The Private Immunization Delivery System for Children in Kansas

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Gianfranco Pezzino, M.D., M.P.H.
Anne K. Nugent, M.P.H.

KANSAS HEALTH INSTITUTE

212 SW Eighth Avenue, Suite 300
Topeka, Kansas 66603-3936
(785) 233-5443
www.khi.org

The Kansas Health Institute is an independent, nonprofit health policy and research organization based in Topeka, Kansas. Established in 1995 with a multi-year grant from the Kansas Health Foundation, the Kansas Health Institute conducts research and policy analysis on issues that affect the health of Kansans.

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EXECUTIVE SUMMARY

A Kansas Health Institute (KHI) study published in 2006 for the Immunize Kansas Kids (IKK) initiative detailed important gaps in the distribution of pediatric primary care clinics in the state, and indicated a need for more private clinics offering immunization services. In this report, KHI updates the information presented in the 2006 IKK report and describes trends and differences between the findings from the two studies.

The 2009 report identifies 508 clinics in the state that provide pediatric primary care services. This number was up from the 479 identified in 2006. Of these 508 clinics, 486 (96 percent) participated in a survey that collected information about the characteristics of each clinic including which clinics offer immunization services to children.

Over 45 percent of the clinics that participated in the 2009 survey have only one medical practitioner (i.e., solo practices), a slight increase from less than 40 percent in 2006. Solo practices are proportionally more common in less populated areas of the state, but they also represent over a third of all pediatric primary care clinics in urban areas. Only 19 clinics, none of which are in rural counties, are classified as large in size.

Over 70 percent of the clinics reported that they offer immunization services to pediatric clients, up from 65 percent in 2006. The proportion of clinics that offer immunizations varies based on location. Over 87 percent of clinics in urban counties vaccinate children, but that number drops to 39 percent in rural counties. Like in 2006, clinics located in counties that have more than 600 children ages 0−5 years are more likely to offer immunizations.

While nearly all of the clinics surveyed accept children with private insurance, only two-thirds accept children in the Medicaid or the Children's Health Insurance Program (CHIP), and only 55 percent participate in the federal Vaccines for Children (VFC) program, which provides free vaccines for children who qualify. The percentage of clinics that participate in VFC is lower in urban than in semi-urban and rural counties.

Although the number of pediatric primary care clinics, private immunization clinics, and VFC clinics in Kansas has increased since 2006, limitations in the ability to access immunization services still exist. The 2006 study identified the need to increase the number of VFC providers and, according to the 2009 findings, it still remains a priority. Although some encouraging progress has been made, many private immunization clinics do not participate in VFC, which may limit the ability of Kansans to access timely immunization services, particularly for residents living in urban areas.

Initiatives to expand the number of immunization clinics and VFC providers should focus primarily on urban areas, which have a higher concentration of at-risk children and families, a heavier load of patients per clinic, a lower number of private clinics participating in the VFC program, and lower immunization coverage rates.

INTRODUCTION

Over the last decade, the immunization rates for children in Kansas have fluctuated year-to-year, with rates sometimes ranking among the lowest in the nation. In response to this trend, public health stakeholder organizations in Kansas established the Immunize Kansas Kids initiative (www.immunizekansaskids.org) in 2004. The IKK project has sponsored several research activities, including a census conducted in 2006 of all public and private clinics that offered immunization services for children. The results of the 2006 study showed that:

- Access to pediatric primary care services and immunizations was limited in some parts of the state. Although all counties reported having a public health department offering immunization services, 12 counties in the state lacked a private primary care clinic and 49 counties had no private immunization clinic.

- Clinics in more populated counties, particularly in counties with at least 600 children ages 0 to 5 years, were more likely to provide immunization services.

- Far below the national average, only slightly more than half of the private clinics that offered immunizations participated in the Vaccines for Children (VFC) program.

- Clinics located in urban counties were less likely to participate in the VFC program.

In the 2006 study, KHI recommended that interventions be put in place to improve the timely delivery of immunization services, expand private providers' participation in immunization programs, and improve the levels of participation in the VFC program. The report from the 2006 study can be found at http://www.immunizekansaskids.org/reports.htm.

