

Level and Use of Resources in Arkansas: Are Use Patterns Consistent With Doubling Student Performance?

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Senate and House Adequacy Study
Oversight Committee

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Questions we seek to answer:

- **What is the level of resources per pupil in Arkansas?**
- **Are the resources distributed fairly and targeted to need?**
- **How are those resources used?**
- **Do typical resource use patterns reflect the most effective ways to use education dollars, and the elements included in Arkansas' funding model?**



National and Arkansas Changes in Level of Resources

- **Increased by about 130 % from 1970 to 2000 in AR, and by 127% nationally, in real, per pupil terms**
- **Increased another 14 % from 2000 to 2003 in AR, and by 10% nationally**
- **Was 68% of US average in 1970 and rose to 79% by 2003**
- **So, education revenues have been constantly rising in AR and nationally, and AR has been catching up to the national average**



Overview of Changes in Revenues and Spending related to Act 59: 2004 to 2006

- **Local Revenue up 9%**
- **State Revenue up 25%**
 - **Categorical Revenue increased from \$40 per student to \$422 per student**
- **Total Revenue up 16.5%**
- **Current Expenditures up 13%**
- **Undoubtedly moved closer to the national average**



Arkansas Revenues Per Pupil in 2004-05

- **2004-05 revenues per pupil**

- **Foundation amount:** **\$5,424**
- **State categorical – NSL, ELL, ALE** **376**
- **Other state aid, including capital** **524**
- **Local above 25 mills, including debt** **845**
- **Federal** **1,049**
- **Other local non-tax** **684**
- **TOTAL** **\$8,902**

which includes capital and debt of \$ 283

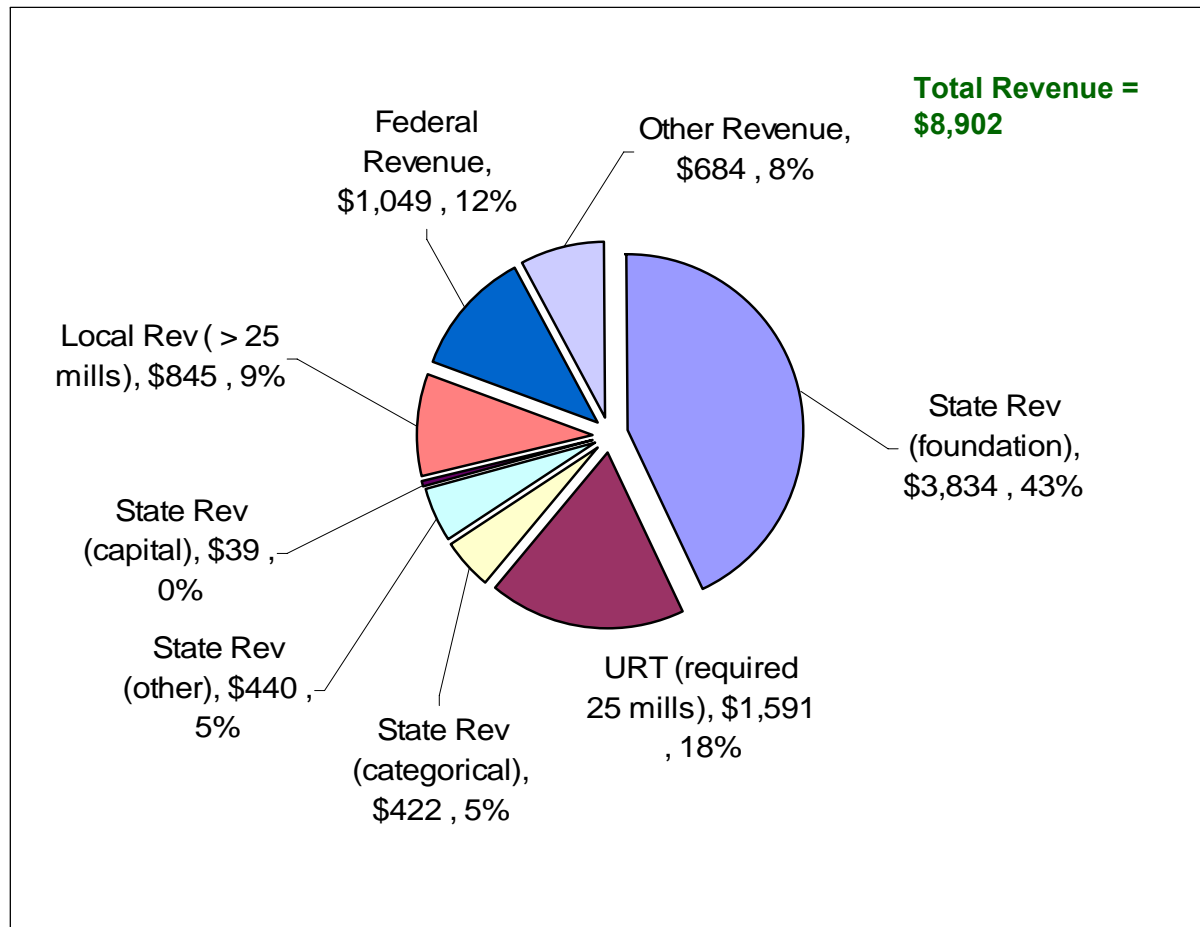
so current operating revenues are \$8,619

which is far above \$5,424



2004-05

Arkansas Public School Revenues



Revenue Increases

Revenue Source	2003-04 Revenue Per Pupil	2003-04 Total Revenue (millions)	2004-05 Revenue Per Pupil	2004-05 Total Revenue (millions)	% Change in Total
State Rev (foundation)	\$3,237	\$1,450	\$3,834	\$1,728	19.2%
URT (required 25 mills)	\$1,518	\$680	\$1,591	\$717	5.5%
Total Foundation Revenue	\$4,755	\$2,129	\$5,424	\$2,445	14.9%
State Rev (categorical)	\$15	\$7	\$376	\$170	2,337.5%
State Rev (other)	\$557	\$250	\$524	\$236	-5.3%
Local Rev (local tax > 25 mills)	\$727	\$326	\$845	\$381	17.0%
Federal Revenue	\$1,000	\$448	\$1,049	\$473	5.7%
Other Revenue	\$642	\$287	\$684	\$308	7.3%
Total Revenue	\$7,656	\$3,447	\$8,902	\$4,014	16.5%



Composition of Revenue Increases from Act 59

- **Bulk of increase in foundation revenues were from the state**
- **Huge increase in state categorical revenues based on NSL, ELL and ALE student counts – estimates of need**
- **Large increase in local tax revenues from property tax rates above the required 25 mills**
- **Modest changes in federal revenues**



What are the Distributional Characteristics of These Dollars?

- **Degree of expenditure per pupil disparities across districts, using all local plus foundation revenues**
- **Degree of linkage between expenditures per pupil (minus transportation) and:**
 - **Property wealth per pupil**
 - **Percent NSL students**
 - **Percent minority students**
 - **Percent low achieving on the state test**



Issues Concerning the Distribution of Resources

- **Are overall differences in general revenues per pupil -- state foundation and all local revenues -- modest?**
- **Has the state equalized spending (minus transportation) by district property wealth per pupil?**
- **Has the state targeted spending per pupil to educational need?**



Overall Disparities in General Revenues Per Pupil

	2003-04	2004-05
Coefficient of Variation	0.08	0.07
McLoone Index	0.95	0.95
Federal Range Ratio	0.34	0.29
Fiscal Neutrality:		
Correlation	0.60	0.51
Elasticity	0.16	0.13

