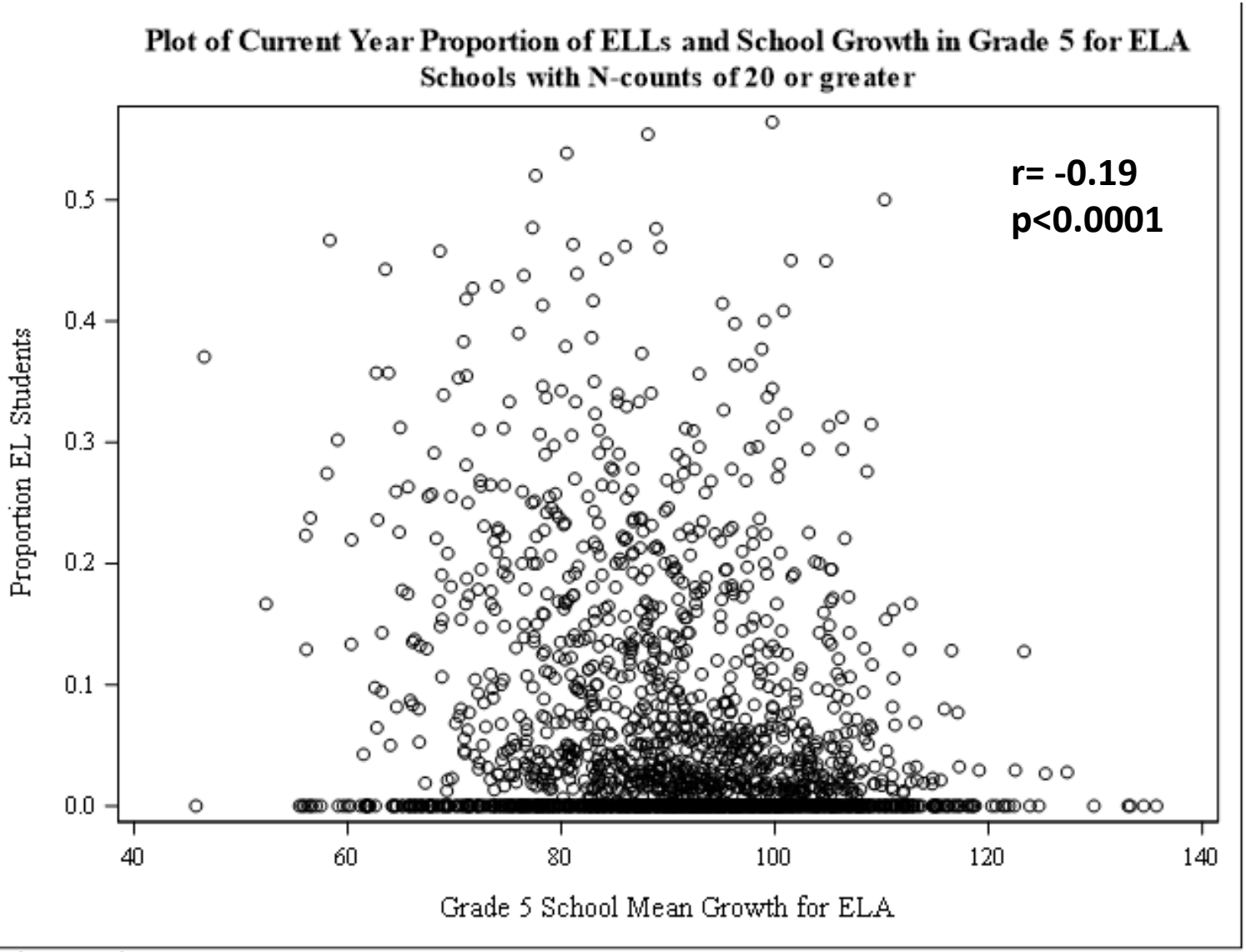
Correlation with Prior Year Percent Proficient



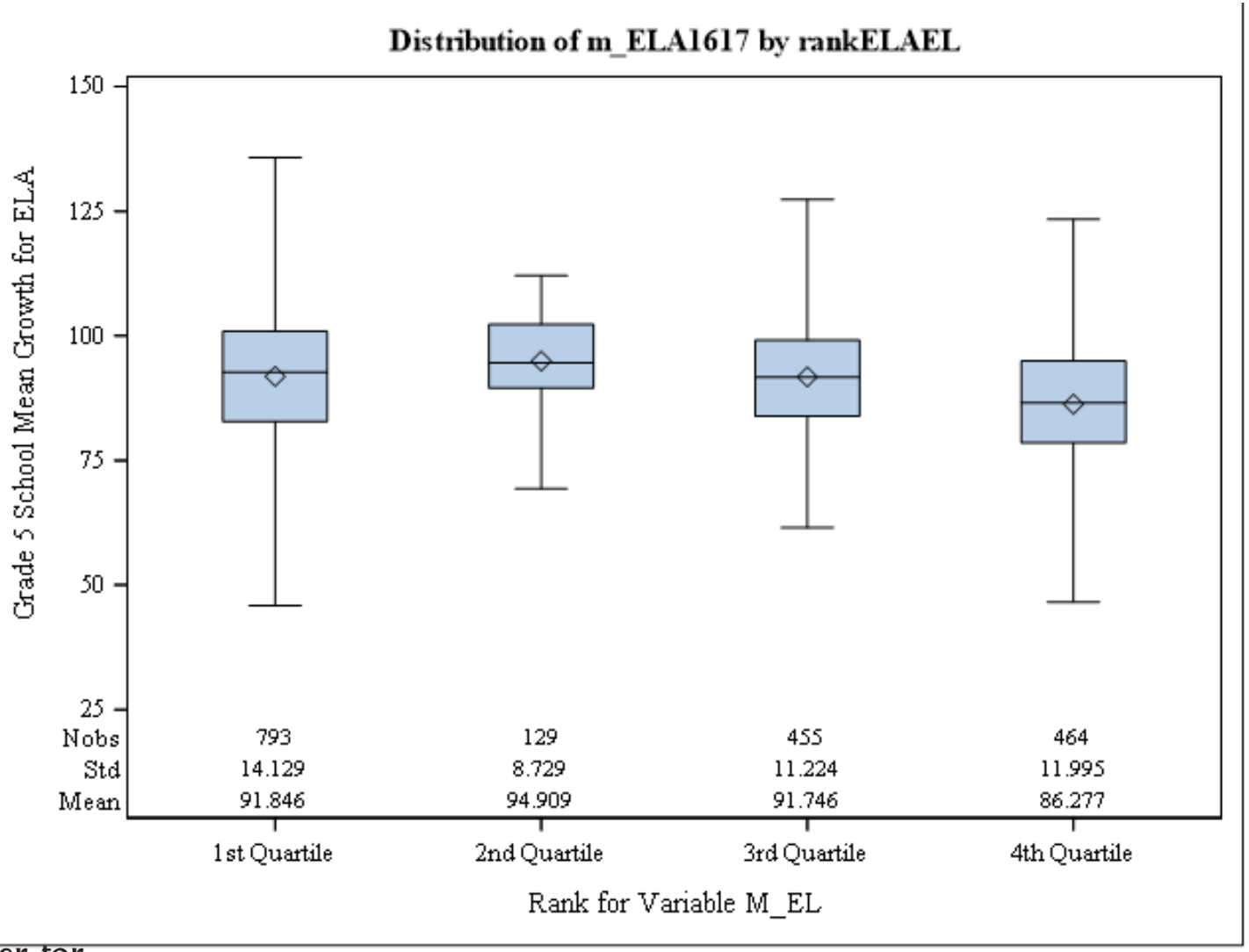
Distribution by Previous Percent Proficient Quartile



