

# Achievement Gap Measurement in District 833



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# Agenda



- Local Accountability System (Vision Cards)
- Achievement Examples
- Regression & Other Methods
- Summary

# Vision Cards



# Vision Cards



- Created by a group of stakeholders, led by the Director of REA and a part of the strategic planning process
- Approved by our School Board in 2011
- Broken out by level - Pre-K, Elementary (K-5), Middle (6-8), High (9-12)
- Measures include proficiency, growth, and college/career readiness
- Equity measures are embedded throughout

# Vision Cards



- Groups Include:
  - All Students
  - 5 Racial/Ethnic Groups
  - Special Education
  - English Learners
  - Free or Reduced Price Lunch
  - Male/Female
  - Gifted
- Measures Include:
  - Lowest Group (proficiency)
  - Gap Between Lowest and Highest Group (growth)
  - All in Percentages (simple)
- Link to Vision Cards:
  - [Vision Cards - District Website](#)

# Achievement Gaps



# Achievement Gaps

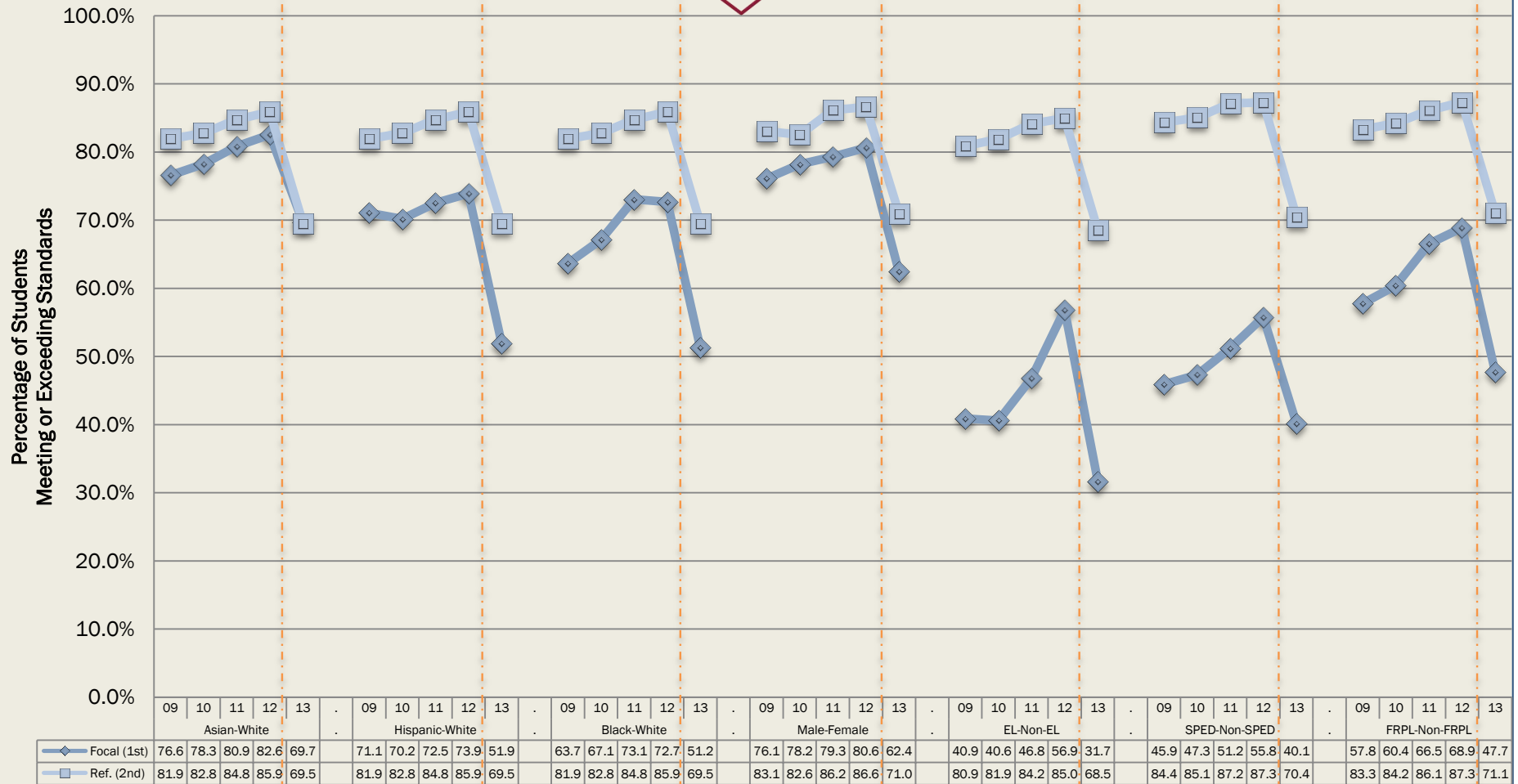


- Examined on Many Assessments in District 833
  - MN Assessments (MCA/MOD/MTAS)
  - PLAN/EXPLORE/ACT
  - NWEA MAP
- Both % and Scale Scores
- Use Coloring to Show Contrasts
- Consideration for How Gaps are Closing

**District 833**  
**MN Assessment Results - Reading**  
**2008-09 to 2012-13**  
**Achievement Gaps (All Grades - Grades 3-8 and 10)**



--- = New Test/Trend





# MN Assessments 2013 Reading Gaps



District 833 - MN Assessments - 2013 Reading Proficiency Gaps By Elementary School

School Number	School	Asian			Hispanic			Black			Male			EL			SPED			FRPL			Average Ranking
