STANDARD &POOR'S

School Evaluation Services

Kansas School District Efficiency Study

Part I:
Efficiency Analysis

Commissioned by

Governor Kathleen Sebelius
Ewing Marion Kauffman Foundation

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Overview

School districts throughout the state of Kansas are faced with the continuous challenge of maximizing student achievement with finite resources. As the state's investment in public education increases, the state's annual measurable performance objectives under the No Child Left Behind Act (NCLB) also increase. One of the goals of NCLB is for 100% of students to demonstrate proficiency on the state's reading and mathematics assessments by the year 2014. Some school districts are closer to this goal than others, but no district has completely reached it. Therefore, it is more important than ever before for school districts to operate as efficiently as possible, and to maximize the academic impact of every dollar spent.

Toward that end, Governor Kathleen Sebelius and the Ewing Marion Kauffman Foundation have commissioned Standard & Poor's School Evaluation Services to conduct an Educational Efficiency Study of the state's school districts. The overarching objective of the project is to help Kansas better understand which districts are utilizing their resources most efficiently and how less efficient districts may benchmark themselves against these districts to identify improvement opportunities.

Specific objectives of the study include the following:

1. **Efficiency Measurement** – provide a relative efficiency measurement system to assess school districts' effective use of resources. Specifically, this study provides relative efficiency scores for individual districts and identifies those districts that are particularly effective in using their financial resources to optimize student learning (i.e., highly efficient districts). The relative efficiency of each school district is scored on a scale from 0% - 100%.

2. **Efficiency Improvement** – in conjunction with the measurement system, provide information to foster the more efficient use of resources, particularly to raise student achievement. Specifically, this study provides the less efficient districts with improvement targets and benchmarks derived from highly efficient districts to which they can compare themselves – a process that can lead to the identification of potential improvement opportunities.

As with Standard & Poor's prior work in Kansas, this study does ***not*** try to answer the question of how much money the state and individual school systems should spend on education (i.e., it is not an "adequacy study"). Rather, this study provides a starting point to answer the question of how well or ***how efficiently*** school districts are spending the money already appropriated to them. Taking a close look at resource efficiency serves as a complement to adequacy studies, by examining how districts are using existing funds, separate and apart from any increase in funding that may come their way.

Organization of the Report

This study is reported in two sections. Part I includes this executive summary, as well as overall findings and a technical appendix, while Part II (a separate document) contains two-page benchmarking profiles for each of the state's less efficient districts. The intent of the second section is to provide an electronic repository from which each less efficient district can find and print its profile, which explains its relative efficiency score and provides potential benchmarks from the state's most efficient districts.

Measuring "Educational Efficiency"

Educational efficiency in this study is measured by the academic results that school districts are getting for the money they spend. Results refer specifically to student performance on the Kansas State Assessments (KSA) in reading and mathematics. Although it is sometimes presumed that the highest-performing districts are also the highest-spending, in actuality there is no significant correlation between per-pupil spending and proficiency rates on reading and math tests among the state's school districts. This does not mean that money does not matter. Nor does it suggest that reading and math skills are the only valued outcomes of a well-rounded education. But what it does suggest is that some school districts may be more cost-effective than others. This is true, even when their demographic differences are taken into account. Demographics are an important consideration, since the proportional enrollment of students with economically disadvantaged backgrounds, disabilities, and limited English proficiency varies from one district to another, and can impact not only a district's overall achievement levels, but its spending levels, too.

In order to take multiple variables into account, this study utilizes an analytical method rooted in linear mathematics known as **Data Envelopment Analysis (DEA)** to determine each district's relative efficiency. The concepts are similar to those used in any organizational efficiency study. Essentially, each district is evaluated for the degree to which, compared to other districts, it is able to maximize the ratio of its **outputs** (KSA scores) to its **inputs** (per-pupil spending), given its own particular **constraints** (student demographics).

Appropriateness of Analytical Framework and Model

While efficiency studies have not been employed in the human service sector to the same extent as they have been in other enterprises, there is now a wide body of educational research that has examined the efficiency of schools as organizations. Nonetheless, some readers may wonder if this type of model fits the learning process. To be certain, the argument can be made that schools are not factories, and student learning cannot be mass-produced like "widgets." However, this argument misses the broad similarities that make an efficiency model a practical tool for measuring and improving education (and potentially ignores the fact that most school district budgets are based on a presumed relationship between spending and achievement).

Educators at every level, from the superintendent to principals and classroom teachers all share the common objective of maximizing student learning (the outputs), but work with limited resources (the inputs), whether they take the form of money, staff, or time. Further, educators at all levels try to maximize learning for all students while working with the core challenge that each student is not equally prepared to learn (the constraints). Consciously or not, educators regularly try to maximize their outputs given the inputs available to them and the constraints pertaining to their students. That said, the difficulty is in utilizing inputs, outputs, and constraints

in an efficiency model that adequately captures the situation on the ground – if these are reasonable, then an efficiency model should produce useful data for educators and policy makers.

Perhaps the most difficult part of the model to adequately measure is the district's outputs. Simply put, there are a wide number of outputs that school districts produce, some of which are not measurable with existing data (e.g., socialization, citizenship, healthy living habits, etc.) as well as measurable outcomes that are nonetheless not universally applicable to every school or student (e.g., college attendance, vocational skill certifications, etc.). Nonetheless, the outputs measured in this study meet two critical requirements – 1) they are universal (i.e., all districts share common goals around achieving strong state test results) and 2) they are fundamental (i.e, school districts may have additional goals, but they are supplemental to state test results). Thus, this study aims to measure the relative efficiency among the state's school districts that is associated with achievement of the state's fundamental educational objectives; this study does ***not*** consider results that are immeasurable or achieved toward other objectives.

Summary of Key Findings

Of the state's 257 school districts meeting the criteria for this study, 21 have received relative efficiency scores of 100%, and are identified as "**efficient frontier**" districts. The term "frontier" refers to the finding that these districts are the most efficient; thus they are on the frontier of efficiency. Interestingly, there is considerable diversity in student performance, spending levels, and enrollment characteristics among these districts.

