

AN ANALYSIS OF WEBIZ USAGE IN KANSAS SCHOOLS

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Master of Public Health Candidate -2019

Concentration: Infectious Diseases and Zoonoses

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MPH
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OUTLINE

FIELD EXPERIENCE OVERVIEW

- Kansas Department of Health and Environment
 - Bureau of Epidemiology and Public Health Informatics
- Date: October 10, 2018 – March 2019
- Preceptor: Kelly Gillespie, MPH

FIELD EXPERIENCE AGENCY

Topeka, KS

Public Health, Environment, and
Health Care Finance

The Division of Public Health is
divided into 7 separate bureaus.

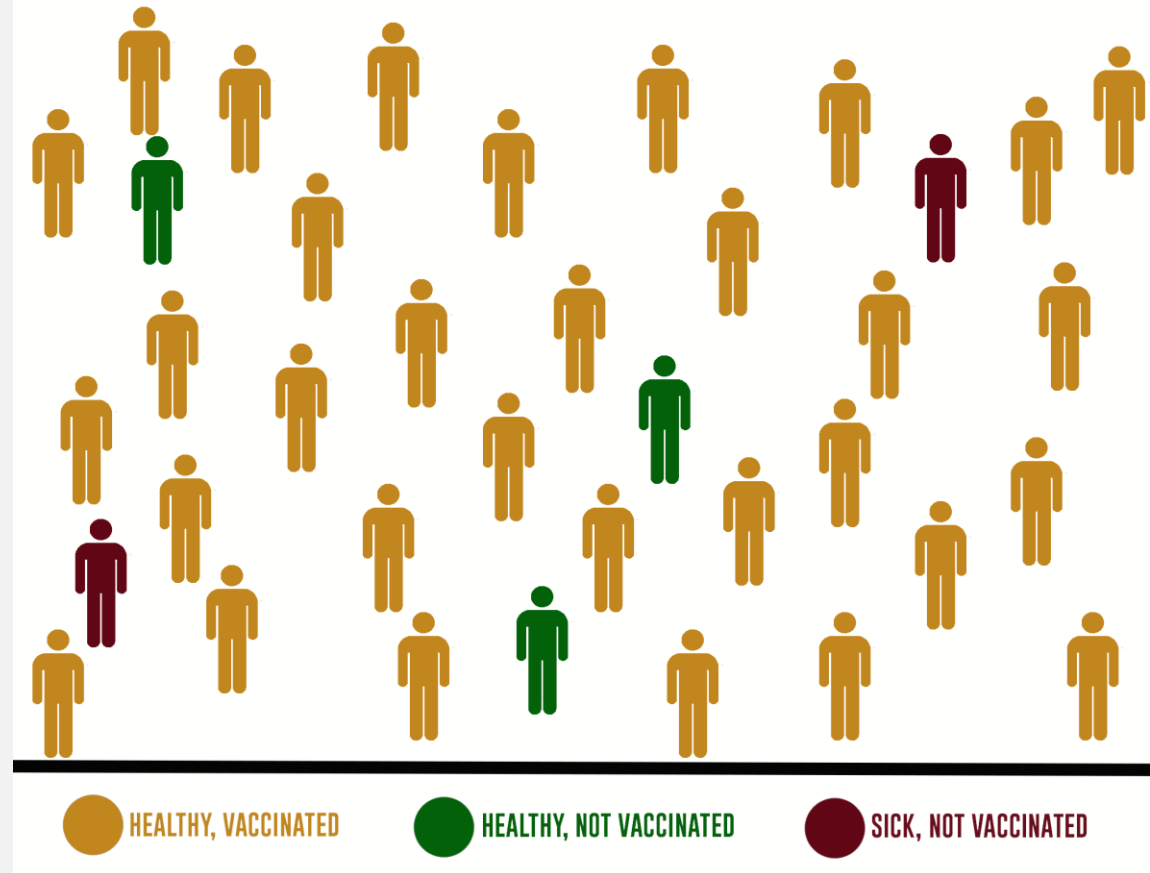


BACKGROUND

IMPORTANCE OF VACCINATION COVERAGE

- Prevention of communicable infectious diseases
- Herd immunity
- Identify where unvaccinated populations exist
- Assists in the event of an outbreak

WHEN ENOUGH PEOPLE ARE VACCINATED



<https://www.vinceandassociates.com/blog/herd-immunity-explained-by-gif/>



KINDERGARTEN IMMUNIZATIONS

- Kansas statutes K.S.A 72-5208-5211a and K.A.R. 28-1-20
- “Deemed necessary by the secretary”
- Current requirements follow the Advisory Committee on Immunization Practices (ACIP) recommendations.
- Required vaccines include: DTaP (Diphtheria, Tetanus, Pertussis), Hepatitis B, MMR (Measles, Mumps, Rubella), Polio, and Varicella.

	Vaccination	Kansas Requirement for School	Number of Doses	Healthy People 2020 Coverage Goals
DTaP5	Diphtheria, Tetanus, Pertussis	Yes	5	95%
DTaP4*			4	
HepB3	Hepatitis B		3	
MMR2	Measles, Mumps, Rubella		2	
IPV4	Polio		4	
IPV3**			3	
Var2	Varicella		Yes	
		(or history of disease)		

*5th dose of DTaP is not necessary if the 4th dose was administered at 4 years or older

**4th dose of IPV not necessary if 3rd dose was given on or after the 4th birthday and at least 6 months after the previous dose

TABLE 1.1: ACIP BIRTH TO SEVEN YEARS IMMUNIZATION RECOMMENDATIONS

KINDERGARTEN IMMUNIZATION COVERAGE SURVEY

- Annual survey conducted by the Kansas Immunization Program
- Purpose: To determine vaccine coverage and exemption rates among children enrolled in a kindergarten class in Kansas
- Allows for KDHE to identify and target low coverage areas for intervention programs.



IMMUNIZATION
INFORMATION
SYSTEMS

[Source: CDC](#)

WEBIZ

- Database for Kansas immunization data – IIS
- Use at the point of care by providers
 - Manage vaccination records and support clinical decisions
- Use at the population level
 - Surveillance or immunization program support
- Not currently being utilized accurately or to its fullest potential
- Requirements for provider use- 2020

WEBIZ SCHOOL MODULE



A tool in WebIZ
for school use

Enter student
vaccination history



Assign students to
school

Assign students to
grade



Promote students
to the next grade.