		Students	Prof. Gap	Rank	Students	Prof. Gap	Rank	Students	Prof. Gap	Rank	Students	Prof. Gap	Rank	Students	Prof. Gap	Rank	Students	Prof. Gap	Rank	Students	Prof. Gap	Rank	
32	CES	10	-26.9%	2	15	-20.3%	5	28	-7.7%	8	77	-16.3%	2	18	-39.7%	5	28	-27.8%	8	81	-25.7%	5	5.00
46	WES	46	-10.2%	5	16	-18.9%	6	39	-22.8%	4	127	-12.1%	6	21	-52.8%	2	26	-39.9%	2	57	-10.7%	12	5.29
42	PES	15	-19.7%	3	24	-32.2%	1	18	-19.7%	5	106	-15.4%	3	20	-45.3%	3	28	-15.7%	14	84	-9.1%	13	6.00
45	BES	66	6.3%	11	20	-17.1%	8	23	-38.0%	1	171	-4.5%	13	14	-55.6%	1	30	-34.4%	7	39	-38.0%	1	6.00
41	LRES	61	3.7%	10	17	-25.4%	3	35	-12.6%	6	243	-12.4%	5	27	-14.6%	11	52	-34.4%	6	37	-27.6%	3	6.29
30	AES	10	0.1%	8	16	-22.4%	4	16	-34.9%	2	107	-9.2%	9				41	-24.0%	10	61	-21.1%	6	6.50
40	PHES	11	20.1%	15	11	-7.2%	11				98	-13.1%	4	10	-34.8%	7	31	-37.2%	3	47	-27.8%	2	7.00
38	NES	12	-29.0%	1				31	-5.6%	11	60	-4.2%	15	19	-26.8%	8	16	-34.8%	5	72	-26.2%	4	7.33
37	CGES	46	-7.0%	6	15	-16.7%	9	28	-2.1%	13	133	-17.7%	1	23	-26.1%	9	32	-44.7%	1	40	-8.6%	14	7.57
34	GCES	26	-17.7%	4	26	-17.7%	7	14	-6.7%	9	185	-4.3%	14	28	-42.5%	4	57	-17.7%	13	64	-20.5%	7	8.29
31	NFSI	12	-3.9%	7	15	-30.6%	2				77	-5.6%	11							17	-2.2%	15	8.75
47	MES	63	1.3%	9	15	9.8%	13	43	-28.3%	3	197	-9.4%	8	18	-18.6%	10	38	-19.6%	12	39	-18.3%	8	9.00
44	ROES	32	8.5%	13	10	13.5%	14	19	-3.3%	12	137	-4.7%	12	13	-39.1%	6	31	-36.9%	4	38	-14.8%	9	10.00
43	RRES	44	12.6%	14	21	4.7%	12	21	-9.6%	7	165	-12.0%	7	19	-4.5%	12	39	-24.2%	9	23	-12.7%	11	10.29
36	HES	21	6.7%	12	17	-10.7%	10	22	-5.9%	10	121	-7.5%	10	21	-1.9%	13	43	-23.5%	11	61	-14.5%	10	10.86
833	D833	475	1.1%		247	-16.9%		350	-17.4%		2004	-10.2%		261	-32.6%		500	-30.2%		760	-24.1%		

