

**IN THE CIRCUIT COURT OF COOK COUNTY, ILLINOIS  
COUNTY DEPARTMENT, CHANCERY DIVISION**

CHICAGO URBAN LEAGUE, <i>et al.</i> ,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	No. 08 CH 30490
	)	
ILLINOIS STATE BOARD OF	)	Hon. David B. Atkins
EDUCATION,	)	
	)	
Defendant.	)	

**AFFIDAVIT OF PROFESSOR MICHELLE TURNER MANGAN  
IN SUPPORT OF PLAINTIFFS' MOTION FOR PARTIAL SUMMARY JUDGMENT**

I, Professor Michelle Turner Mangan, PhD, under penalties as provided by law pursuant to Section 1-109 of the Code of Civil Procedure, certify that the statements set forth in this instrument are true and correct:

1. I have personal knowledge of the facts contained in this affidavit and, if sworn as a witness, I can testify competently to them.

***Professional Background***

2. I am an Associate Professor of Research at Concordia University Chicago (CUC). My expertise is in school finance, research methods, and statewide educational policy. I teach graduate-level courses including School Finance & Business Management, Principal as Resource Manager, Research in Education, Introduction to Research, Survey Research, and Quantitative Analysis. I am Program Leader for the quantitative research courses, and serve as Chair and Methodologist on doctoral dissertation committees.

3. I am a member of the Association for Education Finance and Policy, American Educational Research Association (AERA), and the Illinois Association of School Business

Officials (IASBO). I serve on the Board of Advisors of the National Education Finance Conference.

4. I have participated as a member of the Illinois Education Funding Advisory Board (EFAB) Advisory Committee. I have also been an invited participant at a Ford Foundation convening on school finance reform at the national-level. I am a past officer and current member of the American Educational Research Association (AERA) Fiscal Issues, Policy, and Education Finance Special Interest Group (SIG) and continue to review proposals and serve as discussant for this SIG. I am a past member of School District 102's Financial Advisory Committee, and a current PTO Board member for Longfellow Elementary School in School District 97.

5. I have published scholarly work in the Journal of Education Finance, Journal of School Business Management, and the Illinois School Board Journal, and have served as a reviewer for Educational Policy, Education Administration Quarterly, and the Center for Tax and Budget Accountability. My most recent work was shared at the Illinois Education Research Symposium and ISBE FY15 School Improvement Grant Fall Grantee Convening.

6. Prior to CUC, I was an Assistant Professor at Chicago-based National Louis University, where I led the Illinois School Finance Adequacy Taskforce and conducted school finance research in both Illinois and Wisconsin. I earned my Ph.D. from the University of Wisconsin-Madison in Educational Leadership and Policy Analysis, with a distributed minor in statistics, and was awarded a Wisconsin-Spencer Doctoral Research Program Fellowship. I was an integral part of the Wisconsin School Finance Adequacy Taskforce as part of my position with the Consortium for Policy Research in Education (CPRE) at UW-Madison.

7. I have managed fieldwork of statewide adequacy studies in Arkansas, Washington, and Wyoming as a consultant with Lawrence O. Picus and Associates, LLC. This

work involved presenting research findings to the Arkansas legislature and Washington Governor's Taskforce, in addition to contributing to the education finance field through presenting scholarly work at national conferences.

### ***Summary of Analyses***

8. I was asked to analyze the effect of how ISBE allocated cuts between districts statewide following the under appropriation of General State Aid (GSA) in fiscal years 2013, 2014, and 2015.

9. The methodology ISBE utilizes to manage the under appropriation of GSA is by cutting each and every district's GSA payments by the same percentage, which correspond to the percentage amount the General Assembly under appropriated GSA. For example, if the General Assembly under appropriated GSA by 10 percent (meaning it only appropriated enough funds to cover 90% of what is owed to districts under statute), then each and every district would get 10 percent less than the GSA owed to them under statute (meaning districts receive only 90% of their entitlement).

10. This methodology is referred to as "proration."

11. Conducting statistical analyses, I examined the effect on districts containing a majority of black and Hispanic students ("Majority Minority Districts" or "MMDs") by looking at (A) the loss per pupil a district experiences as a result of proration and (B) the per pupil funds lost resulting from proration as a percentage of the district's operating expense per pupil (OEPP).

12. I then ran the same tests for districts with less than a majority of black and Hispanic districts ("non-Majority Minority Districts" or "Non-MMDs").

13. The results of my analysis of the effect of ISBE’s proration on MMDs and Non-MMDs for fiscal years 2013 through 2015 are summarized as follows:

	Fiscal Year	MMDs	Non-MMDs
Per Pupil Dollar Loss Due to Proration	2013	\$420.09	\$263.52
	2014	\$470.16	\$274.84
	2015	\$475.81	\$262.70

	Fiscal Year	MMDs	Non-MMDs
Percentage of OEPP Lost Due to Proration	2013	3.54%	2.73%
	2014	3.96%	2.84%
	2015	3.94%	2.72%

14. These results were statistically significant. Proration disparately impacts Majority Minority Districts. On average, MMDs lost more per pupil as a result of proration than Non-MMDs and that loss on average represented a greater percentage of Majority Minority Districts’ OEPP.

15. I also conducted the same analysis of proration’s effect on subgroups of MMD and non-MMD: MMDs with students that have 75% or more black and Hispanic students and Non-MMDs with less than 25% black or Hispanic students.

16. The results of my analysis of the effect of ISBE’s proration on the first and fourth quartile subgroup for fiscal years 2013 through 2015 are summarized as follows:

	Fiscal Year	75% -100% MMDs	0%-25% Non-MMDs
Per Pupil Dollar Loss Due to Proration	2013	\$543.34	\$269.93
	2014	\$598.03	\$278.69
	2015	\$591.83	\$264.49

	Fiscal Year	75% -100% MMDs	0%-25% Non-MMDs
Percentage of OEPP Lost Due to Proration	2013	4.43%	2.83%
	2014	4.85%	2.92%
	2015	4.74%	2.77%

17. The disparity between the subgroups of MMDs and Non-MMDs was also statistically significant. The race-based statistical disparity grew as the percentage of black and Hispanic students increased in MMDs.

18. When you examine select districts at the ends of the range of percentage black and Hispanic students in districts in the context of the above statistically significant conclusions, the effect of proration speaks for itself:

School District	Percent Hispanic and Black	District Per Pupil Funding Decrease Resulting From ISBE Proration	Percentage Decrease of Operating Expenditure Per Pupil Resulting From ISBE Proration	
<b>Majority Minority Districts</b>				
East Saint Louis School District 189	<b>FY13</b>	99.48686%	\$911.97	6.306%
	<b>FY14</b>	99.50072%	\$959.03	7.267%
	<b>FY15</b>	99.50072%	\$928.40	7.035%
Harvey School District 152	<b>FY13</b>	97.50904%	\$876.18	7.363%
	<b>FY14</b>	97.01428%	\$915.18	7.558%
	<b>FY15</b>	97.01428%	\$865.91	7.151%
Cicero School District 99	<b>FY13</b>	95.09383%	\$835.73	8.644%
	<b>FY14</b>	94.70871%	\$881.34	9.271%
	<b>FY15</b>	94.70871%	\$848.35	8.924%
East Aurora School District 131	<b>FY13</b>	93.54816%	\$790.98	7.637%
	<b>FY14</b>	93.96981%	\$843.43	7.762%
	<b>FY15</b>	93.96981%	\$835.71	7.691%

19. These four districts, with a student body during FY13 through FY15 that averages over 96% black and Hispanic, lost on average \$874.35 per pupil each of fiscal years 2013-2015, which amounts to a decrease each of those years of 7.72% on average as a proportion of operating expense per pupil.