In the summer of 2009, IKK project managers asked KHI to review the 2006 findings and provide an update about the status of the private immunization delivery system in the state. This report describes the results of the 2009 update, including trends and differences from the 2006 report's findings.

METHODS

DATA COLLECTION

The methods used in this study were very similar to those used in the 2006 report. The goal was to collect information from every private pediatric primary care clinic in the state.[1] We reviewed the list of clinics identified in the 2006 study with staff from the state immunization program at the Kansas Department of Health and Environment (KDHE). Staff members provided information about other clinics not included in the 2006 study that may offer immunization services.

A survey was mailed to these private pediatric primary care clinics in April 2009. A second request was sent a few weeks later to the clinics that had not yet responded. A copy of the survey can be found in Appendix A. Only clinics that reported providing primary care services to children were asked to answer the questions in the survey, and these responses were the only ones included in the report. The survey asked if immunization services for children were provided at the clinic, if the clinic participated in the VFC program, and about other characteristics of the clinic (i.e., number of clinicians, affiliation with other health care networks, etc.). Respondents could choose to return the information to KHI by mail, fax, or through an online survey Web site created for this purpose. KHI also attempted to contact by telephone clinics that did not respond two weeks after the second request was mailed.

In July 2009, KHI staff contacted local health departments to ask if the department was willing to assist in reviewing the responses received and collecting survey responses from sites that had not yet responded. Of the 100 health departments contacted, 98 agreed to assist in data collection.

At the end of the process, a total of 518 clinics were identified. Of these clinics, 508 provided primary care services to children and were considered eligible for the survey. Responses were obtained from 486 (96 percent) of the eligible clinics through a combination of mailed surveys, internet surveys, telephone calls and information collected through local health departments.

[1] Pediatric primary care clinics can be staffed by a variety of medical professionals, including pediatricians, family physicians, general practitioners, etc.

This compares with 479 surveys completed in 2006 (response rate = 88 percent). Local health departments provided information for 128 of the 486 clinics (26.3 percent) for which responses were obtained.

The 2006 survey revealed that all local health departments offered immunization services, so only private clinics were included in the 2009 update. It should be noted that, like in the 2006 survey, the unit of analysis for this study is a clinic, not an individual medical provider.

ANALYSIS

The collected information was analyzed using univariate (i.e., frequency distributions) and bivariate (i.e., tabulations) techniques. Significance level was set at $p=0.05$, meaning that any result with $p<0.05$ was considered statistically significant.

When appropriate, odds ratios (ORs) were computed. An OR measures whether a characteristic in a group is associated with a certain outcome, and the strength of that association. The further the OR value is from 1, the stronger the association between the characteristic and the outcome under study. For example, if the odds ratio of providing immunization services is 12 for clinics located in urban counties compared to rural counties, that means that in urban counties the probability of clinics providing immunizations is 12 times greater than in rural counties.

Clinic size groups were defined as solo clinics (1 provider), medium-sized clinics (2−9 providers) and large clinics (10 or more providers).

Population density was based on county population and size and was classified based on a modified grouping system widely used in Kansas as follows:

Urban: ≥150 people per square mile
Semi-urban: ≥20 and <150 people per square mile
Rural: <20 people per square mile

In addition to population density, levels of immunization services were studied in relation to the number of children ages 0 to 5 years who live in the county. We found in the 2006 study that a private clinic was more likely to provide immunizations when it was located in an area with an adequate number of children that could justify the clinic's investment in equipment, training, etc. Several possible thresholds for the number of resident children above which private clinics were more likely to offer immunizations were analyzed in 2006 and the cutoff point of 600 children ages 0 to 5 years was found to produce the largest differences between the two groups of counties (i.e., those that had above or below 600 children ages 0 to 5 years) in levels of immunization services provided. The same threshold was used in the 2009 survey.