**Bold = Statistically Significant**

# EXPLORE - Composite (All 4) Gaps



EXPLORE Achievement Gap Data (Composite Scale Score) - 2009 to 2013											
School	Gap	Gap	Sig.	Gap	Sig.	Gap	Sig.	Gap	Sig.	Gap	Sig.
D833	Asian-White	0.2		1.0	*	0.6		0.7		0.2	
	Hispanic-White	-1.5	***	-1.5	***	-1.6	***	-2.1	***	-1.9	***
	Black-White	-2.2	***	-2.0	***	-2.3	***	-1.8	***	-2.3	***
	Female-Male	0.6	***	0.5	*	0.6	***	0.4	*	0.3	
	EL-NonEL	-3.1	***	-3.8	***	-3.1	***	-3.6	***	-4.0	***
	SPED-NonSPED	-3.5	***	-4.1	***	-3.8	***	-4.0	***	-3.8	***
	FRPL-NonFRPL	-2.0	***	-2.6	***	-2.6	***	-2.4	***	-2.7	***
CGMS	Asian-White	-0.4		1.0		0.4		-1.5	*	-0.6	
	Hispanic-White	-1.5	*	-1.6	**	-0.9		-1.9	**	-1.7	**
	Black-White	-1.0		-0.5		-1.5	**	-1.5	**	-2.5	***
	Female-Male	0.1		0.7	*	0.9	**	0.3		-0.4	
	EL-NonEL			-2.9	**	-2.0	**	-3.3	***	-3.3	***
	SPED-NonSPED	-2.6	***	-3.3	***	-2.9	***	-3.7	***	-3.7	***
	FRPL-NonFRPL	-1.0	*	-1.5	**	-1.5	***	-2.2	***	-2.5	***
LMS	Asian-White	1.2		1.5	**	1.3	*	2.1	***	1.1	
	Hispanic-White			-0.7		-1.2		-1.3		-2.1	**
	Black-White	-1.4		-2.1	***	-2.2	***	-1.2		-2.3	***
	Female-Male	0.7	*	0.4		0.4		0.2		1.2	***
	EL-NonEL									-5.1	***
	SPED-NonSPED	-3.1	***	-4.6	***	-4.5	***	-3.4	***	-3.7	***
	FRPL-NonFRPL	-1.7	*	-3.6	***	-2.6	***	-3.1	***	-3.1	***
OMS	Asian-White	0.3		-2.4	*	-0.6				-0.6	
	Hispanic-White	-1.0		-0.9		-1.1	*	-1.7	**	-0.7	
	Black-White	-2.0	**	-1.9	*	-0.1		-2.2	**	-2.2	**
	Female-Male	1.1	**	0.8	*	0.8	*	1.3	***	0.0	
	EL-NonEL			-3.5	***	-1.8	**	-2.4	***	-2.7	***
	SPED-NonSPED	-3.7	***	-3.2	***	-2.8	***	-3.7	***	-2.6	***
	FRPL-NonFRPL	-1.1	**	-1.3	**	-1.2	***	-1.1	**	-1.4	**
WMS	Asian-White	-0.5		0.2		-0.3		0.5		0.4	
	Hispanic-White	-1.3		-1.7		-2.3	**	-2.3	**	-2.2	**
	Black-White	-3.6	***	-3.6	***	-4.2	***	-2.4	***	-2.2	**
	Female-Male	0.6		0.2		0.8	*	0.1		0.1	
	EL-NonEL	-4.0	***	-3.7	***	-4.0	***	-3.6	***	-4.5	***
	SPED-NonSPED	-4.5	***	-4.8	***	-4.3	***	-4.1	***	-4.2	***
	FRPL-NonFRPL	-3.2	***	-3.3	***	-3.2	***	-1.9	***	-2.5	***