Retrieve student
immunization
records



- Federal prevention agenda
- 10 year national objectives (2010-2020)
- Science based
- Objectives to reduce preventable diseases by increasing immunization rates



<https://www.healthypeople.gov>

STUDY POPULATION



KINDERGARTEN STUDENTS-
AROUND 38,000



SCHOOLS – 802
(104 PRIVATE)



COUNTIES- 105

PROJECT OVERVIEW AND METHODS



PART I:
WEBIZ
DATA
QUALITY
ANALYSIS

- Annual Kindergarten Vaccination Coverage Study performed by KIP
- Vaccination records of kindergarteners in Kansas are collected directly from schools
- Annual assessment is time consuming and costly.
- KIP seeks to utilize data in WebIZ to determine vaccination rates.
- To validate the use of WebIZ at the population level, current IIS data was examined for completeness.


METHODS:

- WebIZ immunization data was pulled for all students assigned to a kindergarten class in public or private schools for the 2017-2018 academic year
- All vaccines not required for school entry were excluded
- Data was examined for indicators of completeness:
 - Number of kindergarten students (5-7 years old)
 - Percent of schools
 - Number of counties represented
 - Number of private vs public schools represented
- Vaccine coverage for required immunizations was assessed.
 - The number of doses evaluated were based on Health People 2020 (HP2020) goals.

METHODS:

Analysis:

- SAS® software was used for all data analysis
- Frequencies were calculated for all indicators
- Vaccination coverage findings were compared to data from the “Kindergarten Vaccination Coverage Survey – School Year 2016-2017” and HP2020 vaccination coverage goals



PART 2:
WEBIZ
USAGE
BARRIER
ANALYSIS

- As a result of part of the data quality analysis
- To assess barriers to usage of the WebIZ school module by schools
- Hypothesis: Lack of time and knowledge are the main contributors to low WebIZ usage by Kansas Schools

METHODS

- Online survey was developed in Qualtrics®
- Distributed via email to individuals who maintained kindergarten immunization records for each school with a kindergarten class in Kansas (n=802)
- List of schools was obtained from the Kansas State Department of Education
- Emails were obtained from the Kindergarten Vaccination Coverage Study
- Schools were contacted via phone for updated information after failed email delivery
- Separate survey for each school

- **Goal:** Assess current use and identify barriers to WebIZ utilization among schools
- Factors assessed:
 - School
 - Location
 - Type (public vs. private)
 - District
 - Position title (school nurse, secretary, administrator, etc.)
 - Method of keeping immunization records (paper, electronic, or both)
 - If electronic: type of electronic system used (SNAP, PowerSchool, etc.)
 - Number of schools respondent keeps immunization records for



- **Goal:** Assess current use and identify barriers to WebIZ utilization among schools
- Factors assessed:
 - WebIZ awareness
 - WebIZ use
 - Extent of use
 - Factors that affect use (time, knowledge, etc.)
 - Reasons for not using WebIZ
 - Training
 - Benefits
 - Preferred method
 - Prevention to training attendance



METHODS

- Analysis:
 - Frequencies
 - Chi-square (p-value)
 - Odds ratios
 - Mantel-Haenszel test
 - SAS® software was used for all data analysis