RESULTS

Clinic Characteristics

Table 1. **Private Pediatric Primary Care Clinics by Selected Characteristics, Kansas (2009)**

Selected Characteristics	Number of Clinics	Percent of Clinics
Clinic Size		
Solo Practice (1 provider)	219	45.1
Medium-sized Practice (2–9 providers)	243	50.0
Large Practice (≥10 providers)	19	3.9
No Response	5	1.0
County Population Density		
Rural (<20 people per square mile)	141	29.0
Semi-urban (≥20 and <150 people per square mile)	167	34.4
Urban (≥150 people per square mile)	178	36.6
Clinic Affiliation		
Independent/No Affiliation Reported	276	56.8
Hospital Owned	155	31.9
Practice Network/Practice Association	55	11.3
Total	486	100.0

There are 29 more private pediatric primary care clinics in 2009 than in 2006 (508 versus 479). The additional clinics are distributed evenly across the state in both urban and less populated areas. A little less than two-thirds of the 486 pediatric primary care clinics that responded to the survey are located in rural and semi-urban areas (Table 1) and slightly over one-

third of these clinics are in one of Kansas' five urban counties (Wyandotte, Johnson, Douglas, Shawnee and Sedgwick). Residents of these five counties account for about half of the state's population, a similar population distribution to what was observed in 2006.

The proportion of clinics that are individual provider (solo) practices is 45 percent, an increase from slightly less than 40 percent in 2006. Counties of any population density observed an increase in the proportion of solo practices, but this increase was more so in rural counties, where in 2009 solo clinics represent almost 57 percent of all pediatric primary care clinics, up from almost 44 percent in 2006 (Table 2). Large practices represent slightly less than 4 percent of all clinics, a decrease from slightly over 6 percent in 2006. No large practices are present in rural counties, where three large practices were located in 2006.[2]

Table 2. **Private Pediatric Primary Care Clinics by Population Density and Clinic Size, Kansas (2009)**

	Rural		Semi-urban		Urban		Total	
Clinic Size	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Solo	80	56.7	76	45.8	63	36.2	219	45.5
Medium-sized	61	43.3	84	50.6	98	56.3	243	50.5
Large	0	0	6	3.6	13	7.5	19	4.0
Total	141	100	166	100	174	100	481	100

