



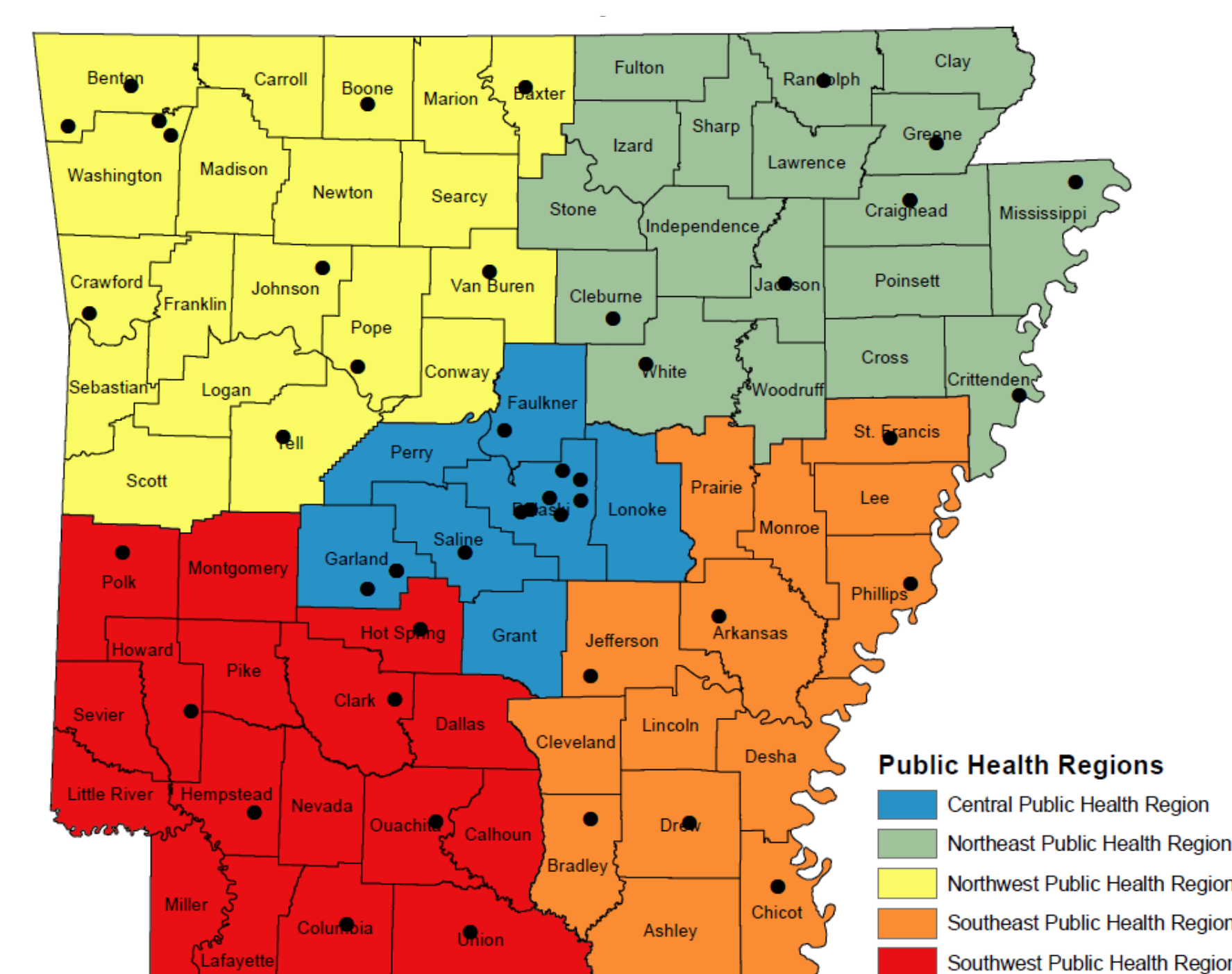
## Background

The Centers for Disease Control and Prevention (CDC), the Advisory Committee for Immunization Practices (ACIP), the Healthcare Infection Control Practices Advisory Committee (HICPAC), and a host of other professional medical organizations recommend that all healthcare personnel (HCP) get vaccinated annually against influenza.<sup>1,2</sup> The national Healthy People 2020 target for annual influenza vaccination among HCP is 90%.<sup>3</sup> HCP vaccination is one feasible strategy used to maintain optimal prevention of influenza in the healthcare setting. High vaccination coverage rates help ensure that HCP will be protected from influenza and patients will be less likely to acquire influenza from facility staff. At least 33 states have enacted statewide laws that, in some way, address HCP influenza vaccination, which have been shown to boost vaccination rates in past years.<sup>4,5</sup>

