

**Financing Childhood
Immunizations Across the Nation:
A Follow-Up Report to the Immunize
Kansas Kids Steering Committee**

January 2007

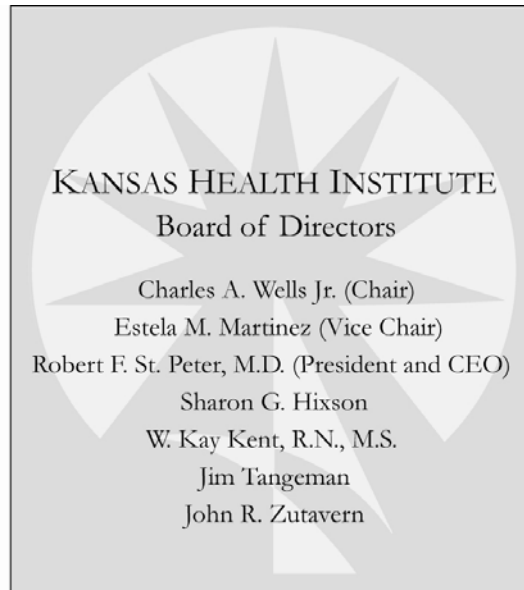
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Immunization program staff members from Connecticut, Iowa, Kansas, Massachusetts, Minnesota, Mississippi, Nebraska, New Hampshire, North Carolina, Rhode Island, South Dakota, and Vermont donated valuable time to this project, as they discussed their immunization programs with us. Without the sharing and collection of information from immunization programs across the country, this report would not be possible.

Finally, the authors appreciate the time and expertise donated by the members of the Immunize Kansas Kids (IKK) Steering Committee, who have shown dedication and enthusiasm throughout the entirety of this important project.

EXECUTIVE SUMMARY

The Centers for Disease Control and Prevention annually publishes a report that compares the immunization rates of the fifty states and the District of Columbia. In addition to reporting the rates, the states are listed in rank order from the state with the best immunization rate in the year of study to the state with the lowest rate. A state's position in the ranking varies over time, a function not only of its performance but also of the performance of other states. For example, Kansas ranked 44th in the nation in 2004 but jumped to 13th in 2005. Despite this movement in the rankings, several states perennially manage to stay at the top of the state rankings of childhood immunization rates. In a five year examination of CDC state rankings of childhood immunization rates, we identified 11 states whose immunization rates are consistently high — Connecticut, Iowa, Massachusetts, Minnesota, Mississippi, Nebraska, New Hampshire, North Carolina, Rhode Island, South Dakota, and Vermont. Because of their good performance, these states may be viewed as exemplars that other states might choose to emulate.

The exemplar states are not homogeneous. They vary in the ways they purchase childhood vaccines and in the administrative strategies they use to improve childhood immunization rates. Consequently, they do not present a clear picture of best practices for improving immunization rates. The purpose of this report is to explain how they are alike and how they differ. Across the 11 states, it details the financing options used to provide childhood vaccines to providers and outlines the programmatic strategies employed by the states to consistently improve their performance.

A follow-up to the Kansas Health Institute's October 2006 report, *Financing Childhood Immunizations in Kansas*, this report summarizes the funding options for childhood immunizations. The first section of this report explores various aspects of the financing structure for immunizations, including the current system of financing the 4:3:1:3:3:1 vaccine series in Kansas, different versions of the Vaccines for Children (VFC) program and which states use them, the structure of the Universal Purchase program, the fluctuation of state rankings in childhood immunizations, and additional options for funding childhood immunizations.

Key findings from part one of this report are:

- Kansas funds childhood immunizations through a combination of sources; the federal VFC and Section 317 programs are the two primary sources of funding.
- There is no discernable correlation between the Universal Purchase program and a high state immunization ranking.
- State rankings vary considerably from year-to-year, but the data show that over a five-year period, every state made progress in improving its immunization rates. The degree of improvement varies among the states.

The second section of this report summarizes the immunization programs of the exemplar states. For this study, we interviewed state immunization program coordinators and directors from the exemplar states. Using a semi-structured interview protocol, we questioned them about various aspects of their programs in an attempt to identify best practices and program innovations.

Key findings from part two of this report are:

- Immunization program directors and coordinators working in states funding immunizations with different VFC funding options cited benefits and barriers of each program. No VFC arrangement was described as perfect, and none was described as unworkable.
- Several of the exemplar states use provider incentives and rewards to encourage them to improve their practice's childhood immunization rates. Conversely, most states do not use parental incentives, suggesting that high performing states target increased provider participation over parental participation.

- The majority of the exemplar states do not actively distribute or promote the use of educational materials for parents, but do actively distribute and promote educational materials to providers. Similar to the previous finding, the exemplary states place greater emphasis on increasing provider involvement rather than parental involvement in immunizations.
- Immunization registries are at significantly different points of development across exemplar states. States use the registries for varied purposes; the effect of immunization registries on immunization rates is unknown at this time.

The most significant finding of this report is that high immunization rates are not associated with one particular program, one specific practice, or one financial arrangement — rather, successful immunization programs employ various approaches simultaneously to increase immunization rates. This report offers an explanation of the immunization funding options as well as information on a variety of practices used in exemplary states. In addition, this report shows that the Kansas statewide immunization plan employs many of the same practices used by the exemplary states. Although these practices differ somewhat, they frequently differ only in terms of scope or emphasis.

If Kansas' immunization programs are similar in most essential respects to those of the exemplar states, factors that we did not study for this report must account for the unexplained variation in immunization rates. Issues such as the structure of public health delivery on the local level may affect the behavior of both private and public providers. Local public health departments across the country have one of three relationships with the state department of health: They are either centralized, decentralized, or the responsibility and authority for public health is shared. Kansas is considered a decentralized state. The existence in every county of Kansas of a local health department that offers immunizations may encourage some providers to not offer immunizations.

Other factors that were not studied for this report that might have an impact on either immunization rates directly or the willingness of providers to offer immunizations include, but

are not limited to: managed care penetration, a threshold population of children under five years of age, the ratio of family practice physicians and pediatricians to the population of children under five years of age, population density, population size, and small area practice variation.

INTRODUCTION

BACKGROUND

With the goal of raising Kansas' childhood vaccination rate to at least 90 percent, the Kansas Department of Health and Environment (KDHE), the Kansas Health Institute (KHI), and numerous stakeholder organizations¹ joined in a partnership known as Immunize Kansas Kids (IKK). The IKK Steering Committee directed staff to explore the barriers to improving the state's immunization rate and to report its findings to the committee. This report — one in a series of immunization studies conducted by KHI on behalf of IKK — will assist members of the IKK Steering Committee in developing recommendations for raising Kansas' immunization rates.

PROJECT OBJECTIVES

In October 2006, KHI composed a report for the IKK Steering Committee describing the current system of financing childhood immunizations in Kansas, including sources of funding, reimbursement, insurance coverage, and an assessment of costs and how these costs are shared between various entities.² Although an extensive project in itself, the report provoked several additional questions relating to the financing of childhood immunizations. This report attempts to answer these questions about the funding structure for immunizations as well as immunization programs in exemplar states. The topics addressed in this report are:

- **Part I: The Structure of Immunization Financing**
 - The current “system” of financing the 4:3:1:3:3:1 vaccine series in Kansas
 - VFC funding options
 - Do Universal Purchase states have higher immunization rates?
 - The uses of state rankings

¹ For a complete list of stakeholder organizations involved in the IKK project, visit www.immunizekansaskids.org.

² Weisgrau, S. (2006). *Financing Childhood Immunizations in Kansas: Report to the Immunize Kansas Kids Steering Committee*, Topeka, KS: Kansas Health Institute.

- **Part II: What Works for Other States?**
 - Benefits of each VFC funding option
 - Is one program superior to the others?
 - Parental and provider incentives and rewards for immunizing children
 - Parental and provider immunization education
 - Immunization conferences
 - Immunization registries
 - Provider assessment
 - Administrative fee caps
 - What do immunization program staff believe works for their state?
 - How can Kansas utilize this information?

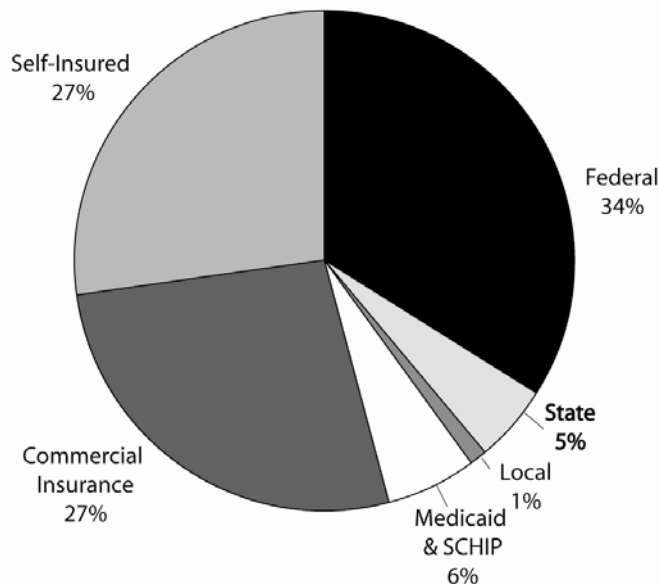
This report presents an overview of financing childhood immunization programs across the country and an exploration of best practices in 11 exemplar states.