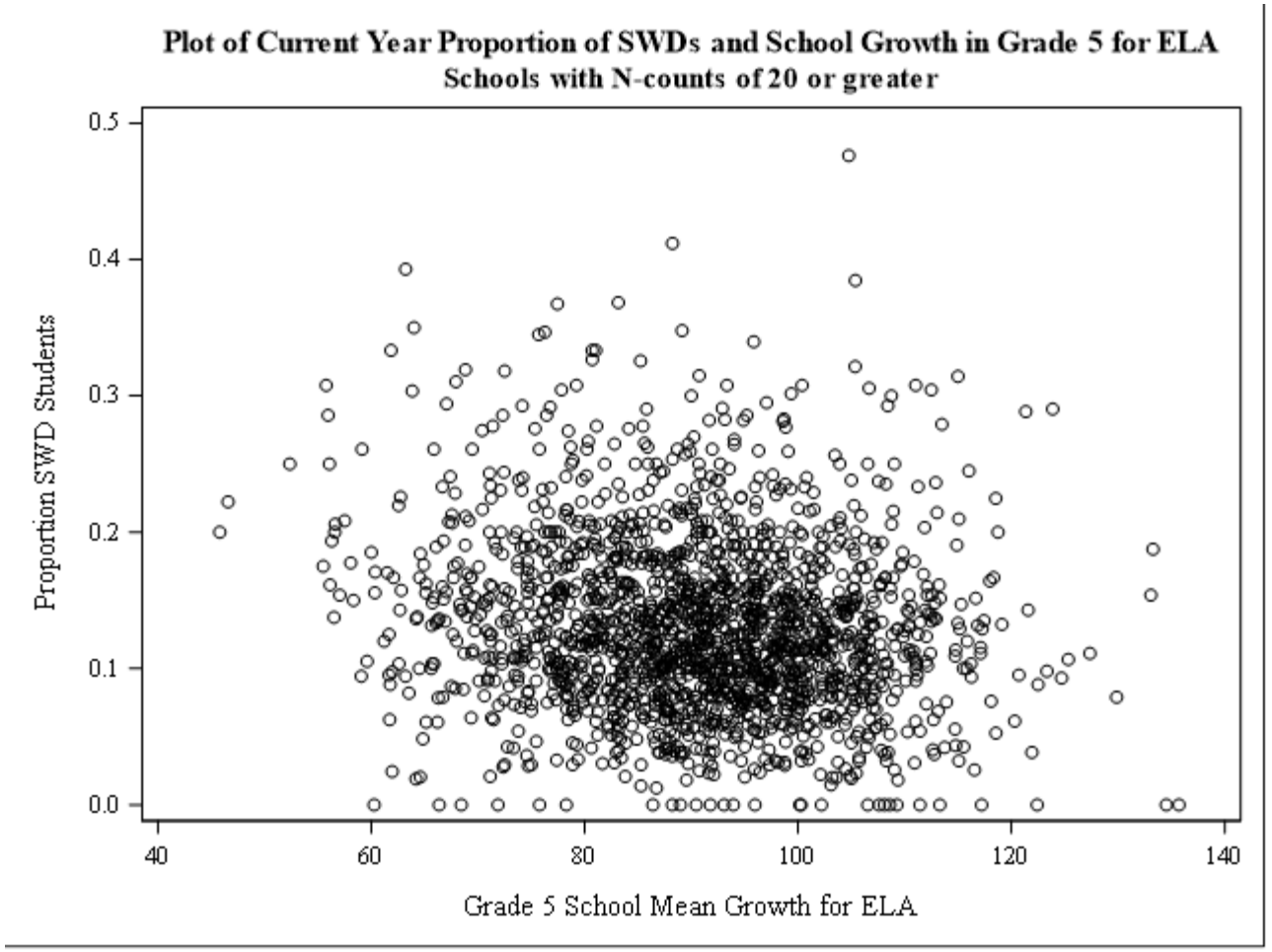
Relationship with EL Representation



Distribution by EL Representation Quartile

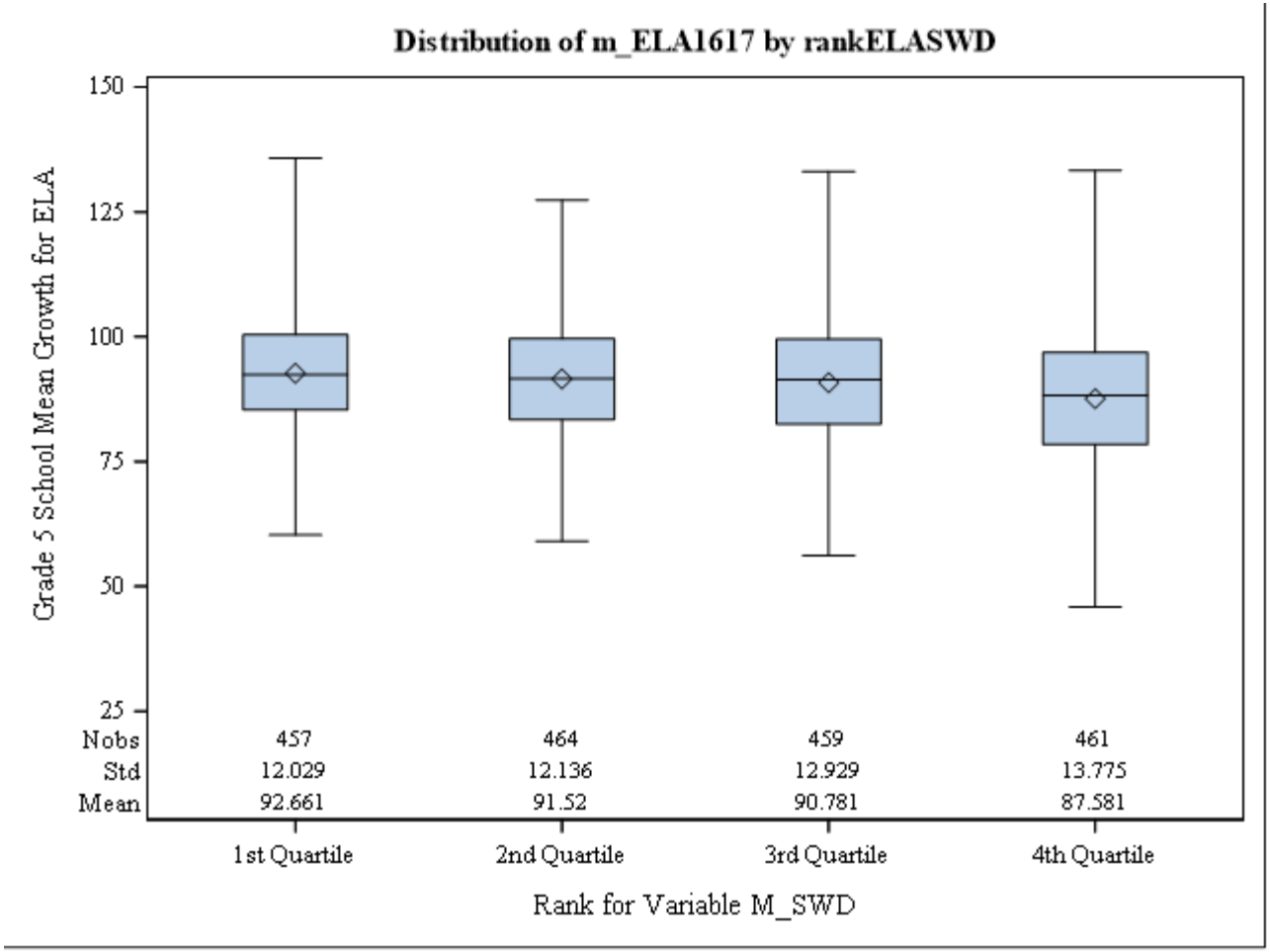


Relationship with SWD Representation

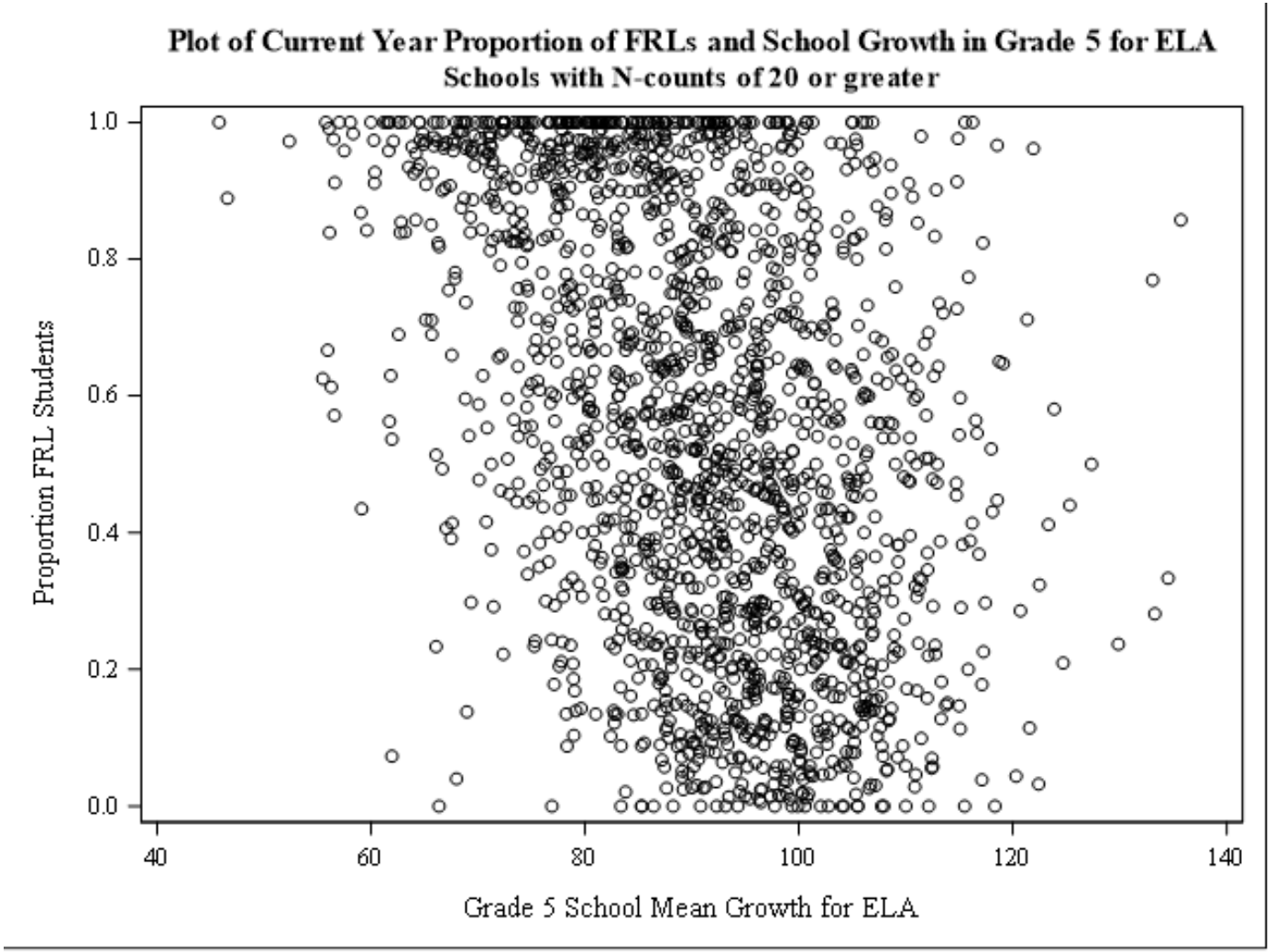


r= -.15
p<.0001

Distribution by SWD Representation Quartile

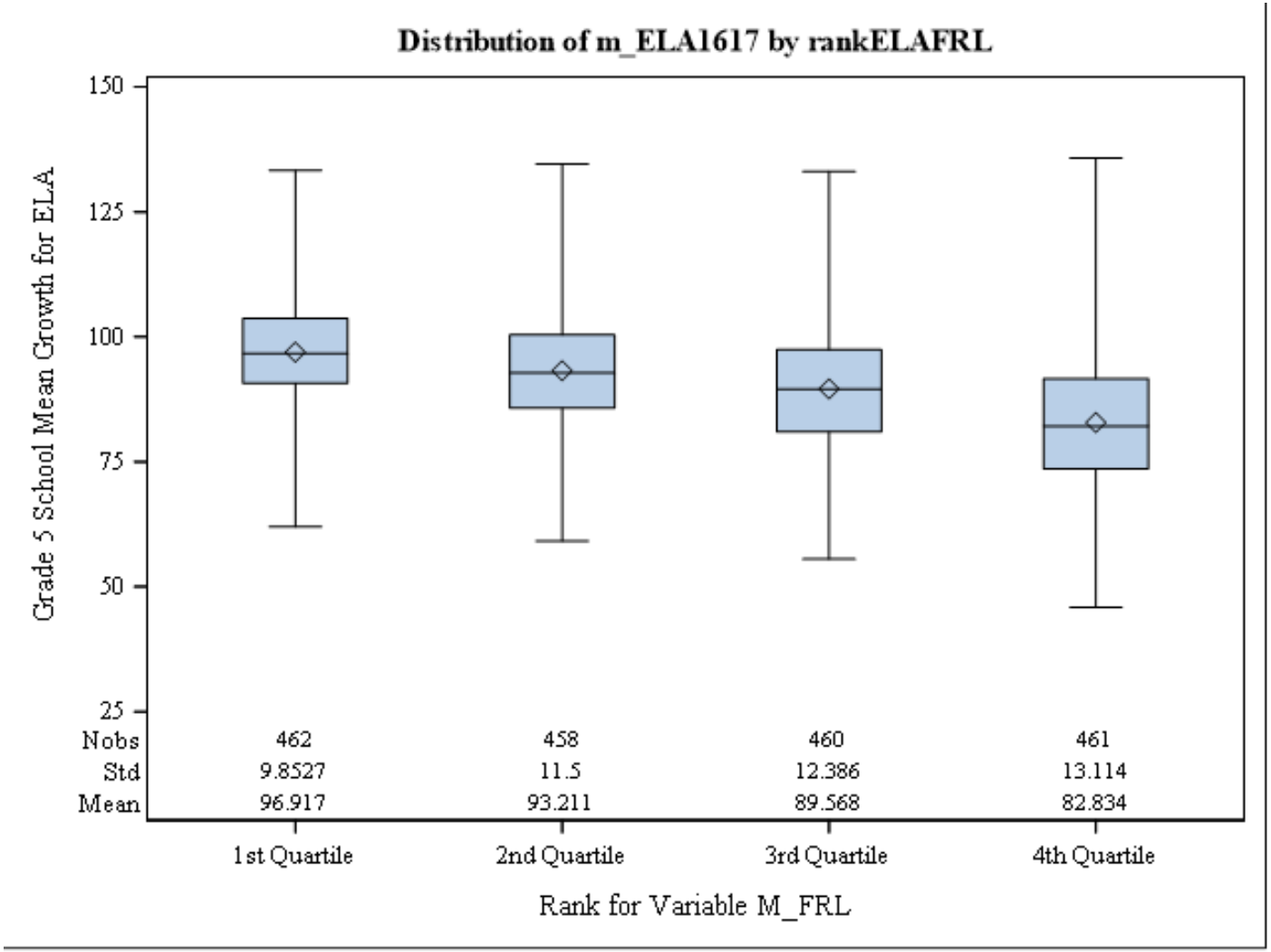


Relationship with FRL Representation



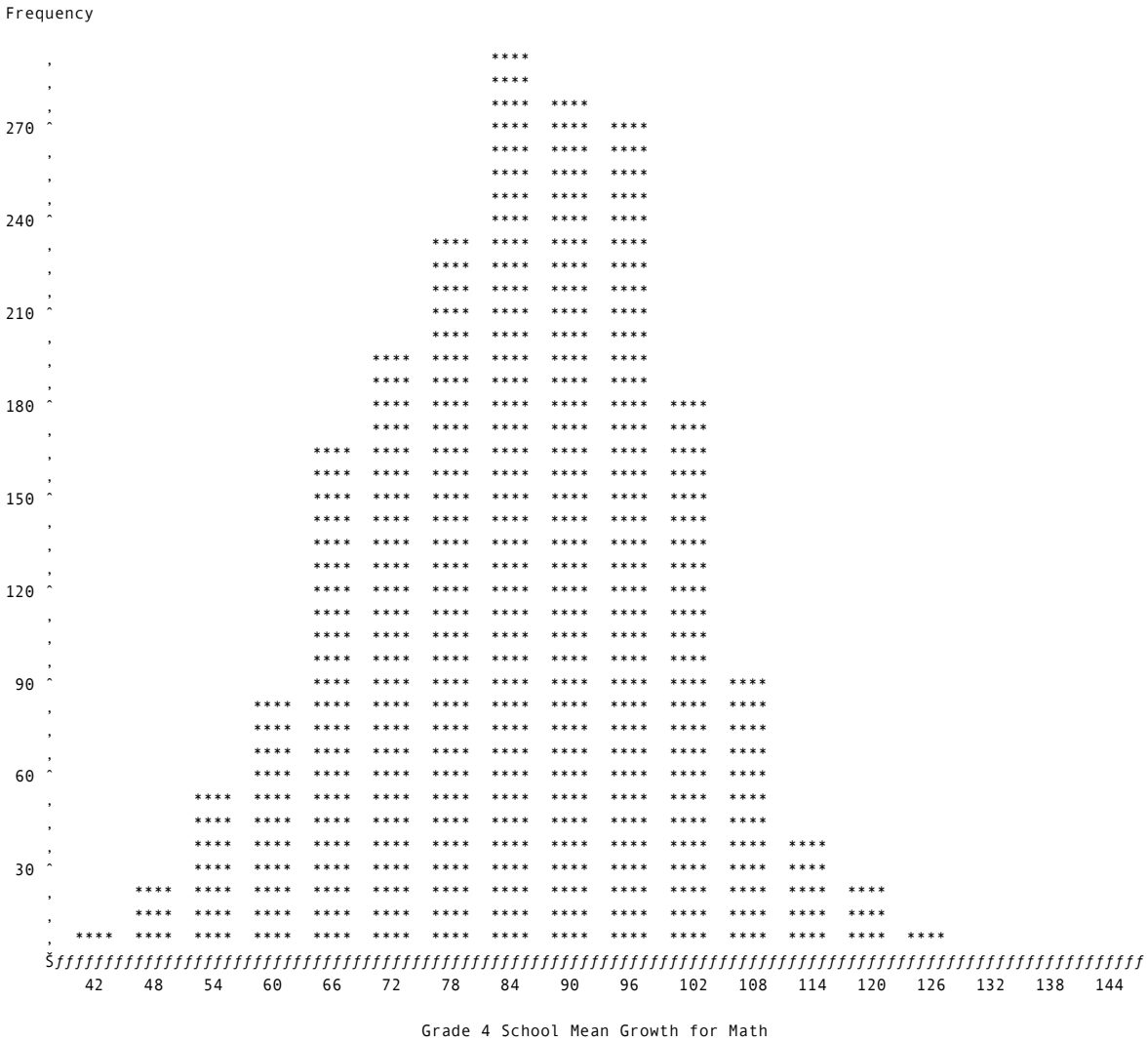
r= -0.41
p<.0001

Distribution by FRL Representation Quartile

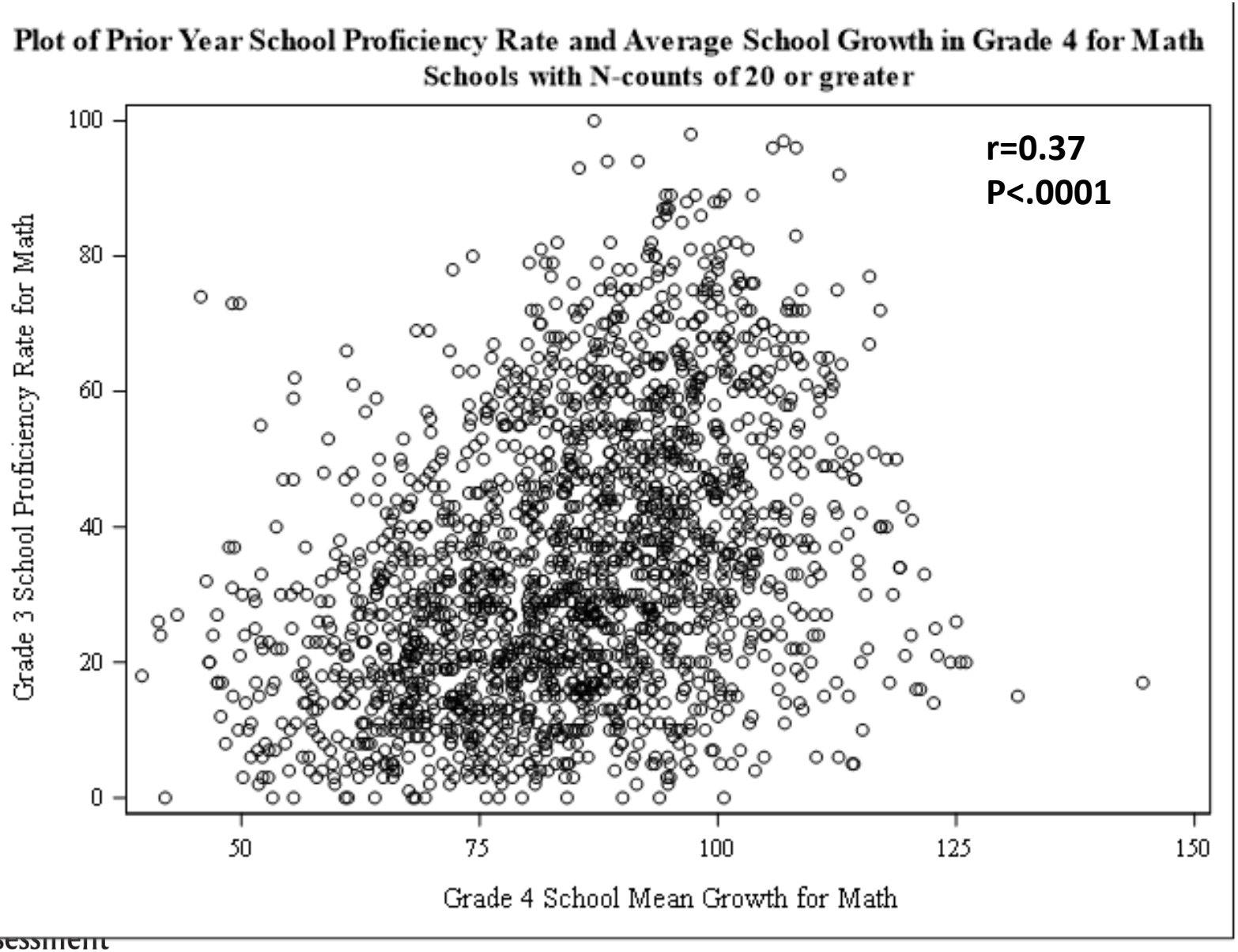


School Level Results
Grade 4 Math 2016

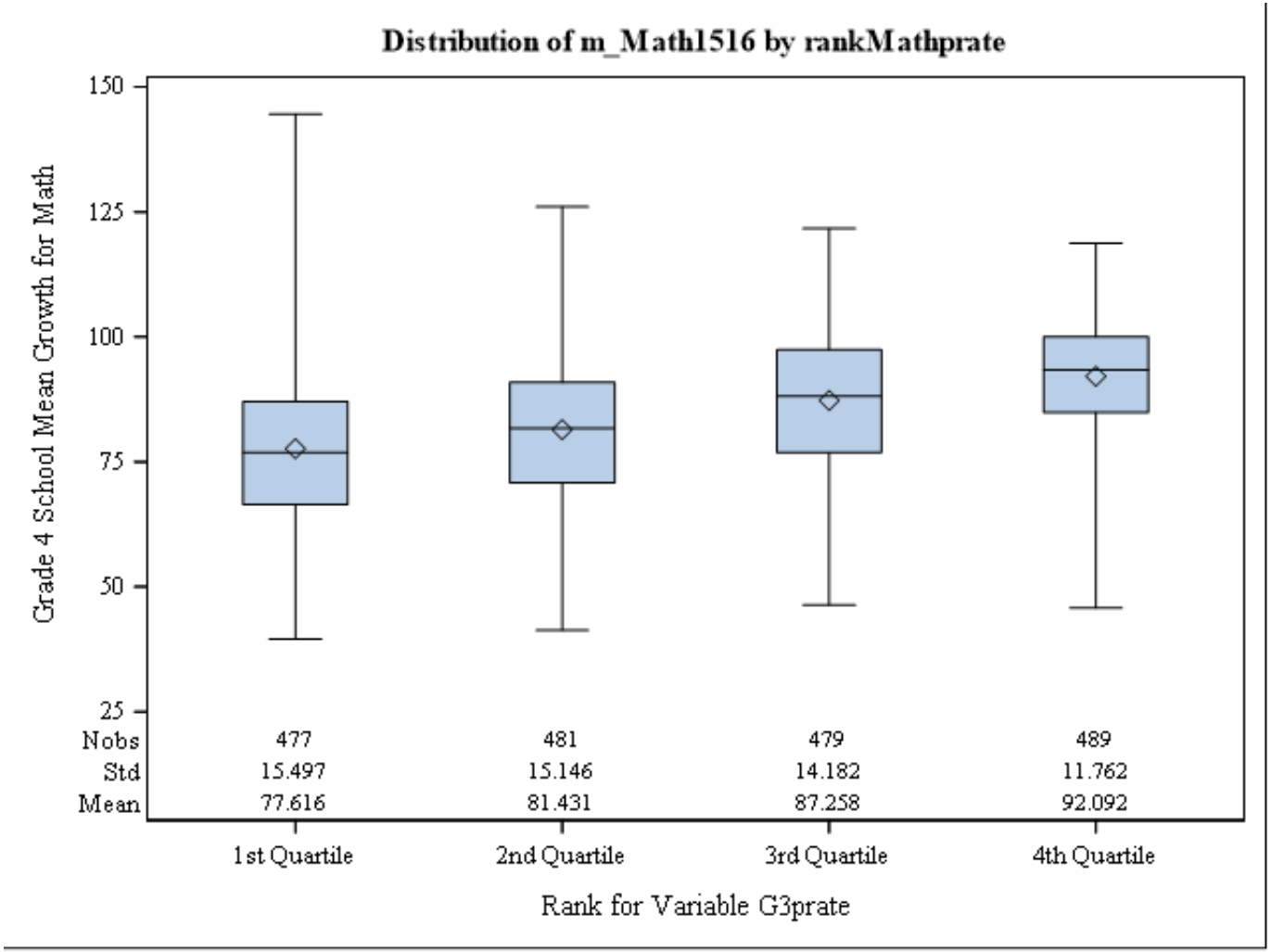
Grade 4 Math School Growth Distribution



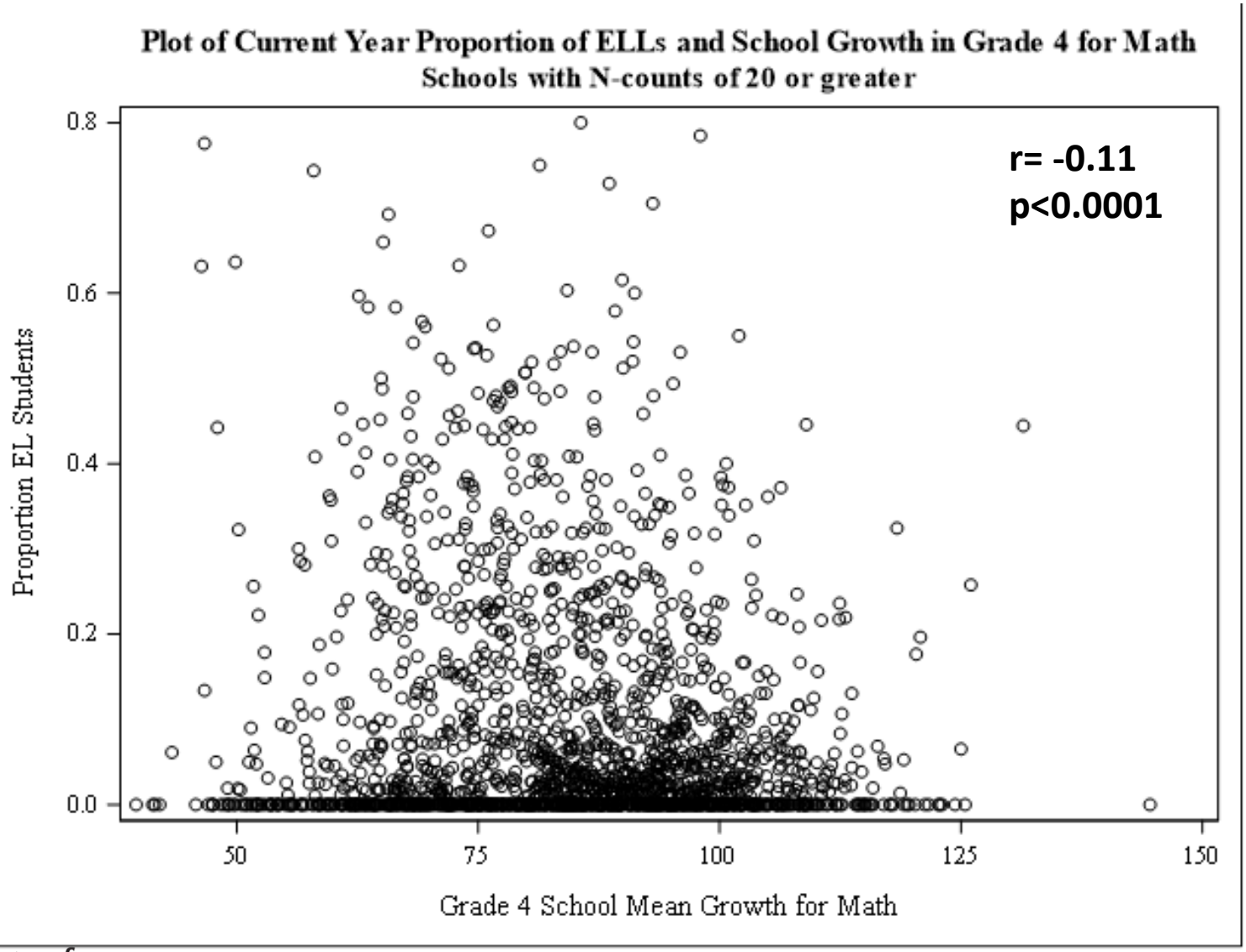
Correlation with Prior Year Percent Proficient