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

# MN Math Gap Closure



Rule - Improvement from 2011-12 to 2012-13 for both groups and gap closure between 2010-11/2011-12 and 2011-12/2012-13 (Math Only)				
Elementary Schools (Grades 3-5)				
ELL	FRPL	SPED	Black	Hispanic
<i>Cottage Grove Elementary</i>	<i>Liberty Ridge Elementary</i>	<i>Armstrong Elementary</i>	<i>Liberty Ridge Elementary</i>	<i>Bailey Elementary</i>
Middleton Elementary	Middleton Elementary	<i>Hillside Elementary</i>	Middleton Elementary	
Royal Oaks Elementary	Red Rock Elementary	<i>Grey Cloud Elementary</i>		
	Royal Oaks Elementary	Middleton Elementary		
	<i>Woodbury Elementary</i>	Red Rock Elementary		
Middle Schools (Grades 6-8)				
<i>Woodbury Middle School</i>	<i>Cottage Grove Middle School</i>	<i>Lake Middle School</i>	<i>Woodbury Middle School</i>	
	<i>Woodbury Middle School</i>		<i>District</i>	
High Schools (Grades 10, 11)				
	East Ridge High School		Park High School	
District - All Grades				
		<i>District</i>		
<i>*Italics Indicate Two Years of Improvement For Both Groups in Overall Proficiency</i>				

# Regression & Other Thoughts



# What is the achievement gap???



- Typically, the difference in some outcome between two groups
- Can also be explored in terms of predictability or probability (typically, in the form of growth)



# What is the achievement gap???



- Measures matter!
  - What happens to the achievement gap if proficiency is set too low or too high?
  - What happens to the achievement gap if the measure is narrow?