Currently, the Centers for Medicare & Medicaid Services (CMS) requires reporting of influenza vaccination coverage through the CDC's National Health Care Safety Network (NHSN) for workers in acute care hospitals, inpatient rehab facilities, ambulatory surgery centers, and inpatient psychiatric facilities as part of the Inpatient Quality Reporting Program.<sup>1,6</sup> This measure requires facilities to collect data on the total number and the number of vaccinated employees and certain nonemployee staff who work at the facility between October 1 and March 31 of each year.

Over 50 Arkansas acute care and long-term acute care (LTAC) facilities have conferred rights to the Arkansas Department of Health (ADH) within NHSN to view and analyze HCP influenza vaccination coverage as well as facility methods and strategies employed to increase coverage since the 2012-13 flu season.

Figure 1. Locations of Facilities in Arkansas Reporting in NHSN



## Methods

- Obtained data collected from the Healthcare Personnel Safety Component of NHSN for acute care and LTAC facilities in Arkansas
- Used SAS (Version 9.3, Cary, NC) to determine the influenza vaccination coverage of employees and all healthcare personnel (employees, licensed independent practitioners, and student volunteers) by flu season, facility bed size, region of the state, and strategies implemented
- Calculated Pearson correlation coefficients to detect variables significantly associated with higher influenza vaccination coverage
- Performed stratified analyses to determine if high vaccination coverage ( $\geq 90\%$ ) was associated with a mandate (condition of employment) or facility size

## Results

Table 1. Correlation Between HCP Influenza Vaccination Coverage Rate and Facility Characteristics, Year, and Quality Improvement Strategy Employed

Variable of Interest	Only Employees		All Healthcare Personnel (Employees + Licensed Independent Practitioners + Adult Students/Trainees & Volunteers)	
	Pearson Correlation Coefficient	p-value	Pearson Correlation Coefficient	p-value
Bed Size*	0.07	0.39	0.09	0.29
Flu Season**	0.18	0.03	0.18	0.03
Send Vaccination Reminders	-0.20	0.02	-0.19	0.03
Credentialing	0.23	0.01	0.16	0.06
Condition of Employment (Mandate)	0.57	<.001	0.39	<.001
Track Vaccination for Targeting Purposes	0.19	0.02	0.16	0.05
Mobile Vaccination Carts	0.16	0.06	0.14	0.09
Provide Vaccination at Meetings	0.20	0.02	0.11	0.17

\*Bed size categories were characterized as  $\leq 25$ , 26-100, 101-200, and 201+. \*\*Flu seasons 2012-13 through 2014-15 were included. Total number (N) of facilities=145, which included all facilities for all flu seasons that were not missing any variables.