PART I: THE STRUCTURE OF IMMUNIZATION FINANCING

CURRENT FINANCING FOR THE 4:3:1:3:3:1 SERIES IN KANSAS

Kansas relies on a variety of sources to fund immunizations for children. All levels of government — federal, state, and local — contribute to financing the delivery of childhood immunization services in the state, and individuals, through commercial health insurance and out-of-pocket expenditures, pay directly for immunization services provided to their children. In an October 2006 report to the Immunize Kansas Kids Steering Committee, the Kansas Health Institute summarized the programs and methods used to pay for immunization services.³ That report found that \$15,664,950 from all sources was spent on providing the 4:3:1:3:3:1 vaccination series in 2005. The distribution of expenditures during the period 2003–2005 is presented in Figure 1.

Figure 1. Source of Immunization Expenditures for the 4:3:1:3:3:1 Vaccine Series for Kansas Children Ages 0–3 Years (2003–2005)



The federal government is the largest single source of immunization funding in Kansas. It provides support through two programs, Vaccines for Children (VFC) and a program known as Section 317, for the section of the Public Health Service Act which authorizes it. VFC is the

³ Weisgrau, S. (2006). *Financing Childhood Immunizations in Kansas: Report to the Immunize Kansas Kids Steering Committee*, Topeka, KS: Kansas Health Institute.

larger of the two programs, providing almost three times the funding support of the Section 317 program for 4:3:1:3:3:1 vaccines in 2005. (The two programs are funded and function independently so the degree of difference in funding from year-to-year differs greatly.) Taken together, the VFC and Section 317 programs contributed \$5,211,947 to the system of financing childhood immunizations in Kansas in 2005.

Administered by the Centers for Disease Control and Prevention (CDC), the VFC program provides funding to states to purchase vaccines at federally negotiated prices. In turn, the state makes vaccines available at no cost to providers who choose to participate in the program. Participating providers immunize categorically eligible children at no cost to their families for vaccines. Providers may charge an administration fee, often paid by Medicaid, the State Children's Health Insurance Program (SCHIP), private insurance, or an out-of-pocket sliding fee scale, but services must be provided to all eligible children regardless of ability to pay.

The Section 317 program provides grants to states to purchase vaccines for people who are underinsured relative to their income. While the VFC program focuses exclusively on children, the Section 317 program provides funds to purchase vaccines for children and adults. Section 317 program grants also fund management and infrastructure development of state department of health immunization programs.

State government in Kansas funds childhood immunizations in three ways. First, state general fund (SFG) moneys are used to purchase vaccines; second, the state provides financial aid to local health departments to support staff and administrative functions, some of which are used for immunization services; and, finally, providers are reimbursed for authorized immunization services delivered to enrolled Medicaid and HealthWave (SCHIP) patients. (Medicaid and SCHIP are shared federal-state programs. Kansas' contribution to Medicaid is approximately 40 percent and 28 percent for SCHIP.) Local governments — counties and municipalities — also provide funding to local health departments for both vaccine purchases and immunization program management.

Private financing for childhood immunizations comes from commercial insurance plans, self-insured plans of large employers, and out-of-pocket expenditures of individuals. Commercial insurance plans in Kansas are required by law to provide coverage for routine and necessary immunizations for children up to six years of age with no co-payment, deductible, or coinsurance requirements. Self-insured plans, however, are not regulated by state insurance law, but are overseen by the U.S. Department of Labor under authority of the Employee Retirement Income Security Act (ERISA). These “ERISA plans” are not prohibited from charging policyholders co-payments, deductibles, or coinsurance for immunization services. These costs are financed out-of-pocket by individuals. Persons who do not have health insurance but who have the ability to pay the full costs of immunization services also pay out-of-pocket.

VFC FUNDING OPTIONS

The VFC program is designed to provide free vaccines to children 18 years of age or younger who are uninsured, Native American/Alaska Native, or eligible for Medicaid or SCHIP. States can expand eligibility for VFC vaccines by supplementing VFC vaccine purchases at federally discounted prices with Section 317 and SGF money. In other words, state funds are used to provide free vaccines to children not eligible for the VFC program. Several funding variations exist in the VFC program:

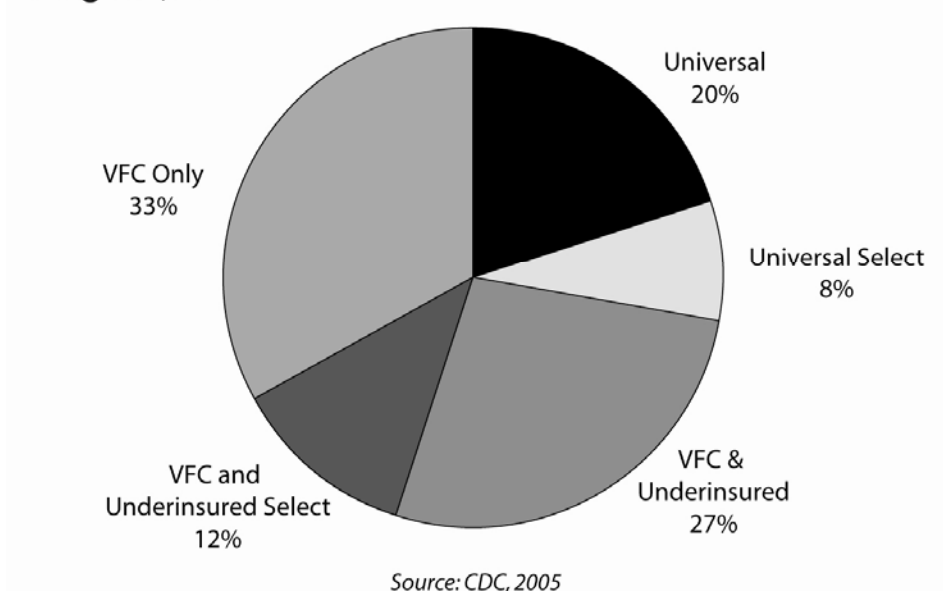
- **Universal Purchase:** The state immunization program supplies all vaccines to all providers for all children at no cost. Ten states (20 percent) purchase their vaccines under this arrangement.
- **Universal Select:** The state immunization program supplies almost all vaccines at no cost. Some relatively high-cost vaccines that have recently been added to the VFC vaccination schedule may not be provided to all children. Four states (eight percent) purchase their vaccines under this arrangement.
- **VFC and Underinsured:** The state immunization program supplies all vaccines for VFC-eligible children and underinsured children at all VFC-enrolled providers. Underinsured children are those in families who have a health insurance plan that does

not include immunizations as a covered benefit. Fourteen states (27 percent) purchase their vaccines under this arrangement.

- **VFC and Underinsured Select:** The state immunization program supplies most vaccines for VFC-eligible and underinsured children to VFC-enrolled providers. Six states (12 percent) purchase their vaccines under this arrangement.
- **VFC Only:** The state immunization program supplies VFC vaccines to VFC providers for VFC-eligible children only. Seventeen states (33 percent) purchase their vaccines under this arrangement.

Kansas currently falls into the VFC and Underinsured Select category. Figure 2 shows the distribution of VFC funding options among the 50 states and the District of Columbia.⁴

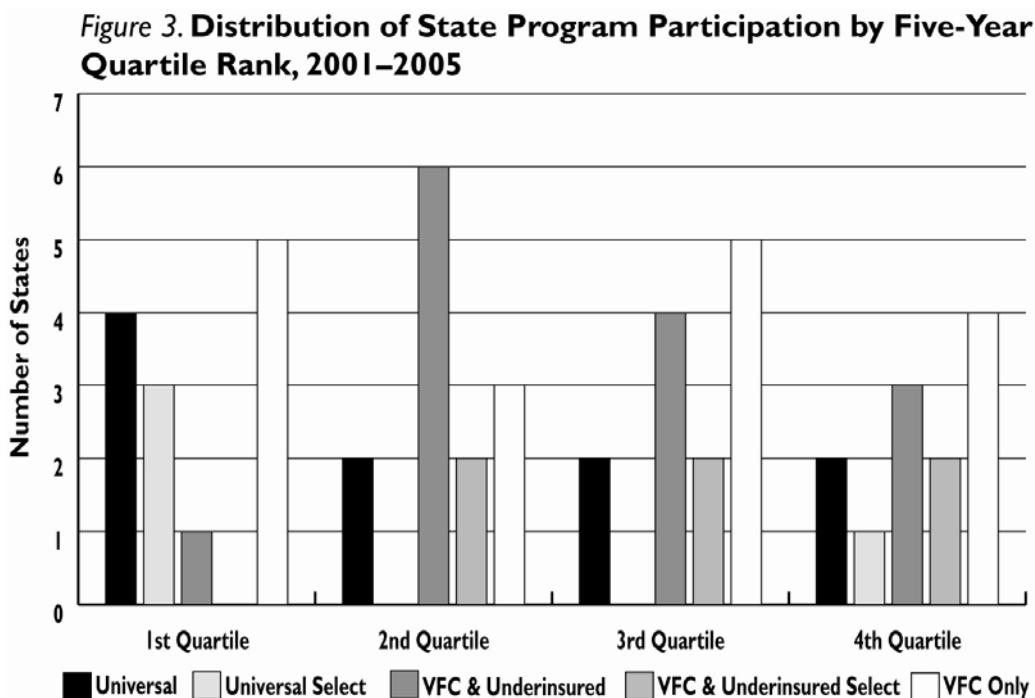
Figure 2. State Variation Under the Vaccines for Children (VFC) Program, 2005



⁴ Drawing on information from its 2006 VFC Management Survey, CDC announced on October 6, 2006, that two states had joined the Universal Select program, Hawaii and North Dakota. Hawaii had previously been a VFC & Underinsured state and North Dakota had been a Universal state.