School District	Percent Hispanic and Black	District Per Pupil Funding Decrease Resulting From ISBE Proration	Percentage Decrease of Operating Expenditure Per Pupil Resulting From ISBE Proration	
<b>Non-Majority Minority Districts</b>				
Glencoe School Dist 35	FY13	2.11268%	\$24.66	0.143%
	FY14	2.26904%	\$26.00	0.146%
	FY15	2.26904%	\$25.16	0.141%
Kenilworth School District 38	FY13	2.21811%	\$24.37	0.110%
	FY14	0.96339%	\$25.49	0.114%
	FY15	0.96339%	\$24.67	0.111%
Lake Forest Comm H S District 115	FY13	3.92512%	\$25.33	0.111%
	FY14	3.92512%	\$26.85	0.113%
	FY15	3.92512%	\$26.20	0.111%
New Trier Twp H S Dist 203	FY13	4.67489%	\$25.29	0.118%
	FY14	5.15588%	\$26.61	0.120%
	FY15	5.15588%	\$25.80	0.117%

20. These four districts, with a student body during FY13 through FY15 that averages around 3% black and Hispanic, lost on average only \$25.54 per pupil each of fiscal years 2013-2015, which amounts to only a decrease each of those years of 0.12% on average as a proportion of operating expense per pupil.

21. I conclude that ISBE’s methodology of managing the under appropriation of General State Aid by proration has a discriminatory effect on school districts with a majority of black and Hispanic students. Further, as the percentage of black and Hispanic students increases in school districts that are majority black and Hispanic, the larger the decrease in GSA funding per pupil and the larger that decrease is as a percentage of the district’s OEPP.

22. I explain these conclusions in detail as follows:<sup>1</sup>

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<sup>1</sup> Further detail of the analyses can be found in the attached Technical Appendix.

### ***The Foundation Level of Funding***

23. As background, a foundation level of funding is the amount each district should possess per pupil, at a minimum, through a mix of state and local resources going to the education of the district's students ("Foundation Level"). The Foundation Level is intended to represent the minimum level of funding required to meet the basic education needs in the Illinois K-12 public school system – basic education defined as when 67% of general education students without special needs meet or exceed learning standards.

24. The Foundation Level is set by statute each year for the entire state.

25. The Foundation Level in Illinois for the last four years, notwithstanding changing costs and students, has stayed at \$6,119 per pupil.

26. ISBE has again proposed that that the Foundation Level for the next year, FY16, again remain at \$6,119.

### ***General State Aid – Equalization Formula Grant Component***

27. To assure that every district meets the Foundation Level, ISBE calculates available local resources by considering property wealth ("Available Local Resources"). A part of how much money a district gets is a function of its Available Local Resources.

28. This grant of state funds that considers Available Local Resources relative to the Foundation Level is known as the "General State Aid Equalization Formula Grant."

29. The GSA – Equalization Formula Grant are unrestricted funds for general operating expenses.

30. The purpose of this Grant is to assure the combination of state and local funding meet the Foundation Level.

31. The amount granted a district under the GSA – Equalization Formula Grant is determined by one of three separate calculations. Which of the three calculations a district is subject to depends on the district’s Available Local Resources relative to the Foundation Level.

32. The three calculations and the districts they apply to are referred to as “Foundation Formula” districts; “Alternate Formula” districts; and “Flat Grant” districts.

33. Foundation Formula districts with Available Local Resources that can only make up some percentage below 93% of the Foundation Level, get a GSA – Equalization Formula Grant equal to the amount of money it takes to bring the district up to the Foundation Level on a per pupil basis.

34. For example, if a school district has an Available Local Resources of \$4,000 per pupil, reflecting relatively low property wealth, the District will receive a General State Aid payment of \$2,119 per pupil to bring local and state resources to the \$6,119 Foundation Level.

35. Districts that have Available Local Resources that alone, without any state contribution, is near or above the Foundation Level still receive a GSA – Equalization Formula Grant.

36. Districts that have Available Local Resources between 93 percent and 175 percent of the foundation level receive between five and seven percent of the Foundation Level per pupil as their GSA – Equalization Formula Grant. These districts are known as “Alternate Formula” districts.

37. Districts that have Available Local Resources over 175 percent of the Foundation Level receive a flat grant amount of \$218 per pupil, regardless of their Available Local Resources. The districts are known as “Flat Grant Formula” districts.



38. Although both Alternate and Flat Grant formula districts on average have Available Local Resources in excess of the Foundation Level, they still receive General State Aid as part of the Equalization Formula Grant component.

***General State Aid: Supplemental Low-Income Grant***

39. A second component of General State Aid grant exists that considers only the number of low-income students in districts without consideration of Available Local Resources. This supplemental grant, which is part of General State Aid, is commonly referred to as the “GSA Poverty Grant.”

40. The per pupil GSA Poverty Grant a district is entitled to under statute increases as the number of the low-income students a district has increases as a percentage of the student body. Put otherwise, the higher the percentage of low-income students in a district, the more supplemental General State Aid per pupil a district receives.

41. Once General State Aid’s Equalization Formula Grant and the Supplemental Low-Income Grant are calculated, the two components are lumped together and paid by ISBE as if they were one grant.

***Under Appropriation of General State Aid***

42. A district’s ability to meet the Foundation Level – a theoretical minimum funding amount to educate students – assumes that the necessary funds will be appropriated by the General Assembly and Governor.

43. However, over the last several years, funds appropriated for GSA have not been enough for GSA Payment to meet the Foundation Level. The percent under appropriation and total for the previous six years are:

Fiscal Year	FY10	FY11	FY12	FY13	FY14	FY15
Percent GSA Under Appropriation	98.3%	99.9%	95.0%	89.2%	88.7%	87.1%
Total GSA Under Appropriation	(\$18,899,097)	(\$260,405)	(\$231,057,534)	(\$518,176,370)	(\$562,116,047)	(\$648,085,500)

44. The effect of how ISBE disburses the above under appropriated funds, or put differently, manages the cuts to General State Aid, is the subject of my analysis.

***The Proration of General State Aid***

45. Here is what ISBE did and continues to do with the under appropriated GSA funds: It allocates the cuts in General State Aid across every school district by reducing every district’s GSA payment (inclusive of both Equalization Formula and Poverty Grants) by the same percentage as GSA as a whole was under appropriated. For example, if the General Assembly only appropriated 87.1% of the amount necessary to fund GSA (as it did in FY15), then each and every district only receives 87.1% of the GSA they were expecting under statute.

46. This is regardless of whether the district is a Foundation, Alternate, or Flat Grant Formula District; this regardless of local property wealth; and this regardless of how much the district relies on General State Aid.

47. Again, this ISBE methodology is referred to as “proration.”

48. When appropriations fall short of the amount necessary to fully fund General State Aid claims by districts, payments to districts from ISBE are prorated for each district given appropriation amounts.

49. ISBE applies proration to the entire GSA grant amount, which is made up of both the Equalization Formula Grant and the Supplemental Low-income Grant.