21 Efficient Frontier Districts

District	County	Enrollment
Arkansas City	Cowley	2,941
Ashland	Clark	217
Baldwin City	Douglas	1,407
Brown County	Brown	684
Burlingame	Osage	351
Deerfield	Kearny	362
DeSoto	Johnson	5,090
Dodge City	Ford	5,947
Gardner-Edgerton	Johnson	3,782
Great Bend	Barton	3,211
Halstead	Harvey	735
Kismet-Plains	Seward	731
Lansing	Leavenworth	2,197
Leoti	Wichita	501
Lyons	Rice	904
Newton	Harvey	3,731
Osawatomie	Miami	1,235
Rolla	Morton	212
Shawnee Mission	Johnson	28,667
Waconda	Mitchell	365
West Elk	Elk	445

Additionally, there are six districts statewide that have demonstrated relative efficiency that places them very near the **efficient frontier**. These districts all have achieved relative efficiency scores that exceed 99%, which means that there is very little improvement they would have needed to make in order to reach the efficient frontier.

District	County	Enrollment
Durham Hills	Marion	706
Olathe	Johnson	24,225
Hays	Ellis	3,060
Blue Valley	Johnson	19,736
Scott County	Scott	961
Valley Center	Sedgwick	2,504

The range in observed relative efficiency scores in Kansas is from approximately 60% to 100%. This means that for the state as a whole, the least efficient district is approximately 60% as efficient as the most efficient districts. By contrast, the average district in the state is approximately 85% as efficient as the frontier districts.

Debunking Myths Regarding Efficiency

Perhaps the best way to illustrate the diversity of the efficient frontier districts is by debunking a series of myths that surround the idea of "what it takes to be efficient."

Myth #1 – "In order to be efficient, my district needs to spend less than other districts."

One third (7 of 21) of the efficient frontier districts spend as much as the highest-spending quartile (top 25%) of districts. Three of these districts spend as much as the top 10% of districts statewide. These districts have demonstrated efficiency not by spending less than other districts, but rather by achieving better results for their level of spending (and constraints) than other districts.

Myth #2 – "In order to be efficient, my district must achieve demonstrably better results than other districts."

Nine of the 21 efficient frontier districts achieve lower KSA scores than most other districts in the state. Two of these districts actually perform worse than all but 10% of districts statewide. While these achievement levels are lower than desired, these districts have demonstrated efficiency not by performing better, but by performing "well" given their low level of spending and high level of constraints. Should they be able to maintain their relative efficiency (i.e., their ratio of outputs to inputs given their constraints), these districts would be expected to improve their student performance with additional resources.

Myth #3 – "In order for my district to become more efficient, it must reduce spending."

The great majority of districts could improve their relative efficiency scores without cutting existing spending levels by improving their student results. The purpose of the benchmarking profiles in the second section of this report is to provide each inefficient district with output

improvement targets, as well as peer districts on the efficient frontier that can be used for comparison purposes, and may be a source for promising instructional practices.

Myth #4 – "This study doesn't help my district; there are no efficient districts that are similar to mine."

A quick scan of the diversity among the 21 efficient frontier districts in the preceding table appears to assuage this concern. These efficient districts are large and small, wealthy and disadvantaged, high and low spending, high and low achieving, and from virtually all areas of the state. The remainder of this portion of the study (Part I) provides additional information about the study's analytical framework and key findings, which are followed by a technical appendix. Part II of this study (a separate document) profiles each of the less efficient districts in the state, and provides them with up to two peers from among the 21 efficient frontier districts for comparison purposes, selected specifically because of their relative similarity to the district.

Measuring "Educational Efficiency"

Educational efficiency in this study is measured by the academic performance that school districts achieve for the money they spend, while considering demographic variables that fall outside of their control. Achievement refers to their performance on the Kansas State Assessments (KSA) in reading and mathematics. Although it is sometimes presumed that the highest-performing districts are also the highest-spending, in actuality there is no significant correlation between per-pupil spending and proficiency rates on reading and math tests among the state's school districts. This does not mean that money does not matter. Nor does it suggest that reading and math skills are the only valued outcomes of a well-rounded education. But what it does suggest is that some school districts may be more cost-effective than others. This is true, even when their demographic differences are taken into account. Demographics are an important consideration, since the proportional enrollment of students with economically disadvantaged backgrounds, disabilities, and limited English proficiency varies from one district to another, and can impact not only a district's overall achievement levels, but its spending levels, too.

In order to take multiple variables into account, this study utilizes an analytical method rooted in linear mathematics known as **Data Envelopment Analysis (DEA)** to determine each district's relative efficiency. The concepts are similar to those used in any organizational efficiency study. Essentially, each district is evaluated for the degree to which, compared to other districts, it is able to maximize the ratio of its **outputs** to its **inputs**, given its own particular **constraints**, which are defined below.

Outputs – the measurable results of the school district's efforts to educate its students (i.e., student learning). The outputs used in this study are derived from the reading and math KSAs, recognizing that while each school district may have a wide range of educational outcomes that it seeks to achieve, all are required to focus on reading and math skills under the state and federal accountability systems currently in place.

Student achievement on the reading and math KSAs is measured using a continuum of performance levels that include (from lowest to highest): Academic Warning, Approaches Standard, Meets Standard, Exceeds Standard, and Exemplary. This study uses two different district-wide output measures that are derived from state tests results: 1) a combined reading and math **proficiency rate**, and 2) an overall **performance index** created by Standard & Poor's. The *proficiency rate* measures the percentage of all reading and math KSAs taken in each district that meet or exceed the proficient standard. The *performance index* is not limited to the proficiency standard; it awards points on a sliding scale for every test score that reaches at least the "approaches standard" level, with more points given for higher performance levels (i.e., a score of "exemplary" is worth more than a score of "exceeds standard", "meets standard" or "approaches standard"). The details regarding the calculation of the performance index can be found in the **Technical Appendix** at the end of this section of the report.

Considered in tandem, these two outputs capture the spirit of the state's accountability system, which requires educators to improve student performance over time such that all students can

score at the proficient standard ***at a minimum***, while also encouraging educators to challenge their students to reach performance levels well above the proficient standard.

Inputs – the resources used by the district to educate and support its students (i.e., per-pupil spending). This study specifically focuses on a subset of "core" district spending functions that are largely comparable from district to district and most directly tied to efforts to improve student learning. These include expenditures for instruction, instructional staff support, pupil support, general administration, school administration, and operations and maintenance. (Spending for transportation, food services, and enterprise operations are excluded because of variation between districts, often due to reasons outside of district control, while non-operating activities like capital outlays and debt service are excluded both because of variation between districts and also within the same district from one year to the next). Since the purchasing power of the dollar varies from one region to another across the state, this study uses a geographic cost index to "normalize" each school district's expenditure data, making spending levels more comparable.