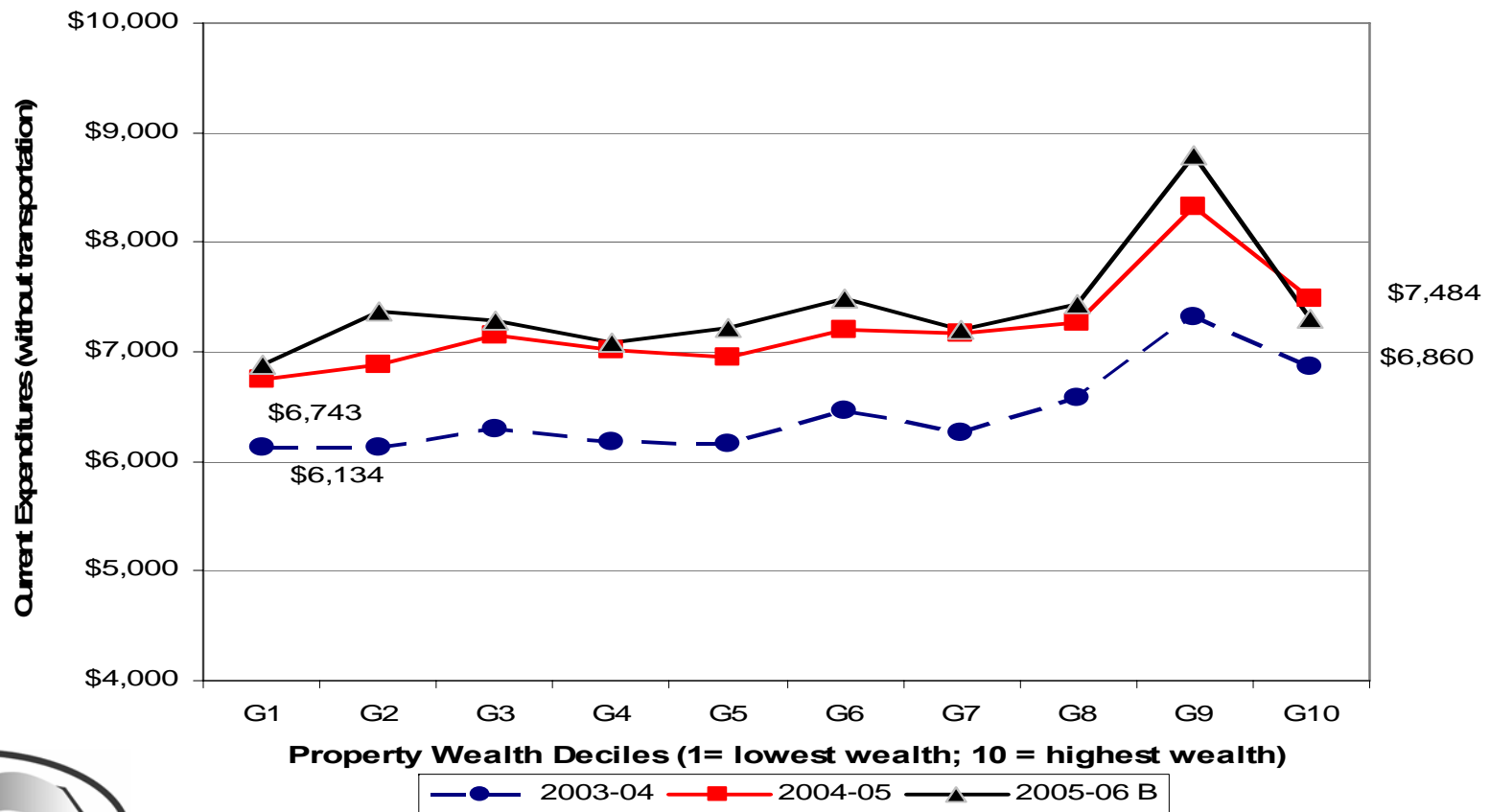


Overall Disparities in General Revenues Per Pupil Have Declined

- **Act 59 Improved the equity characteristics of resource distribution:**
 - The CV dropped
 - The McLoone Index rose
 - The correlation and wealth elasticity between revenues and property wealth per pupil both dropped
- **Foundation plus all other local revenues per pupil are more equally distributed across the state and not closely linked to local property wealth**



Arkansas has equalized expenditures per Pupil (minus transportation) across District Property Wealth per Pupil

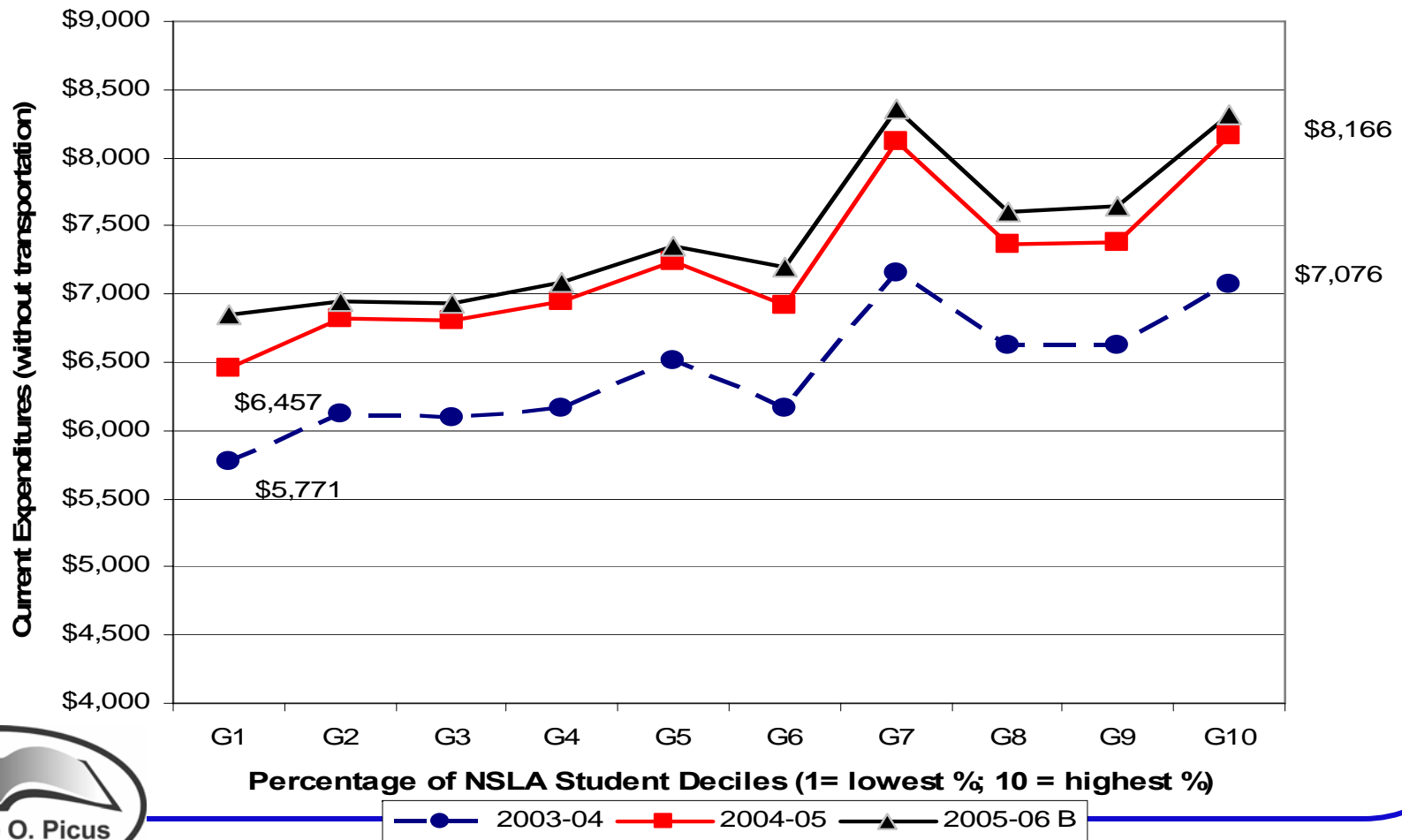


Expenditures per Pupil (minus transportation) v. Wealth per Pupil

- **Expenditures per pupil (minus transportation) are almost the same across all wealth deciles**
- **The modest linkage in 2004 dropped for both 2004-05 and 2005-06**
- **The spike in decile 9 reflects the desegregation funds in Little Rock and Pulaski county and represent an anomaly**



Expenditures Per Pupil (minus transportation) are Targeted to Poverty (percent NSL)