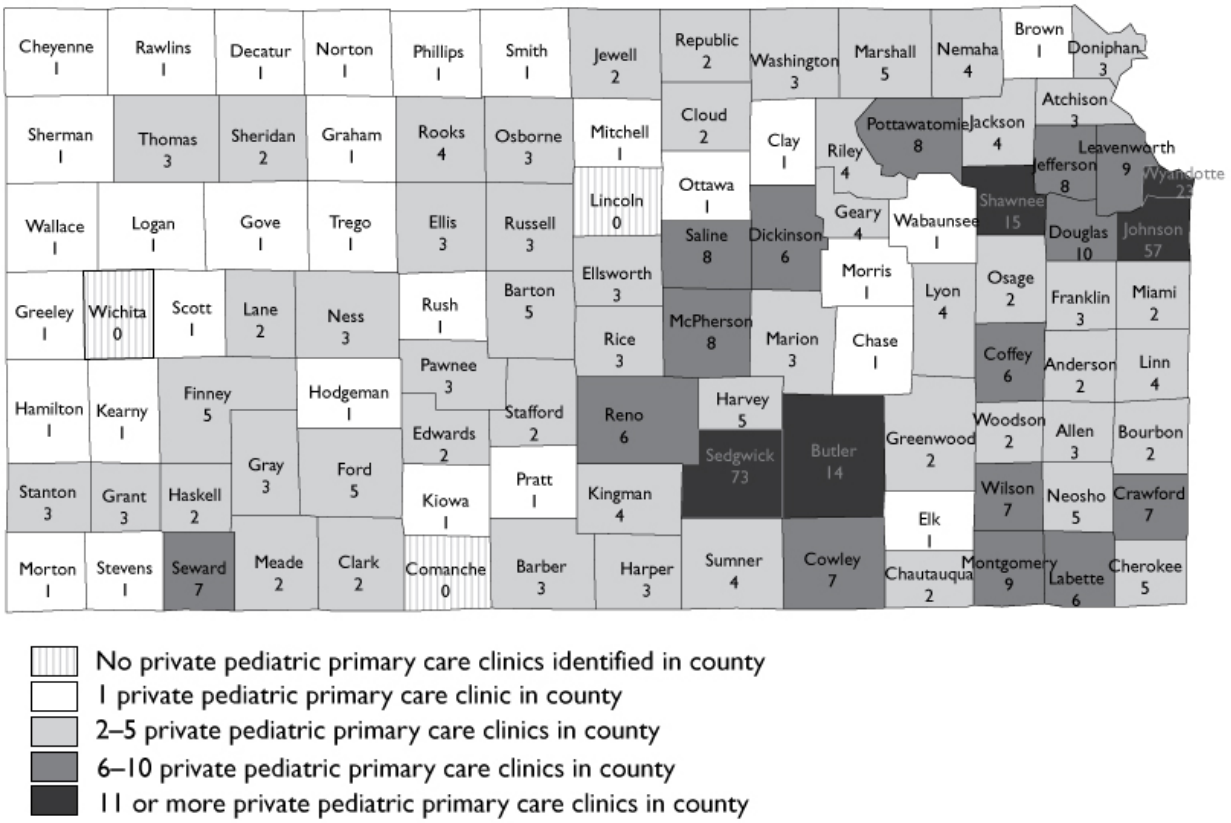
Note: Information missing on 5 clinics

While the majority of the clinics reported that they are independent entities, almost one-third reported an affiliation with a hospital and 11 percent with a practice network.

The 2009 survey identified at least one private pediatric primary care clinic in all but three Kansas counties (Figure 1). In 2006, there were 12 counties without a private pediatric primary care clinic.

[2] Three clinics in rural counties that reported having more than 10 physicians in 2006 reported having only two physicians in 2009. When contacted by telephone, they could not explain why there were more physicians reported in 2006.

Figure 1. Number of Private Pediatric Primary Care Clinics by County (2009)



Immunization Services in Private Pediatric Primary Care Clinics

Of the 486 private clinics that offer pediatric primary care services, 341 (70 percent) also offer immunizations to children, an increase from 277 (65 percent) in 2006. The vast majority of these clinics (324, over 95 percent) reported that they accept clients who have private insurance but, just like in 2006, fewer reported accepting uninsured children (Table 3). Only about two-thirds of clinics provide immunizations to children enrolled in the Medicaid or the Children's Health Insurance Program (CHIP), a slight increase since 2006.