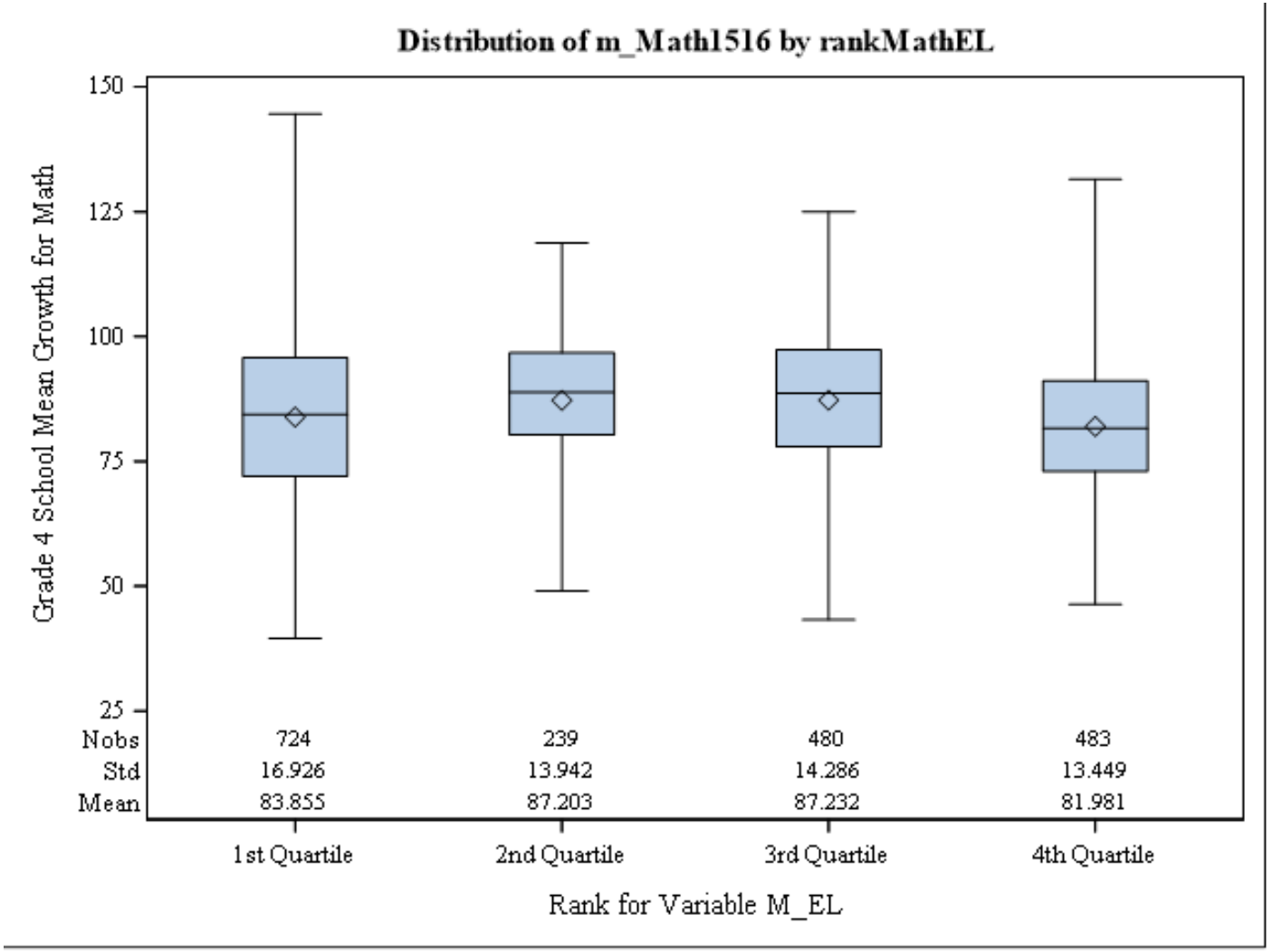
Distribution by Previous Percent Proficient Quartile