RESULTS

PART I: WEBIZ DATA QUALITY ANALYSIS

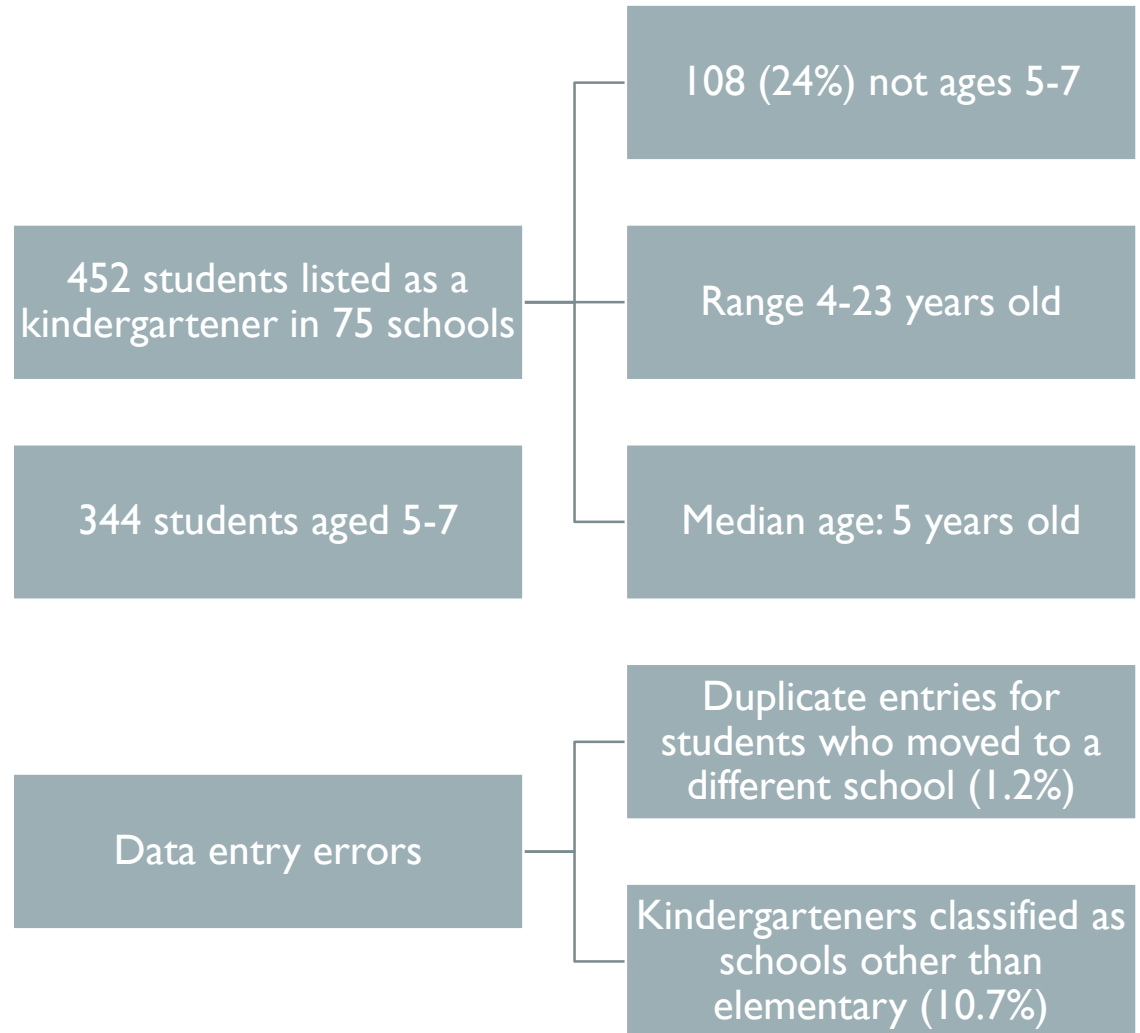


TABLE 3.1: DATA COMPARISON: WEBIZ VS. KINDERGARTEN VACCINATION COVERAGE

	WebIZ data	Kindergarten Vaccination Coverage Study	Representation in WebIZ
Kindergarten students	344	38,484	0.89%
Schools	67	796	8.42%
Counties	42	105	40.00%