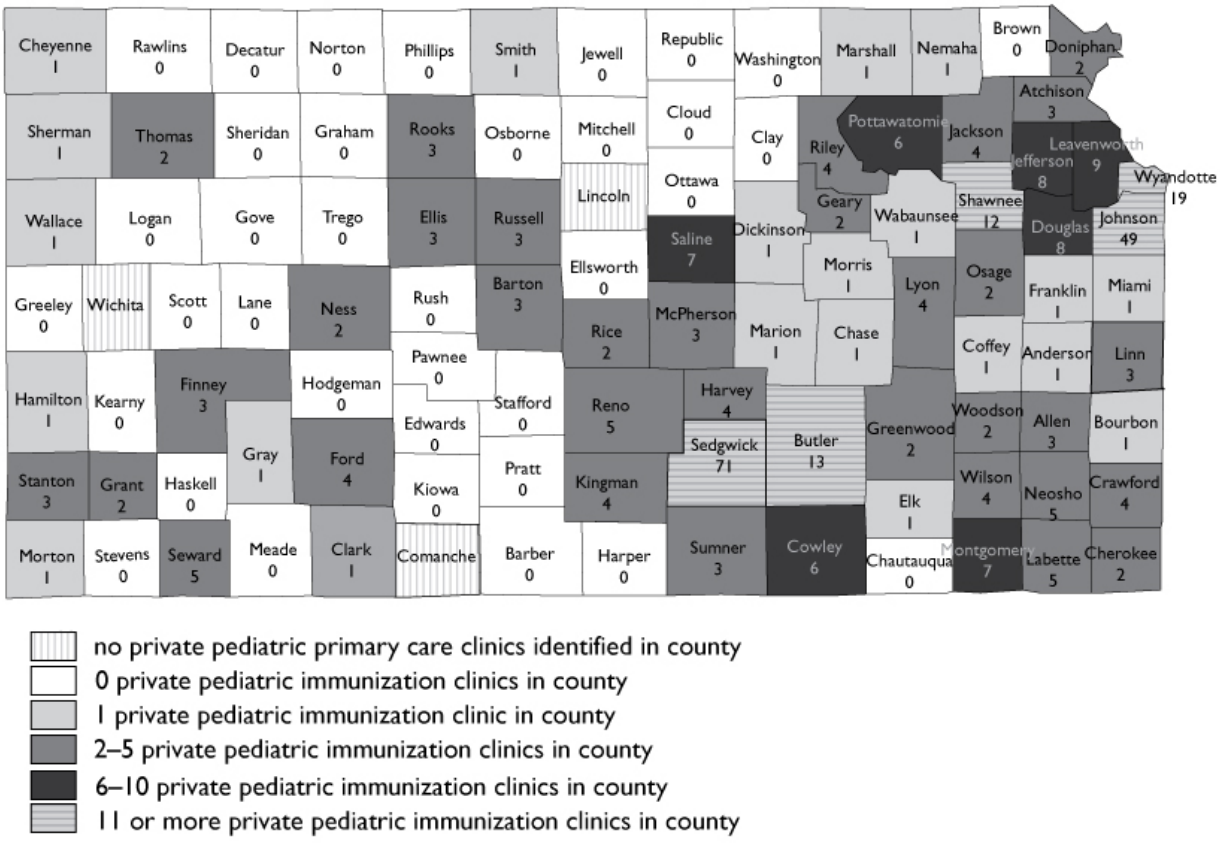
The 2009 survey did not identify a private immunization service provider in 39 Kansas counties, all rural (Figure 2). In 2006, 49 counties had no private immunization provider.

Table 3. **Private Pediatric Primary Care Clinics Offering Immunizations by Insurance Type, Kansas (2009)***

Insurance Type**	Number of Clinics	Percent of Clinics
Private Insurance	324	95.9
Medicaid	226	66.9
HealthWave/CHIP	230	68.0
Tricare/Military Insurance	293	86.7
Uninsured	274	81.1
All types	209	61.3

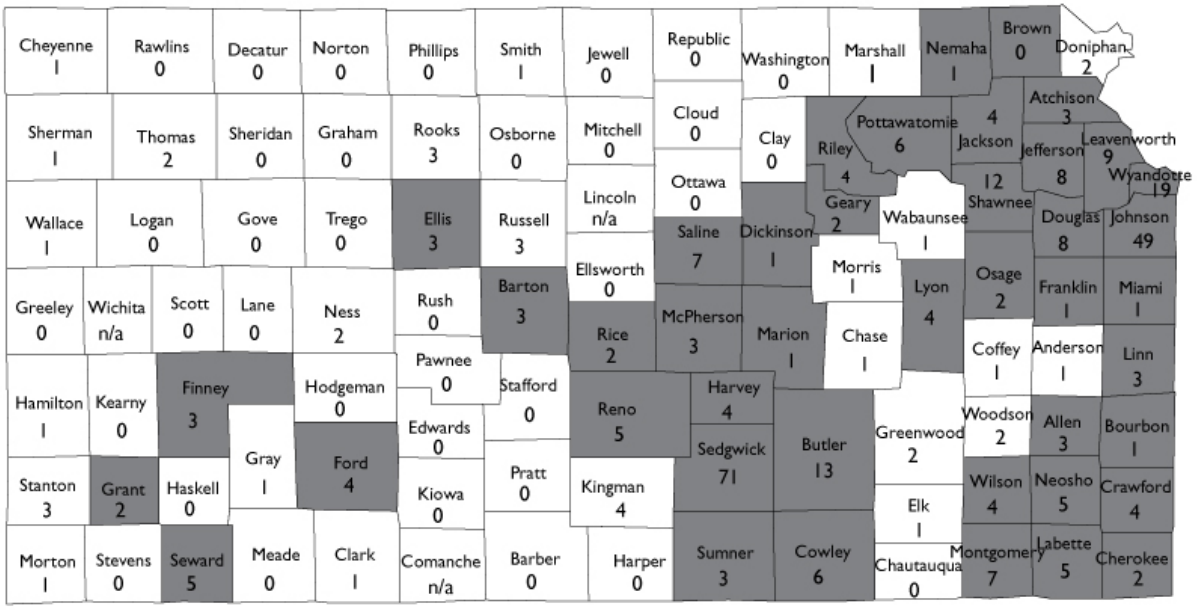
*3 missing insurance type
**Clinics could chose multiple answers