### ***The Racially Discriminatory Effect of ISBE's Proration***

50. I conducted a series of statistical analyses to determine whether ISBE's chosen method to manage cuts in General State Aid resulted in MMDs losing more General State Aid per pupil than Non-MMDs.

51. I also conducted an analysis to determine, if as a result of the proration, MMDs had a greater decrease relative to their OEPP compared with Non-MMDs.

52. As the above chart demonstrates, fiscal years 2013-2015 saw under appropriation of General State Aid funds of more than half a billion dollars. These three fiscal years saw cuts more severe than the under appropriation in Fiscal years 2010 through 2012. Because of the severity of the cut and availability of ISBE data, my analysis evaluates FY13-15.

53. For each of fiscal years 2013, 2014, and 2015, which are school years 2012-2013, 2013-2014, and 2014-2015 respectively, I conducted two analyses:

- I determined the loss per pupil caused by managing the under appropriated of General State Aid funds by the methodology of "proration" for all districts and compared the average loss of MMDs to Non-MMDs. I also compared the loss per pupil between subgroups: school districts with black or Hispanic students making up 75% or more of the student body to those with 24% or less.
- I determined the per pupil loss as a percentage of total OEPP caused by proration and compared the average percentage loss of MMDs to Non-MMDs. Again, I compared the loss as a percentage of total OEPP between the first and fourth quartile subgroups of MMDs.

54. For each year and measure, proration resulted in statistically significant race-based disparity between MMDs and Non-MMDs, which grew larger when comparing the subgroups.

55. My specific findings for Fiscal Years 2013-2015 by year are as follows:

***Fiscal Year 2013***

***Loss of Funds Per Pupil in FY13 Due To Prorating GSA Payments Across All Districts***

56. There was a statistically significant difference in the per pupil loss in General State Aid due to proration between MMDs and Non-MMDs in FY13.

57. For that year, school districts lost on average \$282.96 per pupil for all districts due to ISBE’s GSA proration. Table 1 shows the demographic statistics of loss due to proration by MMD and non-MMD status.

Table 1: *Descriptive Statistics for Per Pupil Proration Loss by MMD status in FY13*

	MMD Status	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	Non-MMD	755	\$263.52	\$176.994	6.441
	MMD	107	\$420.09	\$248.192	23.994

58. Put differently, the 107 MMDs lost on average \$420.09 per pupil as a result of proration compared to \$263.52 loss for Non-MMDs.

59. These results were statistically significant. I conducted independent samples t-test that compared the per pupil proration loss for Non-MMDs (N=755) and MMDs (N=107). T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that Non-MMDs lost because of proration (M=\$263.52, SD=\$176.994) and that MMDs lost (M=\$420.09, SD=\$248.19),  $t_{(860)}=-8.095$ ,  $p<.001$ ,  $\alpha=.05$ .

***Subgroup Analysis; Loss of Funds Per Pupil in FY13 Due To Prorating GSA Payments Across All Districts***

60. To further explore the disparity, I analyzed the effect of proration on the first quartile districts (with 0-24% black and Hispanic concentration) and fourth quartile districts (with 75-100% black and Hispanic concentration) and compared the two quartiles. Table 2 illustrates the descriptive statistics for those two quartiles for FY13.

Table 2: *Descriptive Statistics of Per Pupil Proration Loss between 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY13)*

	Black and Hispanic concentration Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	1st Quartile (0-24% black and Hispanic)	652	\$269.93	\$177.25	6.942
	4th Quartile (75-100% black and Hispanic concentration)	60	\$543.34	\$226.01	29.178

61. Districts with a student body that is 75% or more black and Hispanic lost on average \$543.34 per pupil due to proration compared to a loss of \$269.93 per pupil in districts with a student body that is less than 25% black or Hispanic.

62. To verify statistical significance, I conducted independent samples t-test that compared the per pupil proration loss for 1st quartile districts with 0-24% black and Hispanic students (N=652) and 4th quartile districts with 75-100% black and Hispanic students (N=60) for FY13. T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that 1st quartile districts (0-24% black and Hispanic) lost because of proration (M=\$269.93, SD=\$177.25) and that 4th quartile districts (75-100% black and Hispanic) lost (M=\$543.34, SD=\$226.01) for FY13,  $t_{(66)} = -9.116$ ,  $p < .001$ ,  $\alpha = .05$ .

63. The disparity in funding loss due to proration grew as I compared the losses of district with higher concentrations of black and Hispanic students to districts those with lower concentration of black and Hispanic students.

***Percent Decrease in Operating Expenditure Per Pupil Due To GSA Cuts in FY13***

64. I also examined whether ISBE’s proration of GSA used in FY13 disproportionately affected MMDs versus non-MMD comparing amount prorated relative to operating expenditures per pupil.

65. Table 3 illustrates the difference in means and standard deviations between MMDs and Non-MMDs for the percentage lost as a result of proration relative to their OEPP in FY13.

Table 3: *Descriptive Statistics for Proration Loss per OEPP (FY13)*

	MMD Type	N	Mean	Std. Deviation	Std. Error Mean
Proration Loss Per OEPP	Non-MMD	754	.0273	.02082	.00076
	MMD	107	.0354	.02308	.00223

66. As a result of Proration, the 107 districts with a majority of minority students lost on average what amounts to approximately 3.54% of their Operating Expenditure Per Pupil as a result of Proration compared with to 2.73% loss for 754 majority white districts.

67. To verify reliability of these numbers, I conducted independent samples t-test that compared the per pupil proration loss per OEPP for Non-MMDs (N=754) and MMDs (N=107). T-test results revealed a statistically reliable difference between the mean percentage of proration loss per OEPP for Non-MMDs (M=2.73%, SD=2.08%) compared with MMDs (M=3.54%, SD=2.30%) in FY13,  $t_{(859)} = -3.738$ ,  $p < .001$ ,  $\alpha = .05$ .

***Subgroup Analysis; Percent Decrease in Operating Expenditure Per Pupil Due To GSA Cuts in FY13***

68. To further explore the disparity, I compared the effect of Proration on the first quartile (0-24% black and Hispanic) districts and fourth quartile (75-100% black and Hispanic).

Table 4 illustrates the descriptive statistics for those two quartiles for FY13.

Table 4: *Descriptive Statistics of Percentage per Pupil GSA Lost per OEPP for 1<sup>st</sup> and 4<sup>th</sup> District Black and Hispanic Quartiles (FY13)*

	Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Percentage GSA Lost Per OEPP	1st Quartile (0-24% minority)	652	.0283	.02103	.00082
	4th Quartile (75-100% minority)	60	.0443	.02227	.00288

69. As a result of proration, the 60 districts a student body consisting of 75% to 100% black and Hispanic students lost on average what amounts to approximately 4.43% of their OEPP as a result of proration compared with to 2.83% loss for the 652 districts with a student body consisting of 0% to 24% black and Hispanic students.

70. This disparity is statistically significant. I again conducted an independent samples t-test that compared the percentage per pupil GSA lost per OEPP for 1st quartile districts with 0-24% black and Hispanic students (N=652) and 4th quartile districts with 75-100% black and Hispanic students (N=60) for FY13. T-test results revealed a statistically reliable difference between the mean percentage of per pupil dollars that 1st quartile districts (0-24% black and Hispanic) lost because of proration (M=0.0283, SD=0.02103) and that 4th quartile districts (75-100% black and Hispanic) lost (M=0.0443, SD=0.02227) for FY13,  $t_{(710)} = -5.641$ ,  $p < .001$ ,  $\alpha = .05$ .