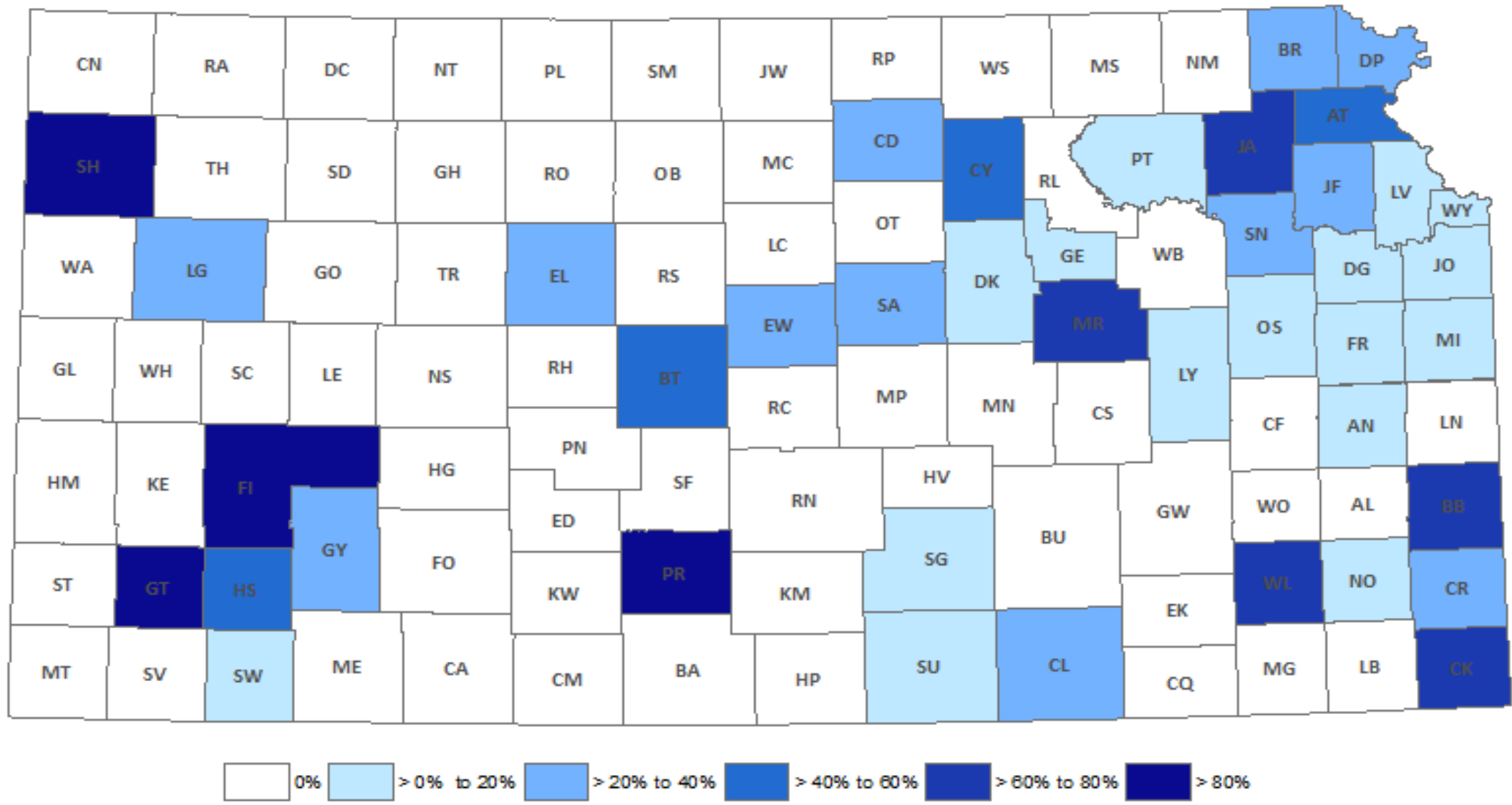


Figure 3.2. Saturation map of WebIZ school module use by county

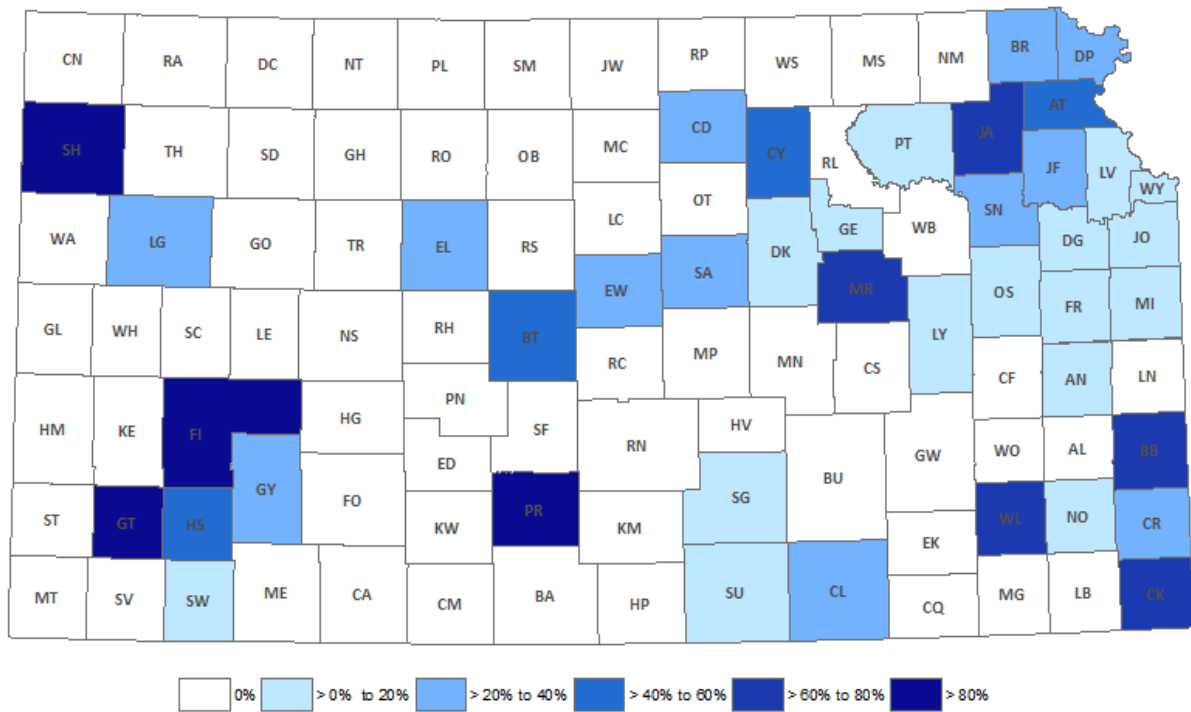


Figure 3.2. Saturation map of WebIZ school module use by county

Table 3.2: Percent school representation by county

School Usage	Counties
0 %	61.0%
>0-20%	15.2 %
>20-40%	11.4%
>40-60%	3.8%
>60-80%	4.8%
>80%	3.8 %

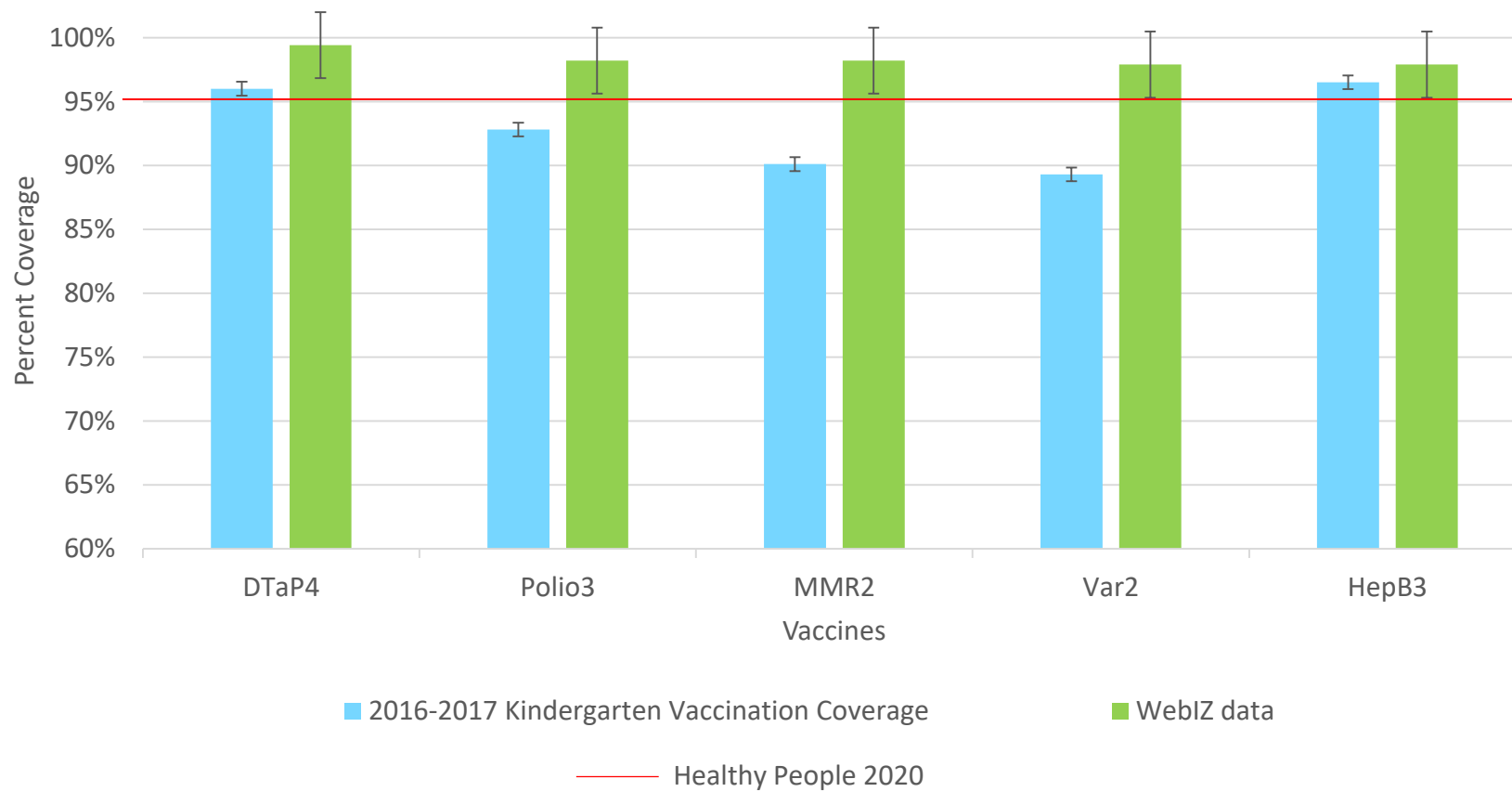


Figure 3.1 Vaccination Coverage Among Kindergarteners, WebIZ 2018-2018 vs. Kindergarten Vaccination Coverage 2016-2017