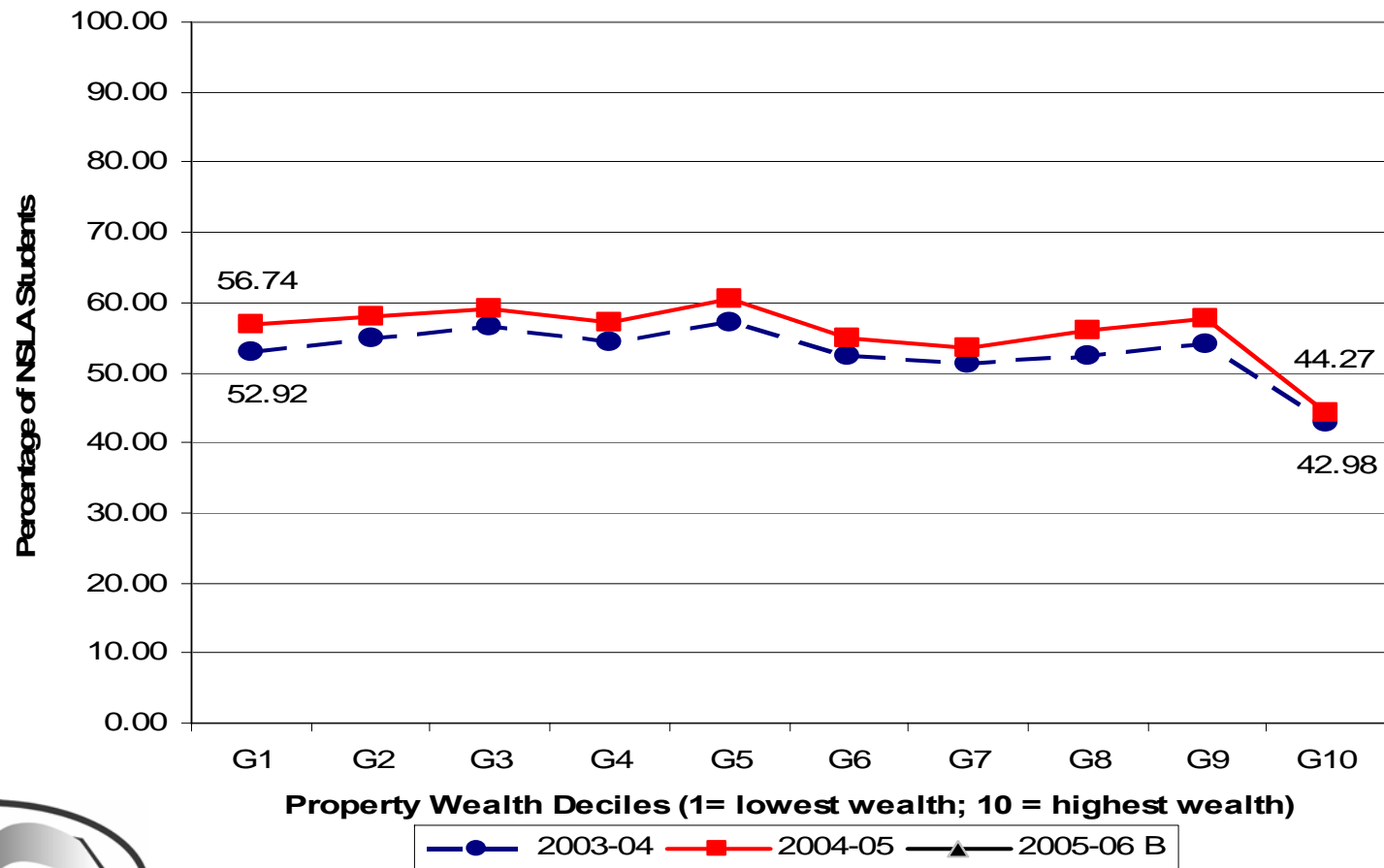


Expenditures Per Pupil (minus transportation) are Targeted to Poverty

- **Expenditures per pupil (minus transportation) rise as the percent of NSL students in a district increases**
- **The increase begins to rise more rapidly in the top five deciles of poverty**
- **Expenditures per pupil in the poorest districts are \$1,500 per pupil more than in the least poor districts! Due to both Arkansas NSL funds and federal aids.**
- **Again, the spike, this time at decile seven, is due to desegregation resources in Little Rock and Pulaski County**



Property Wealth Per Pupil and Student Poverty NOT Linked in AR

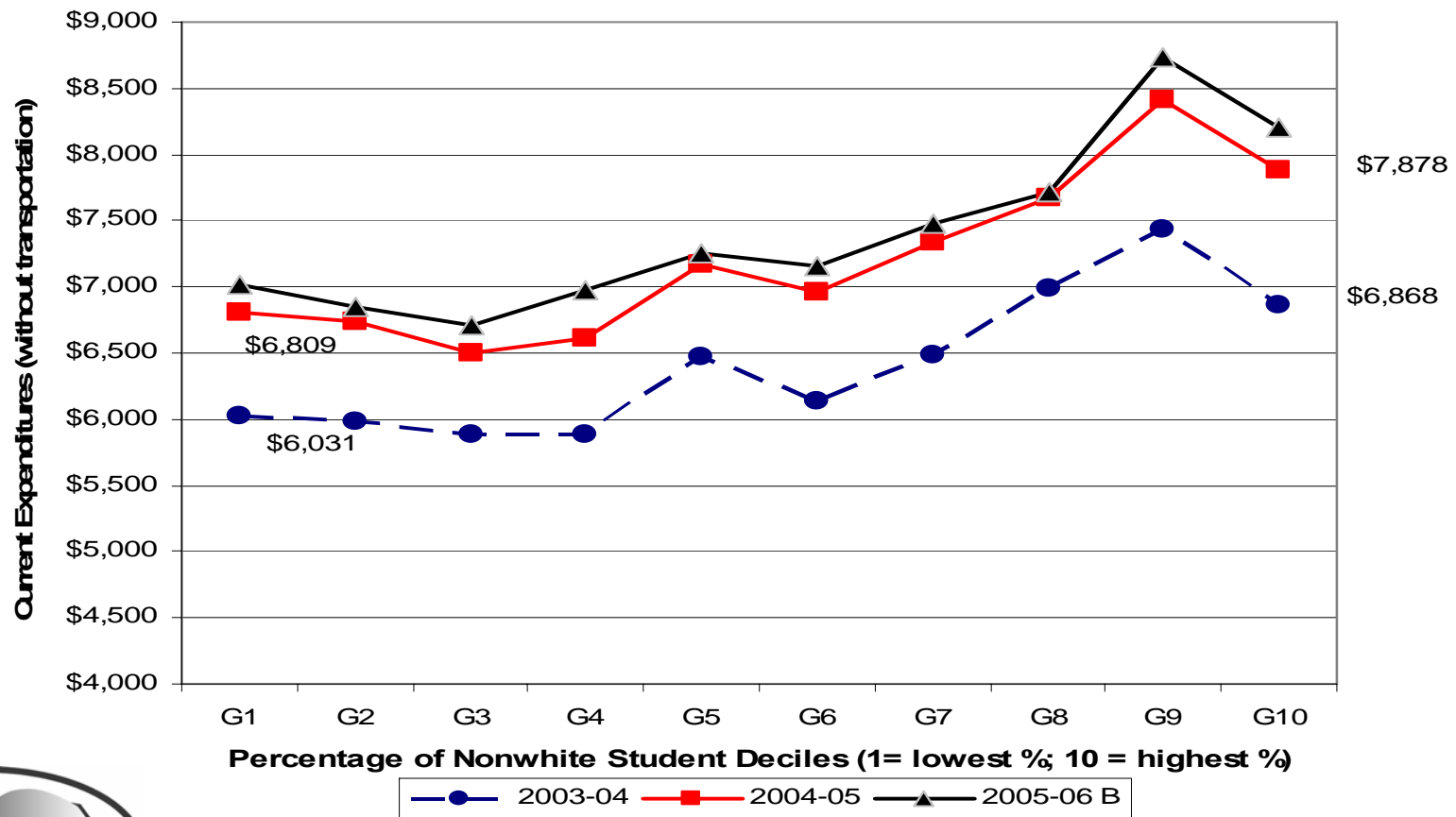


Property Wealth Per Pupil and Student Poverty NOT Linked in AR

- **The percent of students eligible for the federal National School Lunch program is almost the same -- ~55% -- across all districts grouped by property wealth per pupil, though it drops a bit for the highest wealth districts**
- **This is an unusual pattern compared with many other states**