UNIVERSAL PURCHASE

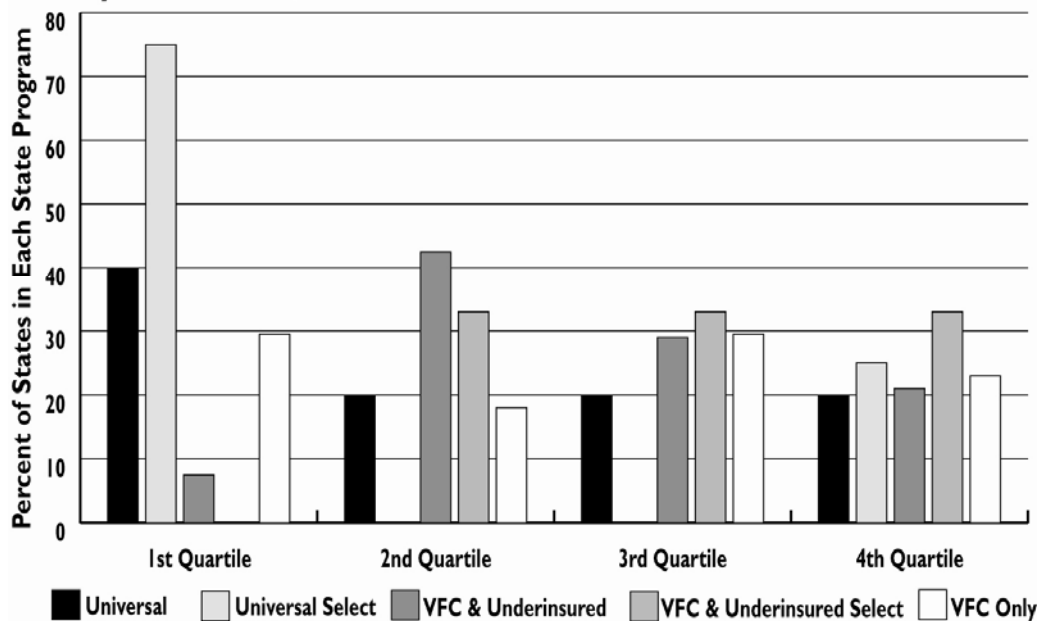
Because Universal Purchase states supply all vaccines to all providers for all children without cost to either providers or families, it would be reasonable to assume that these states have higher immunization rates than other states. The evidence, however, does not support that assumption. Figure 3 presents the distribution of state VFC program participation by quartile rank. States that rank in the top 13 positions over the five year period comprise the first quartile; states that rank between 14th and 26th in the five-year ranking comprise the second quartile and so on in 13 position increments. Four of the 13 states in the first quartile were Universal Purchase states (approximately 31 percent of the total), but two Universal Purchase states were also represented in each of the remaining three quartiles. The fact that four of the perennially leading states — Massachusetts, New Hampshire, Rhode Island, and Vermont — are all Universal Purchase states may suggest to some that free coverage of childhood immunizations improves immunization rates. Note, however, that five VFC Only states also populate the first quartile.



Because participants in the five VFC programs are not evenly distributed across the states, it is useful to examine the data just presented in another way. Figure 4 presents the percent of states in each VFC program spread across the four quartiles of state immunization rankings. This graph

shows that the immunization rates of forty percent of all Universal Purchase states places them in the upper quartile of state rankings. It also shows that forty percent of all Universal Purchase states appear in the lower half of five-year state rankings (i.e., quartiles three and four). The immunization rates of three of four Universal Select programs place them in the first quartile, but the remaining Universal Select state (one of four) appears in the lowest quartile. No VFC and Underinsured Select states (such as Kansas) appear in the first quartile of five-year rankings, but they are evenly distributed across the other three quartiles. Of the five VFC programs, VFC Only states are distributed across the four quartiles most uniformly.

Figure 4. Percent Distribution of State Program Participation by Five-Year Quartile Rank



Universal Purchase states represent the most generous purchasing policy and VFC Only states the most restrictive policy. While the purchasing plan adopted by a state may have some impact on its immunization rates, it is likely only one of several factors that affect rates.⁵ For example, the positive performance of Massachusetts, New Hampshire, Rhode Island, and Vermont may be explained by variables other than the purchasing plan, such as limited small area variation among providers in four contiguous New England states whose combined area is

⁵ Other factors may include state immunization program infrastructure, managed care penetration, pediatrician supply, practice variation, civic culture, and immigration, among others.

less than one-third that of Kansas. This study did not address this and similar issues that may affect state immunization rates.

STATE RANKINGS

Table 1 presents the annual state immunization rankings for the five-year period, 2001–2005. Analyzing the data over five years provides an opportunity for gaining new insights into the comparative ranking system.

Column one of Table 1 presents the five-year ranking of all states and the District of Columbia, calculated by summing the annual rankings and then rank ordering the totals (see Total column). The rankings vary considerably from year-to-year, showing little internal consistency within a state. For example, the range from a state's highest ranking in the five-year period to the lowest ranking is greater than 10 positions in all but four states, Idaho (number 39 in the five-year ranking), Washington (number 46), Oklahoma (number 50), and Louisiana (number 51). Even the highest performing states show variation in their rankings. Rhode Island, which ranked third in the five-year period, ranked 20th in 2005; New Hampshire, which ranked fifth over five years, ranked 22nd in 2005; and Vermont, ranked sixth over five years, ranked 27th in 2005. The reverse situation also applies: Florida, which sat comfortably in the middle of the pack for four of the five years, shot up to number two in 2004 and returned to number 31 in 2005. Kansas ranked 37th over the five-year period and ranged from 13th in 2005 to 46th in 2002.

Table 1. U.S. National Immunization State Rankings, 2001-2005 (for the 4:3:1:3:3:1 immunization series only)

Rank	State	Prgrm. ¹	2005	2004	2003	2002	2001	Total
1	MA	1	1	1	2	1	19	24
2	CT	2	4	3	1	5	14	27
3	RI	1	20	4	6	2	1	33
4	NC	2	7	29	3	4	2	45
5	NH	1	22	6	4	3	17	52
6	VT	1	27	12	11	7	3	60
7	IA	5	9	7	19	16	12	63
8	SD	2	3	8	22	11	20	64
9	MN	3	6	11	9	23	21	70
9	MS	5	14	14	10	28	4	70
11	PA	5	19	10	5	32	9	75
12	WI	5	25	17	18	10	6	76
12	NE	5	2	24	24	18	8	76
14	GA	3	10	13	36	9	13	81
15	ND	1	8	27	23	20	11	89
16	IL	4	15	19	13	17	32	96
17	AL	5	18	23	25	24	7	97
17	TN	5	21	22	30	19	5	97
19	DE	5	11	9	39	14	26	99
20	SC	3	35	36	7	12	10	100
21	ME	1	17	26	31	8	24	106
22	VA	4	5	33	8	38	25	109
23	MD	3	24	35	17	13	28	117
23	FL	3	31	2	21	33	30	117
25	MI	3	23	31	16	6	42	118
26	NY	3	26	25	32	21	18	122
27	HI	3	28	32	15	15	39	129
28	OH	5	12	37	14	31	37	131
28	MO	5	32	28	12	36	23	131
30	WV	5	46	5	48	22	15	136
31	KY	3	29	38	20	37	22	146
32	WY	3	34	16	41	34	27	152
33	NJ	4	38	18	46	26	29	157
34	MT	5	30	42	26	48	16	162
35	IN	5	39	39	28	27	38	171
36	CA	3	41	30	34	35	33	173
37	KS	4	13	44	42	46	31	176
38	AK	1	45	46	27	30	35	183
39	ID	1	40	34	33	42	40	189
40	AR	4	50	21	37	39	44	191
41	DC	3	48	20	40	41	45	194
42	NM	1	36	15	45	50	51	197
42	CO	5	16	45	51	51	34	197
44	AZ	3	33	41	35	45	48	202
45	UT	3	47	50	29	29	49	204
46	WA	1	42	43	44	43	36	208
47	OR	5	49	40	38	40	46	213
48	NV	2	51	51	43	25	47	217
49	TX	4	37	48	47	44	43	219
50	OK	5	44	49	49	49	41	232
51	LA	5	43	47	50	47	50	237

¹Universal Purchase = 1; Universal Select = 2; VFC & Underinsured = 3; VFC & Underinsured Select = 4; VFC Only = 5.

Table 2 presents the actual immunization rates for the 4:3:1:3:3:1 immunization series for 2001–2005 presented in the order of the five-year cumulative ranking. A trend line was calculated for each state using the annual immunization rates for each of the five years. (See Figure 5 for an example of a calculated trend line.) The slope of the calculated trend line measures the amount of change from one year to the next. For example, a slope of 3.67 would mean that immunization rates, as estimated by the calculated trend line, increase by 3.67 percent each year. The slope of the trend line is presented in the next to the last column on Table 2. The trend line does not represent actual performance, but is a statistical estimate. A statistic called “coefficient of determination” (r^2) tells how well the calculated line fits the data. The closer the r^2 is to 1.0, the more confidence one can have in the calculated trend line. The r^2 for each trend line is presented in the final column of Table 2.