71. The results of these FY13 analyses show that proration caused a statistically significant disparity between MMDs and Non-MMDs when considering ISBE's proration per pupil loss as a percentage of the district's OEPP. That statistically significant disparity grew when comparing the 75%-100% MMDs subgroup to the 0%-24% Non-MMD subgroup.

#### **Fiscal Year 2014**

#### ***Loss of Funds Per Pupil in FY14 Due To Prorating General State Aid Payments Across All Districts***

72. There is a statistically significant difference in the per pupil loss in General State Aid due to ISBE's proration between MMDs and Non-MMDs for fiscal year 2014.

73. All districts lost on average \$299.60 per pupil due to GSA proration. Table 5 shows the demographic statistics of proration loss by type of MMD status.

Table 5: *Descriptive Statistics for Per Pupil Proration Loss by MMD status in FY14*

	MMD Status	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	Non-MMD	751	\$274.8425	\$182.89507	6.67394
	MMD	109	\$470.1640	\$254.92282	24.41718

74. On average, the 109 districts with a majority of black and Hispanic students lost \$470.16 per pupil as a result of proration compared to \$274.84 loss for the Non-MMD.

75. These results were statistically significant. I conducted an independent samples t-test that compared the per pupil proration loss for Non-MMDs (N=751) and MMDs (N=109). T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that Non-MMDs lost because of proration (M=\$274.84, SD=\$182.89) and that MMDs lost (M=\$470.16, SD=\$254.92),  $t_{(124)} = -7.716$ ,  $p < .001$ ,  $\alpha = .05$ .

***Subgroup Analysis; Loss of Funds Per Pupil in FY14 Due To Prorating GSA Payments Across All Districts***

76. To further explore the disparity, I analyzed the effect of proration on the first quartile districts (with 0-24% black and Hispanic concentration) and fourth quartile districts (75-100% black and Hispanic concentration) and compared the two quartiles. Table 6 illustrates the descriptive statistics for those two quartiles for FY14.

Table 6: *Descriptive Statistics of Per Pupil Proration Loss between 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY14)*

	Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	1st Quartile (0-24% minority)	642	\$278.69	\$182.36	7.19731
	4th Quartile (75-100% minority)	61	\$598.03	\$227.60	29.14181

77. In FY14, districts with a student body that is 75% or more black and Hispanic lost on average \$598.03 per pupil due to proration compared to a loss of \$278.69 per pupil in districts with a student body that is less than 25% black or Hispanic.



78. To verify the reliability of these conclusions, I conducted independent samples t-test that compared the per pupil proration loss for 1st quartile districts with 0-24% black and Hispanic students (N=642) and 4th quartile districts with 75-100% black and Hispanic students (N=61) for FY14. T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that 1st quartile districts (0-24% black and Hispanic students) lost because of proration (M=\$278.69, SD=\$182.36) and that 4<sup>th</sup> quartile districts (75-100% black and Hispanic students) lost (M=\$598.03, SD=\$227.60) for FY14,  $t_{(67)} = -10.639$ ,  $p < .001$ ,  $\alpha = .05$ .

79. The disparity in funding loss due to proration in FY14 grew as I compared the per pupil losses of districts with higher concentrations of black and Hispanic students to districts with lower concentration of black and Hispanic students.

***Percent Decrease in Operating Expenditure Per Pupil Due To GSA Cuts in FY14***

80. I also examined whether the ISBE’s proration methodology of managing cuts to General State Aid disproportionately affected MMDs versus Non-MMD as measured by percentage loss of OEPP for FY14.

81. Table 7 illustrates the difference in means and standard deviations between MMDs and Non-MMDs for the percentage of GSA lost as a result of proration compared with their OEPP.

Table 7: *Descriptive Statistics for Proration Loss per OEPP (FY14)*

	MMD Type	N	Mean	Std. Deviation	Std. Error Mean
Proration Loss Per	Non-MMD	750	.0284	.02162	.00079
OEPP	MMD	108	.0396	.02336	.00225

82. As a result of proration, the 108 MMD districts lost on average what amounts to approximately 3.96% of their Operating Expenditure Per Pupil compared with a 2.84% loss for 750 district with a student body less than 50% black and Hispanic.

83. To verify statistical significance, I conducted independent samples t-test that compared the per pupil Proration loss per OEPP for Non-MMDs (N=750) and MMDs (N=108). T-test results revealed a statistically reliable difference between the mean percentage of proration loss per OEPP for Non-MMDs (M=2.84%, SD=2.16%) compared with MMDs (M=3.96%, SD=2.33%),  $t_{(856)} = -4.995$ ,  $p < .001$ ,  $\alpha = .05$ .

***Subgroup Analysis; Percent Decrease in Operating Expenditure Per Pupil Due To GSA Cuts in FY14***

84. To further explore the disparity, I compared the effect of proration on the first quartile districts (with 0-24% black and Hispanic) and fourth quartile districts (with 75-100% black and Hispanic). Table 8 illustrates the descriptive statistics for those two quartiles for FY14.

Table 8: *Descriptive Statistics of Per Pupil Percentage GSA Lost per OEPP for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY14)*

	Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Percentage GSA Lost Per OEPP	1st Quartile (0-24% minority)	642	.0292	.02167	.00086
	4th Quartile (75-100% minority)	61	.0485	.02190	.00280

85. As a result of proration, the 61 districts a student body consisting of 75% to 100% black and Hispanic students lost on average what amounts to approximately 4.85% of their Operating Expenditure Per Pupil as a result of ISBE’s proration compared with a 2.92% loss for the 642 districts with a student body consisting of 0% to 24% black and Hispanic students.

86. This disparity is statistically significant. I conducted an independent samples t-test that compared the percentage per pupil GSA lost per OEPP for 1st quartile districts with 0-24% black and Hispanic students (N=642) and 4th quartile districts with 75-100% black and Hispanic students (N=61) for FY14. T-test results revealed a statistically reliable difference

between the mean percentage of per pupil dollars that 1st quartile districts (0-24% black and Hispanic) lost because of proration (M=0.0292, SD=0.02167) and that 4th quartile districts (75-100% black and Hispanic) lost (M=0.0485, SD=0.02190) for FY14,  $t_{(701)} = -6.638$ ,  $p < .001$ ,  $\alpha = .05$ .

87. The results of these FY14 analyses show that proration caused a statistically significant disparity between MMDs and Non-MMDs when considering ISBE’s proration per pupil loss as a percentage of the district’s OEPP. That statistically significant disparity grew when comparing the 75%-100% MMDs subgroup to the 0%-24% Non-MMD subgroup.

***Fiscal Year 2015***

***Loss of Funds Per Pupil in FY15 Due To Prorating GSA Payments Across All Districts***

88. For FY15, a statistically significant difference in the per pupil loss in GSA due to proration between MMDs and Non-MMDs again existed.

89. School districts on average lost \$290 per pupil following proration of General State Aid. Table 9 shows the demographic statistics of proration loss by type of MMD status.