Constraints – the challenges outside of a district's control that impact its spending levels and decisions and the results it achieves. This is not to say that these factors cannot be overcome; rather that they must be considered in order to properly compare the results achieved by one district to those of another. Specifically, this study uses three indicators of student needs as constraints: the proportional enrollment of students with (1) economically disadvantaged backgrounds; (2) disabilities; and (3) limited English proficiency. These three indicators are commonly associated with additional spending and are negatively correlated with student performance on an overall basis, indicating that, all else being equal, a district might expect to spend more to educate students with these special needs than students without any special needs.

How Efficiency Scores are Determined

When multiple inputs, outputs and constraints are used to determine efficiency levels, the question naturally arises as to which ones should carry more weight than others. For example, how should two different outputs be weighted – evenly, or differently? Which of the constraints should "count" more than others, and by how much? These are important considerations, because inputs, outputs and constraints can be weighted many different ways. Some weightings could make a district appear more cost-effective than other districts, while alternative weightings could make the same district appear less cost-effective than others.

Data Envelopment Analysis (DEA) solves this problem by using each district's "optimal" configuration of weightings, so as to determine its "best case scenario" where efficiency is concerned. In other words, DEA selects from all possible combinations of weights and uses the configuration that puts each district in its ***most favorable light***. No other weighting could improve the district's efficiency level, and any other weighting would put the districts in a less favorable light. This optimal efficiency level is then compared with the efficiency levels calculated for all other districts when their inputs and outputs are weighted the same way as the district under consideration. The process is repeated for each individual district – putting its efficiency in the best possible light, and then comparing its efficiency with all other districts when their inputs and outputs are weighted the same way.

The resulting ratios are then compared to determine each district's relative efficiency "score" on a theoretical scale of 0% to 100%. Even when districts are analyzed in their best possible light, the majority still show room for improvement. Only those school systems with the highest ratio of outputs to inputs in light of their constraints are given scores of 100%; they are considered to be on the **efficient frontier**. All other districts are scored below this level. For example, a less efficient district's score of 82% would mean that it is only 82% as efficient as the most efficient districts.

Appropriateness of Analytical Framework and Model

While efficiency studies have not been employed in the service sector to the same extent as they have been in other areas of human endeavor, there is now a wide body of educational research that has examined the efficiency of schools as organizations. Nonetheless, some readers may wonder if this type of model fits the learning process. To be certain, the argument can be made that schools are not factories, and student learning cannot be mass-produced like "widgets." However, this argument misses the broad similarities that make an efficiency model a practical tool for measuring and improving education (and potentially ignores the fact that most school district budgets are based on a presumed relationship between spending and achievement).

Educators at every level, from the superintendent to principals and classroom teachers all share the common objective of maximizing student learning (the **outputs**), but work with limited resources (the **inputs**), whether they take the form of money, staff, or time. Further, educators at all levels try to maximize learning for all students while working with the core challenge that each student is not equally prepared to learn (the **constraints**). Consciously or not, educators regularly try to maximize their outputs given the inputs available to them and the constraints pertaining to their students. That said, the difficulty is in utilizing inputs, outputs, and constraints in an efficiency model that adequately captures the situation on the ground – if these are reasonable, then an efficiency model should produce useful data for educators and policy makers.

Perhaps the most difficult part of the model to adequately measure is the district's outputs. Simply put, there are a wide number of outputs that school districts produce, some of which are not measurable with existing data (e.g., socialization, citizenship, healthy living habits, etc.) as well as measurable outcomes that are nonetheless not universally applicable to every student (e.g., college attendance, vocational skill certifications, etc.). Nonetheless, the outputs measured in this study meet two critical requirements – 1) they are universal (i.e., all districts share common goals around achieving strong state test results) and 2) they are fundamental (i.e, school districts may have additional goals, but they are supplemental to state test results). Thus, this study aims to measure the relative efficiency among the state's school districts that is associated with achievement of the state's fundamental educational objectives, but this study does not consider results that are immeasurable or achieved toward other objectives.

Data Sources and Calculations

All original data used in this study (student performance, enrollment characteristics, and spending) were obtained from the Kansas Department of Education. Data from each of the 2004-05 and 2005-06 school years have been utilized to determine efficiency scores. In order to perform the efficiency analysis, Standard & Poor's converted original data into weighted averages of the districts' 2004-05 and 2005-06 school years, with the most recent year (2005-06)

weighted twice as heavily as the 2004-05 year. The averaging has been done to mitigate potential problems with data volatility due to small populations and measurement error, while recognizing that the most up-to-date performance should be an important reflection of the districts' most recent efforts.

Districts Analyzed

Data from all of the state's 300 school districts were analyzed; 257 districts are given efficiency scores, but 43 districts could not be scored, principally due to their small size and the statistical unreliability of their data. The selection criteria and a list of the excluded districts appears in the **Technical Appendix** at the end of this section of the report.

Which districts are the most efficient?

There are 21 districts in the state that achieved a relative efficiency score of 100%. These districts are considered to be on the **efficient frontier**; no districts in the state have achieved greater efficiency. These districts have managed to achieve the maximum level of outputs given their particular inputs and constraints.

The following table lists these 21 districts, and provides some of their relevant data. As illustrated by the table, there is considerable diversity in student performance, spending levels, and enrollment characteristics among these districts.

Districts with Relative Efficiency Scores of 100%

District	County	Enrollment	Proficiency Rate (%)	Performance Index (%)	Core Spending ($ per std)	Economically Disadvantaged (%)
Arkansas City	Cowley	2,941	74.5	47.4	7,541	57.1
Ashland	Clark	217	86.3	64.2	11,034	50.3
Baldwin City	Douglas	1,407	88.7	64.0	6,490	15.2
Brown County	Brown	684	71.0	40.4	9,238	54.6
Burlingame	Osage	351	81.6	48.3	6,794	31.1
Deerfield	Kearny	362	71.4	43.1	9,619	53.2
DeSoto	Johnson	5,090	81.0	54.1	5,385	11.7
Dodge City	Ford	5,947	57.2	32.9	7,703	68.9
Gardner-Edgerton	Johnson	3,782	89.0	61.5	5,565	21.5
Great Bend	Barton	3,211	74.7	46.8	7,274	52.9
Halstead	Harvey	735	83.9	55.8	6,792	34.7
Kismet-Plains	Seward	731	63.3	36.7	7,745	62.0
Lansing	Leavenworth	2,197	82.9	54.3	4,722	9.1
Leoti	Wichita	501	88.1	58.8	8,455	39.5
Lyons	Rice	904	75.3	46.6	9,018	61.6
Newton	Harvey	3,731	75.1	50.6	5,915	45.5
Osawatomie	Miami	1,235	75.5	45.7	6,193	50.8
Rolla	Morton	212	78.6	50.0	11,780	53.5
Shawnee Mission	Johnson	28,667	81.4	55.3	5,728	16.2
Waconda	Mitchell	365	94.5	70.2	9,480	44.3
West Elk	Elk	445	85.1	56.6	8,950	54.7

Additionally, there are six districts statewide that have demonstrated relative efficiency that places them very near the **efficient frontier**. These districts all have achieved relative efficiency scores that exceed 99%, which means that there is very little improvement they would have needed to make in order to reach the efficient frontier.