# What is the achievement gap???

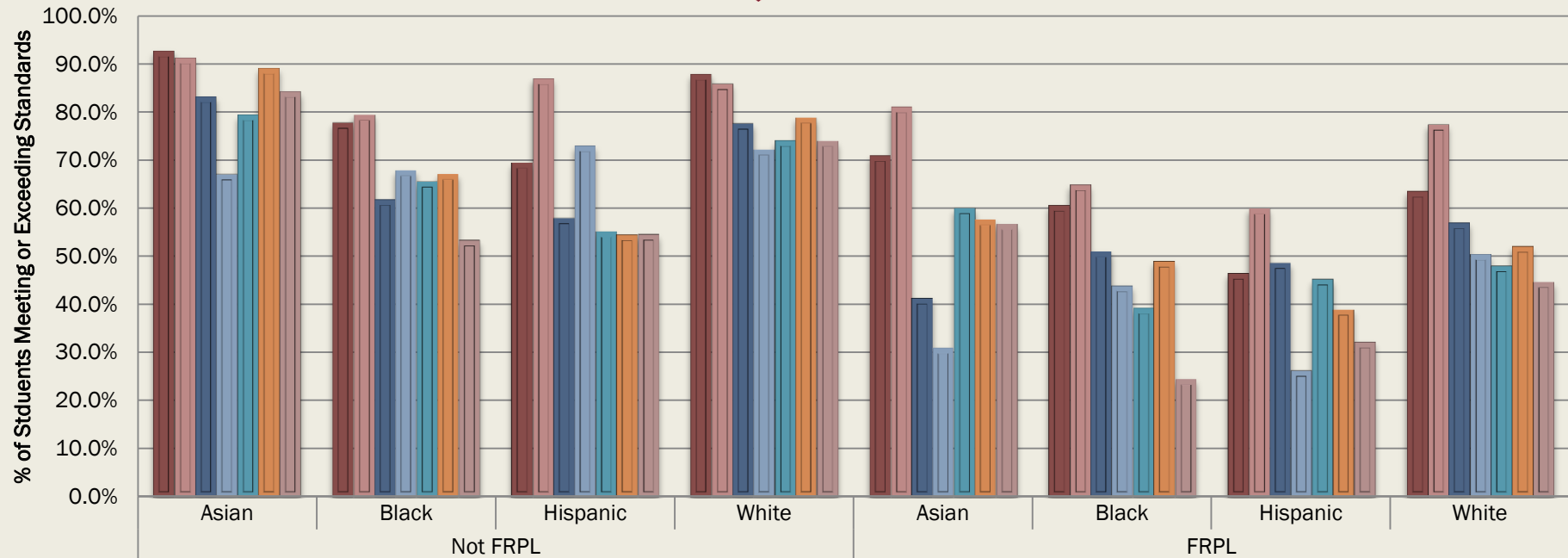


One question that often comes up about the achievement gap is, “do differences still exist if we account for any specific demographics first, like poverty?”

Turns out, we can use a statistical technique – multiple linear regression – to try to estimate the unique contribution of each demographic characteristic in terms of predicting student scores

# District 833 - 2012-13 MN Assessments Results

## Mathematics by Grade and Ethnic Group



	Not FRPL				FRPL			
	Asian	Black	Hispanic	White	Asian	Black	Hispanic	White
3rd Grade	92.6%	77.8%	69.4%	87.8%	71.0%	60.6%	46.5%	63.6%
4th Grade	91.3%	79.5%	87.0%	85.9%	81.1%	64.9%	60.0%	77.4%
5th Grade	83.2%	61.8%	58.0%	77.6%	41.4%	51.1%	48.7%	57.0%
6th Grade	67.0%	67.8%	72.9%	72.1%	31.0%	43.9%	26.3%	50.4%
7th Grade	79.3%	65.5%	55.1%	74.0%	60.0%	39.3%	45.2%	48.0%
8th Grade	89.2%	67.2%	54.5%	78.9%	57.7%	49.1%	39.0%	52.1%
11th Grade	84.1%	53.3%	54.5%	73.9%	56.7%	24.6%	32.3%	44.7%