The trend line data shows that *every state over the five-year period made progress in improving its immunization rates*: Every state had a positive slope.⁶ Not every state made progress at the same rate. The slopes (the calculated rates of progress) range from 4.93 to 0.33. Note that some perennially high-performing states have very small slopes: Rhode Island (0.50), North Carolina (0.88), and Vermont (0.65). The small slope might suggest that these states have reached a point of diminishing returns on the activities they currently employ to encourage parents to immunize their infant children.

Kansas has a slope of 3.27 and an r^2 of 0.6866. While not excellent, an r^2 of approximately 0.7 suggests that the fit of the trend line to the actual data points is reasonably good. Kansas’ slope is the fifth highest among all states. One way of interpreting this finding is that *over the last five-years, Kansas has led most states in the pace of improvement in its immunization rates*. A possible corollary interpretation would suggest that if Kansas is able to maintain this rate of increase in the near future, the goal of a 90 percent immunization rate is within sight.

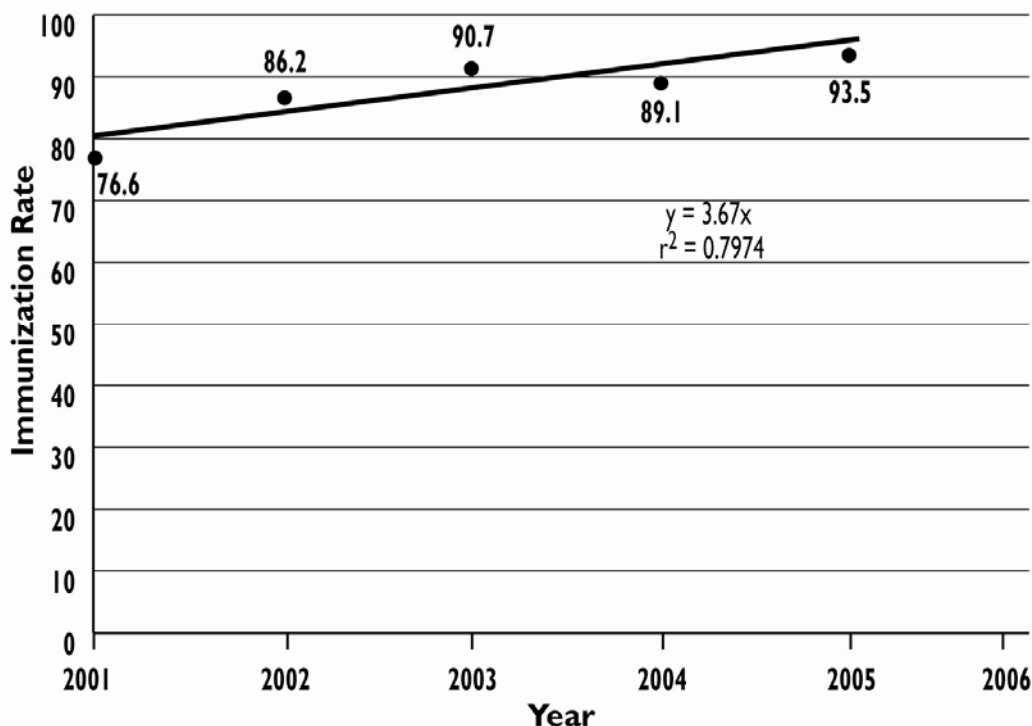
⁶ This analysis looks at the five years as a unit. It is possible for a state to have a positive five-year trend, even with one or two years in which its annual rate is lower than the preceding year.

Table 2. Immunization Rates by State, Rank, and Trend, 2001–2005 (for the 4:3:1:3:3:1 immunization series only)

Rank	State	Prgrm. ¹	2005	2004	2003	2002	2001	Slope	r ²
1	MA	1	93.5	89.1	90.7	86.2	76.6	3.67	0.7974
2	CT	2	86.1	87.8	94.0	81.9	78.4	2.13	0.3214
3	RI	1	83.1	86.7	85.2	84.5	81.7	0.50	0.1690
4	NC	2	85.2	81.6	86.7	82.4	80.4	0.88	0.2840
5	NH	1	82.8	86.3	86.5	83.5	77.6	1.32	0.3350
6	VT	1	81.5	85.0	83.6	80.9	80.3	0.65	0.2713
7	IA	5	84.9	86.1	81.1	78.7	78.6	2.00	0.8263
8	SD	2	86.9	86.1	80.9	79.9	76.5	2.70	0.9508
9	MN	3	85.2	85.2	83.9	76.8	76.3	2.62	0.8334
9	MS	5	83.6	84.0	83.6	75.7	80.2	1.51	0.4527
11	PA	5	83.2	85.7	86.2	74.7	78.8	1.98	0.4088
12	WI	5	82.2	82.9	81.2	80.3	79.5	0.80	0.8434
12	NE	5	89.1	82.3	80.4	78.2	78.9	2.45	0.7809
14	GA	3	84.7	84.7	76.6	80.4	78.5	1.67	0.5228
15	ND	1	85.0	82.0	80.4	77.7	78.7	1.69	0.8589
16	IL	4	83.5	82.7	82.9	78.6	72.7	2.57	0.7942
17	AL	5	83.3	82.3	80.4	76.8	79.1	1.39	0.7245
17	TN	5	82.9	82.4	78.8	78.2	79.7	1.06	0.6194
19	DE	5	84.2	86.0	76.3	78.7	74.9	2.59	0.7059
20	SC	3	78.5	79.8	84.3	78.8	78.7	0.60	0.0015
21	ME	1	83.3	82.1	78.6	80.7	75.1	1.78	0.7589
22	VA	4	85.8	81.0	84.0	72.0	74.9	3.08	0.6789
23	MD	3	82.3	80.0	81.3	78.7	73.4	1.91	0.7517
23	FL	3	79.3	88.5	81.0	74.5	73.0	2.66	0.4709
25	MI	3	82.7	81.2	81.5	81.6	70.0	2.50	0.5593
26	NY	3	81.6	82.2	78.6	77.5	77.1	1.37	0.8447
27	HI	3	80.1	81.2	82.0	78.7	70.8	2.11	0.5469
28	OH	5	84.1	79.5	82.3	75.0	71.2	3.03	0.8175
28	MO	5	79.3	81.6	83.3	73.0	75.5	1.62	0.3618
30	WV	5	74.9	86.6	74.6	76.9	78.1	0.33	0.0113
31	KY	3	79.7	79.1	81.0	72.3	75.9	1.44	0.4215
32	WY	3	78.6	83.3	75.8	73.3	74.3	1.86	0.5351
33	NJ	4	78.2	82.7	75.0	76.1	73.1	1.68	0.5232
34	MT	5	79.6	78.2	80.0	66.6	77.9	1.50	0.1804
35	IN	5	78.1	79.0	79.0	76.0	71.1	1.70	0.6513
36	CA	3	77.9	81.3	77.4	73.2	72.6	1.87	0.6737
37	KS	4	83.8	77.5	75.7	66.8	72.8	3.27	0.6866
38	AK	1	75.4	75.3	79.7	75.3	71.2	0.84	0.1952
39	ID	1	78.1	80.6	78.1	69.4	70.2	2.70	0.6970
40	AR	4	67.4	82.4	76.5	71.0	69.1	0.80	0.0424
41	DC	3	73.5	82.5	76.2	69.7	68.9	2.20	0.3977
42	NM	1	78.4	83.5	75.2	64.6	63.2	4.93	0.7819
42	CO	5	83.4	77.1	67.5	62.7	71.5	3.82	0.5570
44	AZ	3	79.2	78.6	76.9	67.9	68.1	3.29	0.8421
45	UT	3	74.1	71.3	78.8	75.7	66.1	1.16	0.1456
46	WA	1	77.8	77.7	75.3	69.2	71.2	2.17	0.7795
47	OR	5	72.9	78.9	76.5	70.0	68.5	1.77	0.4140
48	NV	2	66.7	68.4	75.7	76.4	68.1	1.08	0.1374
49	TX	4	78.4	72.5	74.8	67.9	69.7	2.20	0.7017
50	OK	5	75.7	72.1	70.5	65.3	70.0	1.82	0.5847
51	LA	5	76.0	74.9	69.9	66.8	64.1	3.19	0.9739

¹Universal Purchase = 1; Universal Select = 2; VFC & Uninsured = 3; VFC & Uninsured Select = 4; VFC Only = 5.

Figure 5. Massachusetts Immunization Rate Trend



One strategy for improving immunization rates in Kansas is to study the best practices implemented in other, high-performing states, and assess them for their utility and cost. Those best practices that appear feasible in Kansas should be added to the programs that are already in place.

As a first step in the assessment of best practices, we identified a set of states to serve as exemplars. We selected the ten states that ranked highest in the five-year immunization rankings: Massachusetts, Connecticut, Rhode Island, North Carolina, New Hampshire, Vermont, Iowa, South Dakota, Minnesota, and Mississippi. To this list we added Nebraska (ranked number 12), because of its good performance and similarity to Kansas. In the next section, we discuss the experiences of these other states and describe the methods we used to learn about them.