*Table 9: Descriptive Statistics for Per Pupil Proration Loss by MMD status in FY15*

	MMDType	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration	Non-MMD	745	\$262.70	\$172.98	6.33772
Loss	MMD	108	\$475.81	\$239.69	23.06420

90. Put plainly, on average the 108 MMDs, again those with majority of black and Hispanic students, lost \$475.81 per pupil as a result of proration compared to \$262.70 per pupil loss for the 745 Non-MMDs.

91. I conducted an independent samples t-test that compared the per pupil proration loss for Non-MMDs (N=745) and MMDs (N=108). T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that Non-MMDs lost because of proration (M=\$262.70, SD=\$172.98) and that MMDs lost (M=\$475.80, SD=\$239.69),  $t_{(124)} = -8.909$ ,  $p < .001$ ,  $\alpha = .05$ .

***Subgroup Analysis; Loss of Funds Per Pupil in FY15 Due To Prorating GSA Payments Across All Districts***

92. To further explore the disparity, I analyzed the effect of proration on the first quartile districts (with 0-24% black and Hispanic concentration) and fourth quartile (with 75-100% black and Hispanic concentration) and compared the two quartiles. Table 10 illustrates the descriptive statistics for those two quartiles for FY15.

Table 10: *Descriptive Statistics of Per Pupil Proration Loss between 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY15)*

	District Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	1st Quartile (0-24% Minority)	637	\$264.49	\$172.76	6.84520
	4th Quartile (75-100% Minority)	61	\$591.83	\$212.36	27.19114

93. Districts with a student body that is 75% or more black and Hispanic lost on average \$591.83 per pupil due to ISBE’s roration compared to a loss of \$264.49 per pupil in districts with a student body that is less than 25% black or Hispanic.

94. I conducted an independent samples t-test that compared the per pupil proration loss for 1st quartile districts with 0-24% black and Hispanic students (N=637) and fourth quartile districts with 75-100% black and Hispanic students (N=61) for FY15. T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that 1st quartile districts (0-24% black and Hispanic students) lost because of proration (M=\$264.49, SD=\$172.76) and that 4th quartile districts (75-100% black and Hispanic) lost (M=\$591.83, SD=\$212.36) for FY15,  $t_{(67)} = -11.674$ ,  $p < .001$ ,  $\alpha = .05$ .

95. The statistically significant disparity in funding loss due to proration in FY15 grew as I compared the losses of districts with higher concentrations of black and Hispanic students to districts those with lower concentration of black and Hispanic students.

***Percent Decrease in Operating Expenditure Per Pupil Due To GSA Cuts in FY15***

96. I lastly examined whether ISBE’s proration method disproportionately affected MMDs versus Non-MMD relative to their operating expenditure per pupil for FY15.

97. Table 11 illustrates the difference in means and standard deviations between MMDs and Non-MMDs for the percentage of GSA lost as a result of proration compared with their OEPP.

*Table 11: Descriptive Statistics for Proration Loss per OEPP (FY15)*

	MMD Type	N	Mean	Std. Deviation	Std. Error Mean
Proration Loss	Non-MMD	745	.0272	.02066	.00076
Per OEPP	MMD	108	.0394	.02231	.00215

98. I conducted independent samples t-test that compared the per pupil proration loss per OEPP for Non-MMDs (N=745) and MMDs (N=108). T-test results revealed a statistically reliable difference between the mean percentage of proration loss per OEPP for Non-MMDs (M=2.72%, SD=2.06%) compared with MMDs (M=3.94%, SD=2.23%),  $t_{(851)} = -5.657$ ,  $p < .001$ ,  $\alpha = .05$ .

99. As a result of proration, the 108 districts with a majority of black and Hispanic students lost on average what amounts to approximately 3.94% of their OEPP as a result of ISBE’s proration compared with a 2.72% loss for the 745 non-MMD districts.

100. The results of this analysis shows that proration loss for MMDs was a significantly greater percentage of their OEPP compared with Non-MMDs for FY15.

***Subgroup Analysis; Percent Decrease in Operating Expenditure Per Pupil Due To GSA Cuts in FY15***

101. To further explore the disparity, I compared the effect of proration on the first quartile districts (with 0-24% black and Hispanic) and fourth quartile (with 75-100% black and Hispanic). Table 12 illustrates the descriptive statistics for those two quartiles for FY15.

Table 12: *Descriptive Statistics of Per Pupil Percentage GSA Lost per OEPP for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY15)*

	MMD Quartile	N	Mean	Std. Deviation	Std. Error Mean
Percentage GSA Lost Per OEPP	1st Quartile (0-24% Minority)	637	.0277	.02069	.00082
	4th Quartile (75-100% Minority)	61	.0474	.02081	.00266

102. The 61 districts with a student body consisting of 75% to 100% black and Hispanic students lost on average what amounts to approximately 4.74% of their Operating Expenditure Per Pupil as a result of ISBE’s proration compared with a 2.77% loss for the 637 districts a student body consisting of 0% to 24% black and Hispanic students.

103. This disparity is statistically significant. I conducted an independent samples t-test that compared the percentage per pupil GSA lost per OEPP for 1st quartile districts with 0-24% black and Hispanic students (N=637) and fourth quartile districts with 75-100% black and Hispanic students (N=61) for FY15. T-test results revealed a statistically reliable difference between the mean percentage of per pupil dollars that 1st quartile districts (0-24% black and Hispanic) lost because of proration (M=0.0277, SD=0.02069) and that 4th quartile districts (75-100% black and Hispanic) lost (M=0.0474, SD=0.02081) for FY15,  $t_{(696)} = -7.084$ ,  $p < .001$ ,  $\alpha = .05$ .

104. The results of these FY15 analyses show that proration caused a statistically significant disparity between MMDs and Non-MMDs when considering ISBE’s proration per pupil loss as a percentage of the district’s OEPP. That statistically significant disparity grew when comparing the 75%-100% MMDs subgroup to the 0%-24% Non-MMD subgroup.

***ISBE's Analyzing The Implementation Of The Methodology Of Capped Per Pupil Cut Versus Proration In FY16***

105. For ISBE's May 14, 2015 Board meeting, it conducted an analysis of the effect on school districts of an alternative methodology to managing the GSA under appropriation anticipated in fiscal year 2016.

106. ISBE refers to the alternative methodology as "Capped Per Pupil Cut."

107. It also analyzed the effect on districts of its previously-implemented methodology, proration. ISBE compared the two methodologies' effects on districts.

108. Using ISBE's most recent demographic data available, I compared the effect of the Capped Per Pupil Cut methodology of managing under appropriated GSA on districts with a majority black or Hispanic students to the effect of proration on the same districts.

109. In ISBE FY16 analysis, the monetary losses suffered by MMDs resulting from the Capped Per Pupil Cut – as measured per pupil and in absolute terms – were less on average than the losses suffered under proration. Put differently, in the scenario ISBE analyzed for FY16, districts with a majority of black or Hispanic students would receive more money if ISBE implemented the Capped Per Pupil Cut methodology instead of proration.

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110. To conclude, for fiscal years 2013, 2014, and 2015, ISBE's selected methodology – proration – to manage under appropriated GSA resulted in a statistically significant disparity between districts with a majority of black and Hispanics and districts with less than a majority of black and Hispanic students as measured by (A) the district's loss per pupil following GSA proration and (B) the district's loss per pupil following GSA proration as a percentage of the district's operating expenditure per pupil. The statistically significant disparity in absolute loss per pupil and relative to operating expenditure per pupil grew when comparing subgroup districts with higher and lower concentrations of black and Hispanic students.