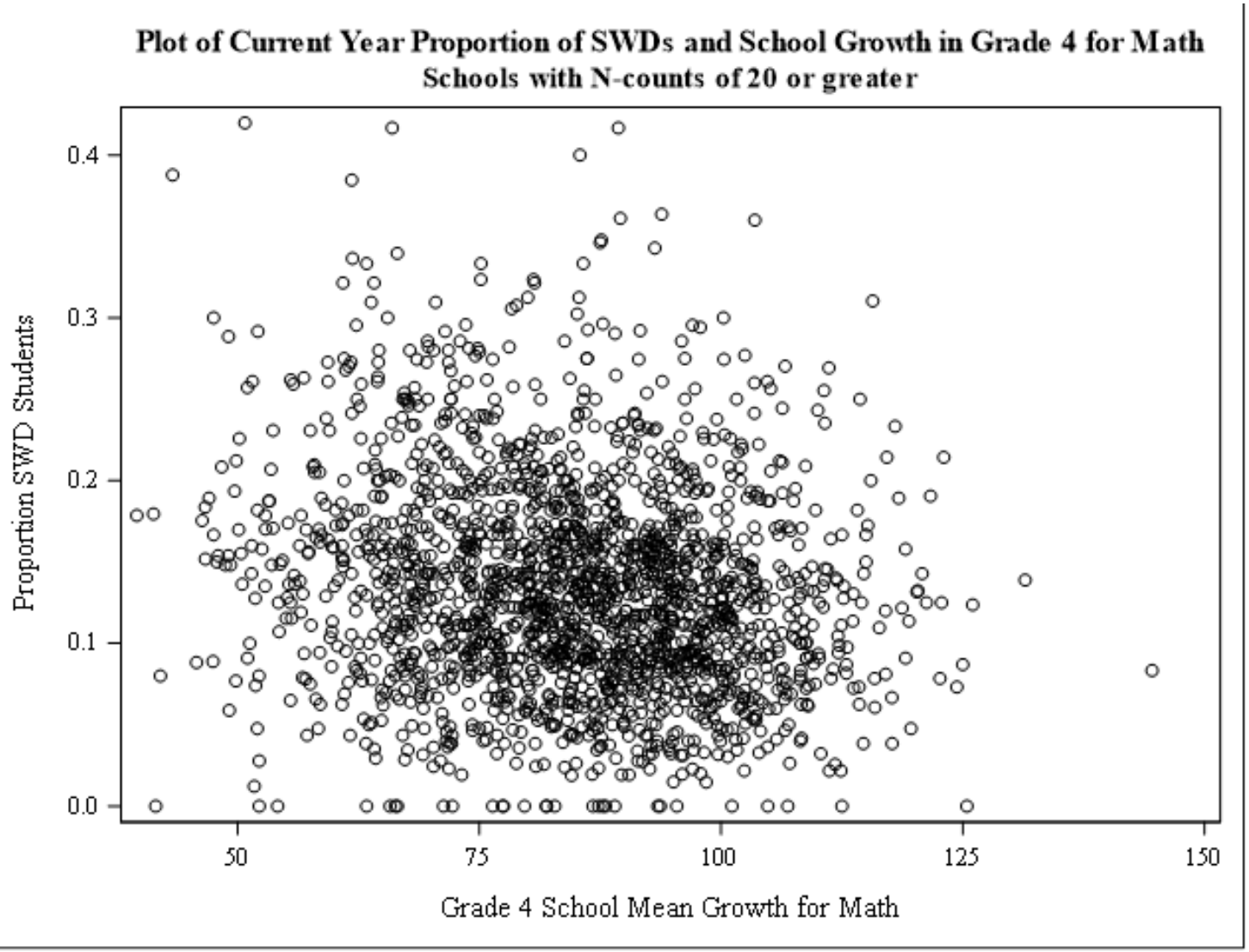
Relationship with EL Representation



Distribution by EL Representation Quartile

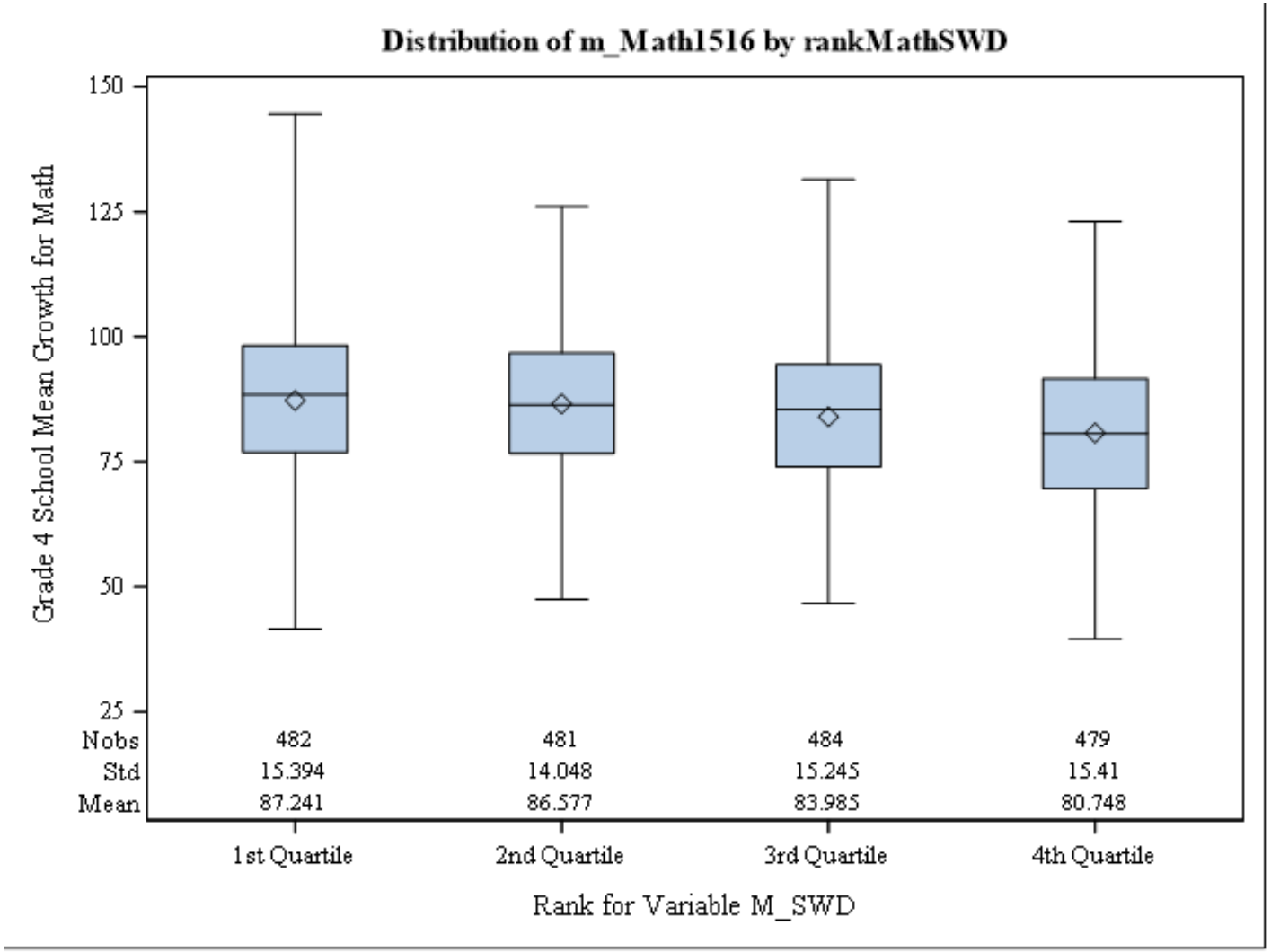


Relationship with SWD Representation

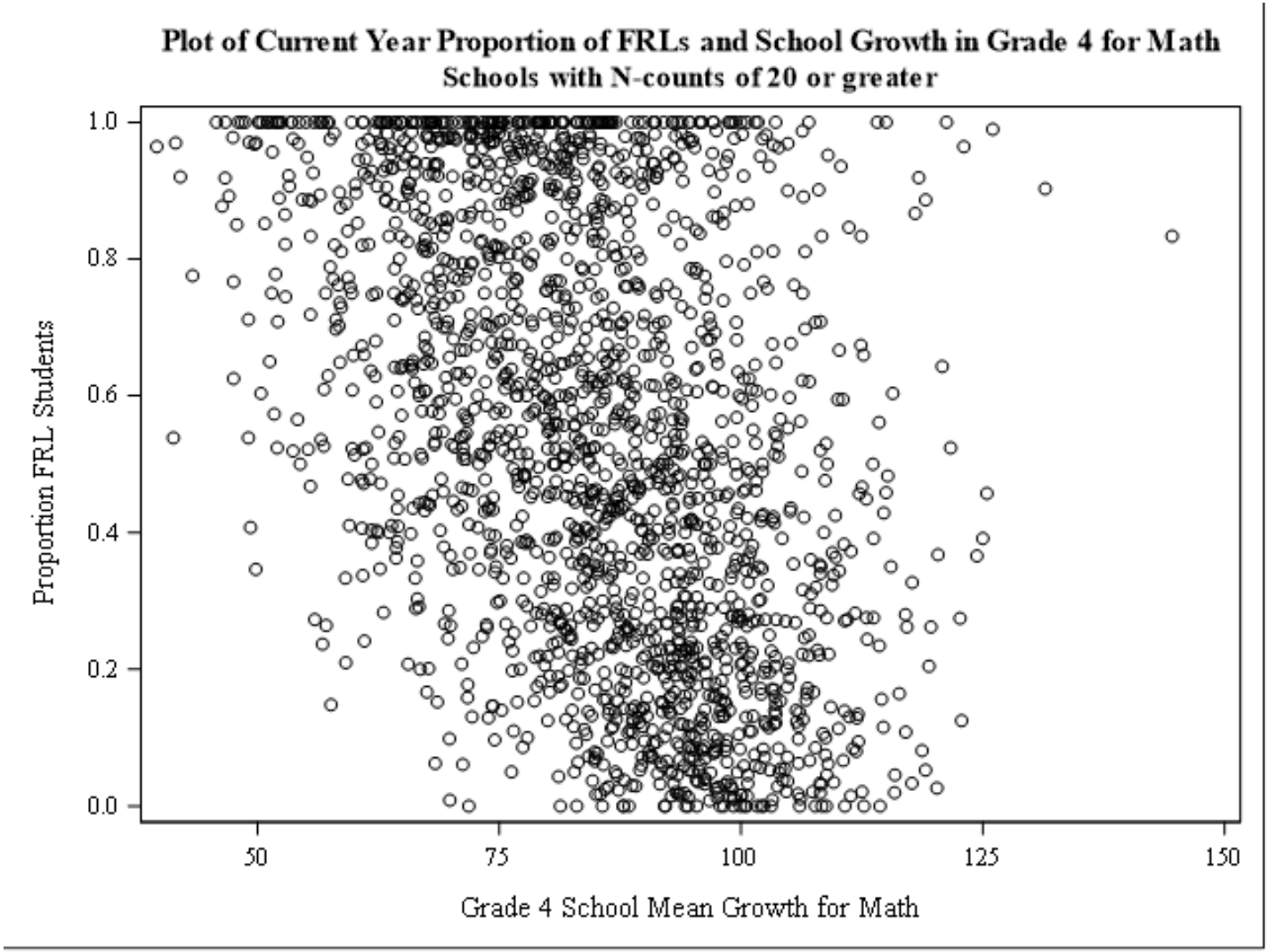


r= -.17
p<.0001

Distribution by SWD Representation Quartile

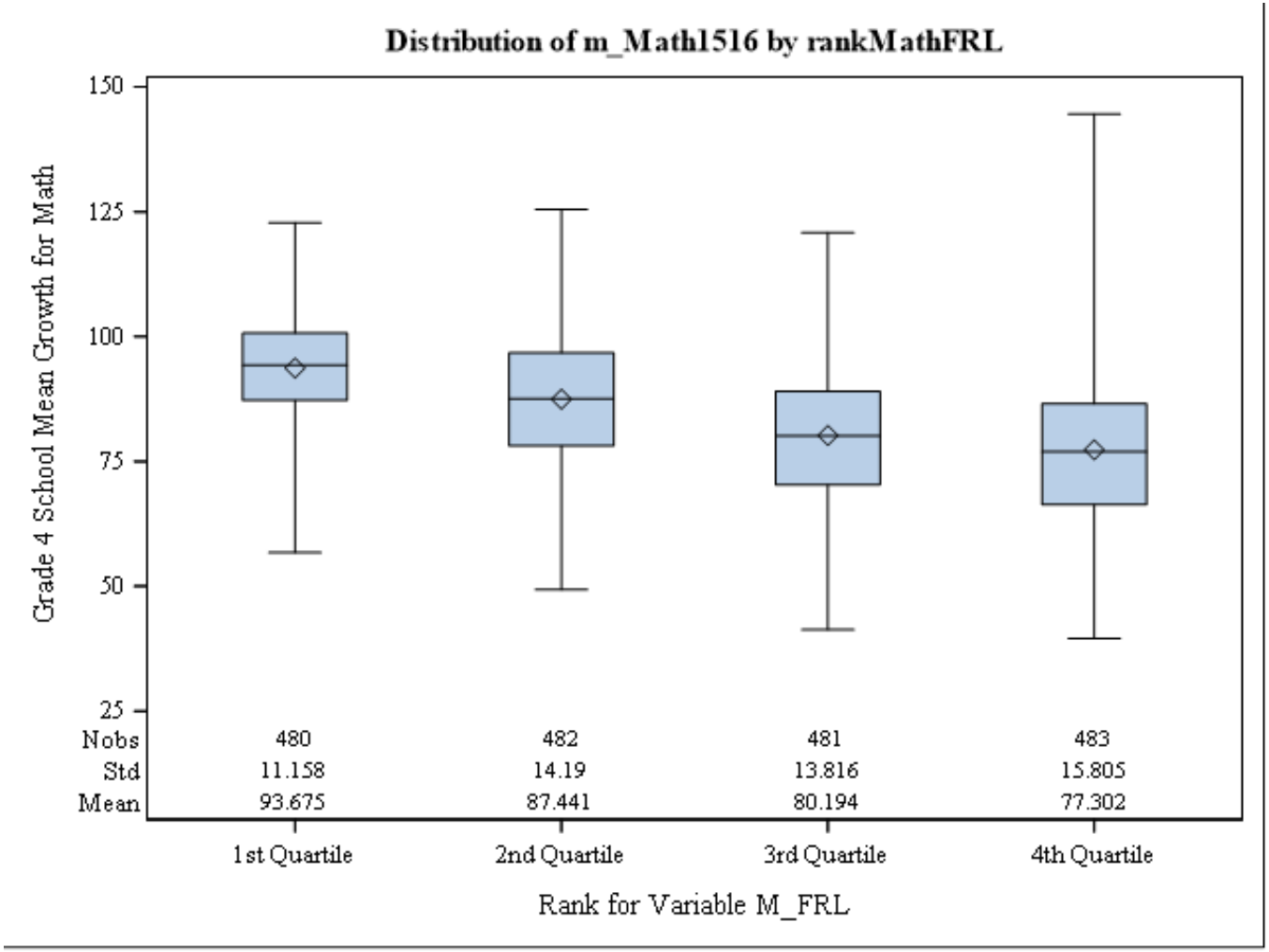


Relationship with FRL Representation



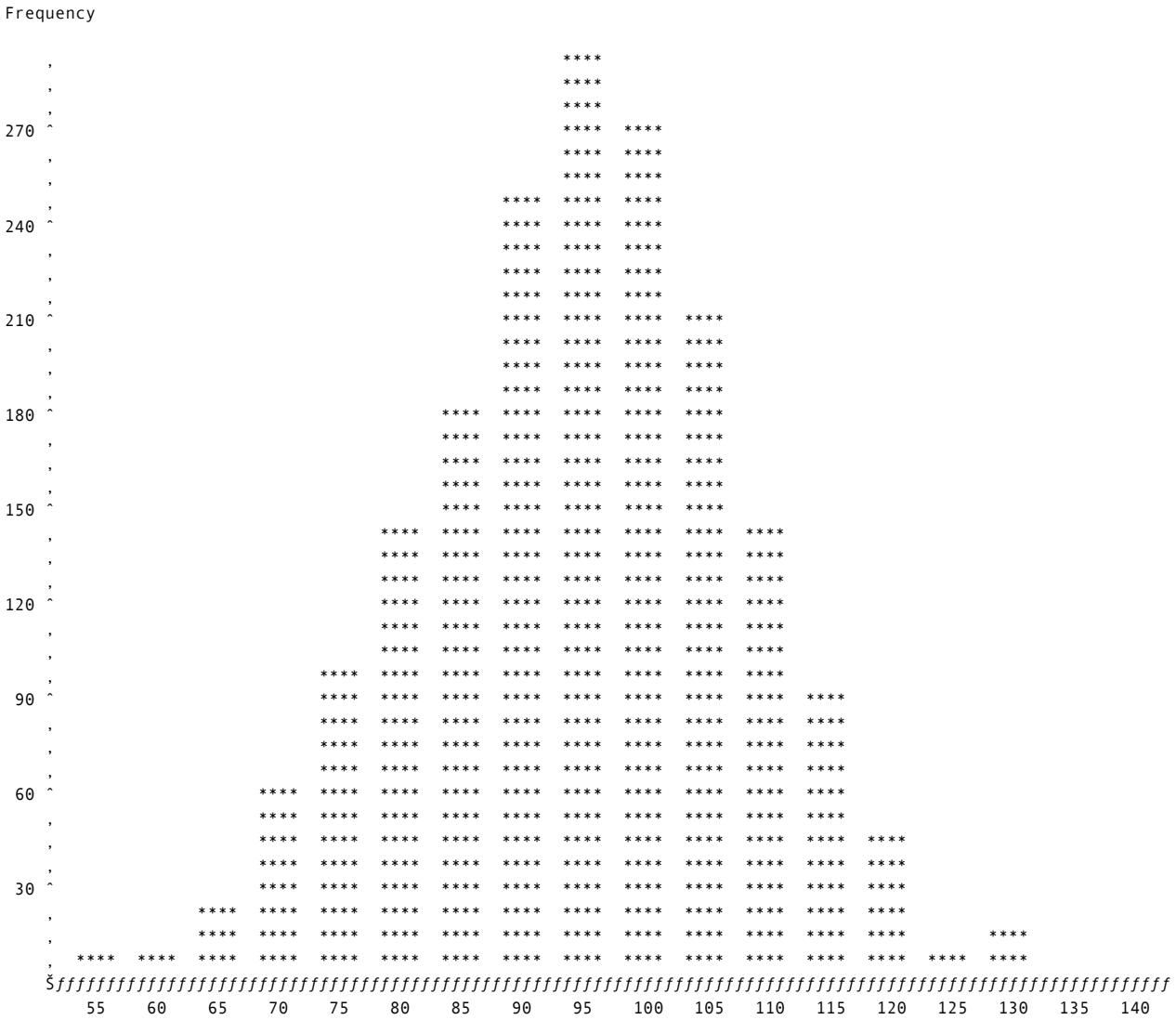
r= -0.44
p<.0001

Distribution by FRL Representation Quartile

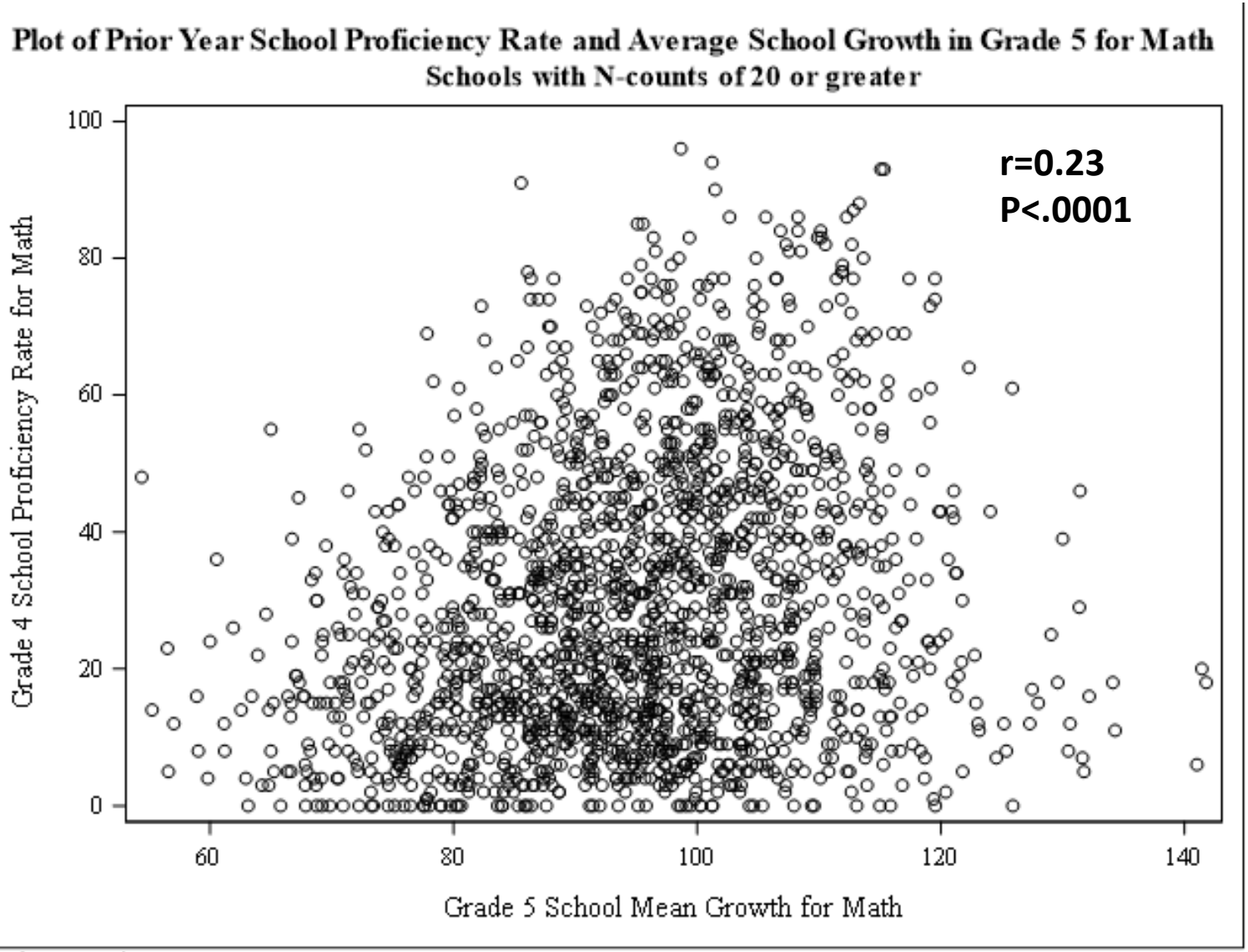


School Level Results
Grade 5 Math 2017

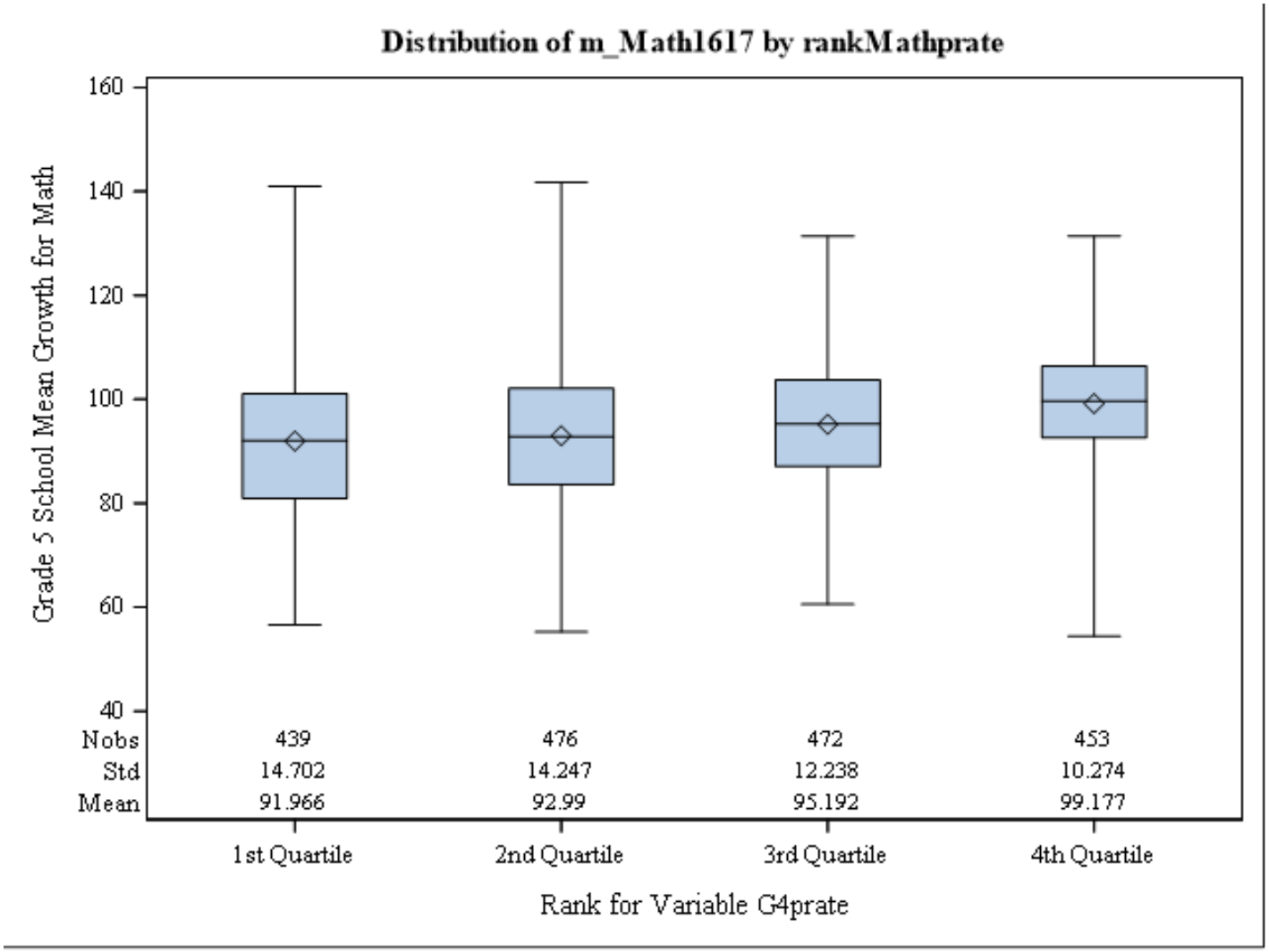
Grade 5 School Growth Distribution



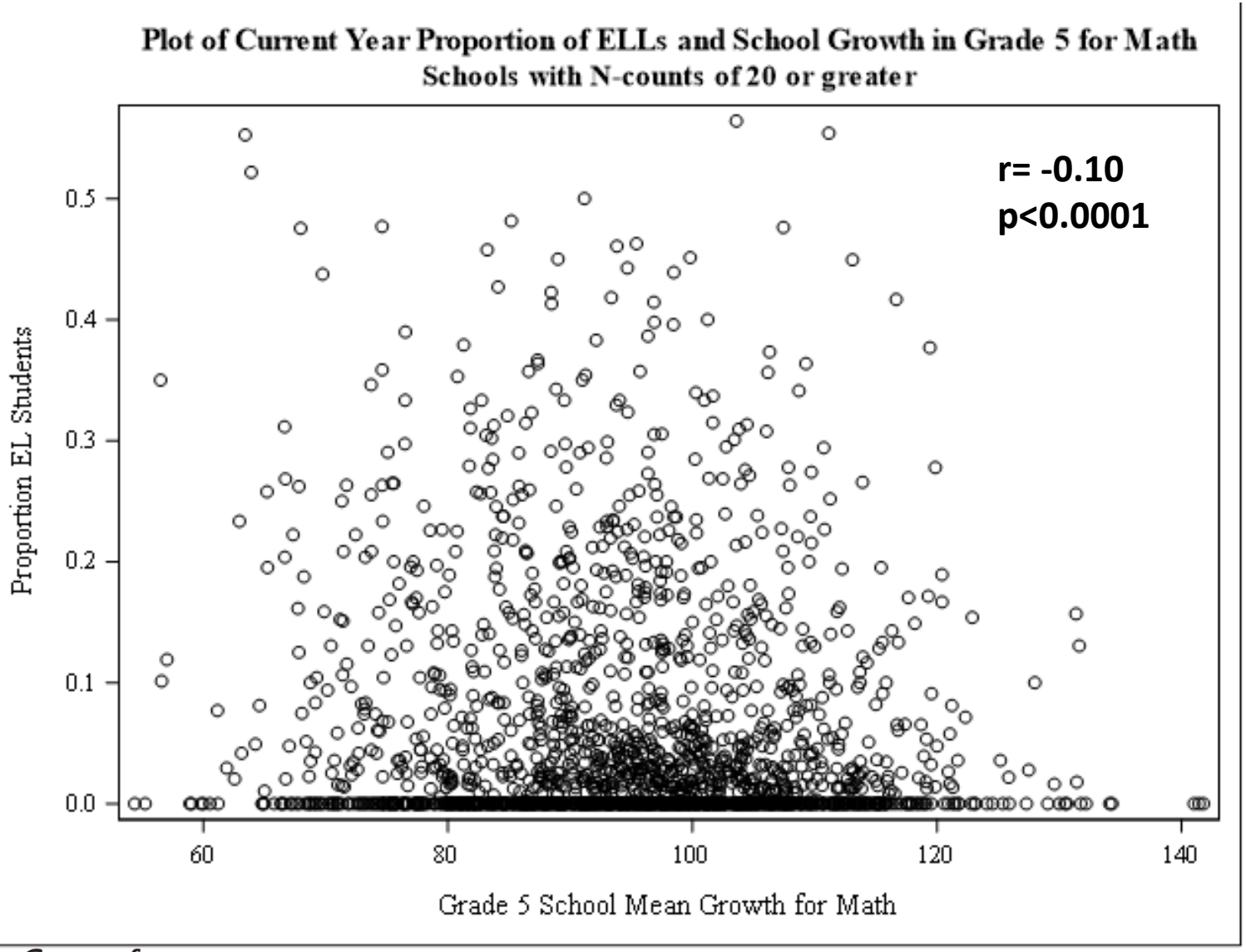
Correlation with Prior Year Percent Proficient