District	County	Enrollment	Relative Efficiency Score (%)
Durham Hills	Marion	706	99.99
Olathe	Johnson	24,225	99.98
Hays	Ellis	3,060	99.58
Blue Valley	Johnson	19,736	99.38
Scott County	Scott	961	99.35
Valley Center	Sedgwick	2,504	99.28

What do these districts have in common?

As noted above, at first glance the **efficient frontier** districts are most notable for their diversity – how ***different*** they are – rather than for any obvious similarities. The following table summarizes the considerable diversity observed among the efficient frontier districts across the key indicators used in the model, as well as enrollment size. This diversity runs counter to some common perceptions regarding what it means to be efficient, such as the notion that efficient districts must either spend less or perform better (or ***both***) than other districts.

	Number of **Efficient Frontier** Districts that fall in *(% of districts statewide)*					
Indicator	Bottom 0-10%	Bottom 11-25%	Bottom 26-50%	Top 26-50%	Top 11-25%	Top 0-10%
Enrollment Size (# of students)	2	3	3	4	4	5
Economically Disadvantaged Students (%)	4	1	2	3	5	6
Students with Disabilities (%)	1	3	6	5	2	4
English Language Learners (%)	x	x	4	4	6	7
Core Spending (adj, $ per student)	4	5	4	1	4	3
Proficiency Rate (%)	2	1	6	2	5	5
Performance Index (%)	2	1	5	3	5	5

Enrollment Size – the efficient frontier districts come in many different sizes, from as few as approximately 200 students to more than 28,000 students, with slightly more districts from among the state's largest. Nine districts come from the largest 25%, while five come from the smallest 25%.

Constraints: Enrollment of Economically Disadvantaged Students – the efficient frontier districts range from the most to least affluent, although more districts have comparatively high enrollments of economically disadvantaged students. Eleven districts come from the 25% of districts with the most student poverty, while five districts come from the 25% with the least student poverty.

Constraints: Enrollment of Students with Disabilities – the efficient frontier districts range from enrolling the highest to the lowest percentages of students with disabilities statewide. Six districts come from the 25% of districts with the highest rates of disabilities, while four districts come from the 25% with the lowest rates.

Constraints: Enrollment of English Language Learners – as with the other constraints, there is a range of enrollment of students with this special need among the efficient districts, but less so, with districts tending towards larger concentrations of students with limited English proficiency. Thirteen of the districts come from the 25% with the highest proportions of English Language Learners, while four districts come from the majority of districts statewide that report no ELL students enrolled.

Inputs: Core Spending Per Student (adjusted) – there is a fairly wide range observed in spending levels, with slightly more districts coming from the lowest spending (9) than from the highest spending (7). Unlike constraints, districts are able to exercise considerable control over their spending levels.

Outputs: Proficiency Rate and Performance Index – the diversity noted above is largely repeated among the outputs. On the whole, the efficient districts exhibit better performance than the average district, with ten placing among the top 25% on either output measure, but there are three districts that place among the lowest 25% that are also considered efficient, due to their comparatively high constraints and (in most cases) low spending levels.

Compared to one another, how efficient are Kansas' school districts?

Looking beyond the most efficient districts reveals some interesting differences that may be worthy of further study. In general, the state's larger, more suburban districts tend to be more efficient, but there are notable exceptions.

Urban/Rural Status – on average, suburban districts appear to be more efficient than all other districts, while rural districts appear to be comparatively less efficient. This may be at least partially attributable to the preponderance of small districts in rural settings, many of which appear to have comparatively high per-student spending levels. That said, the largest number (11) of efficient frontier districts also come from rural communities, so there are many benchmarks to which the inefficient districts can look for potential improvement opportunities.

Urban/Rural Status	Number of Districts	Average Relative Efficiency Score (%)	Number of Efficient Frontier Districts
Suburban	29	92.44	7
Large or Small Town	49	87.56	3
Urban	4	87.23	0
Rural	175	83.63	11
Statewide Total or Average	**257**	**85.43**	**21**

Region – on average, districts in the Southwest and Northeast regions appear to be more efficient than others in the state, while districts in the North Central and Northwest regions appear to be comparatively less efficient. This seems consistent with the earlier findings, as the northern part of the state becomes more rural towards the western half of the state, but the Southwest may stand out as somewhat of a surprise to some observers, as its combination of rural and town settings appear notably more efficient than other parts of the state.

Region	Number of Districts	Average Relative Efficiency Score (%)	Number of Efficient Frontier Districts
Southwest	28	90.16	6
Northeast	60	87.50	7
Southeast	48	85.34	2
South Central	63	85.18	5
North Central	38	82.65	1
Northwest	20	78.93	0
Statewide Total or Average	**257**	**85.43**	**21**

Enrollment Size – on average, larger districts appear to be more efficient than smaller districts statewide. As noted earlier, the state's smaller districts tend to have comparatively high per-student spending levels, which may in part be explained by a lack of economies of scale among these districts.

Enrollment Range	Number of Districts	Average Relative Efficiency Score (%)	Number of Efficient Frontier Districts
5,000 or more students	16	93.77	3
2,500-4,999 students	18	93.27	4
1,000-2,499 students	52	87.15	3
500-999 students	75	85.85	5
Less than 500 students	96	81.31	6
Statewide Total or Average	**257**	**85.43**	**21**

What are the relative efficiency scores for each district analyzed?

Of the 300 districts in Kansas, 257 met the criteria to be included in this study; the remaining 43 districts have not received a relative efficiency score. See the **Technical Appendix** at the end of this section of the report for more details on the criteria for inclusion.