Expenditures Per Pupil (minus transportation) are Targeted to Minority Districts

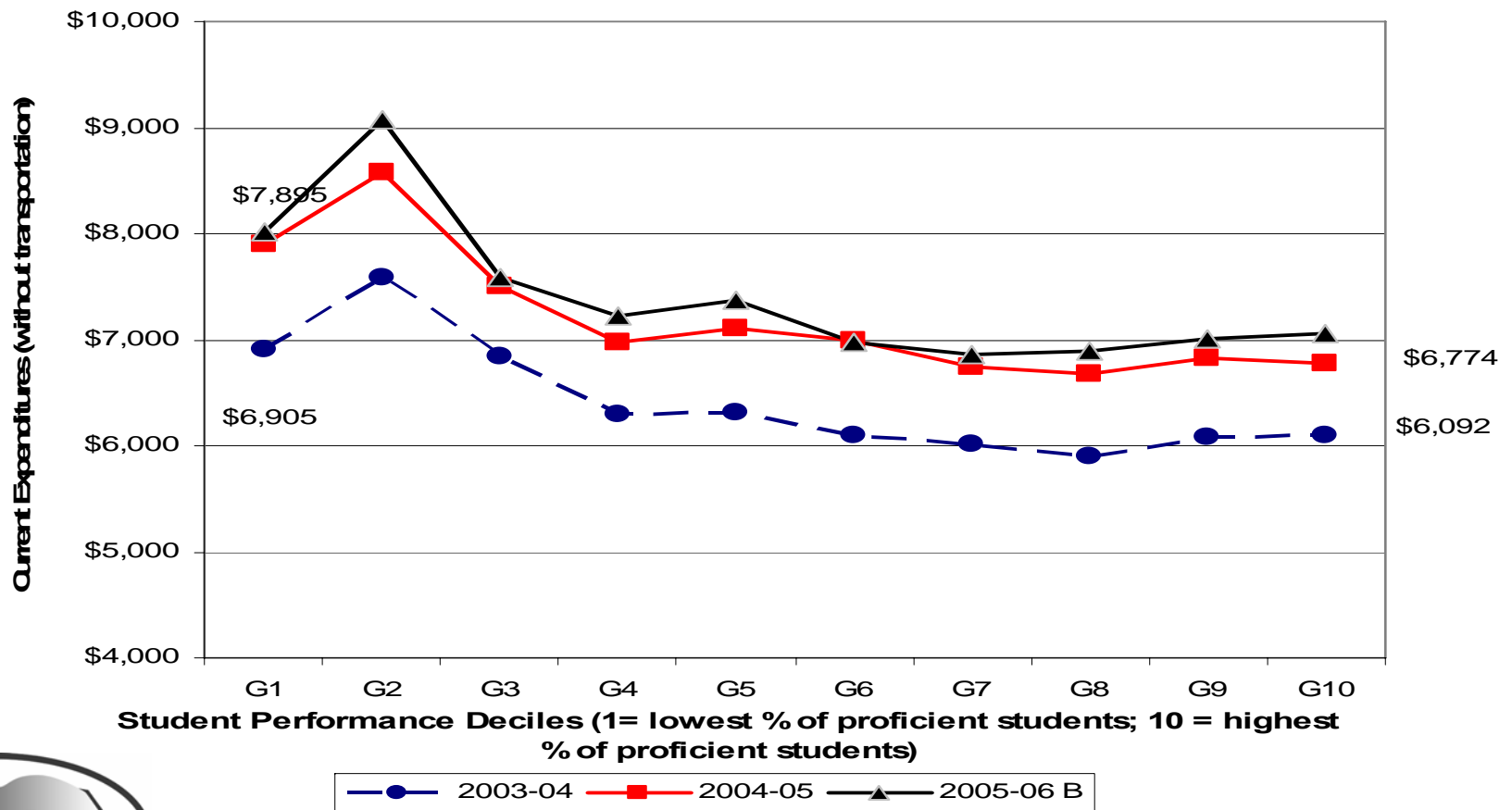


Expenditures Per Pupil (minus transportation) are Targeted to Minority Districts

- **Expenditures per pupil (minus transportation) rise as the percent of minority (non-white) students rises**
- **The highest minority districts spend about \$1,000 per pupil more than the least minority district**
- **Again, the spike at decile 9 is due to desegregation funds**



Expenditures Per Pupil (minus transportation) are Targeted to Low Achievement



Expenditures Per Pupil (minus transportation) are Targeted to Low Achievement

- **The greater the percentage of students scoring proficient or higher on the state test, the lower the spending per pupil**
- **Spending per pupil is higher (~\$1,000 per pupil) in districts with fewer students learning to or above proficiency, largely due to categorical funding**
- **For these additional resources to matter, districts need to spend them in ways that boost student learning**



Expenditures Per Pupil by Function

With a focus on doubling student performance, the evidence-based adequacy study that was translated into Act 59:

- **Provided nearly all new revenues for increased instructional expenditures – lower class sizes, extra help: NSL, ELL, ALE, professional development**
- **Provided no increase for administrative functions**
- **The expectation would be that instructional expenditures would rise**



Expenditures Per Pupil by Function

Expenditure Type	Per Pupil, 2003-04	% of Overall Budget, 2003-04	Per Pupil, 2004-05	% of Overall Budget, 2004-05
Instruction	\$4,093	61%	\$4,604	61%
Instructional Support	\$316	5%	\$395	5%
Pupil Support	\$293	4%	\$325	4%
Site Administration	\$374	6%	\$413	6%
Central Administration	\$288	4%	\$304	4%
Maintenance & Operations	\$619	9%	\$676	9%
Transportation	\$242	4%	\$271	4%
Food & Other	\$447	7%	\$499	7%
Total Current Expenditures	\$6,672	100%	\$7,489	100%



Expenditures Per Pupil by Function

- **Data show that instructional expenditures as a percent of all operating expenditures did not rise from 2003-04 to 2004-05**
- **We do not expect any change in 2005-06**
- **Spending in all functions increased so all functions maintained their relative share of resources**



Instructional Expenditures Per Pupil Did Not Rise Proportionately

- **This is not surprising**
- **The Legislature put few if any restrictions on the use of the new money**
- **So the expectation should be that districts would spend the new money largely the way they had been spending the old money**
- **This has been the national pattern for 45 years**



Background Information on Uses of Education Resources

- **Quick summary of what has happened as a result of the infusion of new educational resources over the past 35-45 years**
- **Patterns in Arkansas today reflect these historical trends**



Use of Resources by Function ...

1960 to 2005 – National average and (Arkansas)

- **60-61 (61) % on instruction**
- **5 (5,4) % on each of instructional support and pupil support**
- **10 (10) % on administration – 5-6 percent school, and 5-4 percent district**
- **10 (9) % on operations and maintenance**
- **5 (4) % on transportation**
- **5 (7) % on food, short term debt and “other”**



Use of Resources by Function ...