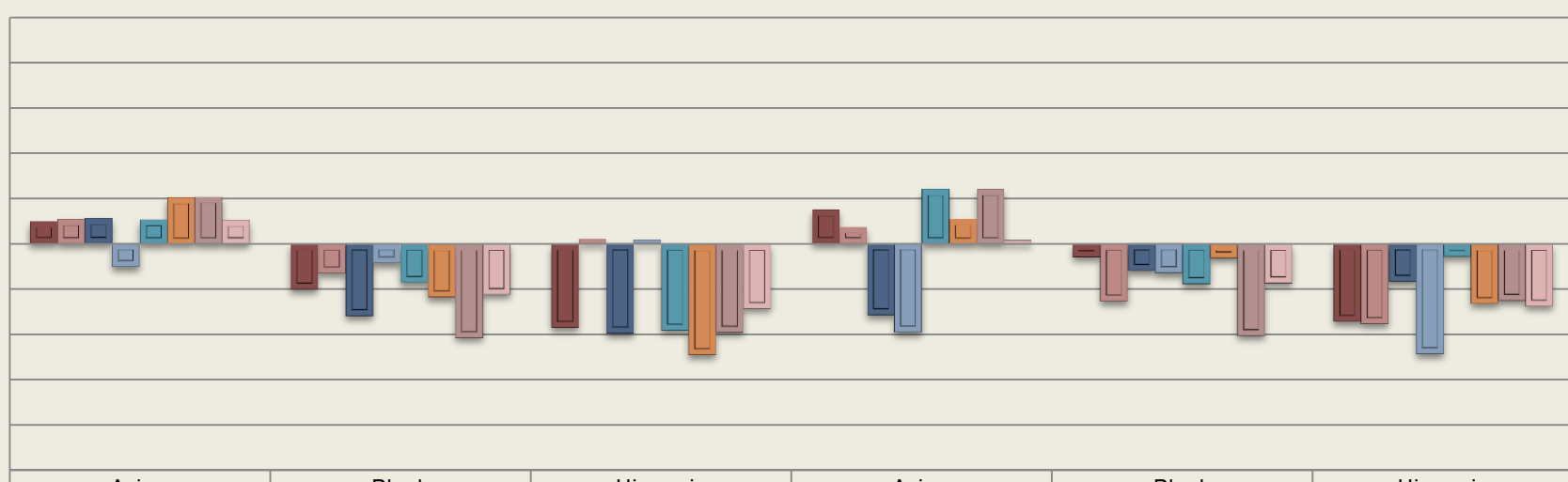


# District 833 - 2012-13 MN Assessments Results

## Mathematics by Grade - Ethnic Group Gaps



% of Students Meeting or Exceeding Standards



	Asian	Black Not FRPL	Hispanic	Asian	Black FRPL	Hispanic
■ 3rd Grade	4.9%	-10.0%	-18.4%	7.4%	-3.0%	-17.1%
■ 4th Grade	5.4%	-6.4%	1.1%	3.7%	-12.5%	-17.4%
■ 5th Grade	5.6%	-15.8%	-19.6%	-15.6%	-6.0%	-8.3%
■ 6th Grade	-5.1%	-4.3%	0.8%	-19.4%	-6.5%	-24.1%
■ 7th Grade	5.3%	-8.5%	-18.9%	12.0%	-8.7%	-2.8%
■ 8th Grade	10.3%	-11.7%	-24.3%	5.6%	-3.1%	-13.1%
■ 11th Grade	10.3%	-20.5%	-19.3%	12.0%	-20.1%	-12.4%
■ All Grades	5.2%	-11.0%	-14.1%	0.8%	-8.5%	-13.6%

# Accounting for Demographics



## *Multiple Regression Results - 2012-13 MCA Mathematics - Demographic Predictors Only*

Grade	Female	Asian	Hispanic	Black	FRPL	LEP	SPE
3rd Grade	-2.5***	5.9***	-2.5	-4.1**	-8.8***	-8***	-11.9***
4th Grade	-2.5**	6.9***	-1.7	-2	-5.4***	-10.9***	-14.1***
5th Grade	-2.6***	3.9***	-1.1	-3.3**	-5***	-11.4***	-8.6***
6th Grade	-0.9	2.7*	-1.5	-3.3**	-6.5***	-7.8***	-12***
7th Grade	-1.7**	3.9***	-2.5*	-2.9**	-5.1***	-6.9***	-8.3***
8th Grade	-0.9	7***	-2.3+	-4.1***	-6.7***	-8.5***	-10.2***
11th Grade	-2.3*	4.6**	-4.7*	-8.8***	-9.9***	-12.2**	-16.3***

Values are in the metric of state scale scores.

Statistical Significance Indicators: + =  $p < 0.10$ , \* =  $p < 0.05$ , \*\* =  $p < 0.01$ , \*\*\* =  $p < 0.001$

Bright Green/Bright Red = Positive/Negative difference, statistically significant at 0.05 or less

Light Green/Light Red = Positive/Negative difference, but not statistically significant

# Demographics + Prior Achievement (e.g. Growth Model)



## *Multiple Regression Results - 2012-13 MCA Mathematics - With Prior Achievement*

Grade	Female	Asian	Hispanic	Black	FRPL	LEP	SPE
4th Grade	-0.2	3***	0.6	1.5+	-1.2+	-2.1*	-2.8***
5th Grade	-1.5**	-0.2	-0.7	-0.3	-1.7*	-1.8**	0.2
6th Grade	0	0.4	-0.6	-0.4	-1.8***	-0.8	-1.8**
7th Grade	-0.1	1.9***	1.1+	0.8	-1.7***	-1	-1
8th Grade	0.4	1	0.4	-1.3+	-1.5**	1.7	-2.3**
11th Grade	-2.1**	0.1	-2.9	-4.1**	-2.4+	3.8	-1.3

Values are in the metric of state scale scores.