The range in observed relative efficiency scores in Kansas is from approximately 60% to 100% (the efficient frontier districts). This means that for the state as a whole, the least efficient district is approximately 60% as efficient as the most efficient districts. By contrast, the average district in the state is approximately 85% as efficient as the frontier districts, as indicated in the preceding tables.

The following table lists the 257 school districts analyzed, in order based on relative efficiency scores. The 21 **efficient frontier** districts are listed first in alphabetical order.

Relative Efficiency Scores (95.6%-100%)

District	County	Enrollment	Relative Efficiency Score (%)
Arkansas City	Cowley	2,941	100.00
Ashland	Clark	217	100.00
Baldwin City	Douglas	1,407	100.00
Brown County	Brown	684	100.00
Burlingame	Osage	351	100.00
Deerfield	Kearny	362	100.00
DeSoto	Johnson	5,090	100.00
Dodge City	Ford	5,947	100.00
Gardner-Edgerton	Johnson	3,782	100.00
Great Bend	Barton	3,211	100.00
Halstead	Harvey	735	100.00
Kismet-Plains	Seward	731	100.00
Lansing	Leavenworth	2,197	100.00
Leoti	Wichita	501	100.00
Lyons	Rice	904	100.00
Newton	Harvey	3,731	100.00
Osawatomie	Miami	1,235	100.00
Rolla	Morton	212	100.00
Shawnee Mission	Johnson	28,667	100.00
Waconda	Mitchell	365	100.00
West Elk	Elk	445	100.00
Durham-Hills	Marion	706	99.99
Olathe	Johnson	24,225	99.98
Hays	Ellis	3,060	99.58
Blue Valley	Johnson	19,736	99.38
Scott County	Scott	961	99.35
Valley Center	Sedgwick	2,504	99.28
Cimarron-Ensign	Gray	697	98.89
Emporia	Lyon	4,928	98.67
Vermillon	Marshall	572	98.39
Nickerson	Reno	1,190	98.08
Northeast	Crawford	617	97.88
Hiawatha	Brown	937	97.79
Auburn Washburn	Shawnee	5,302	97.68
Garden City	Finney	7,482	97.22
Nemaha Valley	Nemaha	544	96.89
Sedgwick	Harvey	545	96.78
Syracuse	Hamilton	488	96.68
Chetopa-St. Paul*	Labette	493	96.37
Ulysses	Grant	1,797	96.09
Geary County	Geary	6,377	95.84
Lincoln	Lincoln	389	95.69

* **Note:** During the Study Period, the St. Paul area was transferred from Erie-St. Paul school district (USD 101) to Chetopa-St. Paul district (USD 505).

Relative Efficiency Scores (89.4%-95.1%)

District	County	Enrollment	Relative Efficiency Score (%)
Augusta	Butler	2,245	95.14
Wichita	Sedgwick	48,548	95.06
Prairie View	Linn	1,056	94.93
Liberal	Seward	4,533	94.90
Meade	Meade	500	94.80
Bonner Springs	Wyandotte	2,298	94.78
Louisburg	Miami	1,520	94.64
Osage City	Osage	757	94.27
Independence	Montgomery	1,974	94.12
Dexter	Cowley	238	94.10
Oakley	Logan	477	93.05
Maize	Sedgwick	6,027	92.89
Wamego	Pottawatomie	1,343	92.77
Hesston	Harvey	787	92.75
Circle	Butler	1,534	92.39
Lawrence	Douglas	10,269	92.35
Atchison	Atchison	1,648	92.30
Andover	Butler	3,968	92.26
Marion	Marion	666	92.25
Goddard	Sedgwick	4,383	92.23
Macksville	Stafford	303	91.92
Wellsville	Franklin	828	91.89
Lakin	Kearny	673	91.42
Santa Fe	Osage	1,267	91.03
Barnes	Washington	469	90.96
Belle Plaine	Sumner	796	90.87
Conway Springs	Sumner	694	90.86
Leavenworth	Leavenworth	4,155	90.85
Shawnee Heights	Shawnee	3,485	90.84
Concordia	Cloud	1,115	90.83
Caldwell	Sumner	299	90.82
Westmoreland	Pottawatomie	801	90.69
Pittsburg	Crawford	2,676	90.68
Central Heights	Franklin	628	90.65
Stafford	Stafford	324	90.65
Renwick	Sedgwick	2,002	90.44
Claflin	Barton	305	90.39
Clay Center	Clay	1,396	90.32
West Franklin	Franklin	920	90.30
Humboldt	Allen	541	90.29
Elk Valley	Elk	207	90.22
Hutchinson	Reno	4,843	90.08
Holcomb	Finney	921	90.07
Norton	Norton	688	89.92
Girard	Crawford	1,100	89.55
McPherson	McPherson	2,496	89.53
Oswego	Labette	500	89.45

Relative Efficiency Scores (85.1%-89.3%)

District	County	Enrollment	Relative Efficiency Score (%)
Derby	Sedgwick	6,626	89.30
Lorraine	Ellsworth	473	89.29
Paola	Miami	2,106	89.18
Pike Valley	Republic	270	88.95
Eudora	Douglas	1,321	88.78
Sublette	Haskell	531	88.77
Seaman	Shawnee	3,483	88.75
North Jackson	Jackson	426	88.67
Basehor-Linwood	Leavenworth	2,118	88.65
Haysville	Sedgwick	4,656	88.63
Columbus	Cherokee	1,243	88.53
Ft. Scott	Bourbon	1,994	88.51
Labette County	Labette	1,708	88.43
Marais Des Cygnes	Osage	272	88.42
Stanton County	Stanton	491	88.11
South Haven	Sumner	247	88.03
Haven	Reno	1,108	87.80
Marmaton Valley	Allen	379	87.77
Salina	Saline	7,428	87.65
Ottawa	Franklin	2,464	87.62
Woodson	Woodson	486	87.60
Tonganoxie	Leavenworth	1,679	87.55
Baxter Springs	Cherokee	917	87.50
Southern Lyon County	Lyon	610	87.31
Greeley County	Greeley	272	87.29
Osborne	Osborne	377	87.21
Silver Lake	Shawnee	760	87.16
Commanche County	Comanche	327	86.99
Frontenac	Crawford	787	86.91
Coffeyville	Montgomery	1,912	86.65
North Ottawa County	Ottawa	569	86.47
Uniontown	Bourbon	470	86.18
Hoisington	Barton	667	86.10
Topeka	Shawnee	13,435	86.03
Alma	Wabaunsee	476	85.85
Dighton	Lane	258	85.77
Southeast of Saline	Saline	714	85.70
Ellis	Ellis	405	85.67
Anthony-Harper	Harper	927	85.62
Kinsely-Offerle	Edwards	350	85.53
Burrton	Harvey	287	85.47
Sabetha	Nemaha	953	85.45
Riverton	Cherokee	883	85.43
Wellington	Sumner	1,724	85.39
Russell	Russell	1,024	85.21
Cheney	Sedgwick	802	85.16
Satanta	Haskell	406	85.09