Figure 2. Number of Private Pediatric Primary Care Clinics Offering Immunizations by County (2009)



According to the 2009 results, medium-sized clinics are about twice as likely as small clinics to offer immunization services ($p<0.001$), a finding virtually unchanged since 2006.[3] Like in 2006, both population density and the number of children ages 0−5 years who live in the county affect the likelihood that a clinic offers immunizations (Figure 3). In 2006, clinics in counties with at least 600 children were over 12 times more likely to offer immunizations than clinics in counties with fewer than 600 children. That figure has been reduced to eight times more likely in the 2009 survey ($p=<0.001$). The change reflects a larger proportion of clinics in rural and scarcely populated counties reporting that they offer immunizations in 2009 than in 2006, while that proportion is virtually unchanged for clinics in urban counties since 2006.

Figure 3. Number of Private Pediatric Primary Care Clinics That Provide Immunizations to Children by County and by Number of Resident Children (2009)



[3] We could not compare large and small clinics due to the small number of large clinics in the state.

Enrollment in the VFC Program

In the 2009 survey, 190 clinics that provide immunizations (almost 56 percent) report that they participate in the VFC program. This is an increase from 2006 both in the number and in the proportion of VFC clinics (141 and 51 percent, respectively). The increase in number of VFC providers is observed among all population density groups, but is more pronounced for clinics in urban counties. While in 2006 only 39 percent of immunization clinics in urban counties were enrolled in VFC, that proportion is now 54 percent. In rural counties, the number of immunization clinics enrolled in VFC has increased from 26 to 32, but those clinics now represent only 58 percent of all immunization clinics, compared to 74 percent in 2006. Based on these numbers, the proportion of urban clinics enrolled in VFC compared to rural clinics enrolled in VFC is now more similar than it was in 2006.

DISCUSSION

The results of the 2009 survey of private pediatric primary care clinics in Kansas confirm most of the findings from 2006 but also reveal some interesting trends.

The increase in the number of private pediatric primary care clinics, from 479 in 2006 to 508 in 2009, while a possible indication of a positive trend, is unlikely to be large enough to produce a substantial change in access to primary care services for children, considering the fact that the pediatric population has also increased.

Although access to primary care for children did not change much, access to immunization services has somewhat improved because a larger proportion of pediatric clinics offer immunizations in 2009 than in 2006 (70 percent versus 65 percent, respectively). In 2006, 277 private pediatric clinics offered immunizations, and the number has grown to 341 in 2009. The number of counties with no private clinic offering childhood immunizations decreased from 49 to 39.

In 2009, clinics in counties with 600 or more children ages 0 to 5 years are eight times more likely to offer immunization services than those in less populated areas. Although that gap is slightly smaller than in 2006, when clinics in more populated areas were over 12 times more

likely to provide immunizations, it remains substantial. The 2006 survey indicated that urban areas needed more private immunization providers. This conclusion was based on two major factors. First, given the population density, a larger number of children need to receive immunizations in urban areas than in less populated areas, but the number of private providers available in urban counties is proportionally lower. Since the ratios of children-to-clinic and children-to-provider (that is, the average number of children that each clinic or provider would have to serve) are higher in urban areas, those clinics have to serve, on average, more children than clinics in less populated areas.[4] In addition, immunization coverage rates are higher in sparsely populated counties, despite the fact that those areas have fewer available private providers to immunize children. In this case, the reason for the higher rates is because local health departments in counties with a smaller number of children can compensate for the lack of private immunization providers more easily than those in urban counties, where both the high number of children and the high proportion of hard-to-reach, underprivileged families represent obstacles for the timely administration of childhood immunizations.