- **This pattern of use by function has stayed remarkably constant over a 45 year time period despite tremendous change in education**
 - **Enrollment growth and decline, expansion of categorical programs, four eras of education reform, rise of teacher unions, and others.**
- **Does that mean education resource use has not changed in the past 45 years? NO**
- **Tremendous change has occurred, but is not revealed by this common way of reporting resource use in the public schools**



Education Resource Use

- **Dollars per pupil after adjusting for inflation rose ~350 percent from 1960 to 2005**
- **Did the bulk of the new dollars go to higher teacher salaries? NO**
- **Did the bulk of the new dollars go for significantly lower class sizes? NO**
- **Did student performance rise significantly? NO**
- **So, how was the new money used?**
 - **To expand programs and services**
 - **Outside of the regular or core classroom**



Education Resource Use

- **How were new dollars used?**
 - **To add specialist teachers (art, music, PE, etc.) in elementary and middle schools to provide planning and preparation time for core teachers**
 - **Thus, to expand elective classes in all schools**
 - **To add services for students with special needs:**
 - **Students with disabilities, from lower income backgrounds, ESL students, vocational education students, desegregation**
 - **To add pupil support services:**
 - **Guidance counselors, social workers, etc.**



Education Resource Use

- **Were the additional resources used in the main in the regular classroom to bolster instruction for the core classes of math, science, reading/English, history, language? NOT REALLY**
- **The bulk of the new uses of resources were for programs and services OUTSIDE of the REGULAR CLASSROOM**
- **Dollars targeted to specific students – low income, handicapped, ELL, deseg – were used for targeted programs but often the programs were ineffective**



Education Resource Use

- **As a result, the percentage of spending on core teachers, i.e., teachers who teach the core subjects, dropped substantially from 1960 to 2005, and the percentage of spending on teachers outside the regular classroom increased ---- though all this took place within the Instructional function**
- **Over the past 45 years, the portion of the budget spent on regular teachers has slowly and consistently declined each decade**



Education Resource Use

- **Did student performance rise because of the new uses of resources? NO**
- **To be sure, students who needed extra help – the disabled, the struggling student from low income families, ELL students, etc. – received extra help and they should continue to receive extra help**
- **But performance generally did not rise!**
- **Makes sense: most of the new money was used outside the regular classroom where core instruction takes place, and too much of the “special needs” resources were used for remedial programs**



Education Resource Use

- **So we have this 45 year history of....**
- **Rising real dollars per pupil, after adjusting for inflation, enrollment growth, and even excluding capital spending**
- **And falling (in the 60s, 70s) or stable or very slowly rising (in the early 80s, 90s) performance**
- **Which many economists and policy makers label as low rate of return on investment**



Education Resource Use

- **Any recent changes in use of resources? YES**
- **Do they auger well for improved productivity of the education system? NO**
- **Why:**
 - **Secondary schools (middle and high school) are moving from 6 period to 7 period days, with fewer minutes for instruction in core subjects and more instruction time for electives and at a higher price as teachers continue to teach only five periods**



Education Resource Use

- **Though many districts, especially urban districts, have put more into professional development, too much extant professional development is a mile wide and an inch deep, with almost no impact on teachers' instructional practice and student performance**
- **In many small districts, class sizes are quite small, so costs are high, but performance is still flat**
- **And the curriculum program in too many schools is not rigorous, does not focus on core concepts, and is not taught to thinking and problem solving levels**



Key Resource Use Challenges

- **Only reduce class sizes strategically**
- **Change curriculum to include core concepts**
- **Focus on improving instructional practice to thinking and problem solving**
 - **High quality professional development with instructional coaches**
 - **Could reinforce with knowledge and skills teacher compensation structure**
- **Target extra help and focus services on learning the core curriculum, not test prep or remedial**



Using Resources More Effectively

- **The Evidence-Based and Arkansas funding models have several examples of how to use resources more effectively:**
 - **Small classes only in the early elementary years**
 - **6 rather than 7 period days in secondary schools**
 - **10 days of intensive teacher training in summer institutes**
 - **Full time instructional coaches in all schools**
 - **Extended learning opportunities for struggling kids:**
 - **Tutoring, extended days, summer, ESL,**



So Did Arkansas Schools Use New Funds Effectively?

- **No state's current fiscal accounting system reports in detail on how resources are used at the school level**
- **Thus, Arkansas asked Lawrence O. Picus and Associates to conduct a study of school uses of resources in a random sample of schools**
- **Goal: to identify how resources are used by educational strategies, and the strategies built into the Arkansas funding model**



Resource Use in Arkansas: A Preliminary Analysis

Random Sample of 107 schools

- **55** Elementary
- **17** Middle
- **35** High Schools

48,132 Students

- Average **53%** **NSL**
- Average **13%** **Special Education**
- Average **5%** **ELL**



Resource Use in the Average School in the Total Sample

Staffing	Funding Model	Sample
Principal	0.90	0.97
Instr. Facilitator	2.25	0.45
Secretary	1.80	1.51
Core Teachers	18.66	18.55
Spec. Teachers	3.73	7.62
Tutors	5.19	0.31
Librarian	0.90	0.93
Pupil Support	2.25	3.51

AR School Resource Use: Instructional Time

- **Average Instructional Day: 6 hours, 13 min**
- **Average Class Length**
 - **Math: 64 minutes**
 - **Reading (Elementary): 1 hour, 53 minutes**
 - **English/LA (Mid/High): 57 minutes**
 - **Soc. Studies & Science (Mid/High): 53 min. ea.**



AR School Resource Uses: Principal

State Funding Model	Actual
1 Principal for Every 500 Students = 96	Total = 104



AR School Resource Uses: Assistant Principal

State Funding Model	Actual
No Assistant Principal in the model	Total = 63



AR School Resource Uses: Principal + Assistant Principal

State Funding Model	Actual
1 Principal or AP for Every 500 Students = 96	Total = 167



AR School Resource Uses: Instructional Facilitators

State Funding Model	Actual
1 Facilitator for Every 200 Students = 241	Total = 49

These findings are at odds with the Web survey responses – next slide.



Q 24: Instructional Facilitators

- **156 districts (84.6%) reported instructional facilitators**

How Allocated	Number	Percent
ADM	11	7.1%
Poverty/NSL Student Count	49	31.4%
Per School	83	53.2%
Per Teacher	13	8.3%
Through Education Cooperatives	50	32.1%
Other	55	35.3%



AR School Resource Use: Students per Core Teacher

	State Funding Model	Actual
Elementary	23:1	Range (13-24):1 Average 20:1
Middle	25:1	Range (11-35):1 Average 25:1
High	25:1	Range (10-41):1 Average 29:1



AR School Resource Use: Core Teachers in Sample Schools

	State Funding Model	Actual
Elementary	897	1,007
Middle	299	308
High	801	669



AR School Resource Use: Specialist Teachers per Student

State Funding Model	Actual
20% of Core Teachers = 399	Total = 815



AR School Resource Uses: Instructional Aides

- **37** Library Aides
 - **49** Resource Room Aides
 - **20** ELL Aides
 - **52** Other Extra Help Aides
 - **61** Special Education Inclusion Aides
 - **57** Special Educ. Resource Room Aides
 - **113** Other Instructional Aides
- = Total of 389 Instructional Aides**

These findings square with the Web survey – see next slide.



Q 26: Instructional Aides

- **Outside of special education 176 (95.6%) of the districts employ instructional aides**
- **There are 82 Federally funded instructional aides in the average district**
- **There are 13 state and locally funded aides in the average district**



AR School Resource Uses: Tutors

State Funding Model	Actual
1 Tutor for Every 100 FRL Students = 229	Total = 34

These findings are at odds with the Web survey findings – see slide 56.



AR School Resource Uses: Tutors

NSL Concentration	State Funding Model	Actual in Sample
< 70%	1 Tutor for Every 100 Students = 414	17
70-89%	2 Tutors for Every 100 Students = 122	15
≥90%	3 Tutors for Every 100 Students = 19	2
TOTAL	555	34



Q25: Certified Teacher Tutors

- **162 (88.0%) of the districts reported the use of certified teachers serving as tutors**

How Allocated	Number	Percent
ADM	9	5.6%
Poverty/NSL Student Count	52	32.1%
Per School	86	53.1%
Per Teacher	11	6.8%
Through Education Cooperatives	8	4.9%
Other	62	38.3%



AR School Resource Uses: Guidance Counselors, Nurses, etc.

