

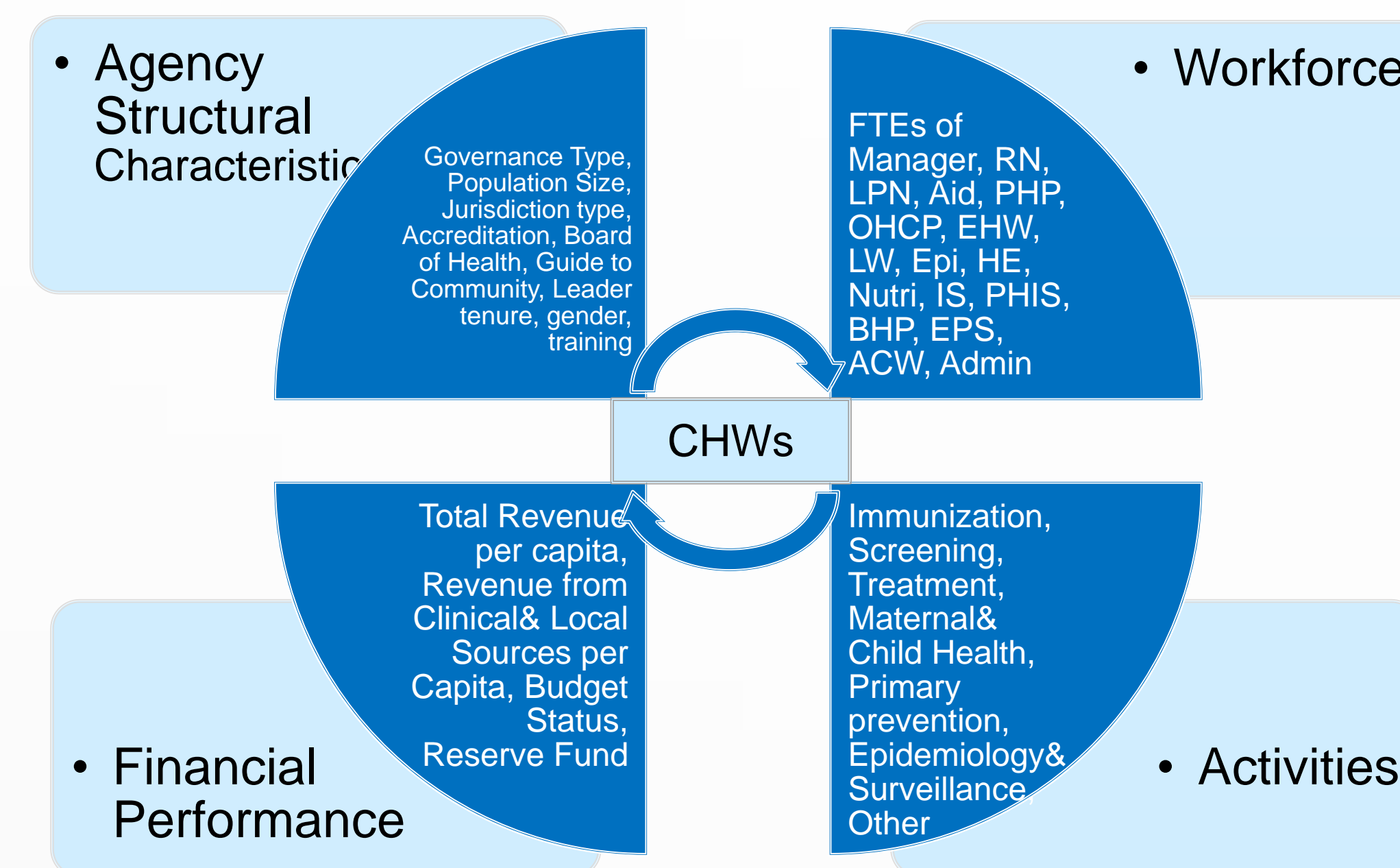
Background

Local health departments (LHDs) are expected to play a prominent role in achieving the nation's latest Healthy People 2020 goals. Evidence suggests that LHDs' characteristics can be applied as predictors for LHDs' performance and community health outcomes.

One characteristic that may be associated with performance and community health is workforce. The National Association of County and City Health Officials (NACCHO) 2013 Profile survey contained classifications for 18 total occupations, including a newly classified occupation, Community health workers (CHWs). CHWs are considered frontline public health workers and have a close understanding of the communities they serve. Because CHWs usually share ethnicity, language, socioeconomic status and life experiences with the community members they serve, having them in LHDs as part of the health workforce is essential to promote the health outcome of community.