The results of the 2009 survey show a continued need for a stronger private immunization delivery network in urban counties. The 2009 survey identified 23 additional private immunization clinics in urban counties than what was calculated in 2006 (159 versus 136, respectively). An increase of similar magnitude was found in rural (55 versus 35) and semi-urban areas (127 versus 106). In 2009, the infant load per clinic[5] was 143 in urban counties, 114 in semi-urban counties, and 82 in rural counties, indicating that urban clinics on average serve more children than clinics in less populated counties. Furthermore, while the infant load per clinic was virtually unchanged in urban areas between 2006 and 2009, it decreased noticeably in semi-urban and rural areas. These trends likely indicate that private clinics in urban counties struggle to serve their pediatric population more so than clinics in less populated counties. To improve access to pediatric primary care services and bring immunization coverage rates to levels similar to those in rural areas, urban areas need additional private immunization providers, beyond the increase observed from 2006 to 2009.

[4] As we noted in 2006, the smaller ratios of children-to-clinic and children-to-provider in non-urban counties, however, may be partially offset by other barriers to access, such as the distance that children and their parents have to travel to reach a clinic.
[5] Number of newborn children in a year divided by number of private clinics in a county.

A positive change was observed in the number of immunization clinics that participate in the VFC program, a federal program aimed at assuring timely vaccination of at-risk children who otherwise might not have easy access to immunization services. The number of VFC clinics identified in the 2009 survey was 190, up from 141 in 2006, representing a 35 percent increase. In 2009, almost 56 percent of private immunization clinics participate in VFC. The increase in the number of private immunization clinics participating in VFC was more pronounced in urban areas, where the majority of the at-risk population that the program targets resides. The number of VFC clinics in urban areas went from 54 in 2006 (representing less than 40 percent of clinics with immunization services) to 86 in 2009 (representing more than 54 percent of clinics with immunization services). Findings from the 2006 survey identified increasing VFC participation as a top priority, and the results of the 2009 survey demonstrate that progress has been made in this area. Despite this progress, important gaps remain. The VFC enrollment rate is still considerably lower in Kansas than in other states. Additionally, only about two-thirds of private immunization clinics in 2009 accept Medicaid and CHIP clients.

This study is subject to several limitations. It relied on clinic contact information collected in 2006 and partially updated in 2009. While efforts were put in place to assure the completeness of this information, it is possible that some clinics were missed. Also, the information collected was all self-reported, and only limited validation through local health departments took place, introducing the possibility of inaccuracies in the reported information.

CONCLUSIONS

This study is useful in monitoring the availability of immunization services in different parts of the state and identifying areas in which the availability of these services can be improved. Similar to the 2006 study, increasing the number of VFC providers remains a priority since many private immunization clinics do not participate in this program which improves access to timely immunization services, particularly in urban areas.

The results of the 2009 update indicate a need to expand the number of private immunization clinics and VFC providers in urban areas. Although the number of private clinics offering childhood immunizations has increased in urban counties since 2006, these areas still see a

higher concentration of at-risk children and families, a heavier load of patients per clinic, fewer clinics participating in the VFC program, and a smaller proportion of children receiving the recommended immunizations on time.

It is important to consider the information discussed in this report in the context of broader strategies and plans that address the issues affecting immunization rates in the state. Financial barriers, vaccine availability, community involvement, support from state leaders inside and outside government, and local relations between private and public providers all play important roles in determining whether a child receives all the recommended immunizations on time. These and other issues have been described in more detail in the IKK report *How to Achieve and Sustain High Vaccination Rates Among Kansas Children: An Action Plan.*[6] The present report represents an additional tool to assist policymakers in understanding some of these complex issues.

[6] Report available at http://immunizekansaskids.org/reports/IKK_How_to_Achieve_High_Rates.pdf .