State Funding Model	Actual
2.5 FTE for Every 500 Students = 241	Total = 376



AR School Resource Uses: Librarians

State Funding Model	Actual
0.7 FTE for Every 500 Students = 67	Total = 99



The High School Schedule

Class	Percent of Total Class Periods
Career & Technical	16%
English	14%
Math	12%
Science	11%
History	10%



The High School Schedule

- **Only 47 percent of high school classes are in the core content areas of math, science, history, language arts**
- **Career technical classes comprise 16 percent of all classes, more than any individual core subject**
- **Almost 2,000 of the 16,561 high school students take an athletics class – football, basketball, etc. – in addition to their P.E. class.**



Q13: Daily Substitute Pay - is low

Substitute Pay	Minimum	Maximum
Average	51.15	72.16
Minimum	40.00	40.00
Maximum	150.00	281.49

Mean Daily Substitute Pay by Enrollment Quintiles					
	Q1	Q2	Q3	Q4	Q5
Minimum	50	52	53	56	58
Maximum	65	73	87	103	85

Mean Substitute Pay by Revenue Quintiles					
	Q1	Q2	Q3	Q4	Q5
Minimum	52	50	52	51	50
Maximum	68	71	73	73	78

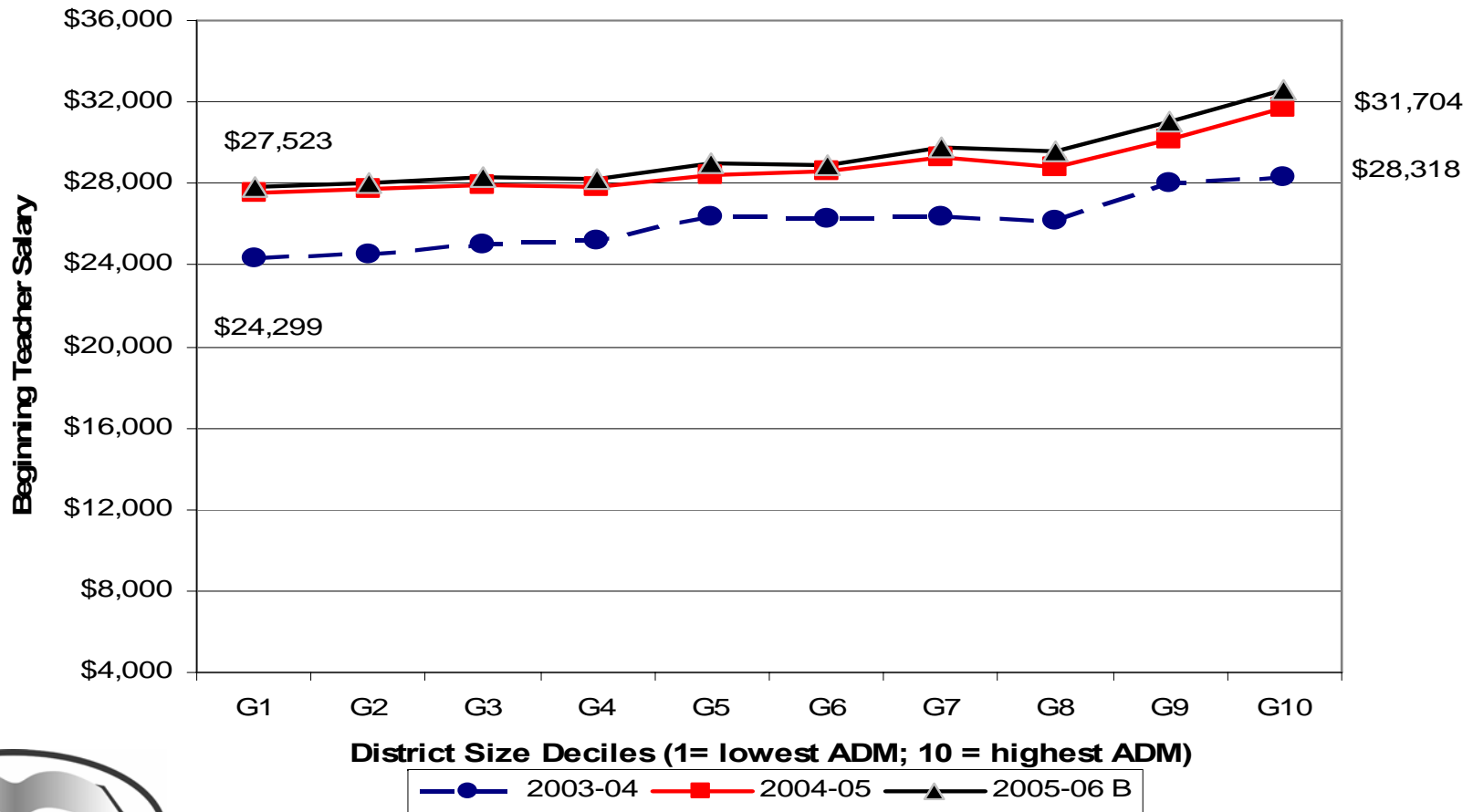


Teacher Beginning and Average Salaries Rose

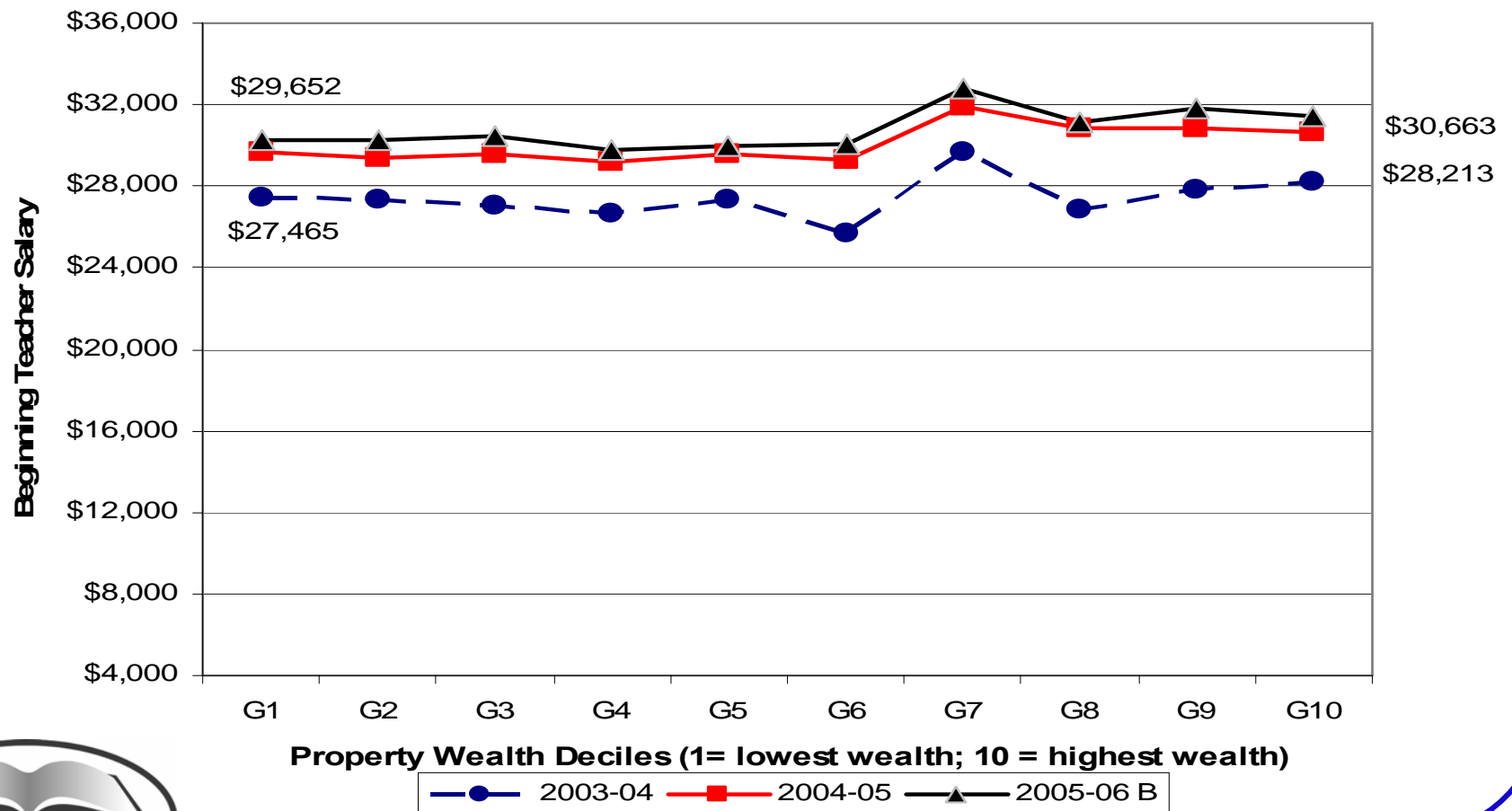
- Did beginning teacher salaries change?
 - New teacher salary 2003-04 = \$27,218
 - New teacher salary 2004-05 = \$30,070
- Did average teacher salaries change?
 - Average teacher salary 2003-04 = \$39,409
 - Average teacher salary 2004-05 = \$41,489
- In what type of districts have beginning teacher salaries changed?
 - Smallest and Poorest Districts