PART II: WHAT WORKS FOR OTHER STATES?

STATE IMMUNIZATION PROGRAM INTERVIEWS

State Department of Health officials in the 11 states selected as exemplars were interviewed about the structure and experiences of their state immunization programs. We contacted an individual from each state's health department who was able to discuss details of the immunization program at length. Respondents included program coordinators/directors (7), VFC program coordinators/managers (2), and public health educators (2). The semi-structured interviews lasted from 20–45 minutes, and length depended upon the amount of information available from the interviewee. In addition, we interviewed Kansas' immunization program director using the same semi-structured interview protocol used with the exemplar states. We conducted all interviews between October and December 2006. Appendix A contains a copy of the semi-structured interview protocol. The remainder of this report summarizes the responses of those interviewed.

CDC STATE CLASSIFICATION

The exemplary states we interviewed function under four of the five VFC funding classifications (see pages five and six). We interviewed four Universal Purchase states (Massachusetts, Rhode Island, New Hampshire, and Vermont), three Universal Select states (Connecticut, North Carolina, and South Dakota), one VFC and Underinsured state (Minnesota), zero VFC and Underinsured Select states, and three VFC Only states (Iowa, Mississippi, and Nebraska).

No particular VFC funding option stands out by itself as a determinate way of raising immunization rates. According to the state respondents, however, different programs exhibit very different benefits and costs. Although the mechanism for financing vaccinations likely contributes to the success of state immunization programs, it is only one of several factors. Each respondent interviewed cited both advantages and disadvantages of their funding solution.

Universal Purchase States

The details of the Universal Purchase program differ by state, giving rise to several questions about the program: How does a state become a Universal Purchase state? Is the Universal

Purchase program successful at raising immunization rates? How did states join the program, and why and when did they join? Why do the administrative practices of the Universal Purchase program appear to vary by state? Although the Universal Purchase program is coordinated by the CDC, each state determines the financial arrangement between its state and local insurance companies and the CDC. Therefore, each Universal Purchase state has somewhat different attributes.

Each of the four Universal Purchase states studied entered the Universal Purchasing program at different points in time. Massachusetts, Rhode Island, and Vermont respondents explained that their states have participated in the Universal Purchase program “for as long as they can remember.” Massachusetts has provided vaccines to practitioners at no cost since the beginning of the health department in 1894, but officially signed on to the CDC Universal Purchase program when it began in 1994. Rhode Island also was a Universal Purchase state before the beginning of the CDC Universal Purchase program and joined the CDC’s program in 1994 to save money. The Vermont respondent was not sure of the year in which the state became a universal purchaser, but stated it was “at least since the 1960s.” The New Hampshire respondent also did not know the year of enrollment in the program, but noted that New Hampshire has been in the Universal Purchase program for at least the past ten years.

None of the exemplar Universal Purchase states joined the Universal Purchasing program within the last ten years. They all had a previous commitment to providing vaccines universally to all providers. Because the Universal Purchase program offers federally negotiated prices for vaccines at rates that are lower than rates the states were paying prior to creation of the CDC’s Universal Purchase program, these states reduced the cost of offering vaccines to providers by joining the Universal Purchase program. It is important to note that three of the four exemplar Universal Purchase states — and possibly the fourth as well — joined the Universal Purchasing program not to increase access to vaccines, but to reduce their immunization program costs.

Because we did not interview non-exemplary Universal Purchase states, we do not know their date of entry into the program or their motivation for joining. If a state had previously made vaccines available to all providers at no cost, as the exemplary Universal Purchase states had

done, their motivation for joining would have been to reduce cost. If, on the other hand, they did not previously make vaccines universally available, their motivation likely was to increase the supply of vaccines and encourage greater participation in the immunization program.

A barrier which exists to joining the program at present includes an alteration in the Universal Purchase program since its original creation. As the Rhode Island respondent explained, Rhode Island was “grandfathered” into the Universal Purchase program. Under the original arrangement, states could create Restricted Receipts Accounts, meaning that the funds added to these accounts by insurance companies, the CDC, and the state could only be used for immunization programs. Since the initial inception of the program, Universal Purchase states have been prohibited from establishing Restricted Receipts Accounts.

Although states joining the Universal Purchase program currently do not have the advantage of Restricted Receipts Accounts, several states managed to make the Universal Purchase program work for their state regardless of recent changes in Universal Purchase policy. For example, Massachusetts negotiated a method by which its insurance companies pay for vaccines. In essence, the state taxes the insurance companies for each underwritten policy and places that tax into the state general fund. The state then supplies money out of the general state budget to supply the universal vaccines. Although it is possible to construct a Universal Purchase program which provides many of the benefits of the early program offered in 1994, states must negotiate such an arrangement with the CDC and local insurance companies on a case-by-case basis.

Overall, the individuals interviewed from the four Universal Purchase states are content with their participation in the program. The Universal Purchase program allows states to give all vaccines to all children within the state with greater ease. The New Hampshire respondent expressed satisfaction with providing vaccines for all kids in the state regardless of their financial access to medical services.

In addition, respondents from two states, Massachusetts and Vermont, said that the Universal Purchase program generally increases state immunization rates over other VFC funding options. Even when we pointed out that several Universal Purchase states do not have consistently

exemplary rates, respondents still felt that the Universal Purchase program is responsible for a large portion of their immunization rate success. Universal Purchase states did not hesitate to acknowledge the key role of the purchasing program on their state's immunization rates.

State respondents also cited the Universal Purchase program as “less confusing,” since most of the children in these states receive their immunizations in a medical home. The New Hampshire respondent noted that a benefit of the Universal Purchase program is that it keeps children in their medical homes. Since most children in Massachusetts receive their immunizations in a physicians' office or another medical home, health departments and other common safety nets often do not provide immunizations. This may create a barrier for children without access to a medical home (for example, children without transportation or children who do not receive routine medical services).

In addition, Universal Purchase state respondents cited that they work closely with physicians, since physicians must order all of their vaccines through the state offices. The Rhode Island respondent expressed that the Universal Purchase program is responsible for an increase in provider communication, since 85 percent of vaccinations are given in private offices. The Universal Purchase program also eliminates provider cost for carrying vaccines.

The Massachusetts respondent also noted that Universal Purchase funding is simple for providers. Because all vaccines are provided to all children, providers do not have to make an eligibility determination. Providers use uniform forms and records for all patients, and can order all vaccines from one distributor.

While Universal Purchase states seem satisfied with the program overall, several financial aspects make the program difficult to maintain. Programmatic funding issues commonly top the list of complaints. The Vermont respondent described the difficulty in obtaining insurance company assistance with funding for the Universal Purchase program. The goal in Vermont is that eventually all insurance companies will voluntarily contribute funds at the same rate.

Not only are Universal Purchase states finding it more difficult to find the necessary funding for the current price of immunizations, but Massachusetts and Vermont noted that staying truly “Universal” was becoming increasingly difficult with the rising cost of immunizations, as well as the addition of new recommended vaccines.

Universal Select States

Three of the exemplary states, Connecticut, North Carolina, and South Dakota, function under a Universal Select funding plan. This plan differs from the Universal Purchase plan in that it provides most, but not all, vaccines at no cost to providers.

Universal Select states shared many of the same positive comments about the program as did Universal Purchase programs. South Dakota and North Carolina respondents noted that the program is helpful because they can vaccinate all children and provide most vaccines regardless of patients’ insurance status.

The Connecticut respondent noted, however, that in contrast to the Universal Purchase program, the Universal Select program creates additional work for providers. For vaccines not universally covered by the Universal Select program, providers must determine and document that children are eligible for the VFC program. Also, Connecticut providers must currently order vaccines not universally covered from both the state and the manufacturers, since VFC children receive the vaccine at the CDC negotiated price, and insured children receive the vaccine at the distributor’s price, as covered by their insurance companies.

South Dakota relies on its 317 grant funding to cover some of the vaccines not covered by the Universal Select program. The state noted, however, that due to major cuts in 317 grant funding in 2007, their Universal Select status might become even more selective in the vaccines it purchases. Since the amount of 317 grant money awarded each year drastically fluctuates, 317 grant money cannot be counted on as a reliable source of funding for immunizations.

VFC and Underinsured States

Minnesota functions under a VFC and Underinsured funding plan. Minnesota supplements VFC funding with 317 grant money. As a result, underinsured children are covered by the 317 supplement, uninsured children are covered by VFC funding, and fully insured children are covered by private insurance.

The Minnesota respondent appreciated the fact that the program covers all children in the state, thus eliminating barriers for uninsured and underinsured children. Again, due to changes in 317 grant awards, Minnesota projects that it will lose some of its funding, and may possibly decrease the extent of its statewide funding program. An additional difficulty is that the program is not easy to explain to physicians and health departments since providers must determine and document that children are eligible for the VFC program

Kansas funds immunizations using a VFC and Underinsured Select program, in which the state immunization program supplies most vaccines for VFC-eligible and underinsured children to VFC-enrolled providers only. Although none of the exemplary states use the same VFC funding mechanism as Kansas, Minnesota uses the program that is most similar.