Relative Efficiency Scores (80.6%-85.0%)

District	County	Enrollment	Relative Efficiency Score (%)
Spring Hill	Johnson	1,702	85.01
Clifton-Clyde	Washington	326	85.00
Piper	Wyandotte	1,434	84.77
Galena	Cherokee	780	84.67
Chanute	Neosho	1,884	84.45
Turner	Wyandotte	3,874	84.23
Abilene	Dickinson	1,539	84.15
Parsons	Labette	1,552	84.11
Burlington	Coffey	893	84.02
Buhler	Reno	2,255	83.86
Kansas City	Wyandotte	20,161	83.58
Manhattan	Riley	5,182	83.36
Oskaloosa	Jefferson	638	83.27
McLouth	Jefferson	564	83.25
Morris County	Morris	884	83.13
B & B	Nemaha	221	83.09
Mulvane	Sedgwick	1,930	83.09
Easton	Leavenworth	713	83.06
Cherokee	Crawford	816	82.89
Sterling	Rice	528	82.84
Iola	Allen	1,497	82.65
Leon	Butler	741	82.62
Centre	Marion	284	82.60
Belleville	Republic	462	82.59
Ness City	Ness	291	82.57
Perry	Jefferson	1,002	82.53
Ingalls	Gray	267	82.37
Peabody-Burns	Marion	409	82.37
Canton-Galva	McPherson	419	82.31
Holton	Jackson	1,154	82.28
Bucklin	Ford	261	82.25
Kaw Valley	Pottawatomie	1,131	82.18
Jefferson West	Jefferson	971	82.13
Madison-Virgil	Greenwood	257	82.09
Flinthills	Butler	323	82.01
Goessel	Marion	284	81.71
Cherryvale	Montgomery	681	81.59
Jefferson County	Jefferson	503	81.52
Marysville	Marshall	819	81.49
Ft. Larned	Pawnee	962	81.48
Phillipsburg	Phillips	651	81.40
Solomon	Dickinson	417	81.25
Troy	Doniphan	383	81.21
Greensburg	Kiowa	304	80.86
WaKeeney	Trego	407	80.81
Ellinwood	Barton	561	80.63

Relative Efficiency Scores (74.3%-80.6%)

District	County	Enrollment	Relative Efficiency Score (%)
Rose Hill	Butler	1,758	80.62
Udall	Cowley	390	80.40
LaCrosse	Rush	311	80.14
Douglass	Butler	873	80.01
Herington	Dickinson	526	79.96
Erie-St. Paul*	Neosho	862	79.88#
Pleasanton	Linn	424	79.87
Fredonia	Wilson	778	79.79
North Lyon County	Lyon	582	79.58
St. Francis	Cheyenne	327	79.53
Wabaunsee East	Wabaunsee	541	79.38
Minneola	Clark	264	79.20
Eureka	Greenwood	680	79.10
Spearville	Ford	355	79.09
El Dorado	Butler	2,200	79.07
Skyline	Pratt	389	78.99
Fairfield	Reno	400	78.73
Hugoton	Stevens	1,082	78.24
Goodland	Sherman	1,009	78.22
Colby	Thomas	1,045	78.07
Smoky Valley	McPherson	1,038	77.96
Winfield	Cowley	2,598	77.89
Remington-Whitewater	Butler	550	77.45
Chapman	Dickinson	989	77.44
Crest	Anderson	251	77.42
Kingman	Kingman	1,180	77.37
Twin Valley	Ottawa	665	77.12
Pratt	Pratt	1,223	76.87
Riley County	Riley	666	76.48
Chase County	Chase	480	76.46
Caney	Montgomery	855	76.28
Lyndon	Osage	462	76.21
Ellsworth	Ellsworth	615	75.84
Valley Halls	Jefferson	448	75.84
Neodesha	Wilson	784	75.70
Atchison County	Atchison	771	75.67
Valley Heights	Marshall	401	75.43
Oberlin	Decatur	446	74.97
Beloit	Mitchell	803	74.91
Jayhawk	Linn	588	74.78
Mayetta	Jackson	961	74.75
Hill City	Graham	424	74.53
Axtell	Marshall	349	74.31

* **Note:** During the Study Period, the St. Paul area was transferred from Erie-St. Paul school district (USD 101) to Chetopa-St. Paul district (USD 505).

Note: The district's per-student spending data appear to be overstated, as a result of the transfer. The district's possible relative efficiency scores, depending on the correct figures, may be higher (or possibly lower) than the figure provided here. Based on historical figures, the district's relative efficiency score may be as high as 85.41. See **Appendix** for further discussion.

Relative Efficiency Scores (61.8%-74.3%)

District	County	Enrollment	Relative Efficiency Score (%)
Lebo-Waverly	Coffey	595	74.25
Washington	Washington	370	73.66
Clearwater	Sedgwick	1,292	74.18
Rawlins County	Rawlins	356	74.14
Elkhart	Morton	746	74.08
Chautauqua	Chautauqua	440	74.01
Little River	Rice	297	73.49
Moundridge	McPherson	427	73.07
LeRoy-Gridley	Coffey	278	72.48
Onaga	Pottawatomie	377	73.07
Garnett	Anderson	1,143	73.03
Jetmore	Hodgeman	310	72.24
Hoxie	Sheridan	350	72.20
Elwood	Doniphan	310	72.16
Quinter	Gove	337	71.73
Smith Center	Smith	452	71.71
Oxford	Sumner	406	71.26
St. John-Hudson	Stafford	420	69.97
Stockton	Rooks	361	69.53
Plainville	Rooks	423	69.06
South Barber County	Barber	270	68.91
Inman	McPherson	441	68.45
Wathena	Doniphan	393	68.43
Barber County	Barber	621	66.90
Rural Vista	Dickinson	418	66.76
Ell-Saline	Saline	471	65.71
Central	Cowley	363	65.65
Cunningham	Kingman	225	65.33
Blue Valley	Riley	234	64.89
Pretty Prairie	Reno	301	64.69
Victoria	Ellis	273	62.03
Altoona-Midway	Wilson	271	61.81