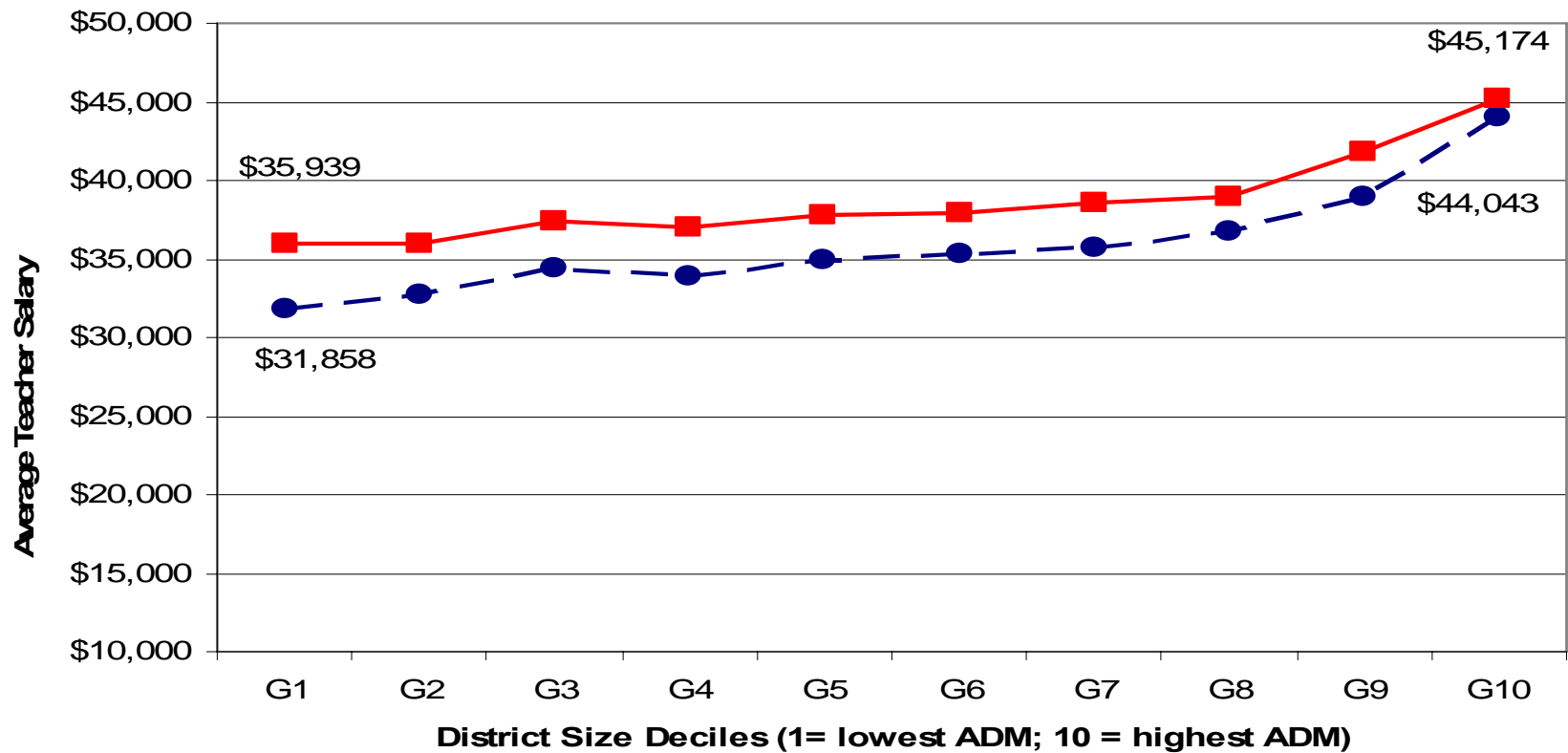
Beginning Teacher Salary *by District Size*



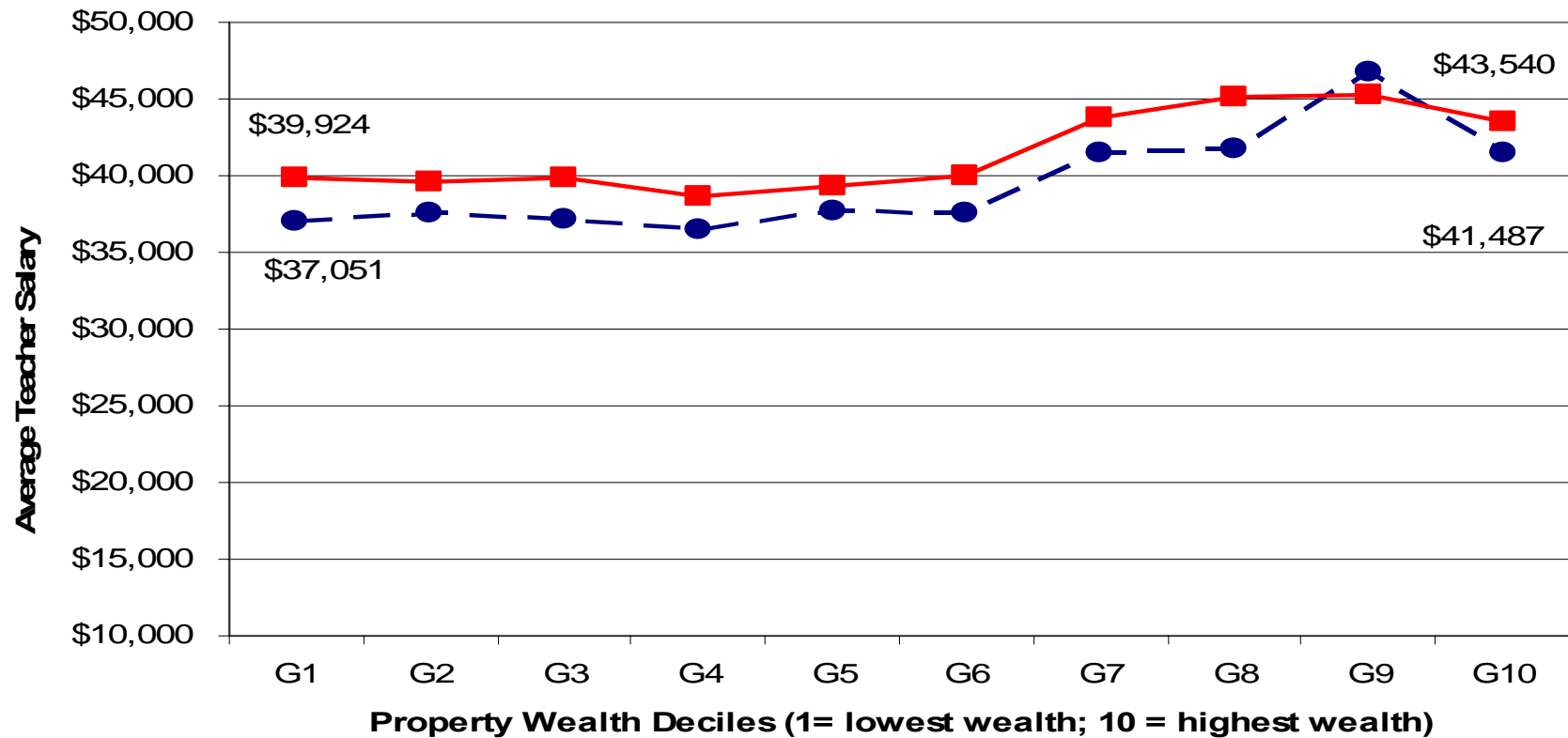
Beginning Teacher Salary *by Assessed Valuation Per Pupil*