APPENDIX A:
IMMUNIZE KANSAS KIDS CLINIC QUESTIONNAIRE

IMMUNIZE KANSAS KIDS

ID:

IMMUNIZE KANSAS KIDS CLINIC QUESTIONNAIRE

Please mail or fax completed survey to:

Immunize Kansas Kids – KHI
212 SW Eighth Avenue, Suite 300
Topeka, KS 66603-3936
FAX (785) 233-1168

Please contact Anne Nugent at the Kansas Health Institute, (785) 233-5443 if you have any questions. Thank you!

1. Please complete your clinic/practice's information:

Clinic/Practice Name:

Address:

City: Zip: County:

Telephone:

Contact Person:_____ Email: _____

Best time to be contacted by phone: ___AM ___PM

2. How many physicians offer primary care services to children in your clinic? (If your clinic does not offer primary care services to children, please write "zero".)

_____

3. Does your clinic/practice offer immunization services to children 0-5 years of age?
[Circle response letter]

A.	Yes	If "Yes," continue to Question #4.
B.	No	If "No," continue to Question #6.

4. Does your clinic/practice offer immunization services to all children regardless of insurance coverage?
[Circle response letter]

A.	Yes	
B.	No	If "No," please circle which insurance clients you offer immunization services to below: *[Circle all that apply below]*
		D. Uninsured children
		E. Medicaid children
		F. Healthwave/SCHIP children
		G. Tricare (military) insured children
		H. Privately insured children (e.g. BCBS)

5. Does your clinic/practice currently participate in the Vaccines for Children Program (VFC)?
[Circle response letter]

A.	Yes	
B.	No	If "No," did your clinic participate in the VFC program in the past? *[Circle response letter below]*
		D. Yes
		E. No

6. Is your clinic/practice part of a larger health organization or system (umbrella organization)?
[Circle response letter]

A.	Yes	If "Yes," continue to Question #7.
B.	No	If "No," continue to Question #8.

7. Please indicate your clinic/practice's affiliation, if any, by selecting the option that best describes it from the following:
[Circle one response letter and fill in name of affiliation]

		Name of Organization
A.	Practice Network	
B.	Hospital Owned	
C.	Practice Association	

8. Does your clinic/practice use an electronic (i.e., computerized) patient record system?
[Circle response letter]

A.	Yes	If "Yes," continue to Question #9.
B.	No	If "No," continue to Question #12.

9. Please circle the functions that are used in your electronic record system:
[Circle all that apply below]

A.	Billing
B.	Medical record
C.	Immunization record

10. Please circle the electronic record system your clinic/practice uses from the following list:
[Circle response letter]

A.	Alteer	S.	Lytec
B.	Amazing Charts	T.	MedicWare (Clinix)
C.	AMICO	U.	Medisoft
D.	ASK	V.	Medisource
E.	Athena	W.	Meditech
F.	CPSI	X.	Misys
G.	Doc's Inc	Y.	NextGen
H.	E-Clinical	Z.	Nightingale
I.	EHS	AA.	Novell
J.	Elite Medical Services	BB.	OCS
K.	e-MDs	CC.	Office Practicum (Connexin Software Inc.)
L.	encounterPRO	DD.	Practice Partner
M.	Epic	EE.	Professional Data Services (PDS)
N.	Gateway Medical Systems	FF.	Resource & Patient Mgmt System (RPMS)
O.	GE Centricity	GG.	Rogers and Sisco
P.	Healthland Healthcare Solutions	HH.	Sage (Medical Manager)
Q.	Infinite Campus/Computer Information Concepts		
R.	KIPHS	II.	Other:_____ (Please list)

11. If you marked "II.Other" to question 10 above, please list a contact person who knows the most about your clinic/practice's electronic record system or service?

Name of Contact Person:_____ Email: _____

Telephone:_____

Best time to be contacted by phone: ___AM ___PM

12. Is there anything else you would like to tell us about your clinic/practice and children's immunizations?

Thank you for completing the Immunize Kansas Kids Clinic Questionnaire!