Figure 2. HCP Vaccination Coverage by Facility Bed Size and Flu Season

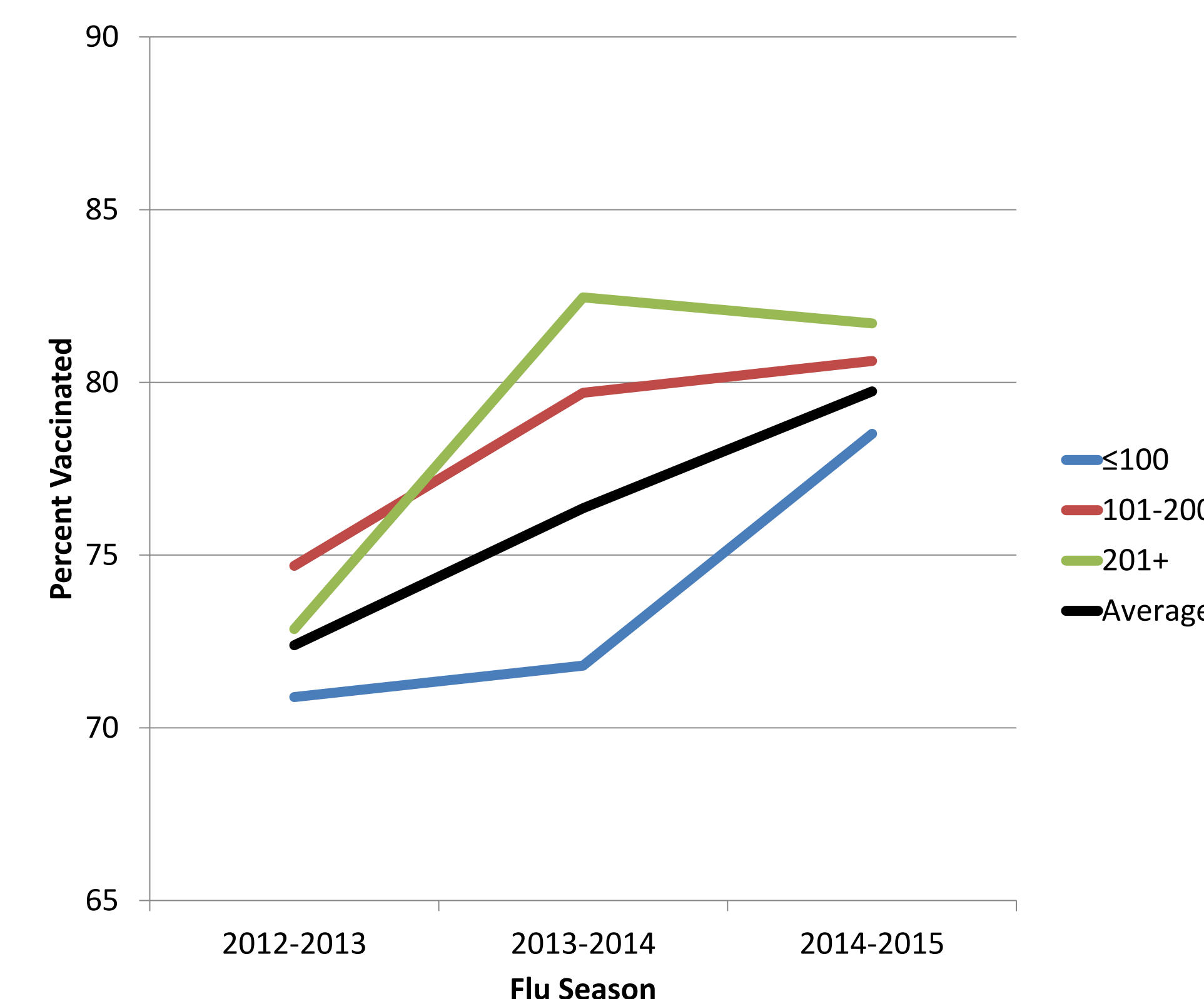


Figure 3. HCP Vaccination