Average Teacher Salary by District Size

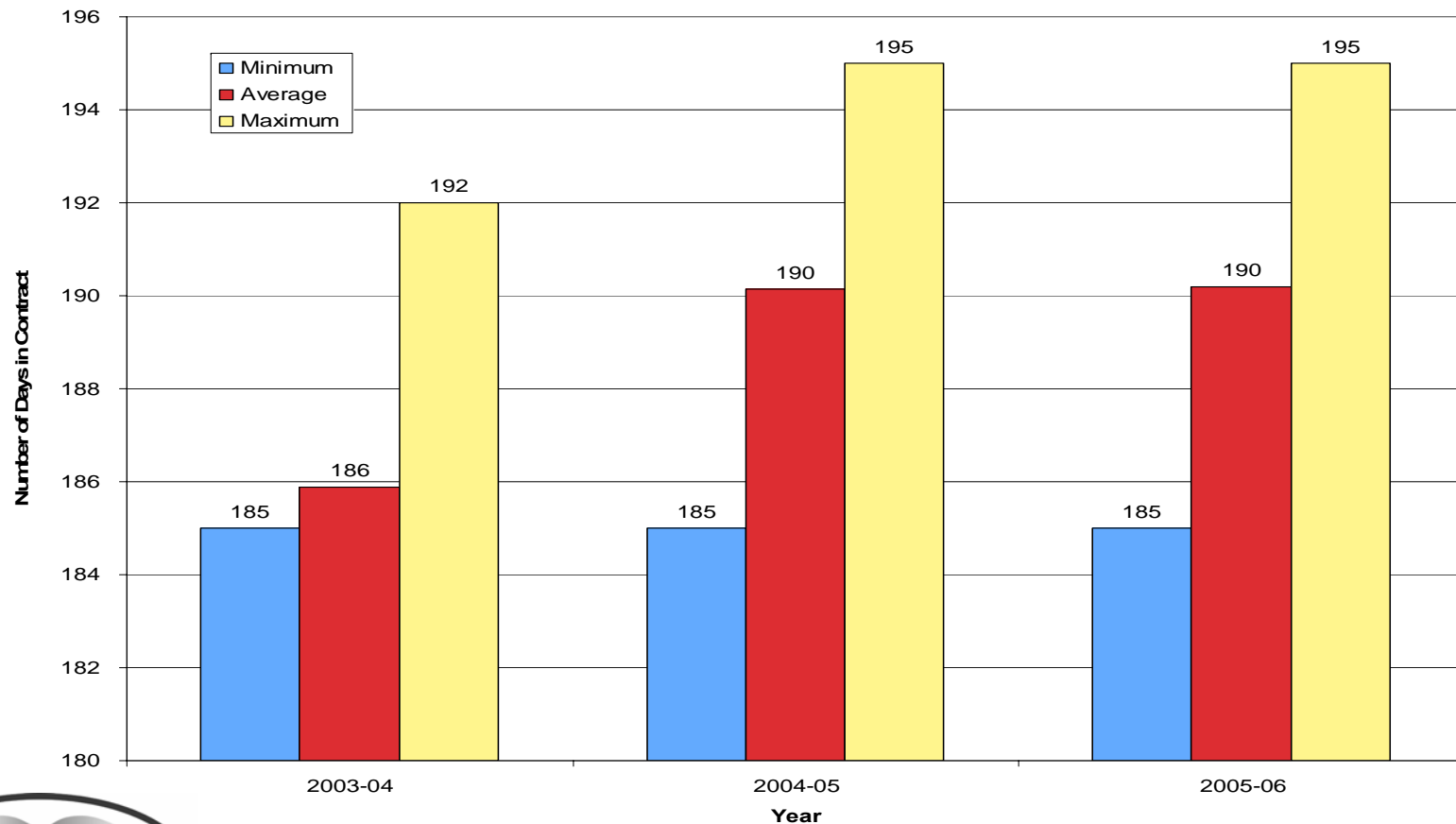


Average Teacher Salary *by Assessed Valuation Per Pupil*



—●— 2003-04 —■— 2004-05 —▲— 2005-06 B

Q23: Districts Increased the Number of Contract Days



What Happened in Arkansas?

- **The 2004 Arkansas School Finance Adequacy reform increased school resources based on the Arkansas version of the Evidence-Based model.**
- **The legislature did not require districts to use the resources according to the model; it deferred to the judgment of local educators**
- **Did local school systems use the resources for the evidence-based, high impact strategies in the evidence-based model? **Not Really****



What Happened in Arkansas?

- **In a study of 107 schools, we found that:**
- **In terms of class size:**
 - **Elementary class sizes averaged 20 while the model provided funding for 23**
 - **Middle school class sizes averaged 25 with funding for 25**
 - **High school class sizes averaged 29 versus funding for 25.**
- **Schools had an average of 815 specialist or elective teachers, about 40% more than core teachers, whereas the model provided 399 or 20% above core teachers**



What Happened in Arkansas?

- **Schools had an average of 0.20 instructional coaches for every 200 students, while the model funded 1 per 100. And many superintendents asked why instructional coaches were needed.**
- **A number of principals asked where the instructional coaches were, but they were not in their schools**



What Happened in Arkansas?

- **Schools had an average of 0.15 teacher tutors for every 100 poverty students, while the model funded 1 per 100. And many superintendents and principals asked why tutors were needed.**
 - **And rather than using the resources for extra help, many local educators wanted to use the “extra help” resources for smaller classes and higher salaries, neither of which provides extra helps for struggling students.**



What Happened in Arkansas?

- **Most districts increased teacher salaries by the dollars for the extra days for training the model provided but few expanded systemic professional development.**
- **There was weak leadership at all levels around the strategies known to double student performance.**



What Should Happen Now?

- **Put some constraints on use of some resources:**
 - **NSL money focused on tutoring and some other program**
 - **Instructional facilitators**
- **Mount a statewide leadership and capacity development strategy to “double” student performance over the next ten years**



Six Steps to Doubling Results

- **We know how to double student academic performance**
- **Examples around the country show how student achievement results can be doubled**
 - **Aldine (TX), Long Beach (CA), Newport News (VA), Madison (WI)**
 - **Washington's' Reading First Schools, Rosalia, Kennewick**
 - **We need to identify Arkansas examples**



Six Steps to Doubling Results

- 1) Analyze student achievement data to become deeply knowledgeable about performance issues and nature of the achievement gap**
 - Importance of formative assessments
- 2) Review evidence on good instruction and effective curriculum**
 - Throw out the old curriculum and replace with a different, more rigorous curriculum



Six Steps to Doubling Results

3) Invest heavily in teacher training

- Resources for trainers
- Intensive summer institutes, longer teacher work years
- Instructional coaches in all school

4) Provide extra helps for struggling students - - state funded and federal Title 1

- Tutoring: 1-1, 1-3, 1-5
- Extended days
- Summer School
- ELD for ELL students



Six Steps to Doubling Results

- 5) Smaller classes in early elementary years**
 - **K-3 at 15 from randomized trials**
- 6) Strong leadership around data-based decision making and improving the instructional leadership, by both the superintendent and principal**



Six Steps to Doubling Results

- **Bolster by measuring and reporting results, and accountability for both students and teachers**
- **Measure results, faculties analyze results and use to continue to improve instruction**



The New School Vision ...

- **Personalized learning environments – school units 400-600 or smaller – strong parent involvement and community outreach**
- **Most important factor: high quality teacher in every classroom**
 - **Urban and rural, low performing schools, math and science**
- **Ongoing, intensive training for all teachers in all subjects and at all levels**
- **Next most important factor: a rigorous curriculum program in all core content areas**



The New School Vision ...

- **Focus on teaching students to think, problem solve, apply knowledge in the core subjects of math, science, reading/English, history, language**
- **Relentless pursuit of high levels of student achievement through a range of extended learning opportunities**
- **Bolstered with significant parent outreach and community support**
- **Reinforced by a changed teacher compensation system that is built on a more adequate base salary and tied to teacher knowledge, skills and instructional expertise**



The Arkansas Funding and Evidence-Based Model

- **Produces a completely re-engineered school**
 - **Think of a hybrid car but not a hover-mobile**
 - The Prius gets twice the gas mileage of a traditional car, but still looks like a car
 - It is a re-engineered car with double performance
- **Built on strategies that are evidence-based**
- **Evidence that each strategy has boosted student academic achievement**
- **Assumes reallocation of all extant resources to the elements of the model**



Discussion with Committee



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