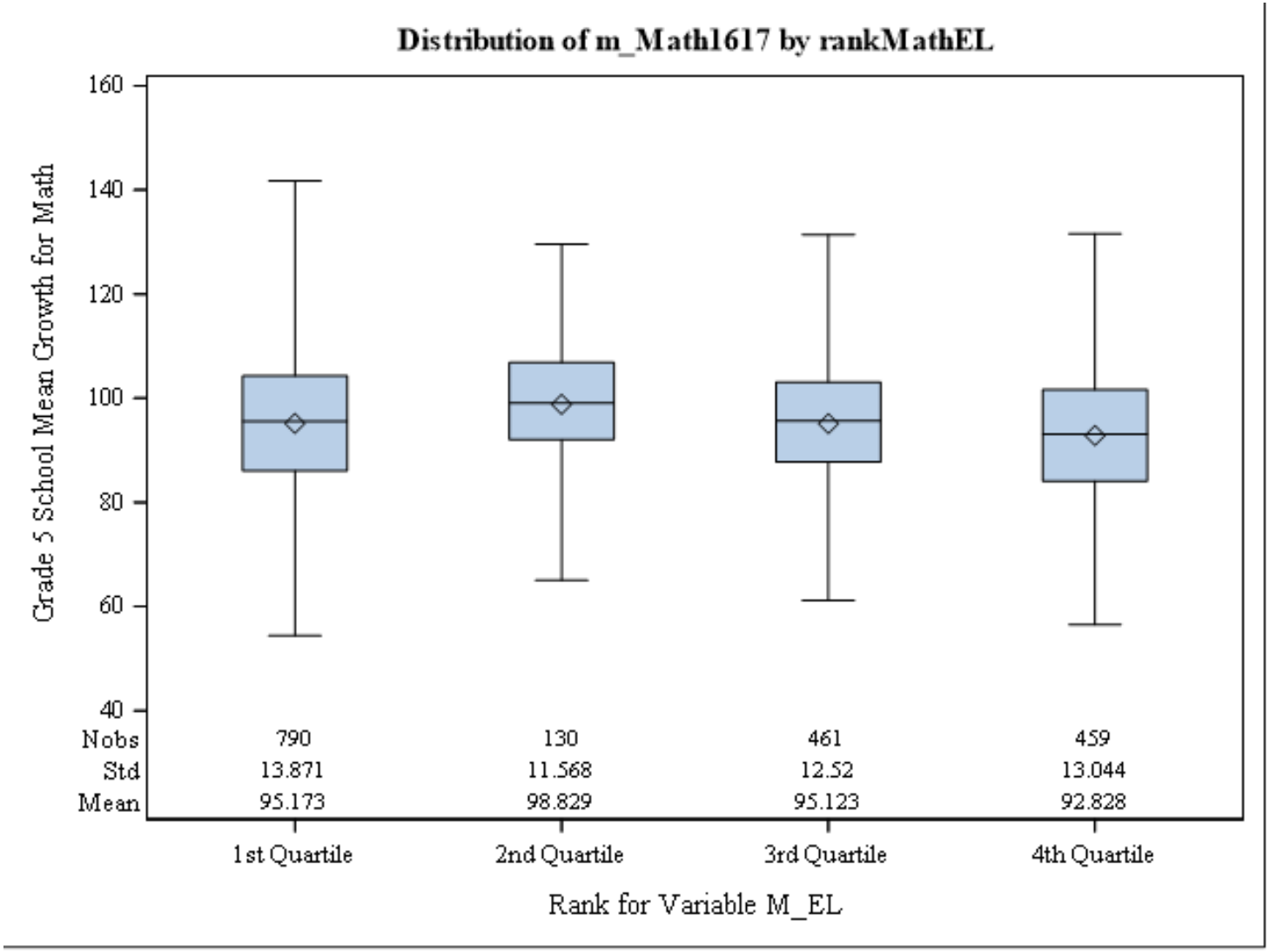
Distribution by Previous Percent Proficient Quartile