Coverage by Region of the State and Flu Season

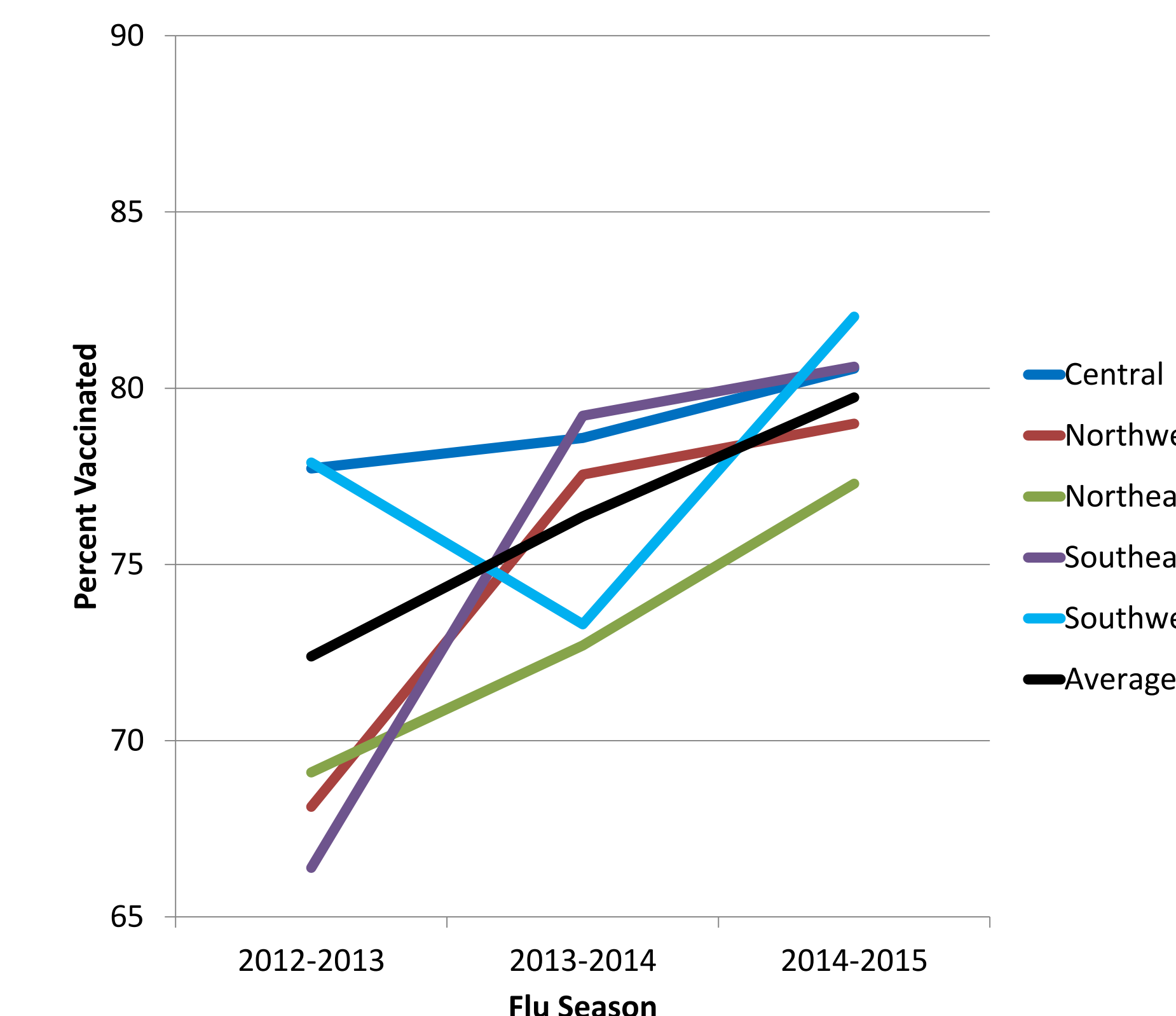
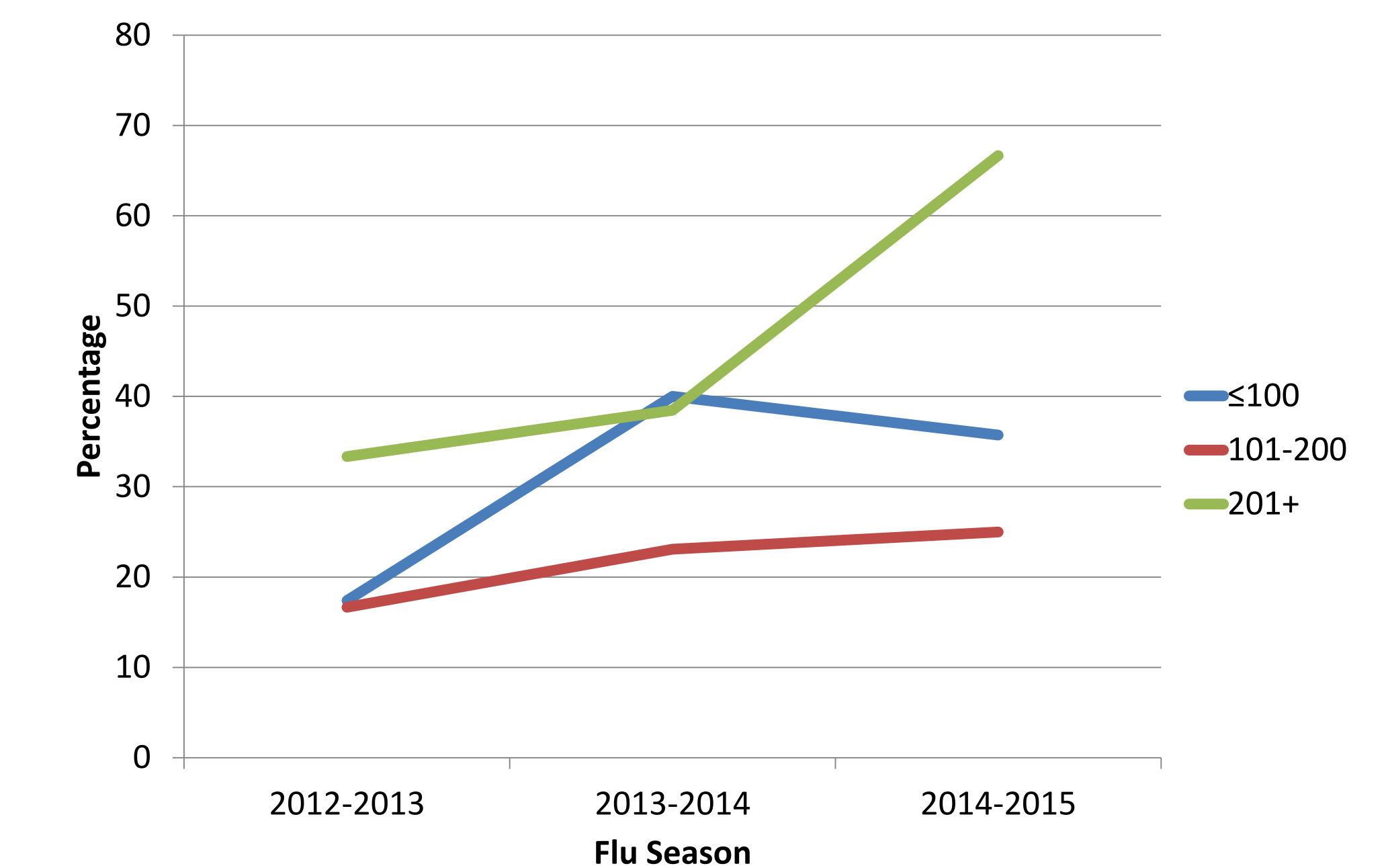