Under penalties as provided by law pursuant to Section 1-109 of the Code of Civil Procedure, the undersigned certifies that the statements set forth in this instrument are true and correct, except as to matters therein stated to be on information and belief and as to such matters the undersigned certifies as aforesaid that he verily believes the same to be true.

By:   
Professor Michelle Turner Mangan, Ph.D.



## TECHNICAL APPENDIX

### Proration Analyses

The following inferential statistical analyses (I-III) were conducted to determine whether ISBE's chosen proration method to manage cuts in GSA resulted in MMDs losing more GSA per pupil than non-MMDs.

#### I. Loss in GSA per pupil due to Proration, with comparison between MMDs and Non-MMDs (FY13)

##### Research Question

For FY13, is there a statistically significant difference in the per pupil loss in general state aid (GSA) due to proration between majority minority districts (MMDs)<sup>1</sup> and Non-MMDs?

##### Research Hypotheses

H<sub>0</sub>: There is no relationship between proration loss per pupil and MMD status in FY13.

H<sub>1</sub>: There is a statistically significant difference in proration loss per pupil based on MMD status in FY13.

##### Results

For FY13, there was an average of \$282.96 lost per pupil due to GSA proration. Table 1 shows the demographic statistics of proration loss ((FY13 Net GSA Claim – FY13 Prorated Net GSA Payment)/ADA Used in FY13 GSA) by type of MMD status.

Table 1

*Descriptive Statistics for Per Pupil Proration Loss by MMD status in FY13*

	MMD Status	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	Non-MMD	755	\$263.52	\$176.994	6.441
	MMD	107	\$420.09	\$248.192	23.994

Table 2 provides the results of the independent samples t-test that compared the per pupil proration loss for Non-MMDs (N=755) and MMDs (N=107). T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that Non-MMDs lost because of proration (M=\$263.52, SD=\$176.994) and that MMDs lost (M=\$420.09, SD=\$248.19),  $t_{(860)}=-8.095$ ,  $p<.001$ ,  $\alpha=.05$ .

<sup>1</sup> MMDs are defined as those districts whose number of black and Hispanic students is 50% or more of their total number of students.

Table 2

*Independent Samples t-Test of Per Pupil Proration Loss by MMD type (FY13)*

		t-test for Equality of Means					
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
						Lower	Upper
Per Pupil Proration Loss	Equal variances assumed	<b>-8.095</b>	<b>860</b>	<b>.000*</b>	-156.572	19.341	-194.534 -118.611

\*Significant at the  $p < .001$  level.

To further explore the disparity, a comparison between the first quartile (0-24% minority) districts and fourth quartile (75-100% minority) districts were examined. Table 3 illustrates the descriptive statistics for those two quartiles for FY13.

Table 3

*Descriptive Statistics of Per Pupil Proration Loss between 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY13)*

	Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	1st Quartile (0-24% minority)	652	\$269.93	\$177.25	6.942
	4th Quartile (75-100% minority)	60	\$543.34	\$226.01	29.178

Table 4 provides the results of the independent samples t-test that compared the per pupil proration loss for 1<sup>st</sup> quartile districts with 0-24% minority students (N=652) and 4<sup>th</sup> quartile districts with 75-100% minority students (N=60) for FY13. The Levene's test for equality of variances revealed a statistically significant difference in variances; therefore the t-test results are reported with equal variances not assumed<sup>2</sup>. T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that 1<sup>st</sup> quartile districts (0-24% minority) lost because of proration (M=\$269.93, SD=\$177.25) and that 4<sup>th</sup> quartile districts (75-100% minority) lost (M=\$543.34, SD=\$226.01) for FY13,  $t_{(66)} = -9.116$ ,  $p < .001$ ,  $\alpha = .05$ .

<sup>2</sup> "Equal variances not assumed" includes the Cochran and Cox (1957) adjustment for the standard error of the estimate and the Satterthwaite (1946) adjustment for the degrees of freedom.

Table 4

*Independent Samples t-Test of Per Pupil Proration Loss for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY13)*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Per Pupil Proration Loss	Equal variances not assumed	<b>-9.116</b>	<b>65.849</b>	<b>.000*</b>	-273.409	29.992	-333.292	-213.525

\*Significant at the  $p < .001$  level.

**II. Loss in GSA per pupil due to Proration, with comparison between MMDs and Non-MMDs (FY14)****Research Question**

For FY14, is there a statistically significant difference in the per pupil loss in GSA due to proration between majority minority districts (MMDs) and Non-MMDs?

**Research Hypotheses**

$H_0$ : There is no relationship between proration loss per pupil and MMD status in FY14.

$H_1$ : There is a statistically significant difference in proration loss per pupil based on MMD status in FY14.

**Results**

For FY14, there was an average of \$299.60 lost per pupil due to GSA proration. Table 5 shows the demographic statistics of proration loss ((FY14 Net GSA Claim – FY14 Prorated Net GSA Payment)/ADA Used in FY14 GSA) by type of MMD status.

Table 5

*Descriptive Statistics for Per Pupil Proration Loss by MMD status in FY14*

	MMD Status	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	Non-MMD	751	\$274.8425	\$182.89507	6.67394
	MMD	109	\$470.1640	\$254.92282	24.41718

Table 6 provides the results of the independent samples t-test that compared the per pupil proration loss for Non-MMDs (N=751) and MMDs (N=109). The Levene's test for equality of variances revealed a statistically significant difference in variances; therefore the t-test results are reported with equal variances not assumed. T-test results revealed a statistically reliable difference between the mean

number of per pupil dollars that Non-MMDs lost because of proration ( $M=\$274.84$ ,  $SD=\$182.89$ ) and that MMDs lost ( $M=\$470.16$ ,  $SD=\$254.92$ ),  $t_{(124)} = -7.716$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 6

*Independent Samples t-Test of Per Pupil Proration Loss by MMD type (FY14)*

		t	df	t-test for Equality of Means				
				Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper	
Per Pupil Proration Loss	Equal variances not assumed	<b>-7.716</b>	<b>124.640</b>	<b>.000*</b>	-195.32156	25.31284	-245.42023	-145.22289

\*Significant at the  $p < .001$  level.

To further explore the disparity, a comparison between the first quartile (0-24% minority) districts and fourth quartile (75-100% minority) districts were examined. Table 7 illustrates the descriptive statistics for those two quartiles for FY14.

Table 7

*Descriptive Statistics of Per Pupil Proration Loss between 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY14)*

	Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	1st Quartile (0-24% minority)	642	\$278.69	\$182.36	7.19731
	4th Quartile (75-100% minority)	61	\$598.03	\$227.60	29.14181

Table 8 provides the results of the independent samples t-test that compared the per pupil proration loss for 1<sup>st</sup> quartile districts with 0-24% minority students ( $N=642$ ) and 4<sup>th</sup> quartile districts with 75-100% minority students ( $N=61$ ) for FY14. The Levene's test for equality of variances revealed a statistically significant difference in variances; therefore the t-test results are reported with equal variances not assumed. T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that 1<sup>st</sup> quartile districts (0-24% minority) lost because of proration ( $M=\$278.69$ ,  $SD=\$182.36$ ) and that 4<sup>th</sup> quartile districts (75-100% minority) lost ( $M=\$598.03$ ,  $SD=\$227.60$ ) for FY14,  $t_{(67)} = -10.639$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 8

*Independent Samples t-Test of Per Pupil Proration Loss for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY14)*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Per Pupil Proration Loss	Equal variances not assumed	<b>-10.639</b>	<b>67.519</b>	<b>.000*</b>	-319.34103	30.01743	-379.24760	-259.43446

\*Significant at the p<.001 level.