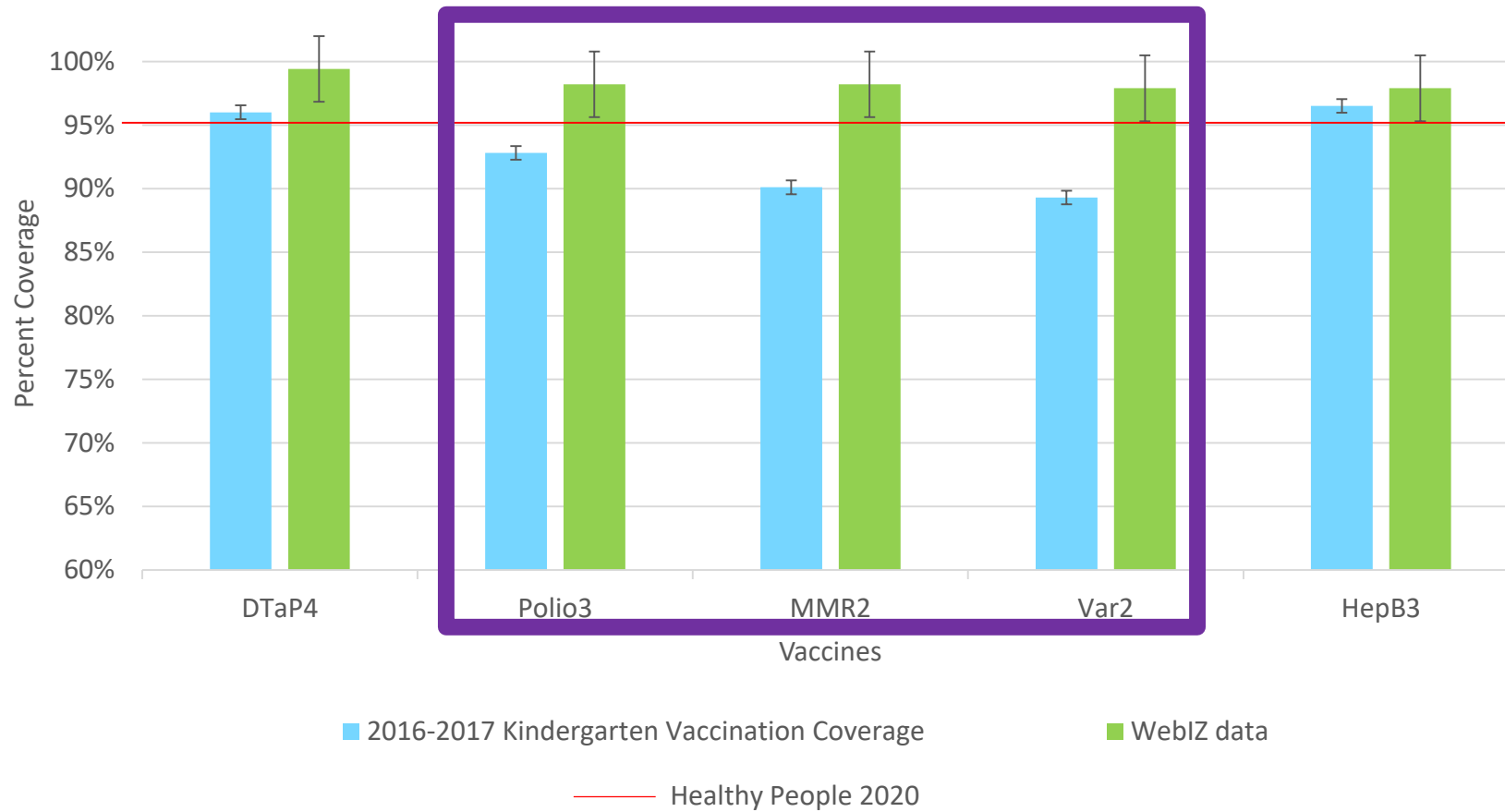
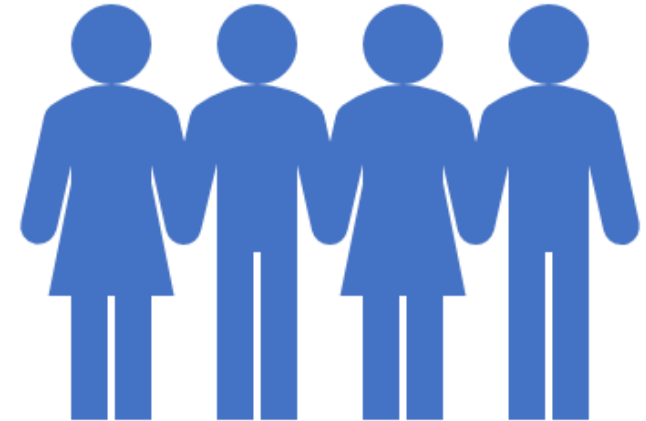


Figure 3.1 Vaccination Coverage Among Kindergarteners, WebIZ 2018-2018 vs. Kindergarten Vaccination Coverage 2016-2017

PART 2: WEBIZ USAGE BARRIER ANALYSIS

BARRIER ANALYSIS: PARTICIPANTS

- 62% response rate
- 501 individuals who kept kindergarten immunization records participated in the survey
- Job titles of participants:
 - school nurse (83.4%),
 - administrative assistant/secretary (10.4%),
 - health aid (2.4%)
- 28.5% (142) of schools had staff member who kept records for at least one other school (range: 2-7 schools)



WEBIZ AWARENESS AND USAGE

10% (50) of schools were not aware of WebIZ or its purpose

23% (105) of schools that are aware of WebIZ choose not to use it.