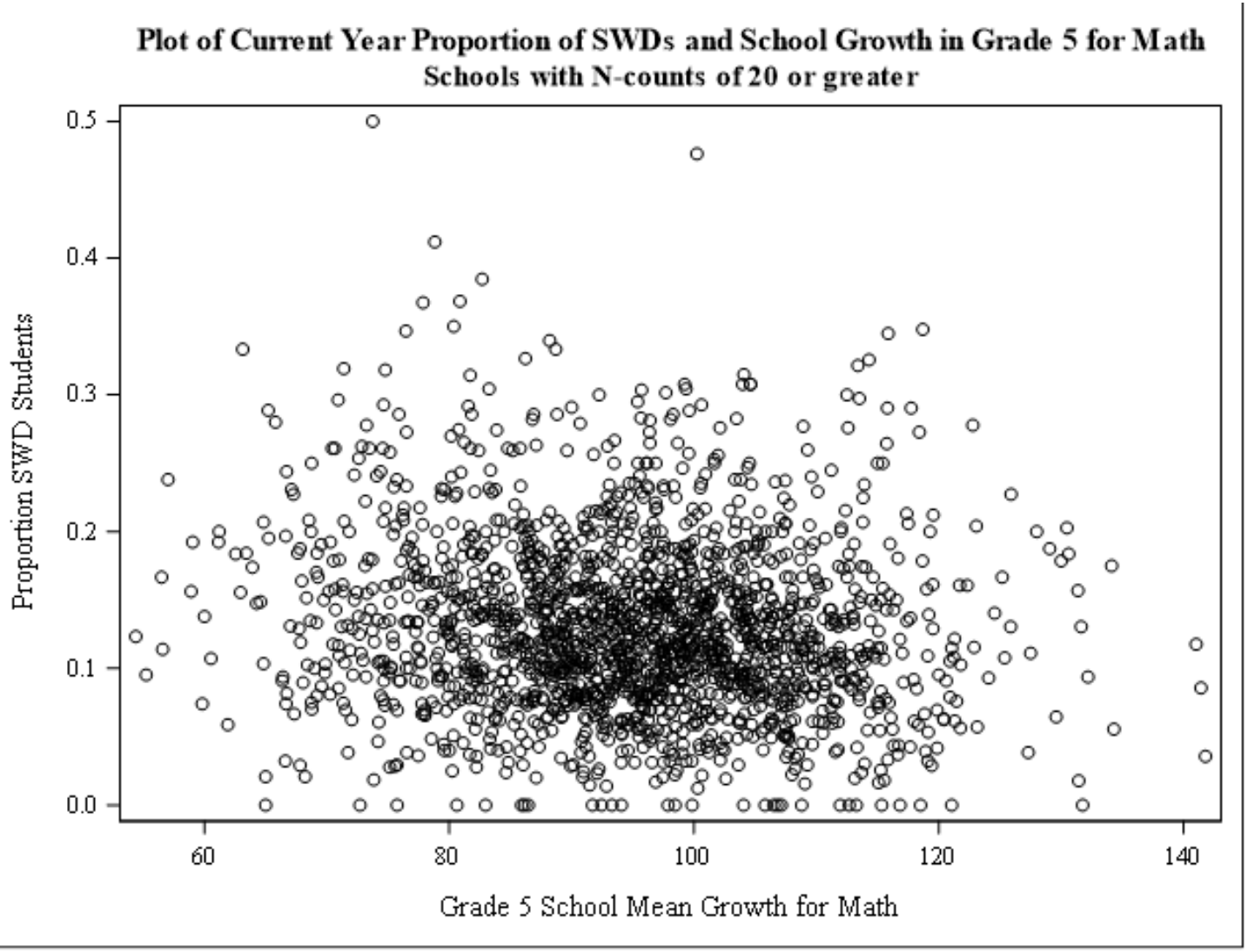
Relationship with EL Representation



Distribution by EL Representation Quartile

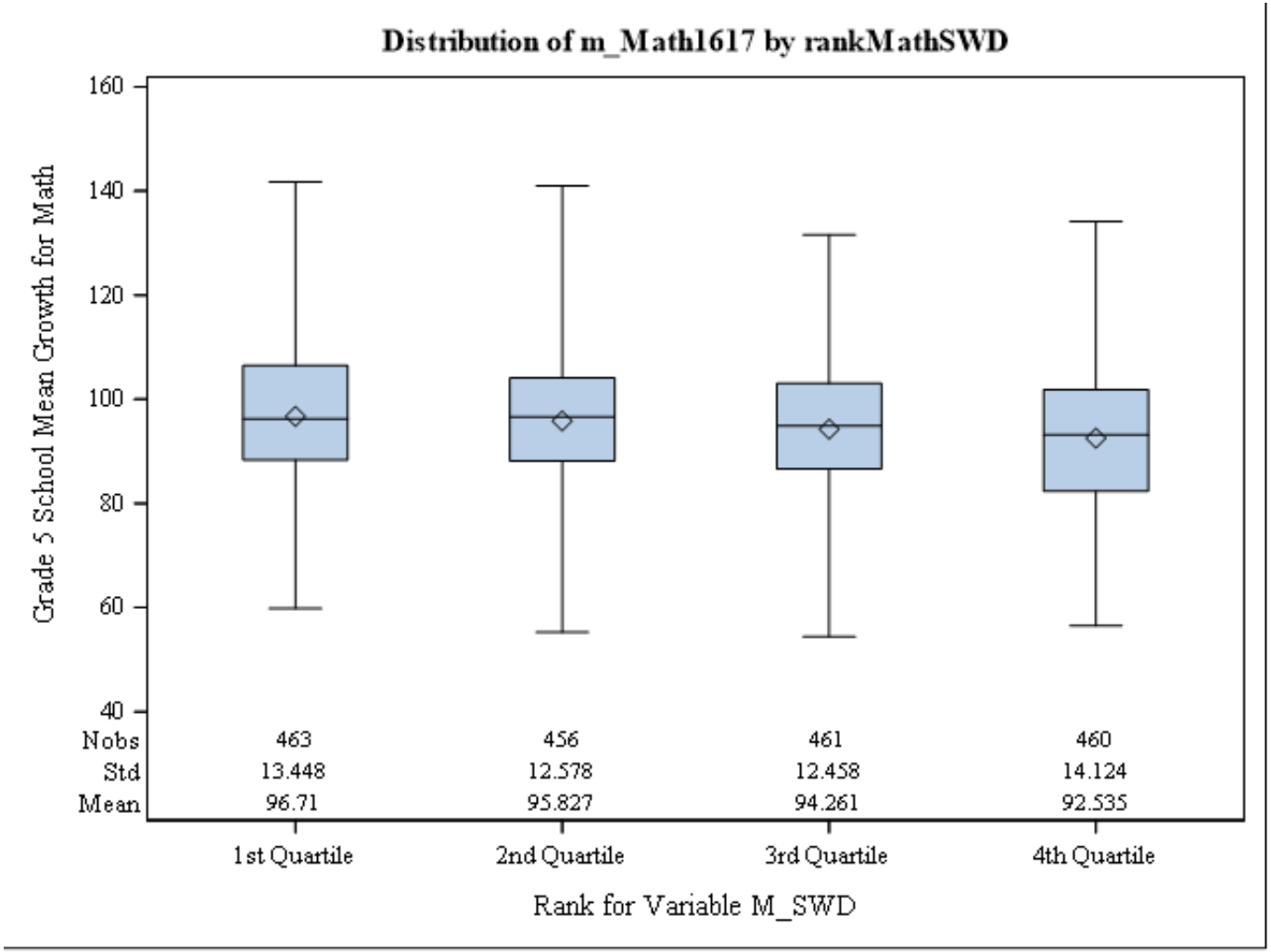


Relationship with SWD Representation

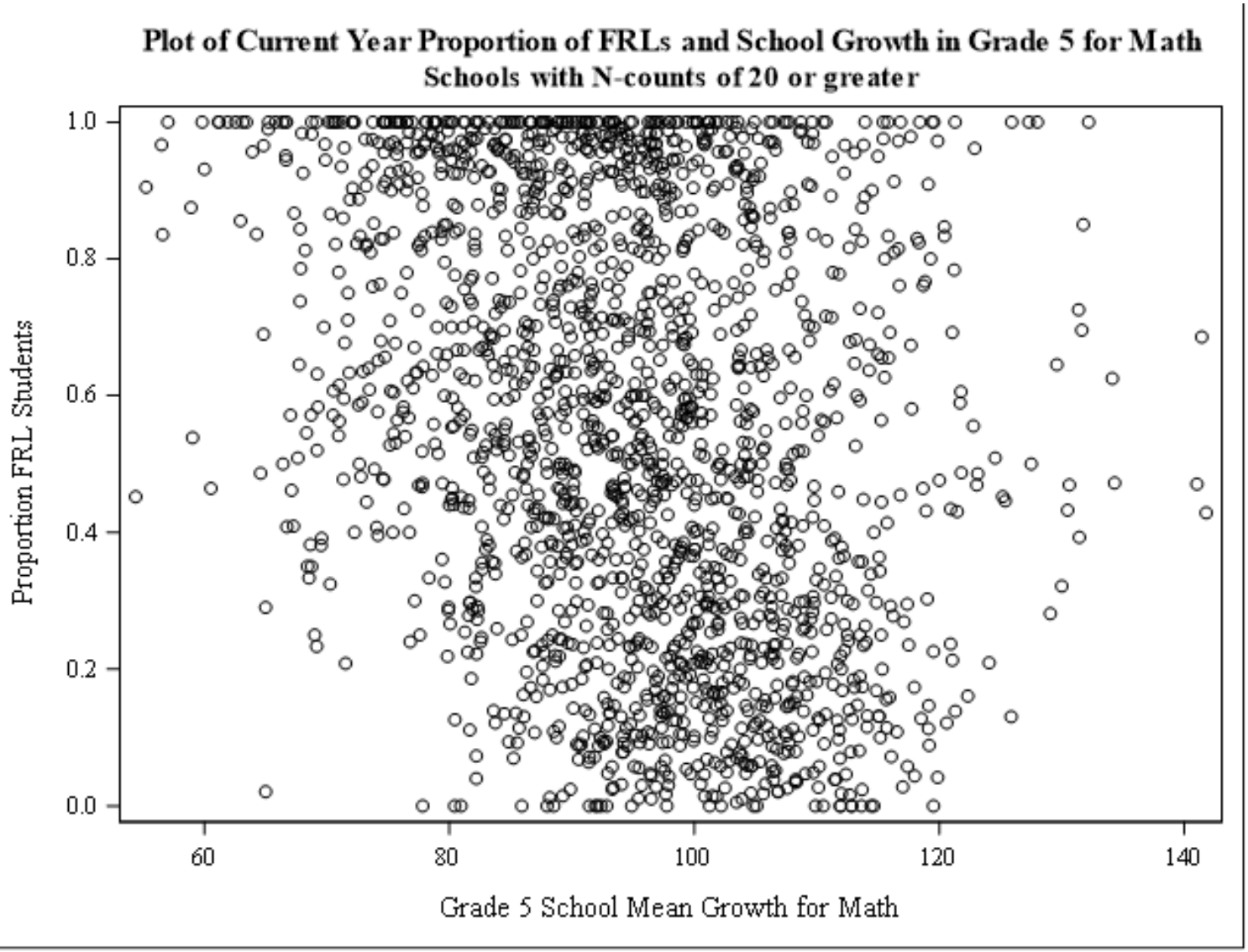


r= -0.13
p<.0001

Distribution by SWD Representation Quartile

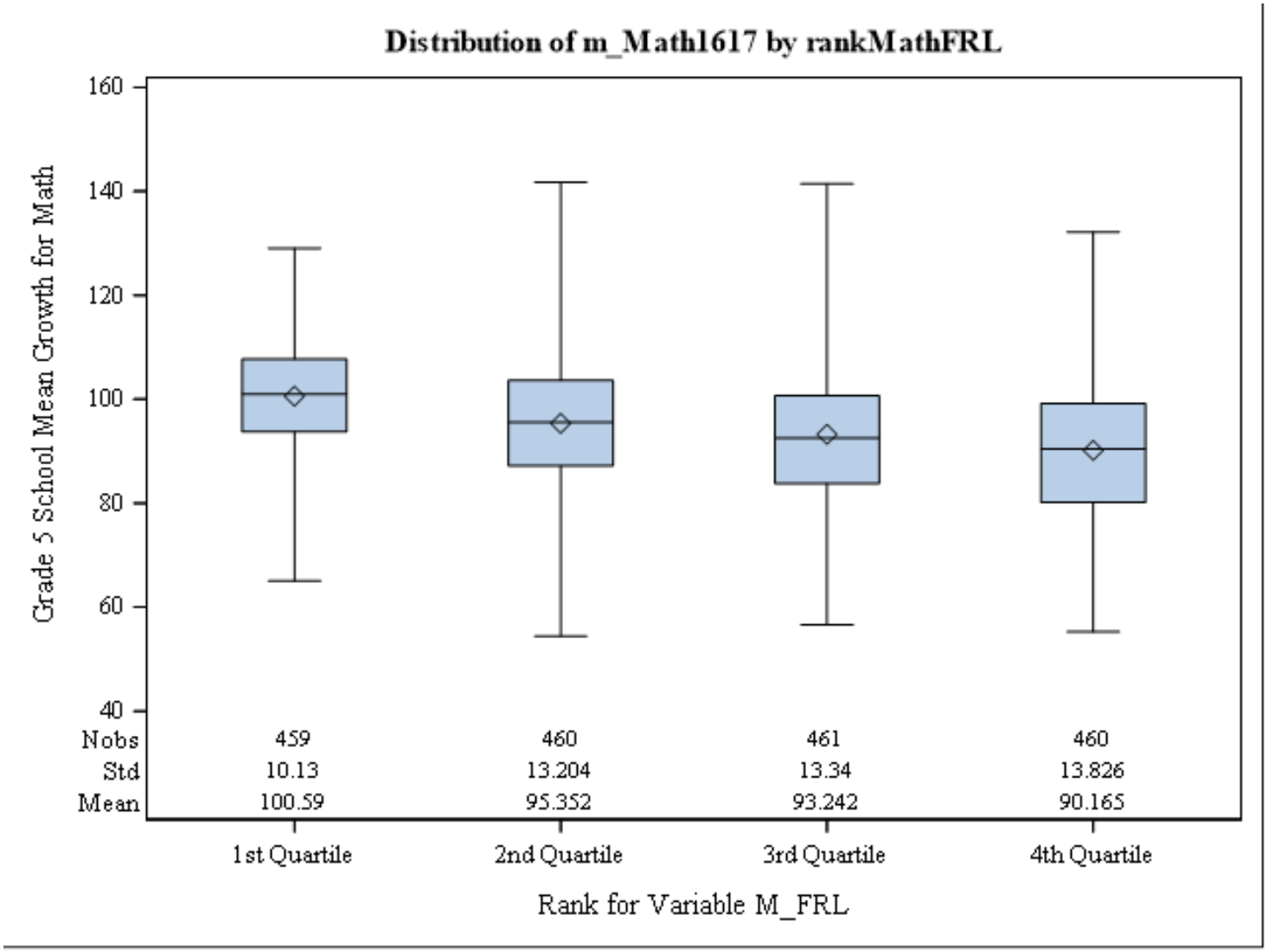


Relationship with FRL Representation

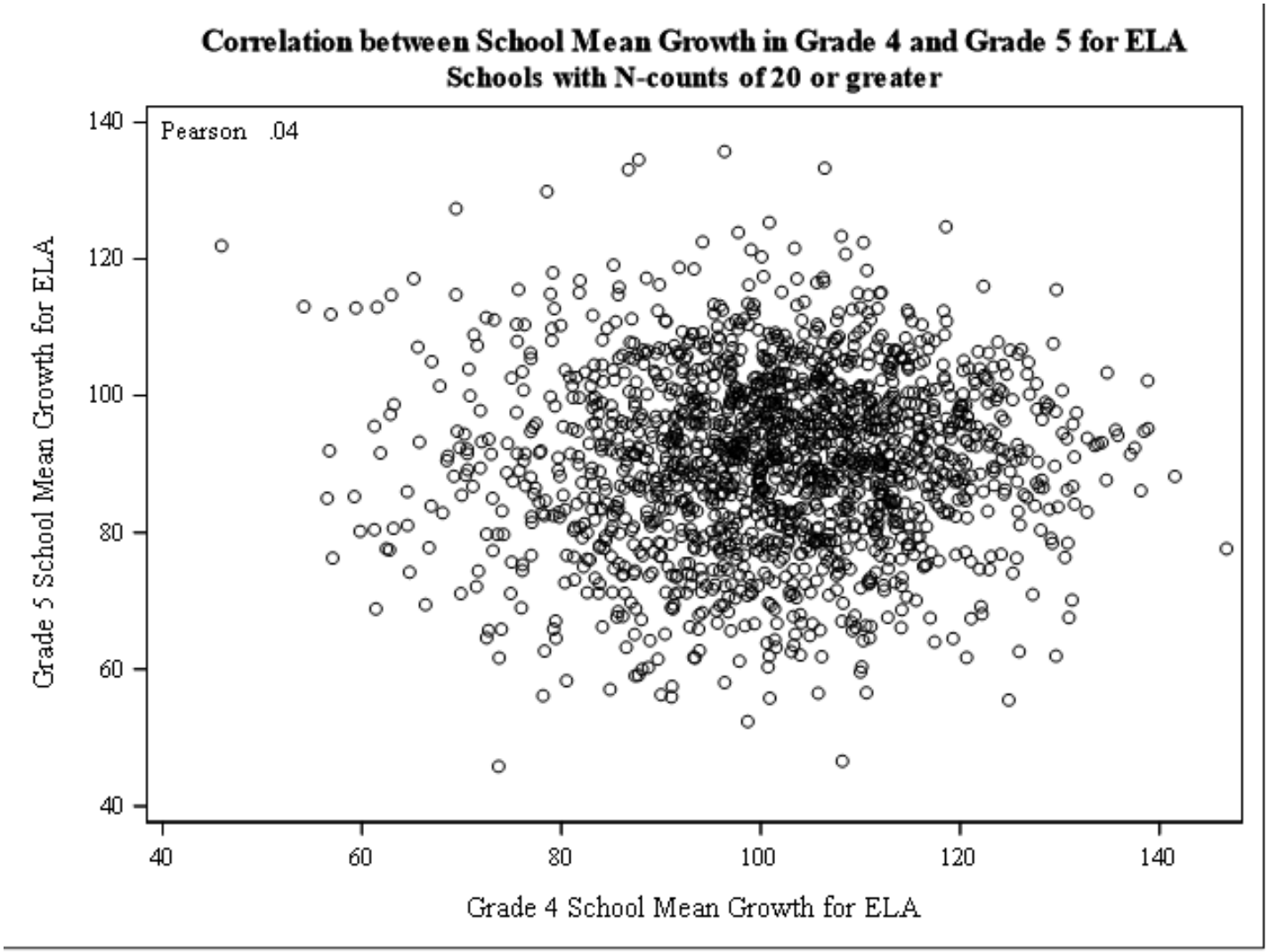


r= -0.29
p<.0001

Distribution by FRL Representation Quartile

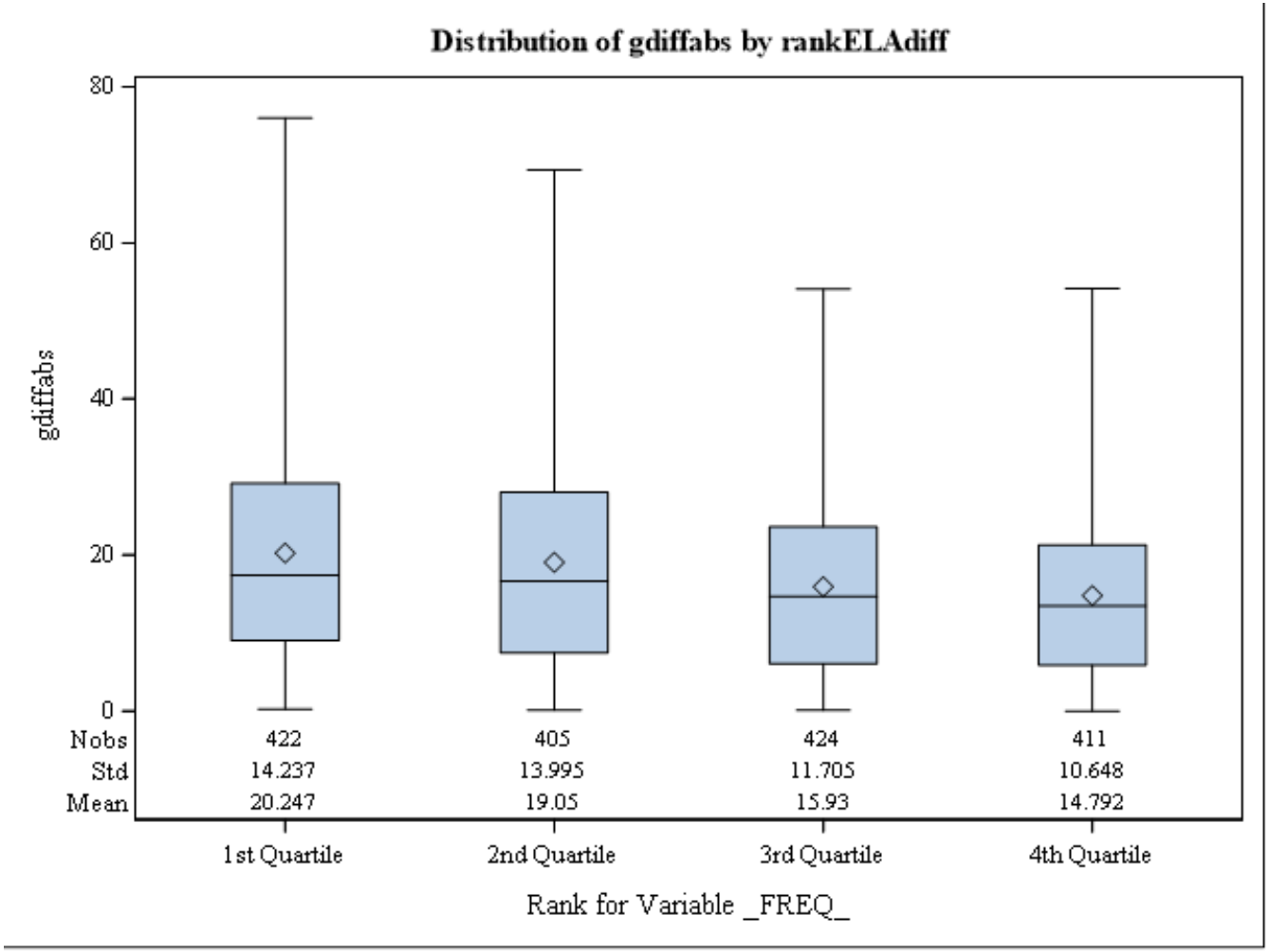


Grade 4 ELA 2016 and Grade 5 ELA 2017

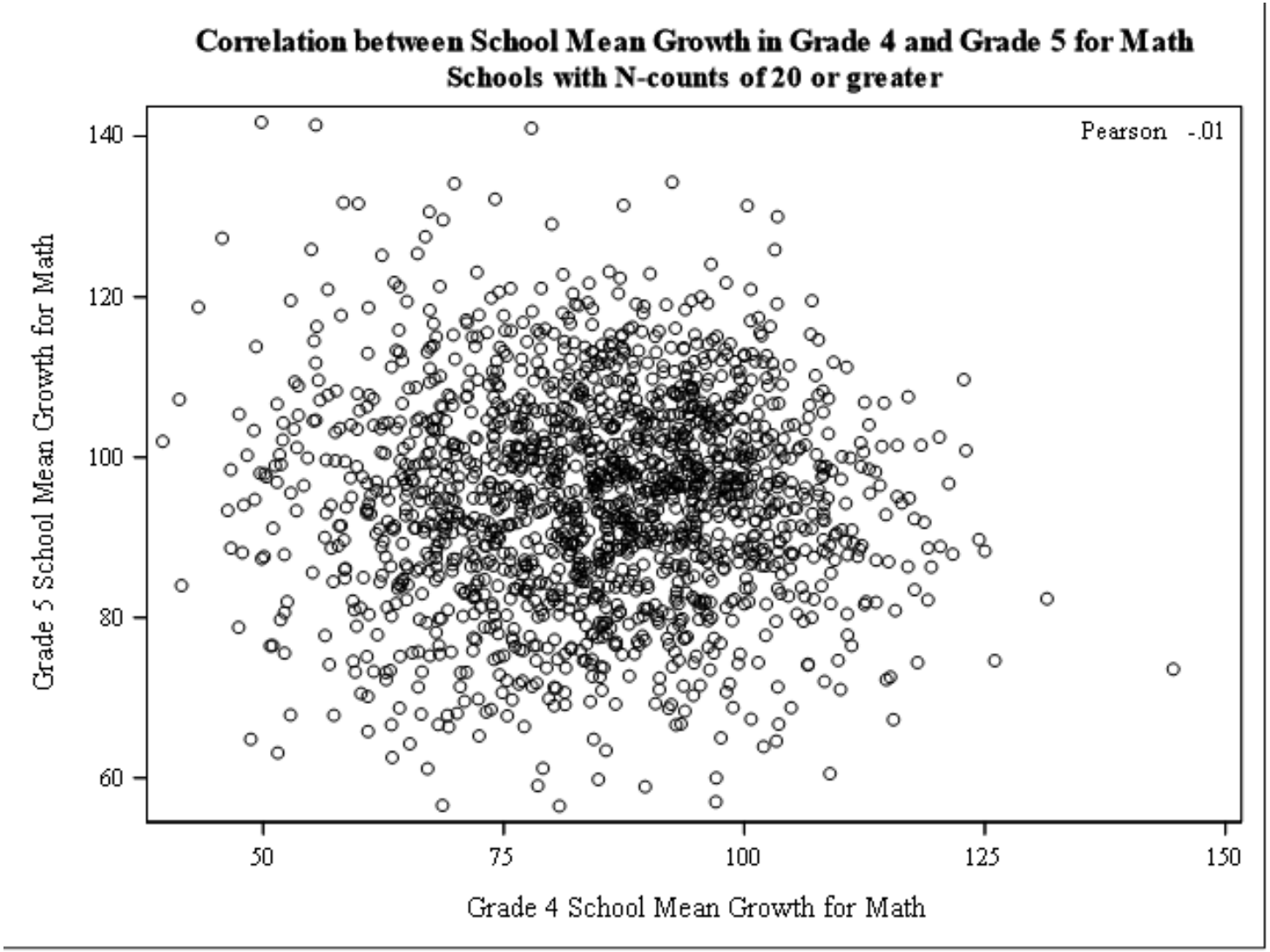


r = .03

Absolute Change in School Growth in ELA (Grade 4 to Grade 5) by School Size Quartile

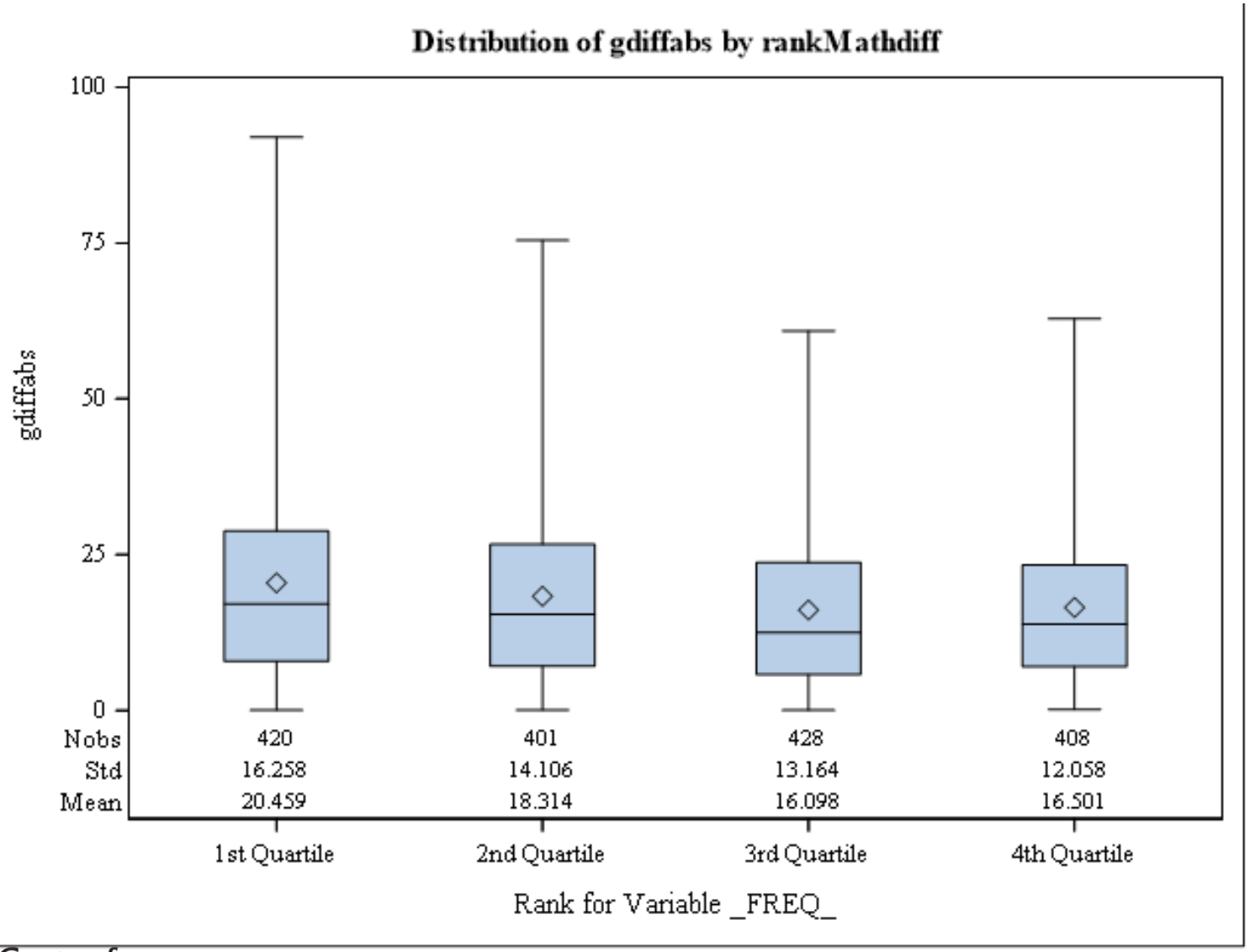


Grade 4 Math 2016 and Grade 5 Math 2017



r = -.01

Absolute Change in School Growth in Math(Grade 4 to Grade 5) by School Size Quartile