### III. Loss in GSA per pupil due to Proration, with comparison between MMDs and Non-MMDs (FY15)

#### Research Question

For FY15, is there a statistically significant difference in the per pupil loss in GSA due to proration between majority minority districts (MMDs)<sup>3</sup> and Non-MMDs?

#### Research Hypotheses

H<sub>0</sub>: There is no relationship between proration loss per pupil and MMD status in FY15.

H<sub>1</sub>: There is a statistically significant difference in proration loss per pupil based on MMD status in FY15.

#### Results

For FY15, there was an average of \$290 lost per pupil due to GSA proration. Table 9 shows the demographic statistics of proration loss ((FY15 Net GSA Claim – FY15 Prorated Net GSA Payment)/ADA Used in FY15 GSA) by type of MMD status.

Table 9

*Descriptive Statistics for Per Pupil Proration Loss by MMD status in FY15*

	MMDType	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	Non-MMD	745	262.7047	172.98613	6.33772
	MMD	108	475.8056	239.69024	23.06420

<sup>3</sup> MMD status from FY14 was used since FY15 status was not available.

Table 10 provides the results of the independent samples t-test that compared the per pupil proration loss for Non-MMDs (N=745) and MMDs (N=108). The Levene's test for equality of variances revealed a statistically significant difference in variances; therefore the t-test results are reported with equal variances not assumed. T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that Non-MMDs lost because of proration (M=\$262.70, SD=\$172.98) and that MMDs lost (M=\$475.80, SD=\$239.69),  $t_{(124)} = -8.909$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 10

*Independent Samples t-Test of Per Pupil Proration Loss by MMD type (FY15)*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Per Pupil Proration Loss	Equal variances not assumed	<b>-8.909</b>	<b>123.667</b>	<b>.000*</b>	-213.10086	23.91912	-260.44475	-165.75697

\*Significant at the  $p < .001$  level.

To further explore the disparity, a comparison between the first quartile (0-24% minority) districts and fourth quartile (75-100% minority) districts were examined. Table 11 illustrates the descriptive statistics for those two quartiles for FY15.

Table 11

*Descriptive Statistics of Per Pupil Proration Loss between 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY15)*

	District Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Per Pupil Proration Loss	1st Quartile (0-24% Minority)	637	\$264.49	\$172.76	6.84520
	4th Quartile (75-100% Minority)	61	\$591.83	\$212.36	27.19114

Table 12 provides the results of the independent samples t-test that compared the per pupil proration loss for 1<sup>st</sup> quartile districts with 0-24% minority students (N=637) and 4<sup>th</sup> quartile districts with 75-100% minority students (N=61) for FY15. The Levene's test for equality of variances revealed a statistically significant difference in variances; therefore the t-test results are reported with equal variances not assumed. T-test results revealed a statistically reliable difference between the mean number of per pupil dollars that 1<sup>st</sup> quartile districts (0-24% minority) lost because of proration (M=\$264.49, SD=\$172.76) and that 4<sup>th</sup> quartile districts (75-100% minority) lost (M=\$591.83, SD=\$212.36) for FY15,  $t_{(67)} = -11.674$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 12

*Independent Samples t-Test of Per Pupil Proration Loss for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY15)*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Per Pupil Proration Loss	Equal variances not assumed	<b>-11.674</b>	<b>67.820</b>	<b>.000*</b>	-327.33685	28.03952	-383.29153	-271.38217

\*Significant at the p<.001 level.

The main inquiry behind the next inferential statistical analyses (IV-VI) is to determine if as a result of the chosen proration method, MMDs had a greater decrease in their operating expenses per pupil compared with non-MMDs in FY13 thru FY15.

#### IV. Difference in Percentage of Proration Loss per OEPP by District for FY13

##### Research Question

Does the proration method used for FY13 disproportionately affect MMDs versus Non-MMD as a result of their disparate operating expenses per pupil (OEPP)?

##### Research Hypotheses

H<sub>0</sub>: There is no relationship between proration loss per pupil and MMD status in FY13.

H<sub>1</sub>: There is a statistically significant difference in proration loss per pupil based on MMD status in FY13.

##### Results

Table 13 illustrates the difference in means and standard deviations between MMDs and Non-MMDs for the percentage of GSA lost as a result of proration compared with their OEPP<sup>4</sup> in FY13.

Table 13

##### *Descriptive Statistics for Percentage GSA Lost per OEPP due to Proration by MMD Type (FY13)*

	MMD Type	N	Mean	Std. Deviation	Std. Error Mean
Percentage of GSA Lost Per OEPP	Non-MMD	754	.0273	.02082	.00076
	MMD	107	.0354	.02308	.00223

Table 14 provides the results of the independent samples t-test that compared the per pupil percentage GSA lost per OEPP for Non-MMDs (N=754) and MMDs (N=107) for FY13. T-test results revealed a statistically reliable difference between the mean percentage of GSA lost per OEPP for Non-MMDs (M=2.73%, SD=2.08%) compared with MMDs (M=3.54%, SD=2.30%) in FY13,  $t_{(859)} = -3.738$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 14

##### *Independent Samples t-Test for Percentage GSA Lost per OEPP by MMD Type (FY13)*

		t-test for Equality of Means						
		t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Percentage GSA Lost Per OEPP	Equal variances assumed	<b>-3.738</b>	<b>859</b>	<b>.000*</b>	-.00815	.00218	-.01243	-.00387

\*Significant at the  $p < .001$  level.

<sup>4</sup> Illinois State University Lab School and Whiteside School District 115 were not included in these analyses since their OEPP were not reported by ISBE for FY13.



The results of this analysis show that the percentage GSA lost for MMDs was a significantly greater percentage of their OEPP compared with non-MMDs for FY13.

To further explore the disparity, a comparison between the first quartile (0-24% minority) districts and fourth quartile (75-100% minority) districts were examined. Table 15 illustrates the descriptive statistics for those two quartiles for FY13.

Table 15

*Descriptive Statistics of Percentage per Pupil GSA Lost per OEPP for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY13)*

	Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Percentage GSA Lost Per OEPP	1st Quartile (0-24% minority)	652	.0283	.02103	.00082
	4th Quartile (75-100% minority)	60	.0443	.02227	.00288

Table 16 provides the results of the independent samples t-test that compared the percentage per pupil GSA lost per OEPP for 1<sup>st</sup> quartile districts with 0-24% minority students (N=652) and 4<sup>th</sup> quartile districts with 75-100% minority students (N=60) for FY13. T-test results revealed a statistically reliable difference between the mean percentage of per pupil dollars that 1<sup>st</sup> quartile districts (0-24% minority) lost because of proration (M=0.0283, SD=0.02103) and that 4<sup>th</sup> quartile districts (75-100% minority) lost (M=0.0443, SD=0.02227) for FY13,  $t_{(710)} = -5.641$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 16

*Independent Samples t-Test of Percentage per Pupil GSA Lost for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY13)*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Percentage GSA Lost Per OEPP	Equal variances assumed	<b>-5.641</b>	<b>710</b>	<b>.000*</b>	-.01608	.00285	-.02168	-.01048

\*Significant at the  $p < .001$  level.