Overview

This section provides some of the details and important considerations behind the school district efficiency study. Specifically, there are several items that merit some explanation, including:

- the exclusion of school districts from the analysis
- the assumptions behind the DEA model
- the calculation of the performance index
- the impact of using a geographic cost adjuster to normalize per-student spending
- the impact of probable data reporting errors due to the transfer of territory between two school districts
- the categorization of Kansas counties into six regions

Exclusion of Districts from the Analysis

Of the 300 districts in Kansas, 257 met the criteria to be included in this study; the remaining 43 districts did not receive a relative efficiency score. There were essentially two reasons that school districts were excluded from the analysis: 1) unavailable/unusable data and 2) lack of statistical significance/interpretability of data, often due to the district's unusually small size. Kansas has many small districts, and for the most part, the excluded districts were among the state's smallest.

Unavailable/Unusable Data – For the study period (2004-05 and 2005-06 school years), there were 21 districts statewide that lacked either spending data or student test results. The reasons for unavailable data range from district openings and closings to potential data reporting errors to rules regarding student privacy. In the case of privacy, even district-wide results may be suppressed to protect individual students privacy if the total number of students tested is too few to protect their anonymity. In practice, this threshold is often set at 10 students tested per grade.

Significance of Results – Even after removing districts that have so few students that they cannot publicly report the results of their testing period, there remain districts that are not big enough to have what might be considered significant data in the technical sense. This is not to say that their data are wrong or unimportant; rather, that it is difficult to have statistical confidence in their data's reliability, and that it is perhaps impractical to use these data to compare these districts to the rest of the state. Given that the efficiency analysis is inherently relative, it would be problematic to include such small districts, particularly if their data placed them on the **efficient frontier** as the result of data anomalies rather than reliable measurement. To improve the reliability of the analysis, each district was required to enroll at least 200 students, and/or at least 15 students tested per grade, on average.

List of Excluded Districts – the following table lists the districts that were excluded from being scored, along with the rationale for doing so.

District	County	Enrollment Size	Reason for Exclusion
Argonia	Sumner	217	Size
Attica	Harper	126	Size
Brewster	Thomas	133	Size
Cedar Vale	Chautauqua	168	Size
Chase	Rice	165	Size
Cheylin	Cheyenne	152	Size
Copeland	Gray	135	Size
Eastern Heights	Phillips	155	Size
Fowler	Meade	189	Size
Ft. Leavenworth	Leavenworth	1,676	Missing data
Golden Plains	Thomas	203	Size
Grainfield	Gove	178	Size
Grinnell	Gove	119	Size
Hamilton	Greenwood	110	Size
Hanston	Hodgeman	79	Size
Haviland	Kiowa	199	Size
Healy	Lane	110	Size
Highland	Doniphan	250	Size
Hillcrest	Republic	107	Missing data
Jewell	Jewell	157	Size
Lewis	Edwards	134	Size
Logan	Phillips	196	Size
Mankato	Jewell	216	Missing data
Midway	Doniphan	203	Size
Montezuma	Gray	257	Size
Moscow	Stevens	243	Size
Mullinville	Kiowa	148	Size
North Central	Washington	118	Missing data
Northern Valley	Norton	199	Size
Otis-Bison	Rush	224	Size
Palco	Rooks	157	Size
Paradise	Russell	142	Size
Pawnee Heights	Pawnee	179	Size
Prairie Heights	Decatur	19	Missing data
Southern Cloud	Cloud	233	Size
Sylvan Grove	Lincoln	153	Size
Triplains	Logan	106	Size
Wallace	Wallace	215	Size
Weskan	Wallace	127	Size
West Smith Co.	Smith	184	Size
West Solomon	Norton	62	Size
Western Plains	Ness	206	Size
White Rock	Jewell	108	Missing data

DEA Model Assumptions

Output Maximization – there are essentially two questions of efficiency that DEA can address: 1) how much can districts reduce their spending without reducing their current level of student results (**input minimization**) and 2) how much can districts improve their student results without increasing their current level of spending (**output maximization**). The environment in which educators operate is better conceptually aligned with output maximization – trying to achieve

more with existing resources. Thus, the outputs and inputs have been selected with this question in mind. Were there a reason to focus instead on cost-cutting opportunities, the model might have been constructed differently to surface cost-cutting opportunities. By focusing on output maximization, this study seeks to motivate improvements in efforts to facilitate student learning, serving as a resource to support educators and policymakers' existing efforts in this regard.

Calculation of the Performance Index

Standard & Poor's created the performance index used for this study to reflect school district efforts to help students reach the highest levels of student performance, not simply the proficient standard that has been set as the "floor" under NCLB and the state accountability system. Tests at each performance level are awarded points, with the higher performance levels valued more than the lower levels, and the lowest level (academic warning, or "below basic") not valued at all, in order to create an index that rewards districts for moving students "up the ladder" from the lowest to the highest performance levels. The index is expressed as a percentage of total possible points, based on the point values listed in the following table.

Performance Level	Index Points	Effective Weight in Index
Academic Warning	0	0%
Approaching Standard	0.5	10%
Meeting Standard	1.0	20%
Exceeding Standard	1.5	30%
Exemplary	2.0	40%
Possible Points	**4.0**	**100%**

Impact of the Geographic Cost Adjuster

In order to compare per-student spending levels across districts in a state with as much economic diversity as Kansas, the Comparable Wage Index from the National Center for Education Statistics has been utilized to normalize spending data. This has the effect of reducing the spending levels of districts in high-cost areas relative to those in low-cost areas by factoring out differences in local purchasing power of the dollar. The values for this geographic cost adjuster are calculated at the county level, so differences within county cannot be measured by this index. The data underlying the index is from 2004. The following table illustrates the geographic variation in purchasing power among Kansas counties. Overall, the adjustment does not have a large impact on the analysis (the correlation between unadjusted and adjusted core spending is fairly high), but there is some impact on individual districts, as should be expected.