VFC Only States

Three of the interviewed states, Iowa, Mississippi and Nebraska, finance their immunization programs only with VFC funds. All VFC Only states in this report did not suggest many benefits or downfalls to the VFC Only program. VFC Only states finance immunizations only for children covered by Medicaid and SCHIP. Despite the fact that the three states provide fewer vaccines to providers than other exemplary states, they still have noteworthy immunization rates.

ADDITIONAL FACTORS IN STATE IMMUNIZATION PROGRAMS

As illustrated, the funding mechanisms of immunizations vary drastically, even among the exemplar states. Other factors that influence a state's immunization performance may include parental and provider incentives, parental and provider education (including immunization conferences), immunization registries, provider assessment, and administrative fee caps.

Incentives for Immunizations

Parental Incentives

The Kansas Immunization program encourages immunizations by offering incentives to parents who have their children immunized at VFC provider sites, through the *Immunize and Win a Prize* program. Many of the exemplar states interviewed for this report, however, do not focus their money or efforts into providing parental incentives.

Parents who immunize their children through VFC providers are eligible through Kansas' *Immunize and Win a Prize* program to be entered into a lottery including prizes such as \$400 towards rent, 12 family trips to the Wichita Zoo, and a family trip to Disneyworld. In contrast, all other exemplar states interviewed use incentives of small value, or no parental incentives at all. Kansas' incentives attempt to draw parents into immunization providers so that the children are immunized, while other states' incentives function more as rewards for performance. To our knowledge, a formal evaluation of the effects of the *Immunize and Win a Prize* program has not been performed.

Only two exemplary states, South Dakota and New Hampshire, currently use parental incentive programs. In South Dakota, children receive coloring books and crayons, stickers, and teddy bears for their completion of their fourth DTAP. New Hampshire provides children participating in the VFC program with books if they can show an immunization record during their WIC visits. Mississippi officials reported that their immunization programs had previously rewarded parents with incentives such as baby bibs, coffee mugs, and other small items, until funding cuts eliminated the program. Incentives in these states are not widely advertised and are of small monetary value, thus serving as a "thank you" to parents for immunizing a child rather than as a motivation to immunize a child.

Provider Incentives

States that provide incentives for immunizations most often reward providers for immunizing their patients rather than the patients for receiving immunizations. Many of the incentives for providers are not rewards for the act of providing the immunizations, but are incentives for

becoming a VFC provider. Minnesota, for instance, provides VFC providers with mugs and tote bags during provider assessment visits.

States that reward physicians for providing immunizations recognize only those providers with high immunization rates. Likewise, Kansas rewards physicians who immunize 90–94.9 percent of their patients with a framed certificate, and rewards physicians with immunization rates of 95–100 percent with a plaque. These rewards function more as “pats on the back” than direct incentives, however. Details of these rewards will be discussed later in this report, in the section about Provider Assessment on pages 28–30.

Immunization Education

Parent Education

Although all states interviewed offer some form of parental education about immunizations, the medium and method of information delivery varies substantially. In general, states take a passive approach to educating parents: They do not actively distribute or promote the use of educational materials for parents. Although educational materials are available for parents, the materials are not advertised or highly recommended to providers for distribution. In fact, when asked about their educational materials for parents, most states simply referred us to their state immunization Web sites. In Kansas, the state previously distributed hard copies of immunization materials for parents; however, the immunization program would like to gravitate towards an Internet-based material ordering system.

Electronic Education

Before the advent of the Internet and widespread computer access, many educational materials were distributed primarily through the mail and in person. Web sites and Internet access, however, altered the flow of information, including the stream of information about immunizations. Most state health departments now build immunization Web sites, packed with educational information for a variety of audiences: parents, providers, and the general public. States differ in whether they rely on their Web site as a primary or secondary means of conveying their educational information. Some states refer patients and providers to the Web site to print off materials (i.e. forms and brochures), while others still mail and hand-distribute the

printed goods, using their Web site as an additional means of dissemination. For a list of the immunization Web sites for the states interviewed for this report, refer to Appendix B.

Additional Vehicles for Parental Education

In addition to the use of Web sites for educational information, the exemplar states also rely on other means of communication:

- Telephone help lines (Vermont, Rhode Island)
 - Patients and providers call this telephone line for information and answers on a wide array of topics. Rhode Island's telephone help line employs bilingual operators.
- Informational fact sheets on specific vaccines (New Hampshire)
 - At the time of each early childhood immunization, providers distribute a fact sheet on the specific vaccine given that visit.
- Informational brochures, pamphlets, bookmarks, and books (New Hampshire, North Carolina)
 - Printed materials are sent directly to providers for distribution to parents. None of the studied states send materials directly to the parents. Although all states used brochures, pamphlets, and books in the past, most now ask parents to print these materials directly off of immunization Web sites, or asked providers to order the materials online as needed.
- Parent consultant program (Rhode Island)
 - Rhode Island's program employs bilingual parents for 20 hours per week to serve as liaisons between the health department and parents of young children. The health department places parents in walk-in clinic waiting rooms to answer questions and to report parents' complaints to the state health department.
- Educational videos (North Carolina)

- Presentations at health fairs and other community events (Connecticut)
- Baby calendars (Mississippi)
 - Nurses mark calendars with personalized immunization schedules for young patients so that parents know when to bring their children in for immunizations.

Provider Education

States offer extensive educational information to immunization providers through an array of different media. Educational materials available to providers follow:

- Printed protocols on new immunizations and how to provide these immunizations (Massachusetts, Minnesota, North Carolina, New Hampshire, Rhode Island)
- E-mails containing updates about immunizations as well as general information, sent to all immunization providers (Mississippi)
- Complimentary copies of the Pink Book, *Epidemiology and Prevention of Vaccine-Preventable Diseases*, published by the CDC (Nebraska, North Carolina)
- Webcasts hosted through the CDC and other sources (Nebraska, New Hampshire)
- Notification of CDC courses which offer Continuing Medical Education (CME) credits (Nebraska, New Hampshire)
- Provider newsletters exclusively about immunizations (Minnesota, Vermont)
- Provider newsletter containing a section on immunizations (Massachusetts)
- Printed copies of the updated immunization schedule (Minnesota)
- In-office presentations, known as “Lunch and Learns” (Connecticut)

Connecticut's "Lunch and Learn" program stands out as an innovative way to reach providers with information about immunizations. In these one-hour presentations, state health department employees visit clinics with low immunization rates to present information on ordering vaccines, getting children ready for preschool, and a wide variety of additional immunization-related topics. The state health department encourages attendance by providing lunch for the entire office staff. These meetings also give providers and office staff the opportunity to provide direct feedback to state immunization program staff.

Across states, the method of communicating information on immunizations to providers varies widely. However, the majority of states interviewed stress the importance of provider education, suggesting that strong provider education may result in higher state immunization rates. Kansas offers suggestions to providers during provider assessment visits. In addition, the state recently started a weekly electronic bulletin with information on noteworthy immunization topics as well as links to other informational Web sites.

Immunization Conferences

More than half of the states interviewed offer immunization conferences (7 of 11 states) (Table 3). Six of these states offer a statewide immunization conference, and four offer regional conferences (Table 3). New Hampshire — the only state offering a regional conference but no statewide conference — offered its first regional conference in 2006. Turnout was so great that the program was forced to turn away attendees.

As shown in Table 3, the structure of the immunization conferences varies somewhat by state. Kansas offers both an annual statewide conference as well as one-day regional conferences, both available for continuing education credits. More than half of the states that offer statewide immunization conferences (Iowa, Massachusetts, Mississippi, and Vermont) hold their conferences for one day. North Carolina provides a three-day immunization conference. Only Rhode Island offers a statewide immunization conference for less than one full day (four hours for school nurses, two hours for immunization providers). Conference attendees in Rhode Island, however, do not have to travel as far as attendees might in other states due to the small size of the state, possibly justifying the difference in conference-length. When conference

attendees must travel for hours to attend the conference, the length of the event must be worth the travel time. All conferences which lasted for the full day provided lunch for attendees.

Table 3. Immunization Conferences in Eleven Exemplar States

State	Existence of a Statewide Conference	Existence of a Regional Conference	Opportunity for Continuing Education Credits
Connecticut	No	No	N/A
Iowa	Yes (1x/year, 1-day)	Yes (1x/year, 1-day)	Yes
Massachusetts	Yes (1-day conference for “Annual Immunization Updates”; half-day conference for General Immunization information)	No	Yes
Minnesota	No (Planned for 2007)	No	N/A
Mississippi	Yes (1x/year, 1-day)	Yes (1x/year, 1-day)	Yes
Nebraska	No	No	N/A
New Hampshire	No	Yes	Yes
North Carolina	Yes (Alternating Years, 3-day)	Yes (1x/year; 6-hour)	Yes
Rhode Island	Yes (1 for school nurses and teachers, 4 hrs.; 1 for providers, 2 hrs.)	No	No
South Dakota	No	No	N/A
Vermont	Yes* (1x/year, 1-day)	No	No

*Vermont has conducted only one statewide conference, which took place in 2004. The state had planned a conference for 2007, but it was cancelled due to budget cuts. It is unknown whether the state will plan statewide immunization conferences for future years.

Four states — Iowa, Mississippi, New Hampshire, and North Carolina — offer regional immunization conferences (Table 3). All four states offer these conferences once a year. North Carolina’s conferences focus on a different immunization topic each year. This year, for example, the regions held conferences about immunization storage and handling. The Mississippi respondent suggested that regional conferences allow immunization providers within close regional proximity to get to know other area providers better.