## V. Difference in Percentage of Proration Loss per OEPP by District for FY14

### Research Question

Does the proration method used disproportionately affect MMDs versus Non-MMD as a result of their disparate operating expenses per pupil (OEPP) for FY14?

### Research Hypotheses

H<sub>0</sub>: There is no relationship between proration loss per pupil and MMD status in FY14.

H<sub>1</sub>: There is a statistically significant difference in proration loss per pupil based on MMD status in FY14.

### Results

Table 17 illustrates the difference in means and standard deviations between MMDs and Non-MMDs for the percentage of GSA lost as a result of proration compared with their OEPP<sup>5</sup>.

Table 17

#### *Descriptive Statistics for Percentage GSA Lost per OEPP due to Proration (FY14)*

	MMD Type	N	Mean	Std. Deviation	Std. Error Mean
Percentage GSA Lost Per OEPP	Non-MMD	750	.0284	.02162	.00079
	MMD	108	.0396	.02336	.00225

Table 18 provides the results of the independent samples t-test that compared the per pupil proration loss per OEPP for Non-MMDs (N=750) and MMDs (N=108). T-test results revealed a statistically reliable difference between the mean percentage of proration loss per OEPP for Non-MMDs (M=2.84%, SD=2.16%) compared with MMDs (M=3.96%, SD=2.33%),  $t_{(856)} = -4.995$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 18

#### *Independent Samples t-Test for Percentage GSA Lost per OEPP by MMD Type (FY14)*

		t-test for Equality of Means							
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
						Lower	Upper		
Percentage GSA Lost Per OEPP	Equal variances assumed	<b>-4.995</b>	<b>856</b>	<b>.000*</b>	-.01123	.00225	-.01564	-.00682	

\*Significant at the  $p < .001$  level.

The results of this analysis show that the proration loss for MMDs was a significantly greater percentage of their OEPP compared with non-MMDs for FY14.

<sup>5</sup> Illinois State University Lab School and Whiteside School District 115 were not included in these analyses since their OEPP were not reported by ISBE for FY14.

To further explore the disparity, a comparison between the first quartile (0-24% minority) districts and fourth quartile (75-100% minority) districts were examined. Table 19 illustrates the descriptive statistics for those two quartiles for FY14.

Table 19

*Descriptive Statistics of Per Pupil Percentage GSA Lost per OEPP for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY14)*

	Minority Quartiles	N	Mean	Std. Deviation	Std. Error Mean
Percentage GSA Lost Per OEPP	1st Quartile (0-24% minority)	642	.0292	.02167	.00086
	4th Quartile (75-100% minority)	61	.0485	.02190	.00280

Table 20 provides the results of the independent samples t-test that compared the percentage per pupil GSA lost per OEPP for 1<sup>st</sup> quartile districts with 0-24% minority students (N=642) and 4<sup>th</sup> quartile districts with 75-100% minority students (N=61) for FY14. T-test results revealed a statistically reliable difference between the mean percentage of per pupil dollars that 1<sup>st</sup> quartile districts (0-24% minority) lost because of proration (M=0.0292, SD=0.02167) and that 4<sup>th</sup> quartile districts (75-100% minority) lost (M=0.0485, SD=0.02190) for FY14,  $t_{(701)} = -6.638$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 20

*Independent Samples t-Test of Percentage per Pupil GSA Lost for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY14)*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper	
Percentage GSA Lost per OEPP	Equal variances assumed	<b>-6.638</b>	<b>701</b>	<b>.000*</b>	-.01929	.00291	-.02499	-.01358

\*Significant at the  $p < .001$  level.

## VI. Difference in Percentage of Proration Loss per OEPP by District for FY15

### Research Question

Does the proration method used disproportionately affect MMDs versus Non-MMD as a result of their disparate operating expenses per pupil (OEPP) for FY15?

### Research Hypotheses

H<sub>0</sub>: There is no relationship between proration loss per pupil and MMD status in FY15.

H<sub>1</sub>: There is a statistically significant difference in proration loss per pupil based on MMD status in FY15.

### Results

Table 21 illustrates the difference in means and standard deviations between MMDs and Non-MMDs for the percentage of GSA lost as a result of proration compared with their OEPP<sup>6</sup>.

Table 21

#### *Descriptive Statistics for Proration Loss per OEPP (FY15)*

	MMDType	N	Mean	Std. Deviation	Std. Error Mean
Proration Loss Per	Non-MMD	745	.0272	.02066	.00076
OEPP	MMD	108	.0394	.02231	.00215

Table 22 provides the results of the independent samples t-test that compared the per pupil proration loss per OEPP for Non-MMDs (N=745) and MMDs (N=108). T-test results revealed a statistically reliable difference between the mean percentage of proration loss per OEPP for Non-MMDs (M=2.72%, SD=2.06%) compared with MMDs (M=3.94%, SD=2.23%),  $t_{(851)} = -5.657$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 22

#### *Independent Samples t-Test for Proration Loss per OEPP by MMD Type (FY15)*

		t	df	Sig. (2-tailed)	t-test for Equality of Means			
					Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper	
Proration Loss Per OEPP	Equal variances assumed	<b>-5.657</b>	<b>851</b>	<b>.000*</b>	-.01216	.00215	-.01638	-.00794

\*Significant at the  $p < .001$  level.

The results of this analysis show that the proration loss for MMDs was a significantly greater percentage of their OEPP compared with non-MMDs for FY15.

<sup>6</sup> Illinois State University Lab School and Whiteside School District 115 were not included in these analyses since their OEPP were not reported by ISBE for FY14.

To further explore the disparity, a comparison between the first quartile (0-24% minority) districts and fourth quartile (75-100% minority) districts were examined. Table 23 illustrates the descriptive statistics for those two quartiles for FY15.

Table 23

*Descriptive Statistics of Per Pupil Percentage GSA Lost per OEPP for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY15)*

	MMD Quartile	N	Mean	Std. Deviation	Std. Error Mean
Percentage GSA Lost Per OEPP	1st Quartile (0-24% Minority)	637	.0277	.02069	.00082
	4th Quartile (75-100% Minority)	61	.0474	.02081	.00266

Table 24 provides the results of the independent samples t-test that compared the percentage per pupil GSA lost per OEPP for 1<sup>st</sup> quartile districts with 0-24% minority students (N=637) and 4<sup>th</sup> quartile districts with 75-100% minority students (N=61) for FY15. T-test results revealed a statistically reliable difference between the mean percentage of per pupil dollars that 1<sup>st</sup> quartile districts (0-24% minority) lost because of proration (M=0.0277, SD=0.02069) and that 4<sup>th</sup> quartile districts (75-100% minority) lost (M=0.0474, SD=0.02081) for FY15,  $t_{(696)} = -7.084$ ,  $p < .001$ ,  $\alpha = .05$ .

Table 24

*Independent Samples t-Test of Percentage per Pupil GSA Lost for 1<sup>st</sup> and 4<sup>th</sup> District Minority Quartiles (FY15)*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper	
Percentage GSA Lost Per OEPP	Equal variances assumed	<b>-7.084</b>	<b>696</b>	<b>.000*</b>	-.01965	.00277	-.02510	-.01421

\*Significant at the  $p < .001$  level.