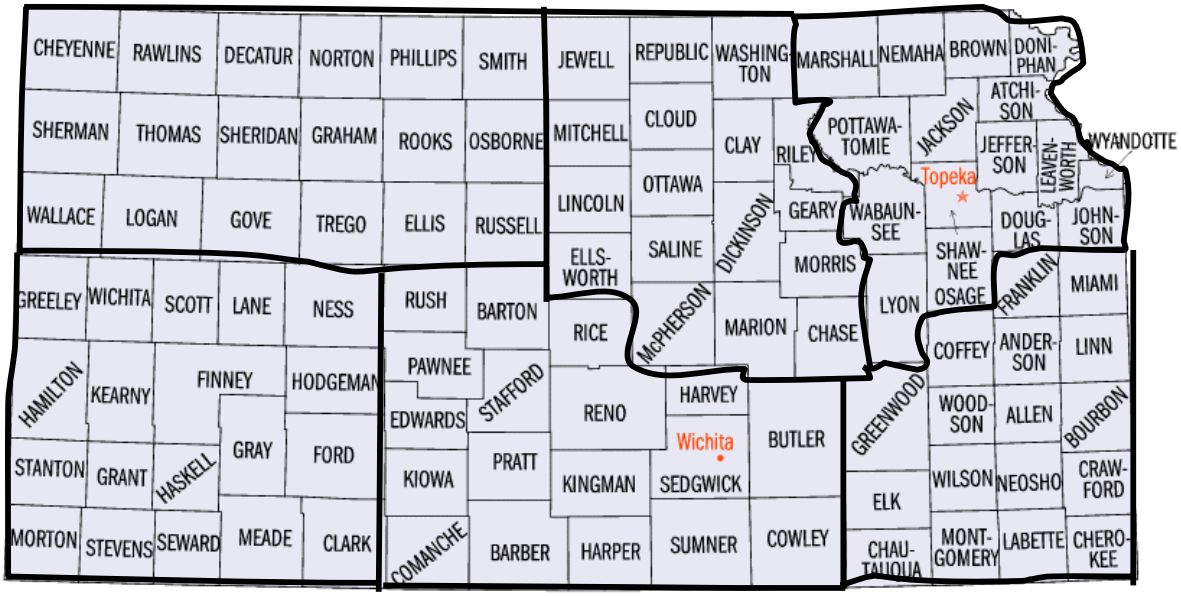
Relative Cost of Region	Geographic Cost Adjuster	Counties
Comparatively High-Cost Areas	118.60	Franklin, Johnson, Leavenworth, Linn, Miami, Wyandotte
	109.36	Doniphan
	107.09	Jackson, Jefferson, Osage, Shawnee, Wabaunsee
	106.90	Butler, Harvey, Sedgwick, Sumner
	106.85	Douglas
	100.00	**State Average**
Comparatively Low-Cost Areas	98.99	Chase, Coffey, Greenwood, Lyon, Marion
	95.10	Cloud, Ellsworth, Jewell, Lincoln, Mitchell, Ottawa, Republic, Saline, Washington
	94.90	Atchison, Brown, Nemaha
	94.42	Clark, Finney, Ford, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kearny, Lane, Meade, Morton, Ness, Scott, Seward, Stanton, Stevens, Wichita
	91.83	Clay, Dickinson, Geary, Marshall, Morris, Pottawatomie, Riley
	91.82	Allen, Anderson, Bourbon, Chautauqua, Cowley, Elk, Wilson, Woodson
	91.17	Cherokee, Crawford, Labette, Montgomery, Neosho
	90.18	McPherson, Reno, Rice
	88.80	Barber, Barton, Comanche, Edwards, Harper, Kingman, Kiowa, Pawnee, Pratt, Rush, Stafford
	88.01	Cheyenne, Decatur, Ellis, Gove, Graham, Logan, Norton, Osborne, Phillips, Rawlins, Rooks, Russell, Sheridan, Sherman, Smith, Thomas, Trego, Wallace

Impact of Probable Data Reporting Error – USD 101 (formerly Erie-St. Paul)

Between the 2004-05 and 2005-06 school years, the St. Paul area was transferred from USD 101 (Erie-St. Paul) to USD 505 (Chetopa). The 2005-06 spending data for the receiving district – Chetopa – appears to correctly reflect this infusion of students. However, the spending data for the sending district – Erie – appears not to reflect the departure of these students. In other words, total spending figures appear unchanged, which has the effect of inflating the per-student spending figures for the district (i.e., same amount of money spent on fewer students). In terms of the DEA model, this data issue has no impact, as the district would not under any number of scenarios have been on the efficient frontier. However, the relative efficiency score for USD 101-Erie would be impacted, as it would appear to be less efficient than it really is. Using the data as provided, the district has received a relative efficiency score of 79.88%, but this score could be significantly higher (as high as approximately 85% assuming that actual per-student spending would be similar to historical levels). However, Standard & Poor's had no means available during this study to confirm that the data is in fact incorrect, let alone to ascertain the correct figure, and so the result is being reported as is with the caveat that it may be artificially low.

Categorization of School Districts for Regional Analysis

There are several different regional categorizations used by the state and private agencies to describe Kansas. Most divide the state into six regions. For the purposes of this study, Kansas counties have been assigned to the six regions as presented below.



Northwest

Cheyenne	Rawlins
Decatur	Rooks
Ellis	Russell
Gove	Sheridan
Graham	Sherman
Logan	Smith
Norton	Thomas
Osborne	Trego
Phillips	

North Central

Chase	McPherson
Clay	Mitchell
Cloud	Morris
Dickinson	Ottawa
Ellsworth	Republic
Geary	Riley
Lincoln	Saline
Marion	Washington

Northeast

Atchison	Lyon
Brown	Marshall
Doniphan	Nemaha
Douglas	Osage
Jackson	Pottawatomie
Jefferson	Shawnee
Johnson	Wabaunsee
Leavenworth	Wyandotte

Southwest

Clark	Kearny
Finney	Lane
Ford	Meade
Grant	Morton
Gray	Ness
Greeley	Scott
Hamilton	Seward
Haskell	Stanton
Hodgeman	Stevens

South Central

Barber	Kiowa
Barton	Pawnee
Butler	Pratt
Comanche	Reno
Cowley	Rice
Edwards	Rush
Harper	Sedgwick
Harvey	Stafford
Kingman	Sumner

Southeast

Allen	Greenwood
Anderson	Labette
Bourbon	Linn
Chautauqua	Miami
Cherokee	Montgomery
Coffey	Neosho
Crawford	Wilson
Elk	Woodson
Franklin	