69% (343) schools use WebIZ

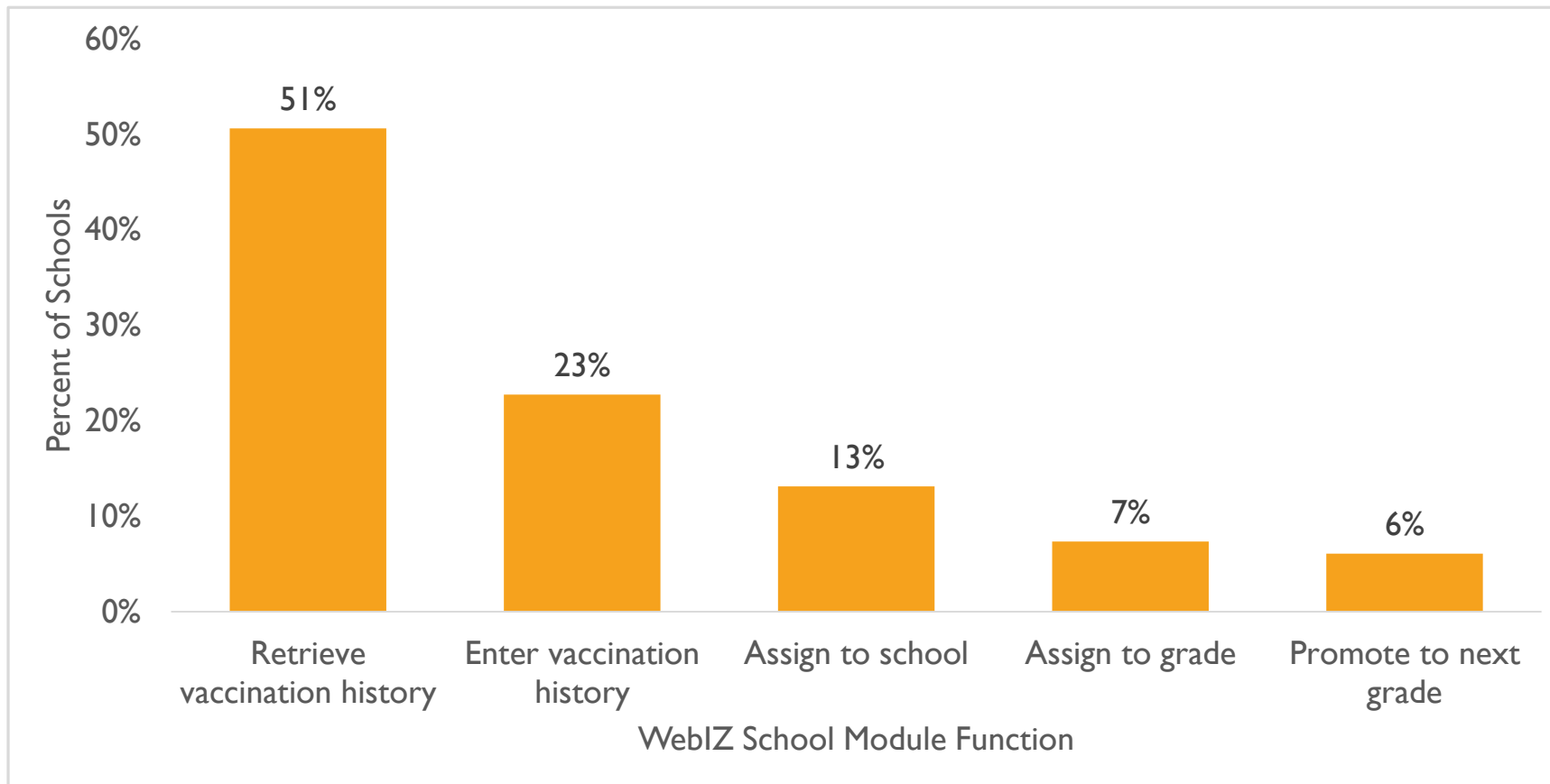


Figure 3.3 School Use of WebIZ School Module (n=162)

Do any of the following affect your use of WebIZ at this school?

	Yes	No	Don't Know / Unsure
Lack of training of WebIZ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unable to enter exemptions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unsure of how to enter vaccination histories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of time to enter vaccination histories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unsure of how to assign students to my school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of time to assign students to my school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unsure of how to assign students to their current grade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of time to assign students to their current grade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unsure of how to promote students to the next grade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of time to promote students to the next grade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Factor	Percent (yes)
Lack of time to assign students to the next grade	46%
Unsure of how to promote students to the next grade	45%
Lack of time to assign students to their current grade	44%
Lack of time to enter vaccination records	41%
Lack of time to assign students to my school	40%
Unsure of how to assign students to their current grade	33%
Unsure of how to assign students to my school	31%
Unsure of how to enter vaccination records	20%
Lack of training	20%
Unable to enter exemptions	17%
Combined barriers	
Time	43%
Knowledge	27%

Table 3.3 Factors that affect individuals who use WebIZ

LACK OF TIME IS THE
GREATEST FACTOR THAT
AFFECTS WEBIZ USERS

Factor		
Lack of Time		
	To assign students to next grade	
	To assign students to current grade	
	To enter vaccination records	
Lack of Knowledge	To assign students to my school	
	To promote students to next grade	
	To assign students to current grade	
	To enter vaccination records	
	To assign students to my school	
	Unable to enter exemptions	