Table 2. HCP Influenza Vaccination Coverage by Vaccination Mandate Status and Facility Size, 2012-2015

Facility Bed Size $\leq 100$				
HCP Flu Vaccination Coverage	Yes – Mandate	No – Mandate	Total	p-value*
$\geq 90\%$	7	9	16	0.25
$< 90\%$	17	43	60	
<b>Total</b>	<b>24</b>	<b>52</b>	<b>76</b>	
Facility Bed Size 101-200				
HCP Flu Vaccination Coverage	Yes – Mandate	No – Mandate	Total	p-value*
$\geq 90\%$	2	5	7	0.63
$< 90\%$	6	24	30	
<b>Total</b>	<b>8</b>	<b>29</b>	<b>37</b>	
Facility Bed Size 201+				
HCP Flu Vaccination Coverage	Yes – Mandate	No – Mandate	Total	p-value*
$\geq 90\%$	11	1	12	<.001
$< 90\%$	6	19	25	
<b>Total</b>	<b>17</b>	<b>20</b>	<b>37</b>	

\*Fisher's Exact Test. Due to the three-year duration of follow-up, a single facility may be counted up to three times in this analysis. For reference, number of facilities for 2014-15 flu season=56, and number of HCP who worked during 2014-15 flu season=79,207.

Figure 4. Percentage of Facilities that Implemented a HCP Influenza Vaccination Mandate by Flu Season



## Conclusions and Next Steps

- Requiring vaccination for credentialing and as a condition of employment, tracking vaccination on a regular basis for targeting purposes, and providing vaccination at any meetings were correlated with higher vaccination coverage among employees (p-value < 0.05)
- Having a facility mandate was the only strategy correlated with higher vaccination coverage among all HCP
- Interestingly, sending vaccination reminders by mail, email, and/or pager was correlated with lower coverage for employees and all HCP
- The association between high HCP flu vaccination coverage ( $\geq 90\%$ ) and having a mandate differed by facility size; the association was strongest in the largest facilities (p-value <.001)
- Next steps include looking at health systems to determine what strategies could be implemented at independent facilities as well as examining facility flu vaccine medical and non-medical exemption processes

## References

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