Statistical Significance Indicators: + =  $p < 0.10$ , \* =  $p < 0.05$ , \*\* =  $p < 0.01$ , \*\*\* =  $p < 0.001$

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# Reading



## Multiple Regression - 2012-13 MCA Reading Results

Model	Grade	Female	Asian	Hispanic	Black	FRPL	LEP	SPED
Demographics Only	3rd Grade	2.6**	3.9*	-4.4*	-5.7**	-8.4***	-8.8***	-17.8***
	4th Grade	2.6***	1.4	-0.3	-4.2**	-5.1***	-7.9***	-12.1***
	5th Grade	1.5*	1.9	-1.6	-2.8*	-5.5***	-11.2***	-9.1***
	6th Grade	3.4***	6.2***	-0.1	-3.2*	-5.9***	-13.7***	-12***
	7th Grade	1.8*	2.3	-3.8*	-5.2**	-7.1***	-13.1***	-15.9***
	8th Grade	1.8*	4.4**	-1.7	-4**	-6***	-16***	-14.9***
	10th Grade	-0.7	3.6**	-1.9	-4.1**	-7***	-18.9***	-12.3***
With Prior Achievement	4th Grade	0.6	-0.9	-0.7	-1.6+	-2**	1.2	-2.8**
	5th Grade	0.5	0	-1.4	-0.3	-1.7*	-1	-1
	6th Grade	3.2***	3**	2.5+	-0.5	-1.5+	-2.4	-0.7
	7th Grade	0.6	1.2	-1.5	-3.4**	-1.9*	-4.8**	-5***
	8th Grade	0.1	2.2*	1.4	-1.3	-1	-4.7**	-4.1***
	10th Grade	-2.8***	0.9	-2.8*	-1.9+	-2.1*	-2.7	-3.5***

Values are in the metric of state scale scores.

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# Science



## *Multiple Regression - 2012-13 MCA Science Results*

Model	Grade	Female	Asian	Hispanic	Black	FRPL	LEP	SPED
Demographics Only	5th Grade	-3.3***	1.9	-1.6	-5.1***	-4.7***	-11.2***	-9.6***
	8th Grade	-3.3***	3.7***	-2.0+	-5***	-5.7***	-10.1***	-11.8***
	High School	-0.9	3.3**	-3.3**	-5.3***	-4.2***	-12.8***	-12.7***
With Prior Achievement	8th Grade	-2.3***	3.5***	-0.6	-2*	-2.2*	-2.3	-3.3***

Values are in the metric of state scale scores.

Statistical Significance Indicators: + =  $p < 0.10$ , \* =  $p < 0.05$ , \*\* =  $p < 0.01$ , \*\*\* =  $p < 0.001$

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# Cumulative Effect of Demographics



- Each coefficient is additive
- For example, in 11<sup>th</sup> grade math, if you're a female black student on FRPL, you would be predicted to score 8.6 points lower – on average – than a white male not on FRPL with similar prior achievement and other demographics.

$$(-2.1) + (-4.1) + (-2.4) = -8.6$$

# Other Measures



- Other measures to examine...
  - Early Learning (Pre-K, K-2)
  - Intervention and Choice Program Participation
  - Activity Participation & Behavior Issues
  - Access (e.g. to highly effective teachers, resources, etc.)
  - Discipline
  - Attendance
  - Perceptions (surveys, focus groups, interviews)
  - Graduation
  - College Participation, Prestige, Persistence, and Performance
  - Student Work/Critical Thinking
  - Long-term, longitudinal (cohort-based)

# Summary



BRINGING IT ALL TOGETHER...



# Summary



- Many different ways to look at gaps
  - Simple versus complex
  - Percentages versus scale scores
  - Achievement versus growth
  - Test scores versus other outcomes
  - Consider the audience!
- Creative displays can help
  - Time
  - Intensity
  - Significance
  - Comparisons (norms)
- Measures matter!
  - Percentages and continuous scores can be different
  - Changes in measures (e.g. MCAs) can make results confusing
  - Demographics often overlap

# Importance



- Desensitization to “achievement gap” (the Ron Burgundy effect)
- Precision versus multiple measures (validity)
- To measure the effectiveness of efforts to close gaps, our measures must reflect our realities
- Data must real and actionable to be useful to teachers and other stakeholders
- It is complicated!

# Resources



# Resources



- District 833 REA

Website:<http://www.sowashco.k12.mn.us/Departments/REA/default.asp>

- District 833 Strategic Plan

Website:<http://www.sowashco.k12.mn.us/Departments/Communications/StrategicPlanning/StrategicObjective1.asp>

# Questions???



THANK YOU!