Table 3.4 Factors that affect individuals who use WebIZ

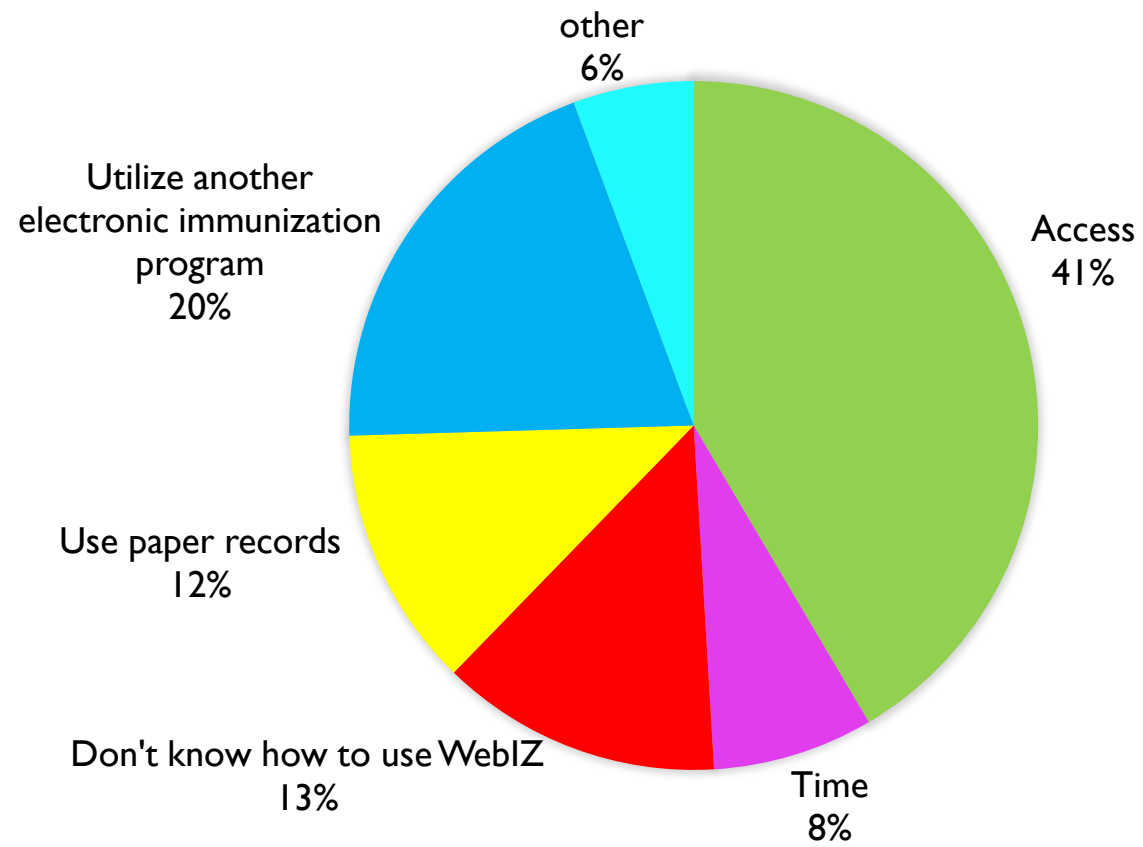


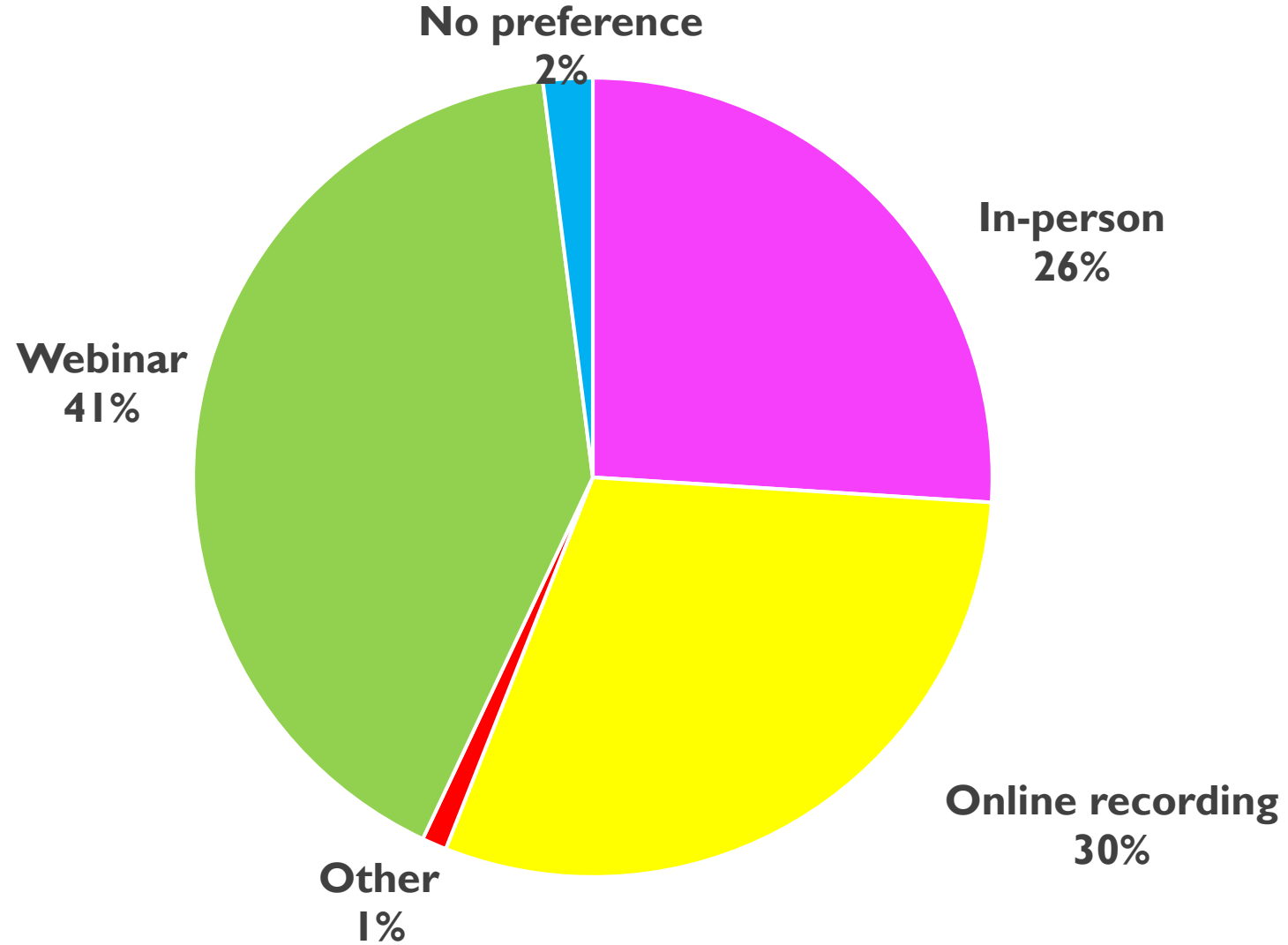
Figure 3.4 Reasons that schools do not use WebIZ (n=100)