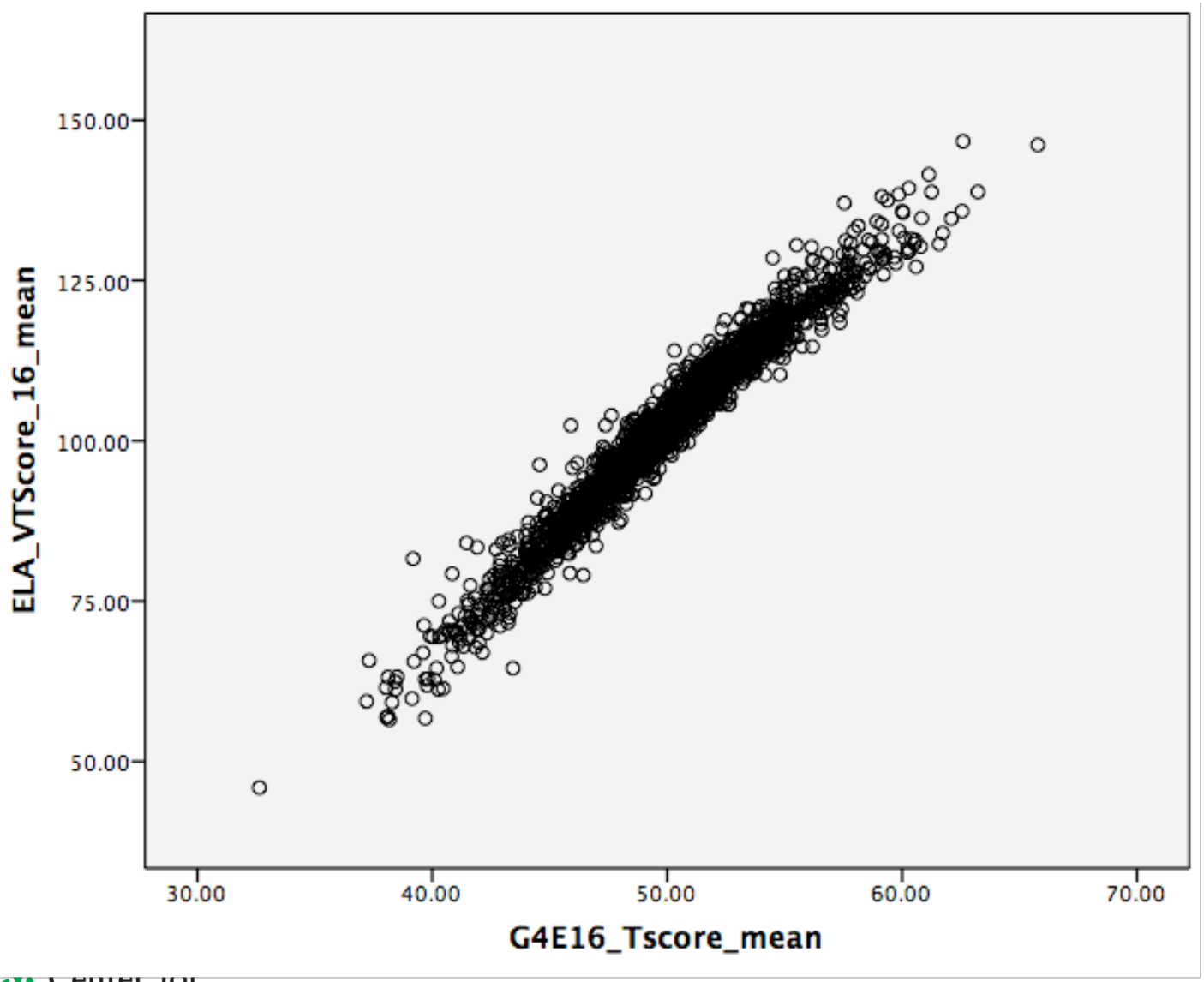


Comparison of Models

Student Level Correlation Between Models

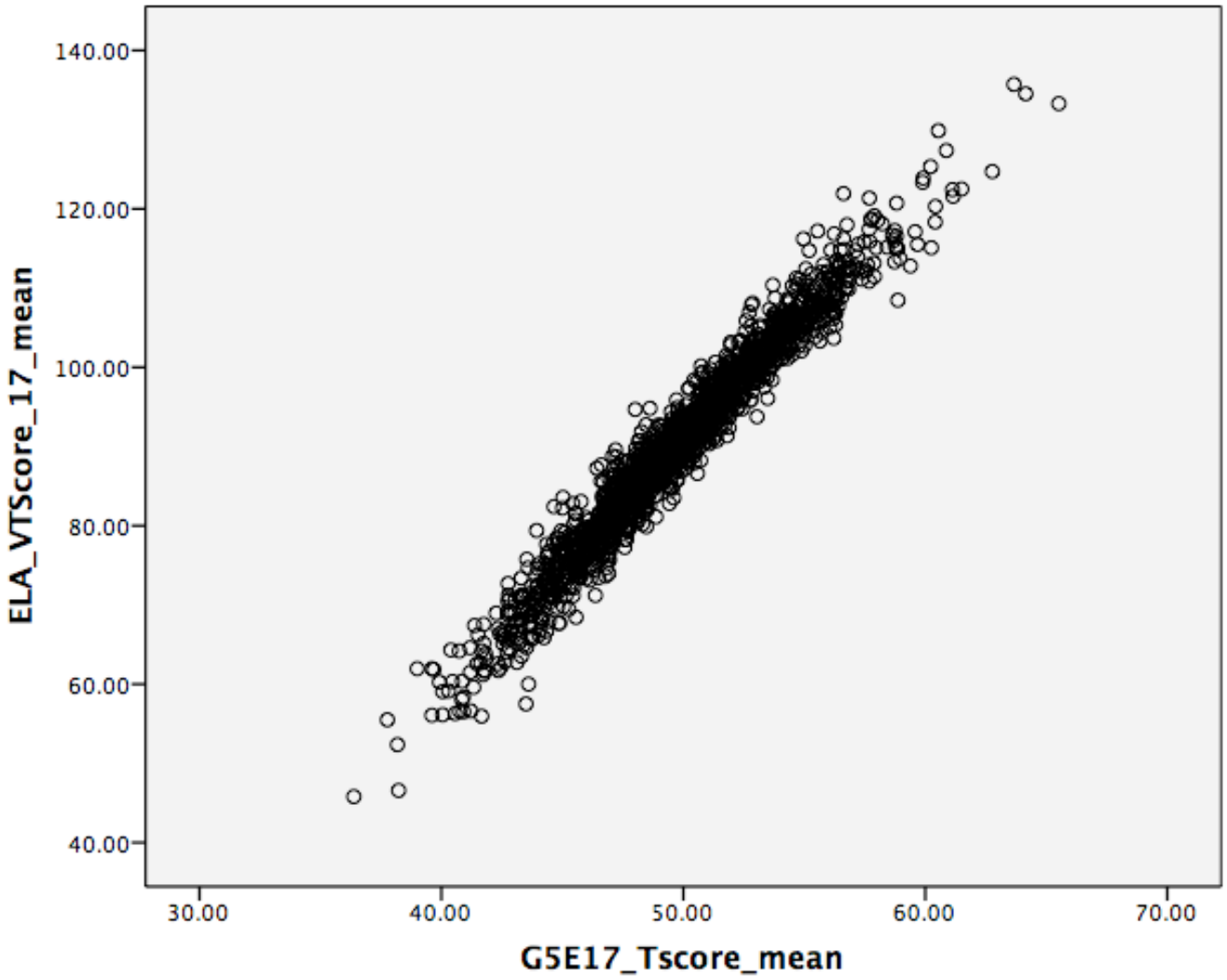
ELA Grade 4	0.903
ELA Grade 5	0.903
Math Grade 4	0.894
Math Grade 5	0.893

School Level Correlation – Grade 4 ELA



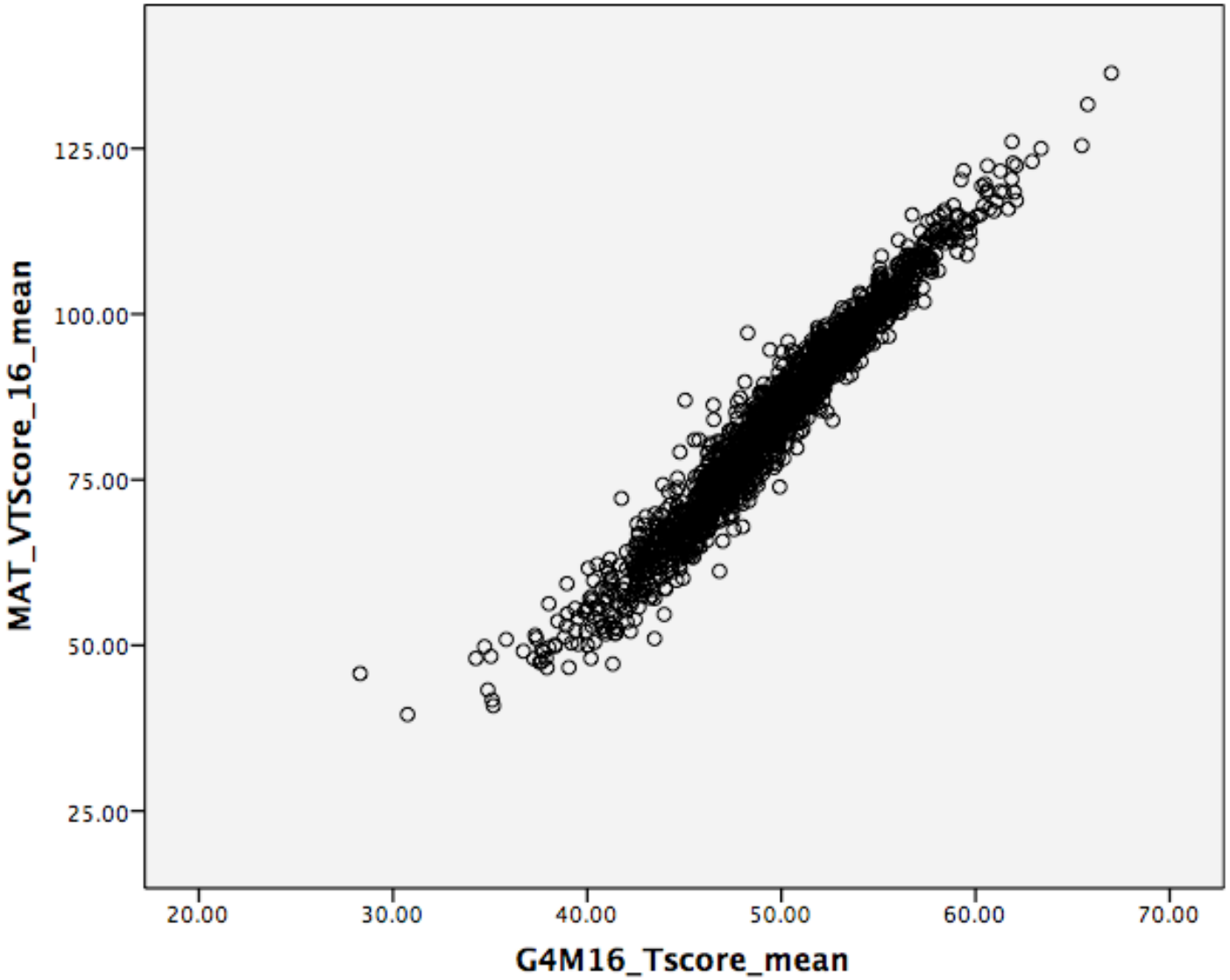
r=.98

School Level Correlation – Grade 5 ELA



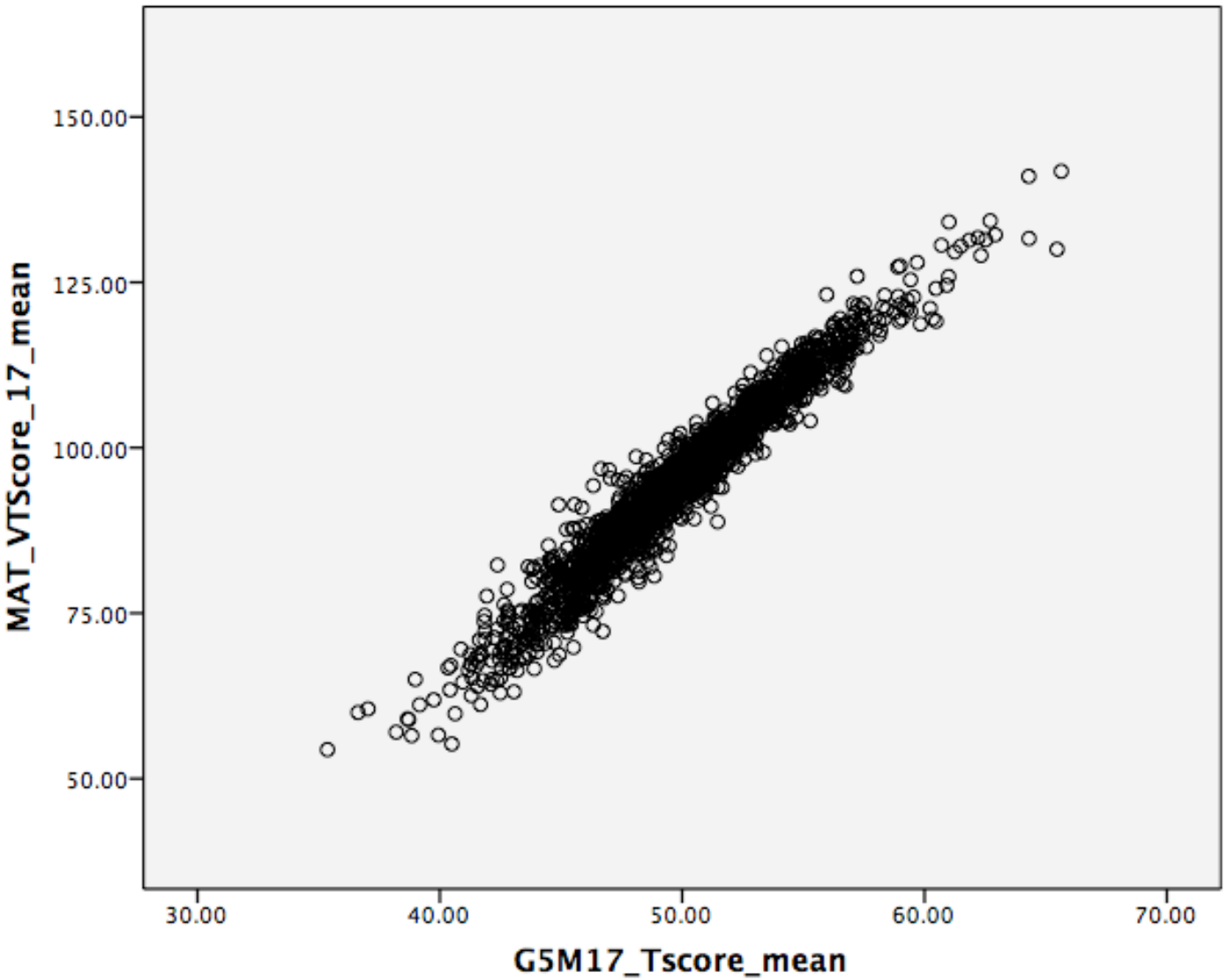
r=.98

School Level Correlation – Grade 4 Math



r=.98

School Level Correlation – Grade 5 Math



r=.97

Comparison of Correlation with Prior Status

	Regression	Value Table
Grade 4 ELA	0.22	0.21
Grade 5 ELA	0.29	0.32
Grade 4 Math	0.25	0.37
Grade 5 Math	0.13	0.23

Comparison of Correlation with EL %

	Regression	Value Table
Grade 4 ELA	−0.07	−0.06
Grade 5 ELA	−0.19	−0.19
Grade 4 Math	−0.07	−0.11
Grade 5 Math	−0.07	−0.1

Comparison of Correlation with SWD %

	Regression	Value Table
Grade 4 ELA	−0.13	−0.14
Grade 5 ELA	−0.15	−0.15
Grade 4 Math	−0.14	−0.17
Grade 5 Math	−0.09	−0.13

Comparison of Correlation with FRL %

	Regression	Value Table
Grade 4 ELA	−0.41	−0.39
Grade 5 ELA	−0.39	−0.41
Grade 4 Math	−0.36	−0.44
Grade 5 Math	−0.22	−0.29

Comparison of Year-to-Year Correlation (Reliability)

	Regression	Value Table
ELA	0.03	0.03
Math	−0.13	−0.01

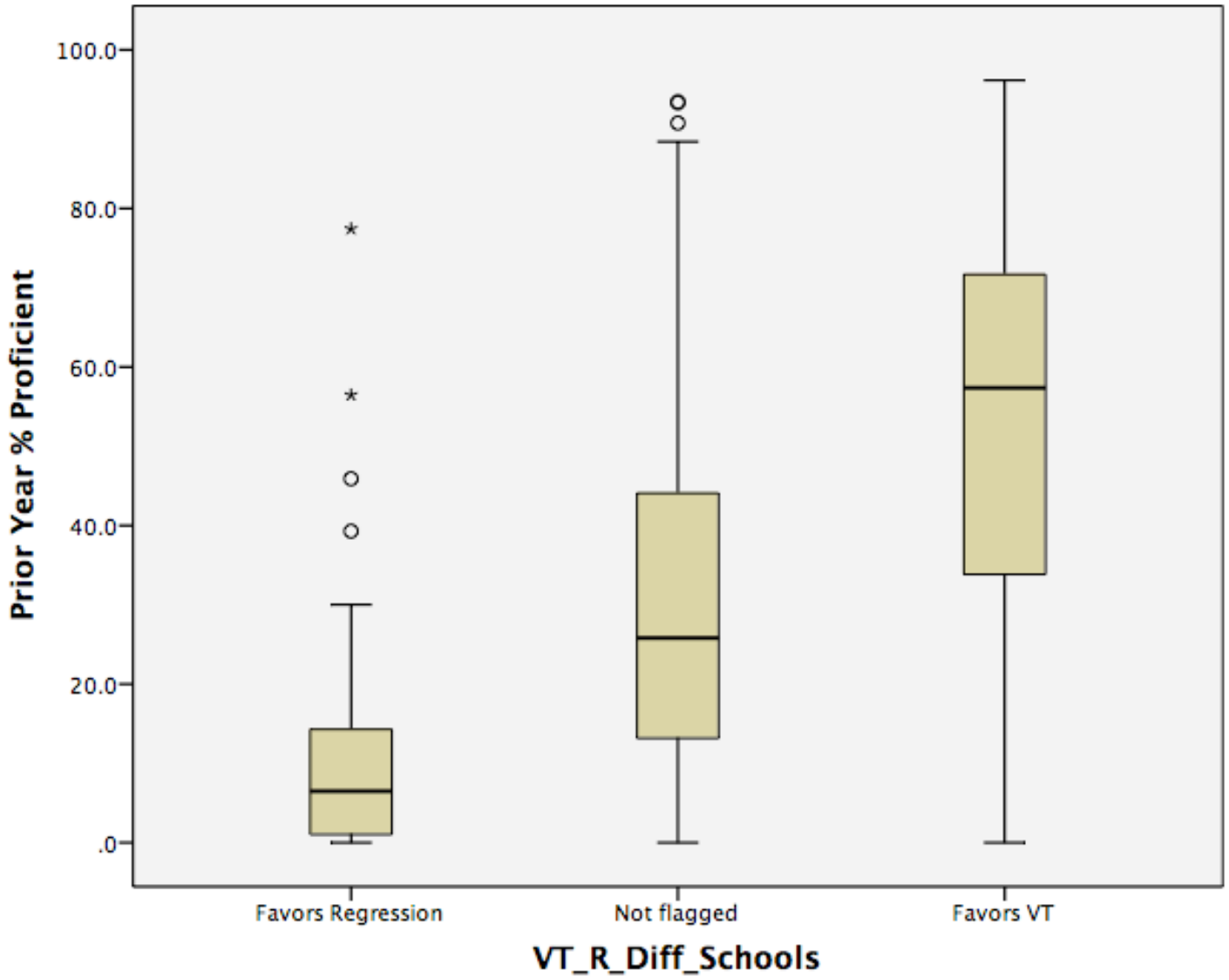
For which schools do models differ?