Immunization Registries

Kansas is in the developmental stages of an immunization registry. Web IZ, the Kansas registry, will allow providers to input patient data as well as view the records of their patients. Of the 11 states interviewed, all but one — New Hampshire — has some sort of immunization registry (Table 4). Although New Hampshire began a joint immunization registry with Maine in 2000, the registry was recently disbanded. New Hampshire conducted an assessment of the registry and its effectiveness. At the time of analysis, only one-third of providers in the state used electronic medical records. Several different systems were used by the providers who used electronic medical records. The state health department determined that providers were not likely to enter data into multiple databases (electronic medical records and an immunization registry) and that it would be costly to transfer the records to a new registry system. The state considered following Connecticut’s path in hiring data entry personnel at the state level, but such a program was also deemed too costly. As a result, New Hampshire does not have a registry. The state hopes to re-evaluate the prospect of an immunization registry in the future.

Table 4. Immunization Registries in Eleven Exemplar States

State	Year of Registry Creation	Capability for Providers to Input Data	Capability for Providers to Output Data
Connecticut	1998	No*	No
Iowa	1995, new program in 2001	Yes	Yes
Massachusetts	Early version in 2000, new system in spring 2007	Yes	Yes
Minnesota	~mid-1990s, transitioned to regional registries in 2000	Yes	Yes
Mississippi	Original format ~1976; January 2007 (first statewide online registry)	Yes	Yes
Nebraska	~1996 (public sector only)	Yes (public providers); No (private providers)	Yes (public providers); No (private providers)
New Hampshire	Currently no registry	N/A	N/A
North Carolina	~2005	Yes	Yes
Rhode Island	~1998 or earlier	Yes	Yes
South Dakota	1996, Web-based in 2004	Yes	Yes
Vermont	~2002–2003, Web-based in Jan. 2007	Yes	Yes

*Providers cannot input records. Instead, they are passed to the state health department for data entry.

All but one of the immunization registries from the states we interviewed are statewide; Minnesota operates regional registries. Minnesota built its registry using Wisconsin's statewide format; however, in 2000, it switched to multiple regional registries. Each region's registry uses different standards, and the information from one region cannot be viewed by providers in another region in the state.

Since most states' registries are still in the developmental stages, the majority of states studied do not mandate that providers enter their patients' records into the registry (Iowa, Massachusetts, North Carolina, Rhode Island, South Dakota, and Vermont). Nebraska's registry is currently only for use in the public sector, meaning that only public providers, such as health departments, can input and access data. Use of the registry is mandated for public providers in Nebraska.

The Vermont respondent noted that the state had prepared strict state laws regarding immunization registries, even though the state currently does not enforce such laws. For example, one law regarding immunizations states that providers must report immunization information within seven days of vaccination. Currently, however, the use of the registry is voluntary. Approximately 50 percent of immunization providers in the state currently use the registry. The state plans on phasing in the enforcement of the law. In North Carolina, similar laws have been enacted to shift the immunization registry from voluntary to mandatory for providers. The law has not yet been enforced, however, keeping the registry voluntary at this time.

In addition to keeping track of patients' immunizations, the registries assist with a variety of additional tasks. In Iowa, the registry helps with ordering vaccines and with inventory control. In South Dakota the registry saves time for providers. If the features of the registry are fully used, providers can manage their vaccine supply, view which patients received particular lot numbers, determine which patients are VFC-eligible, and more. In Massachusetts, the registry is also used for immunization ordering.

One barrier to use of immunization registries is the time it takes to enter each patient's immunization record. To overcome this obstacle, Connecticut asks physicians' offices to send their immunization records to the state health department where data entry personnel enter the records. Although this removes the burden of record entry from the office staff, physicians' offices cannot yet view the information entered into the database. Connecticut plans to provide the capability to view immunization registry records at the office level at some point in the future.

Vermont encourages providers to enter their own patients' immunization records into the registry and supplies funds, if necessary, for data entry personnel. Data personnel at the state level are available to enter the records, as well. Mississippi plans to offer assistance to providers based on clinic size. Medium-to-large clinics will be asked to enter their own patients' data, while state health department staff will enter patients' records from small clinics.

The use of reminders and recalls has been endorsed by the Task Force on Community Preventive Services⁷ as one of the effective strategies to improve immunization coverage. Registries can be an important component of that strategy. Registries in most states are relatively new. Consequently, none have been evaluated for their effectiveness.

Provider Assessment

As a condition of participation in the VFC program, all states must conduct assessments of immunization providers. In Kansas, about 50 percent of all VFC providers are assessed each year. The frequency of visits and the follow-up procedures to such visits vary among states, however (Table 5).

⁷ Task Force on Community Preventive Services. (2000). Recommendations regarding interventions to improve vaccination coverage in children, adolescents and adults. *Am J Prev Med* 18(1S), 92–96.

Table 5. Provider Assessment in Eleven Exemplar States

State	Number of Provider Sites Visited Annually	Provider Recognition and Rewards for High Immunization Rates	Provider Assistance Measures for Low Immunization Rates
Connecticut	100% public and private providers	Providers with rates over 90% receive a certificate; Providers with rates over 95% receive a plaque; All over 90% recognized in newsletter	Lunch and Learn session
Iowa	100% public providers; Private provider number varies (a provider is visited every 2–3 weeks)	Certificate for public providers with rates over 90%; No recognition for private providers	Recommendations shared with provider; Follow-up visit the next year for providers with rates below 70%
Massachusetts	1/3 of all providers	Acknowledgement in quarterly AAP Newsletter; Certificates to hang on provider's office wall	Recommendations specific to individual practice site on ways to increase rates
Minnesota	Varies	Names of providers published in newsletters	Recommendations for improvement during site visits
Mississippi	Varies	Positive feedback at site visit; Provider published in newsletter	Review corrective action plan with providers; Encourage communication with other providers
Nebraska	1/4 of all VFC providers	Physicians with rates over 90% are published in newsletter and receive certificate	Review of good practices
New Hampshire	25–30%	30–40% of all providers recognized each year; Providers with rates over 90% invited to award dinner and receive plaque	Providers who do not reach 90% immunization rates receive provider in-service with recommendations
North Carolina	250 private providers; 100% public providers*	Certificates for high rates dispersed at state immunization conference on alternating years; Share good practices with other providers	Educational session to discuss rates with the entire provider staff
Rhode Island	At least 40%	Annual breakfast for high performers	Review good technique at the site visit
South Dakota	100%	Awards of Excellence luncheon with golden syringe award for physicians with coverage over 90%, wastage of less than 5%; Smaller clinics with less than 50 possible patients with over 90% coverage receive a silver syringe	Education at assessment
Vermont	Varies	None at the time — previously awarded physicians meeting 80% rates with framed certificates	Feedback sessions at provider site; High-performing physicians asked to do in-clinic follow up with struggling peer providers

*Although North Carolina previously visited 250 private providers and 100% of public providers annually, the state is currently in the process of shifting its assessment strategies to a Web-based assessment.

All states interviewed reported that providers receive specific recommendations on how to increase their practice immunization rates, whether the practice already meets the states' guidelines or not. New Hampshire assesses 25–30 percent of its provider sites annually. Small practice sites are not assessed as frequently as larger practices because they immunize fewer children and therefore have a smaller impact on the states' immunization rates. Massachusetts schedules random follow-up visits with practices that had low immunization rates the year before.

Rhode Island provides an annual breakfast to reward and recognize providers with high immunization rates. In the past, the breakfast attracted such a high turnout that the state had to increase the criteria for providers to qualify for the breakfast. The state added that providers must not only have high immunization rates, but that they must also score well on a Vaccine Management Survey.

The Connecticut respondent stressed the importance of provider assessment. The state assesses 100 percent of both private and public providers and calculates their immunization rates each year. The state respondent stressed that providers must constantly know continually how well they are doing in order to improve.

The Minnesota State Health Department contracts with local health departments to conduct provider assessments. The local health departments do not receive payment until they return their assessments to the state health department. The state employs two full-time nurses to conduct the assessments in counties without sufficient local health department resources.

THE OPINIONS OF IMMUNIZATION PROGRAM STAFF

For the final question of the interview, we asked immunization program staff to list the aspects of their state's immunization program which they believe to be most responsible for their state's exemplary performance in childhood immunizations. We asked Kansas' Immunization Director the same question. The answers given in this section of the interview varied considerably by state:

- Universal Purchase or Universal Select VFC funding (Connecticut, Massachusetts, New Hampshire, North Carolina, Rhode Island)
- Ease of administration for providers (Connecticut, Rhode Island)
- Immunization outreach at the local level (Connecticut, Iowa, Minnesota, Nebraska, Vermont)
- Active, dedicated providers (Connecticut, Iowa, New Hampshire, South Dakota)
- Strong partnerships between state agencies, clinics, and provider organizations (Kansas)
- Availability of immunization information on Web sites (Massachusetts, Minnesota)
- Network of public immunization clinics (Nebraska)
- Enforcement of immunization policies and guidelines (Mississippi)
- Parental education (Kansas)
- Provider assessments (New Hampshire)
- Immunization registry, including the ability for reminder recall (Kansas)
- Immunization customer service department (North Carolina)
- Close relationships with state chapter of the American Academy of Pediatrics (Massachusetts)

SUMMARY

Our analysis of the financing structure of childhood immunizations, as well as our interviews of respondents from 11 states, show that the exemplar states are not uniform. The ways they purchase childhood vaccines as well as the administrative strategies used to improve childhood immunization rates vary among these states. Consequently, the variety of strategies employed does not present a clear-cut plan for improving immunization rates.