Table 3.5 Odds ratios for barriers to WebIZ use

Barrier	Chi-square (P-value)	Odds Ratio	95% Confidence Interval
LACK OF TIME	45.23 (<0.0001)	5.79*	3.08-10.86
LACK OF KNOWLEDGE	10.31 (0.0013)	2.23	1.354-3.684
USE OF ALTERNATE DATABASE	5.62 (0.0178)	1.96	1.354-3.684
PAPER	14.45 (0.0001)	0.37	0.22-0.63
LACK OF ACCESS	134.38 (<0.0001)	0.043**	0.02-0.10

* Controlled for lack of knowledge

** Controlled for lack of time



324 (66%) of participants stated that they would find WebIZ training beneficial

Figure 3.5 Frequencies of preferred WebIZ training by type

DISCUSSION

PART I: WEBIZ DATA QUALITY ANALYSIS

INACCURATE REPRESENTATION

- Current WebIZ data does not provide an accurate representation of kindergarten vaccination coverage to support surveillance
 - Fewer than 10% of schools
 - Less than 1% of kindergarten students
 - Only 3.8% of counties with >80% of schools accurately using WebIZ school module

VACCINE COVERAGE

- Significant difference in coverage rates for 3 of 5 vaccines between WebIZ and the Kindergarten Vaccination Coverage Study
- WebIZ exceeds HP2020 goals
- Section bias could affect this, since WebIZ is opt-in

PART I: WEBIZ DATA QUALITY ANALYSIS

- Counties in the eastern part of the state had more county representation
- Counties with the highest percentage of participation were located in the western region of the state
- Fewer schools per county



PART I: WEBIZ DATA QUALITY ANALYSIS

- Not abundant
- Poor quality
- Age range 4-23 : Students inaccurately assigned to grade and/or are not being promoted to the next grade in WebIZ.
- Duplicate entries: incorrect school associations and data not updated when students move to another school.

PART 2: WEBIZ USAGE BARRIER ANALYSIS

PART 2: WEBIZ BARRIER ANALYSIS

RESPONDENTS

- Large sample size
- Participants with 8 different job titles. The most frequent title was school nurse.
- Due to small sample size for some job titles, barrier analysis to using WebIZ based on title could not be conducted.

SKIP PATTERNS

- Survey contained skip patterns
- More tailored results
- Sample sizes for each question differ
- Intentionally skipped questions



PART 2: WEBIZ BARRIER ANALYSIS

The greatest barrier that affected the odds of complete WebIZ utilization identified in this study was lack of time

Knowledge = significant confounder to lack of time

Lack of knowledge makes the tool more time consuming.

Time is a difficult barrier to address, however making WebIZ easier to use can help.

PART 2: WEBIZ BARRIER ANALYSIS

Lack of knowledge was identified as the second greatest barrier to use of WebIZ.

Training can address this barrier.

63% of participants thought training would be beneficial

Should emphasize the importance of all aspects of the school module



PART 2: WEBIZ BARRIER ANALYSIS

- Use of an alternate electronic database also a barrier to WebIZ usage.
- Schools are unlikely to change IIS, therefore efforts to sync more systems with WebIZ would improve completeness
- This could be a barrier because of lack of time or lack of desire to enter immunization data into two separate systems.
- Synced information does not utilize all aspects of the school module necessary to provide accurate data.

PART 2: WEBIZ BARRIER ANALYSIS

- Lower odds of not using WebIZ due to the barrier:
 - Lack of access
 - use of paper records
- WebIZ is mostly being used to retrieve student immunization records.
 - Does not require data entry into WebIZ
 - Does not support wider surveillance efforts.
- 2020 provider requirement to report to WebIZ will support more complete data.
 - Will not affect the school module
 - Schools will still need to utilize the school module functions, but will not have to enter vaccination histories as frequently.

STRENGTHS

DATA QUALITY ANALYSIS

- State-level data from two sources -> direct comparison of methodology
- Informed us that the WebIZ school module was not being used accurately

BARRIER ANALYSIS

- Large sample size
- Provided numerous different types of results
- Will guide future implementations to address barriers

LIMITATIONS

DATA QUALITY ANALYSIS

- Small sample size
 - Private schools (3.1%)
 - Exemptions (n=7)
- Unreported history of varicella disease

BARRIER ANALYSIS

- Technical errors from online survey platform
- Partial completion of 11 surveys
- Skipped questions

IMPROVEMENTS TO WEBIZ

TRAINING

- Awareness-10% gap
- Webinar
- Online platform
- School nurse conference
- Emphasis on use of the entire school module and it's importance

SYNCED IMMUNIZATION SYSTEMS

- SNAP-reinforce use
- Commonly used systems that are not synced:
 - Skyward
 - Powerschool
 - CarDox
 - Edupoint
 - Synergy

COMPETENCIES

Number and Competency	Description
1 Apply epidemiological methods to the breadth of settings and situations in public health practice	I used my knowledge of epidemiological methods to understand daily conversations and situations about infectious diseases and outbreaks during my time in the Bureau of Epidemiology and Public Health Informatics. Epidemiology allowed for me to understand how diseases were spread and the importance of control through vaccinations. An understanding of epidemiology allowed for me to calculate and understand odds ratios and evaluate vaccine coverage.
2 Select quantitative and qualitative data collection methods appropriate for a given public health context	I developed a survey to collect quantitative data to inform KDHE about the barriers to WebIZ use.
3 Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate	Biostatistics was used to understand different ways that the data could be analyzed. SAS software was used to analyze current WebIZ data and survey data. Biostatistics was also used to interpret SAS output.
9 Design a population-based policy, program, project or intervention	Designed a study to examine the population who maintains kindergarten vaccination records at Kansas schools.
21 Perform effectively on interprofessional teams	Performed project by collaborating with professionals at KDHE within Bureau of Epidemiology and Public Health Informatics, and the Kansas Immunization Program, school nurses, and elementary school office staff.

ATTAINMENT OF MPH FOUNDATIONAL COMPETENCIES

QUESTIONS???