- We looked at schools for whom the models were most different
- Computed z scores for each of value table and regression growth scores in math 2017 only
- Identified schools that differed by .33 SD or more in one direction or another
  - VT Difference Schools: Z score of VT was .33 or more greater than R schools (i.e. model favors VT in relative standings)
  - R Difference Schools: Z score of VT was -.33 or more less than R schools (i.e. model favors R in relative standings)
- *Important note, the results were very similar across both models. Even for schools flagged as 'difference schools,' the models were consistent in reporting favorable or unfavorable performance. These analyses detect differences in relative standing or ordering of the schools across models.*

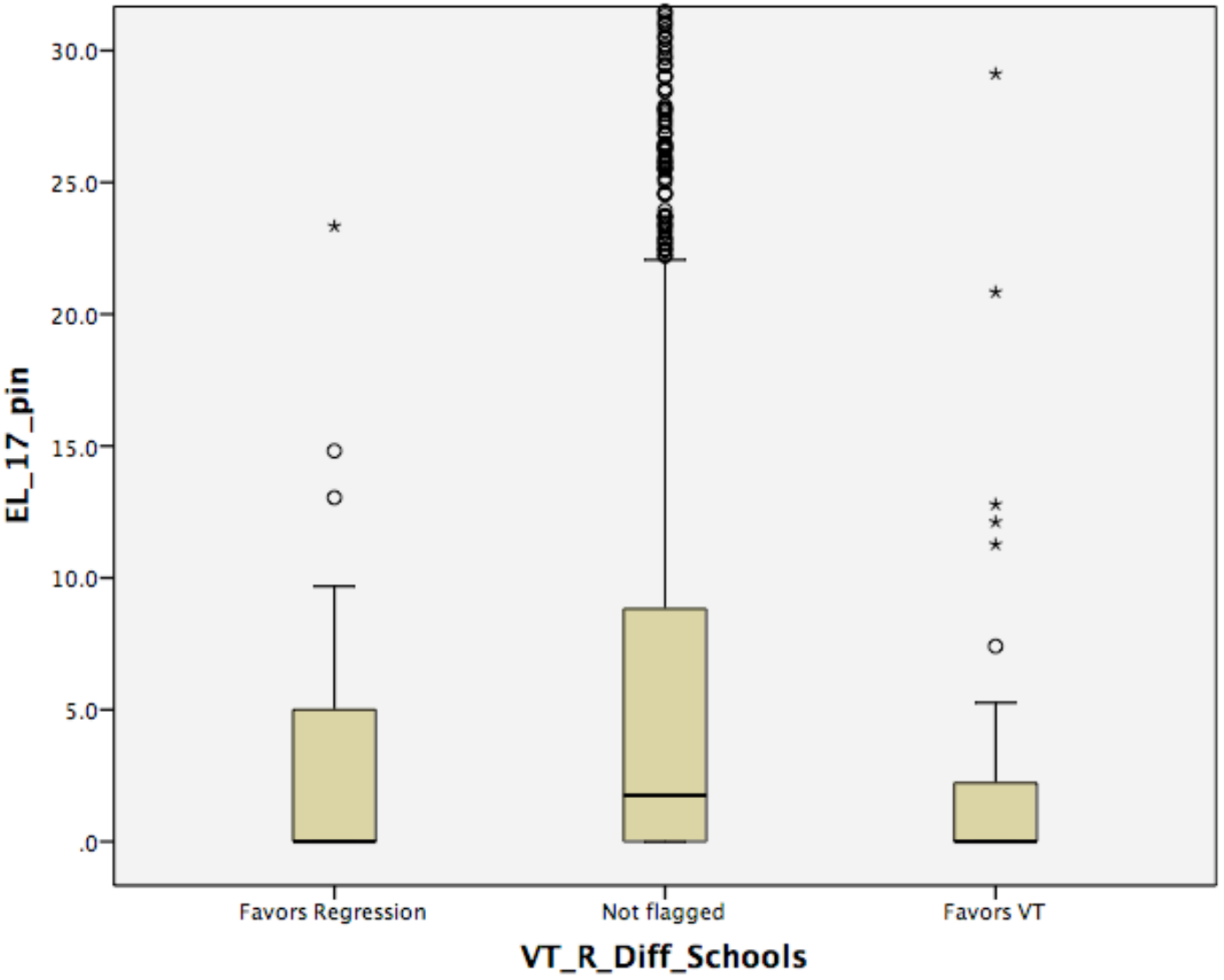
Summary

	N	Percent
Favors Regression	42	2.4
Not flagged	1637	93.8
Favors VT	66	3.8
Total	1745	100

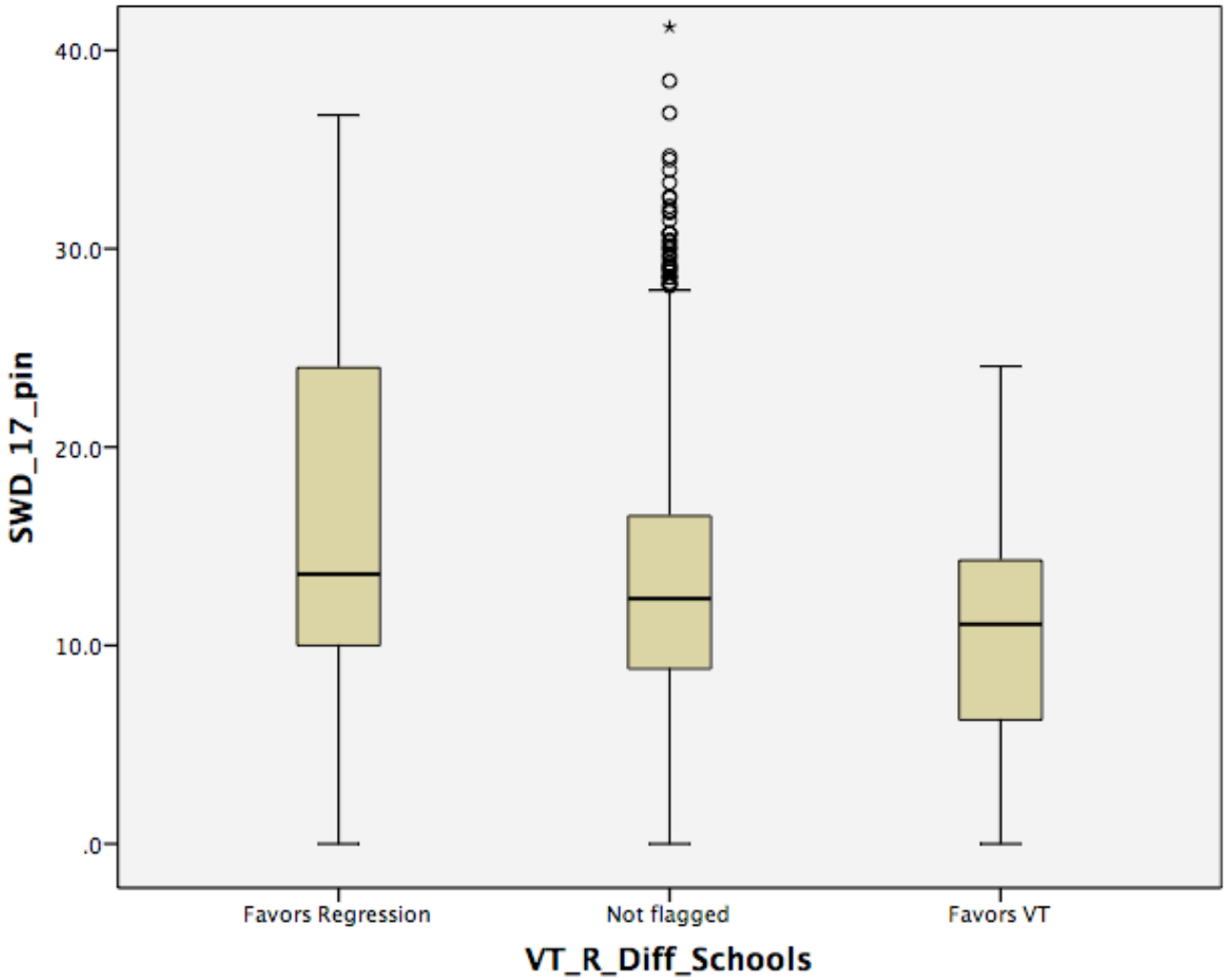
Comparison of "Difference Schools" on Prior Year Percent Proficient



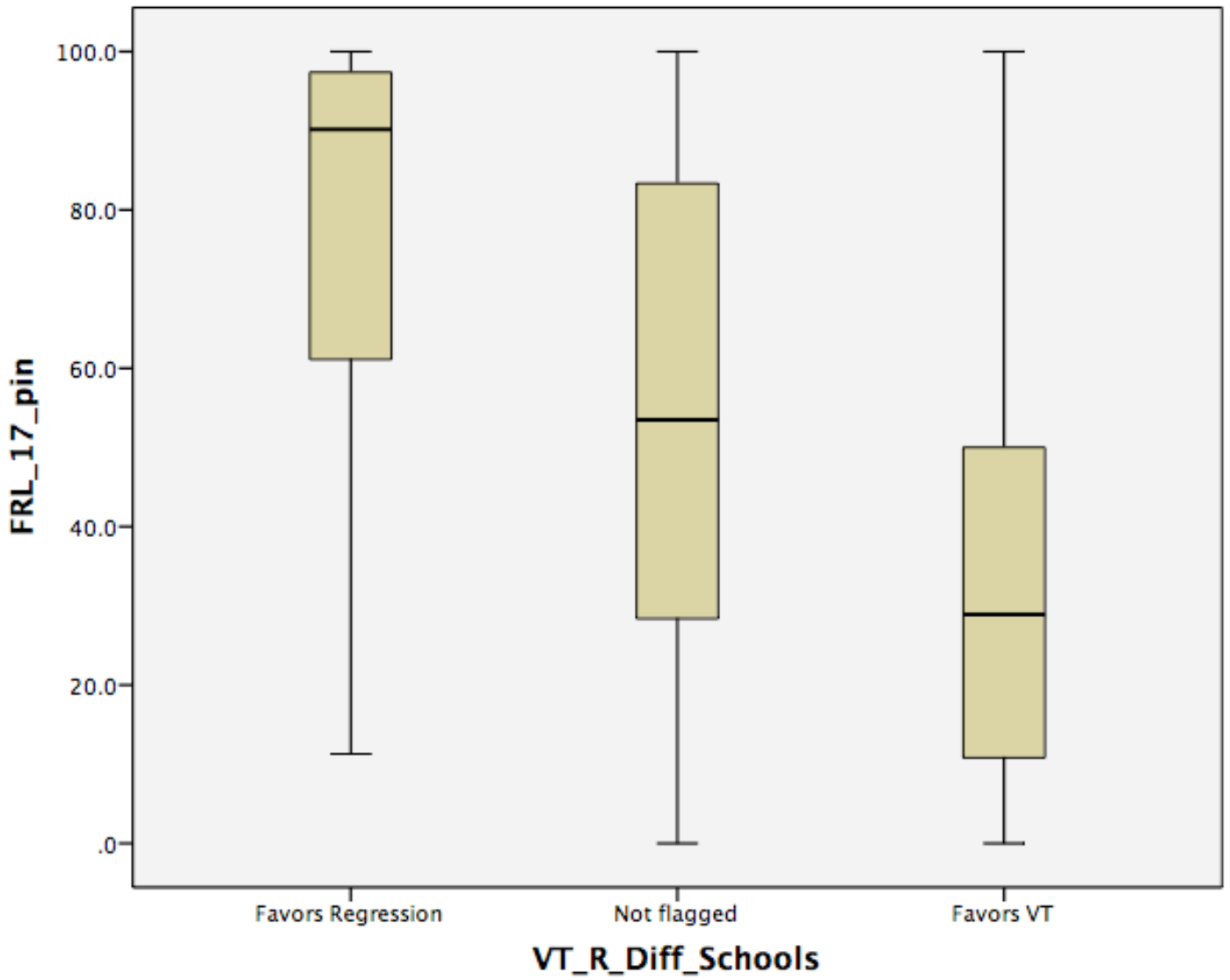
Comparison of "Difference Schools" on Prior Year Percent EL



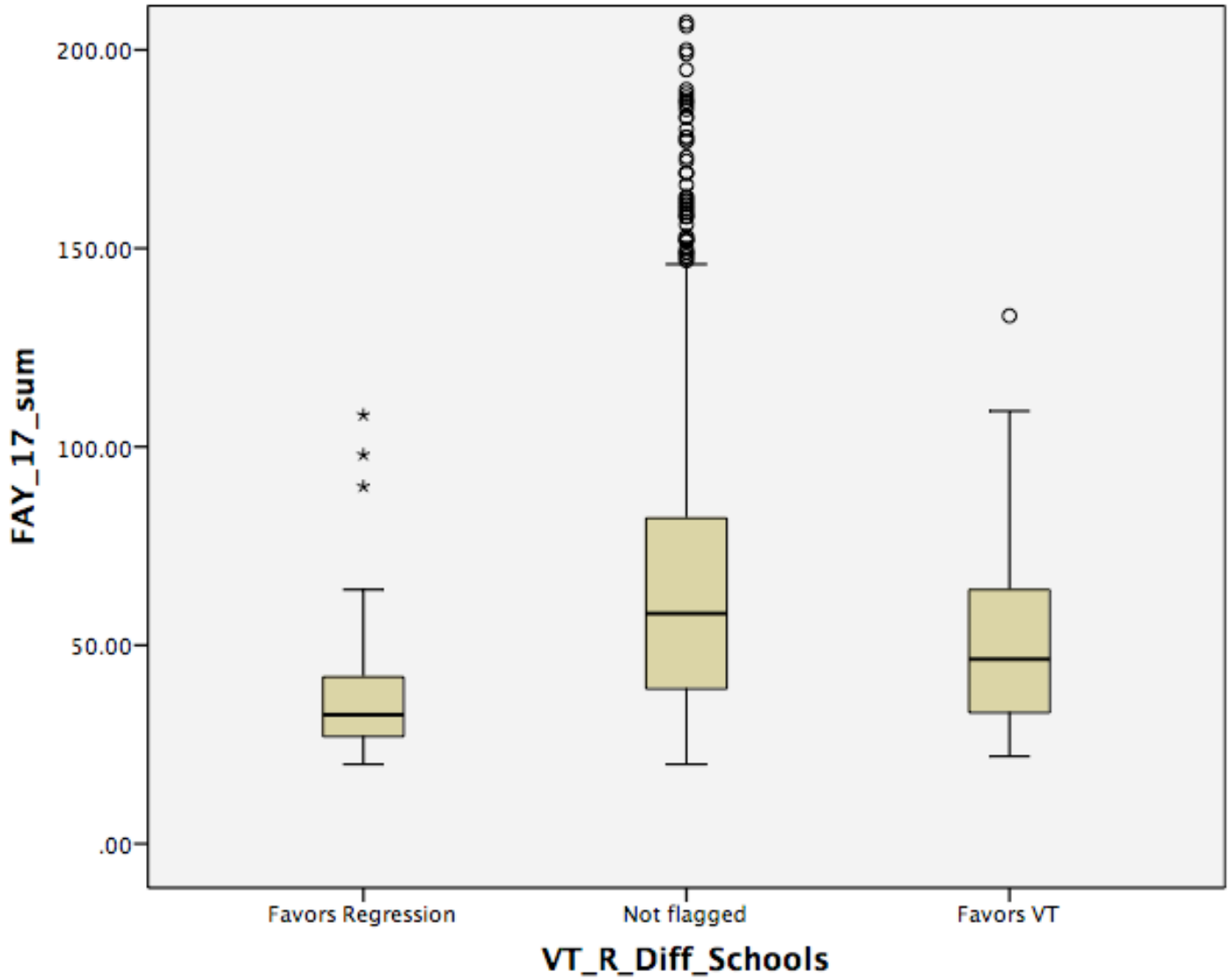
Comparison of "Difference Schools" on Prior Year Percent SWD



Comparison of "Difference Schools" on Percent FRL Eligible



Comparison of "Difference Schools" on Percent N Size



Overall Findings

- Based on this limited exploratory study, both value tables and regression performed similarly
- There was a strong positive correlation between results at the student and especially school level
- Both models had a modest positive correlation with prior year status (approximately .2 to .3)
- Both models had a small negative correlation with percent EL and percent SWD enrollment (approximately -.1 to -.2)
- Both models had a stronger but still modest negative correlation with percent FRL eligible (approximately -.2 to -.4)
- Neither model produced stable results from year to year– near zero correlation. But this is influenced by differences in grades examined in those years.

Overall Findings

- A very limited look at the schools for which the models were most different, reveals that regression tends to yield *relatively* more favorable scores for higher poverty and lower performing schools.
- Larger schools are less likely get favorable scores with regression, which suggests reduced variability blunts residual based growth.
- Importantly, this was an early exploratory analysis for a limited number of grades and years. Generalizability is uncertain.

Discussion and Next Steps

- How do the findings of these study measure-up to the criteria identified by the TAC?
- We know that the manner in which the models are specified can have a substantial impact on results, does the TAC have any recommendations for modifying the model characteristics?
- A challenge for comparing stability is that change is expected and desired when positive. How can we better examine stability under uniform conditions?
- Other than adding SGP to the growth analyses, what additional information might be useful?

Public Comment

Future Meetings

- March 6-7: 8:30-4:30 on the 6th; 8:30-12:00CT on the 7th
- April 2-3: 12:00-4:30 on the 2nd; 8:30-4:30 on the 3rd
- April 30: 12:00-3:00CT (WebEx)

Thank you!