Key findings from this report are:

- Kansas funds childhood immunizations through a combination of sources; the federal Vaccines for Children (VFC) and Section 317 programs are the two primary sources of funding.
- There is no discernable correlation between the Universal Purchase program and a high state immunization ranking.
- State rankings vary considerably from year-to-year, but the data show that over a five-year period, every state made progress in improving its immunization rates. The degree of improvement varies among the states.
- Immunization program directors and coordinators cited pros and cons for each VFC funding option. No single VFC arrangement was described as perfect, and none were described as unworkable.
- Many of the states studied use provider incentives and rewards for providing childhood immunizations. Conversely, most states do not use parental incentives, suggesting that high performing states target increased provider participation over parental participation. Kansas offers lucrative prizes to parents for childhood immunizations. Although the impact of the *Immunize and Win a Prize* program on the state's immunization rates

cannot be measured in isolation from the state's other immunization programs, Kansas may want to:

1. Evaluate the benefit of this program.
 2. Assess whether it is cost effective.
- The majority of the exemplar states do not actively distribute or promote the use of educational materials for parents, but do actively distribute and promote educational materials to providers. Similar to the previous finding, the exemplary states place greater emphasis on increasing provider involvement rather than parental involvement in immunizations. Kansas may consider further provider educational options for providers such as on-site immunization consultations.
 - Immunization registries are at significantly different points of development across states. States use the registries for varied purposes and the effect of immunization registries on immunization rates is unknown. Kansas should prepare a plan of effectiveness evaluation for the registry while the registry is still in development.

The most significant finding of this report is that high immunization rates are not associated with one particular program, one specific practice, or one financial arrangement — rather, successful immunization programs employ various approaches simultaneously to increase immunization rates. This report demonstrates the importance of immunization program evaluation to establish a cause and effect relationship between program characteristics and high immunization rates.

This report also shows that the Kansas statewide immunization program employs many of the same practices used by the exemplary states. Although these practices differ somewhat, they frequently differ only in terms of scope or emphasis. If Kansas' immunization programs are similar in most essential respects to those of the exemplar states, factors that we did not study for this report account for the unexplained variation in immunization rates. Issues such as the structure of public health delivery on the local level may affect the behavior of both private and public providers. Local public health departments across the country have one of three

relationships with the state department of health: They are either centralized, decentralized, or the responsibility and authority for public health is shared. Kansas is considered a decentralized state. The existence in every county of Kansas of a local health department that offers immunizations may encourage some providers to not offer immunizations.

Other factors that were not studied for this report that might have an impact on either immunization rates directly or the willingness of providers to offer immunizations include, but are not limited to: managed care penetration, a threshold population of children under five years of age, the ratio of family practice physicians and pediatricians to the population of children under five years of age, population density, geographic size, and small area practice variation.

APPENDIX A
State Interview Protocol

STATE INTERVIEW PROTOCOL

Date: _____

State: _____

Type of Program Listed at CDC: _____

Respondent: _____

Position within State Health Department: _____

E-mail: _____

Sample Greeting: Hello, my name is _____ and I am calling on behalf of the Immunize Kansas Kids initiative. Kansas is currently working to improve our early childhood immunizations rates, and we are curious to find out what other states find works for their immunization program. I work for the Kansas Health Institute and I contacted you earlier this summer. Although I gathered very useful information during the first contact I made with you, it sparked my interest to find out more. Do you mind if I ask you some additional questions about your state immunization system? This should take about thirty minutes.

Q1: Name of State:

Q2: Our research shows that your state functions under a (Universal, Universal Select, VFC and Underinsured, VFC and Underinsured Select, VFC Only: insert the CDC's current classification) purchasing agreement. Is this correct?

Q3: How long has your state been functioning as a (Universal, Universal Select, VFC and Underinsured, VFC and Underinsured Select, VFC Only) state?

Q4: What do you like about being a (Universal, Universal Select, VFC and Underinsured, VFC and Underinsured Select, VFC Only) state?

- a. What do you dislike about being a (Universal, Universal Select, VFC and Underinsured, VFC and Underinsured Select, VFC Only) state?
- b. Overall, are you satisfied with being a (Universal, Universal Select, VFC and Underinsured, VFC and Underinsured Select, VFC Only) state?

Q5: Does your state offer incentives to parents to immunize their children?

- a. What are these incentives?
- b. Are these parental incentives offered to *all* parents or only to qualifying parents?
- c. What are the parental qualifications for such incentives?
- d. Are these incentives offered through services with *all* physicians, or only select physicians?
- e. Does your state experience an increase in immunization rates from these incentives?

Q6: Does your state offer incentives to physicians to provide immunization services?

- a. What are these incentives?
- b. Are these provider incentives offered to *all* providers, or only to qualifying providers?
- c. What are the qualifications for providers to receive such incentives?
- d. Does your state experience an increase in immunization rates from these incentives?

Q7: What educational information do you make available to parents about immunizations?

- a. In what medium are the information communicated?
- b. Are incentives offered to parents for becoming educated about immunizations? If so, what are they?
- c. Is the availability of the educational information advertised to the parents? If so, how?
- d. What are your participation or exposure rates in these educational programs for parents?
- e. Where is the information dispersed from? (ex: where are sessions held? pamphlets distributed? billboards posted? etc.)
- f. Can I have a copy of any educational materials for parents which you have available?
- g. Does your state experience an increase in immunization rates due to the educational services offered to parents?

Q8: How are parents of newborns notified of the needs of immunization services?

- a. Could you please send me a copy of these materials?
Address: 212 SW Eighth Avenue, Suite 300; Topeka, KS 66603

Q9: Does your state assess physicians' immunization rates of their children patients?

- a. If a physician is found to be a poor performer at immunizing their patients in comparison to other physicians within the state, what is done?

Q10: Does your state recognize physicians with good immunization rates?

- a. How do they recognize the physicians?

Q11: What educational information do you make available to physicians about immunizations?

- a. In what form is this information communicated?
- b. Are incentives offered for physicians to become educated about immunizations? If so, what are they?
- c. Is the educational information advertised to the physicians? If so, how?
- d. What are your participation or exposure rates in these educational programs for physicians?
- e. Where is the information dispersed from? (ex: where are sessions held? pamphlets distributed? billboards posted? etc.)
- f. Are CME credits offered for any of the educational trainings or exposure, etc.?
- g. Can I have a copy of any educational materials for physicians that you have available?
- h. Do you see an increase in state immunization rates in correlation to the educational services offered to physicians?

Q12: Does your state place a cap on the administrative fee which physicians can charge patients or insurance?

- a. Do doctors in your state commonly waive the office fee for immunization services for those patients without insurance?

Q13: Does your state currently have an immunization registry?

- a. How long has your immunization registry been in existence?
- b. Is enrollment in the registry mandatory or voluntary?
- c. What incentives are used to enroll physicians?
- d. Is there currently a legislative mandate that physicians in your state report immunizations into the registry?
- e. What are the fields on the registry?
- f. Does the registry allow physicians to input data directly into the registry?
- g. How compliant are providers in entering children into the registry?
- h. Can physicians query the registry to get output data?
- i. Has the launch of your registry contributed to an increase in immunization rates?

Q14: Are state health department immunization program employees stationed in regional offices around the state or made available on-site at local health departments?

Q15: Does your state employ any lay people to act as liaisons between parents and the state health department?

Q16: Does your state work with any practicing physicians who act as liaisons between physicians offering immunizations in the state and the state health department?

Q17: Does your state have any statewide immunization conferences?

- a. How many times a year are these conferences?
- b. What percentage of physicians in the state attend these conferences (an estimate)?

Q18: Does your state currently have immunization advertising campaigns taking place?

- a. How extensively are these advertising campaigns used?
- b. Have there been mass advertising campaigns in the past?

Q19: What aspects of your state's immunization program do you believe are most responsible for the exemplary performance you have experienced in recent years?

Sample End Interview: Thanks for talking to me today. The information you have shared with me has been very helpful. Goodbye!

APPENDIX B
State Immunization Web Sites

STATE IMMUNIZATION WEB SITES

- Connecticut: www.dph.state.ct.us/BCH/infectiousdise/immuniza.htm
- Iowa: www.idph.state.ia.us/adper/immunization.asp
- Kansas: www.kdhe.state.ks.us/immunize/index.html
- Massachusetts: www.mass.gov/dph/cdc/epii/imm/imm.htm
- Minnesota: www.health.state.mn.us/divs/idepc/immunize/index.html
- Mississippi: www.msdh.state.ms.us/msdhsite/_static/14,0,71.html
- Nebraska: www.hhs.state.ne.us/imm/immindex.htm
- New Hampshire: www.dhhs.state.nh.us/DHHS/IMMUNIZATION/default.htm
- North Carolina: www.immunizenc.com
- Rhode Island: www.health.ri.gov/family/immunization/index.php
- South Dakota: www.state.sd.us/doh/disease/index.htm
- Vermont: www.state.vt.us/health/hcprov.htm