The purpose of this project is to describe the different characteristics between local health departments that do or do not have community health workers, based on data in the 2013 NACCHO Profile study. The project also examines which health department characteristics are associated with the presence of CHWs.

Figure 1. Conceptual Framework Used to Guide Research



Methods

The two dependent variables of interest in this study were created by measuring LHD who employed CHWs as full time equivalents, treated as a binomial variable, and the number of CHWs in LHDs, treated as counts.

Figure 1 shows the main areas of LHD's characteristics that were analyzed, including Agency Structure Characteristics (including top executives' characteristics), Financial Performance, Workforce Information, and Activities. Descriptive analysis (Tables 1-3) were applied to show the difference between LHDs that contained and did not contain CHWs.

Logistic regressions were utilized to identify the associations of key characteristics of LHDs that were most likely to have CHWs. Stepwise selection approaches, with a selection cut off of $p=0.1$ and stay level at 0.05, were applied to create four models for selections. Based on the results of stepwise logistic regression, a parsimonious final model (Table 4) were created using backward elimination approaches.

To further analyze the associations between LHD's characteristics and the number of community health workers, a negative binomial regression (Table 5) was conducted. Covariates for the models were selected from the results of final logistic regression analysis.

Result

Figure 2. Agency Characteristics Difference for Having CHWs

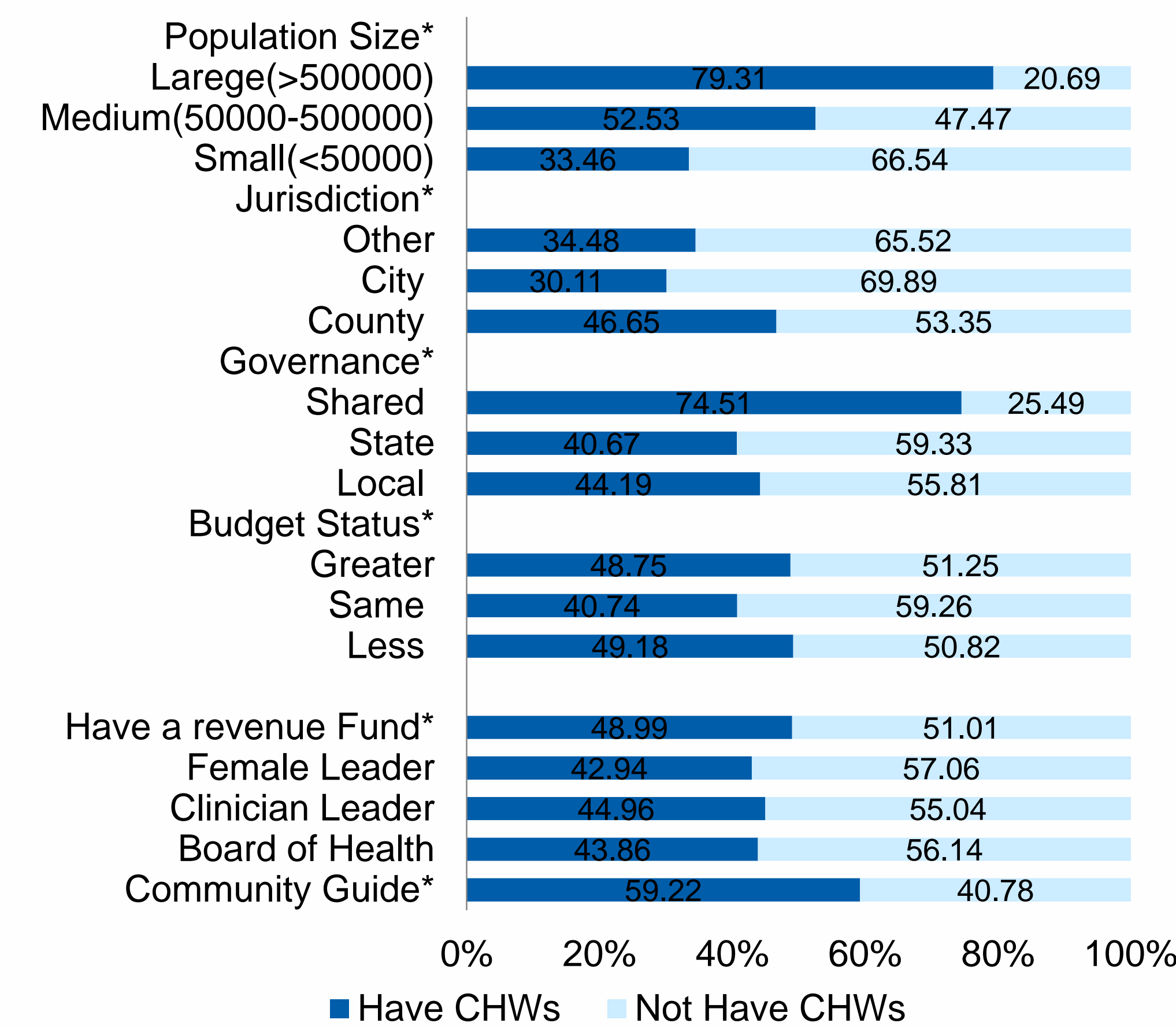


Figure 2. Workforce Difference for Having CHWs

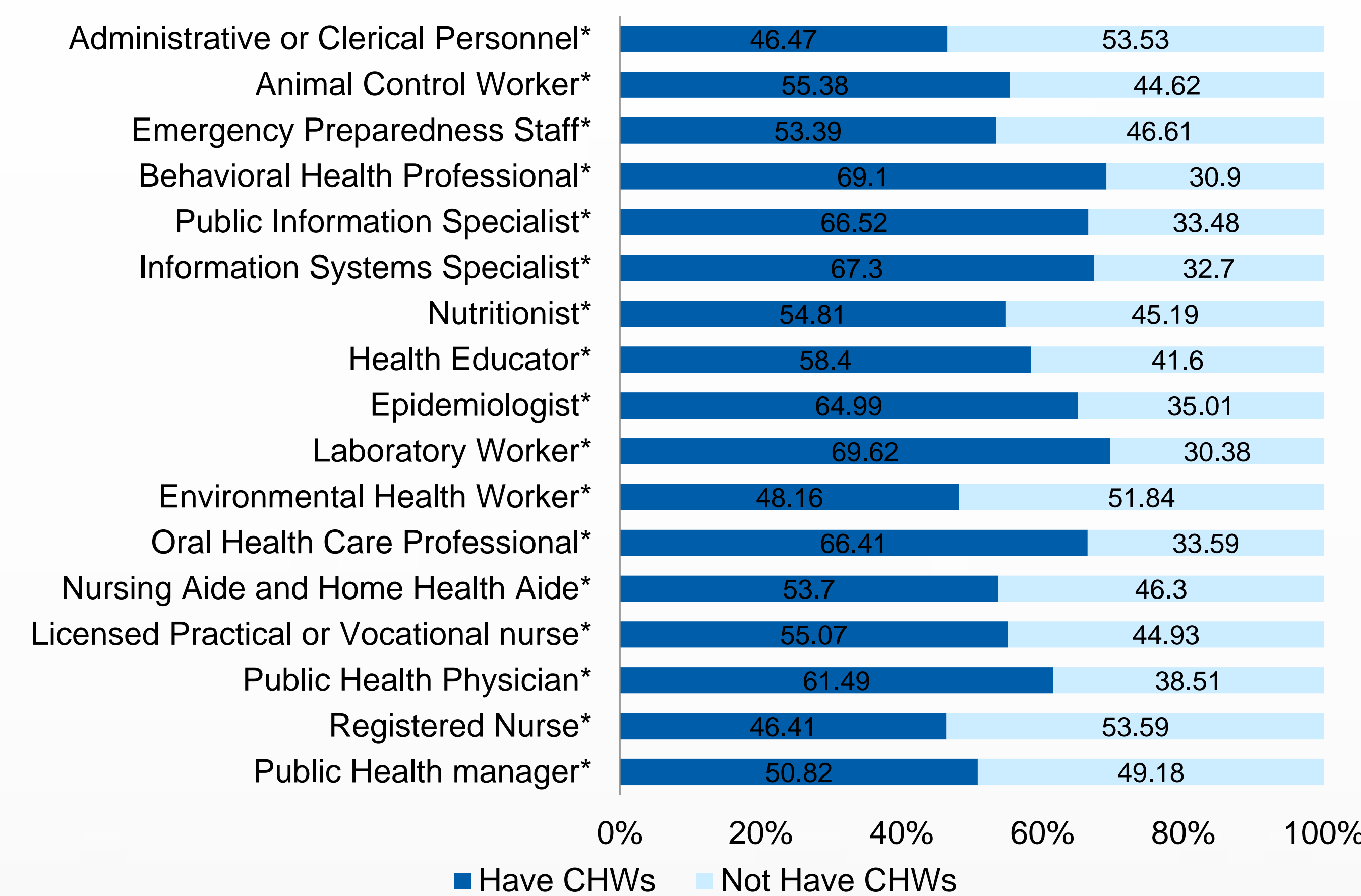


Figure 3. Number of Activities Difference for Having CHWs

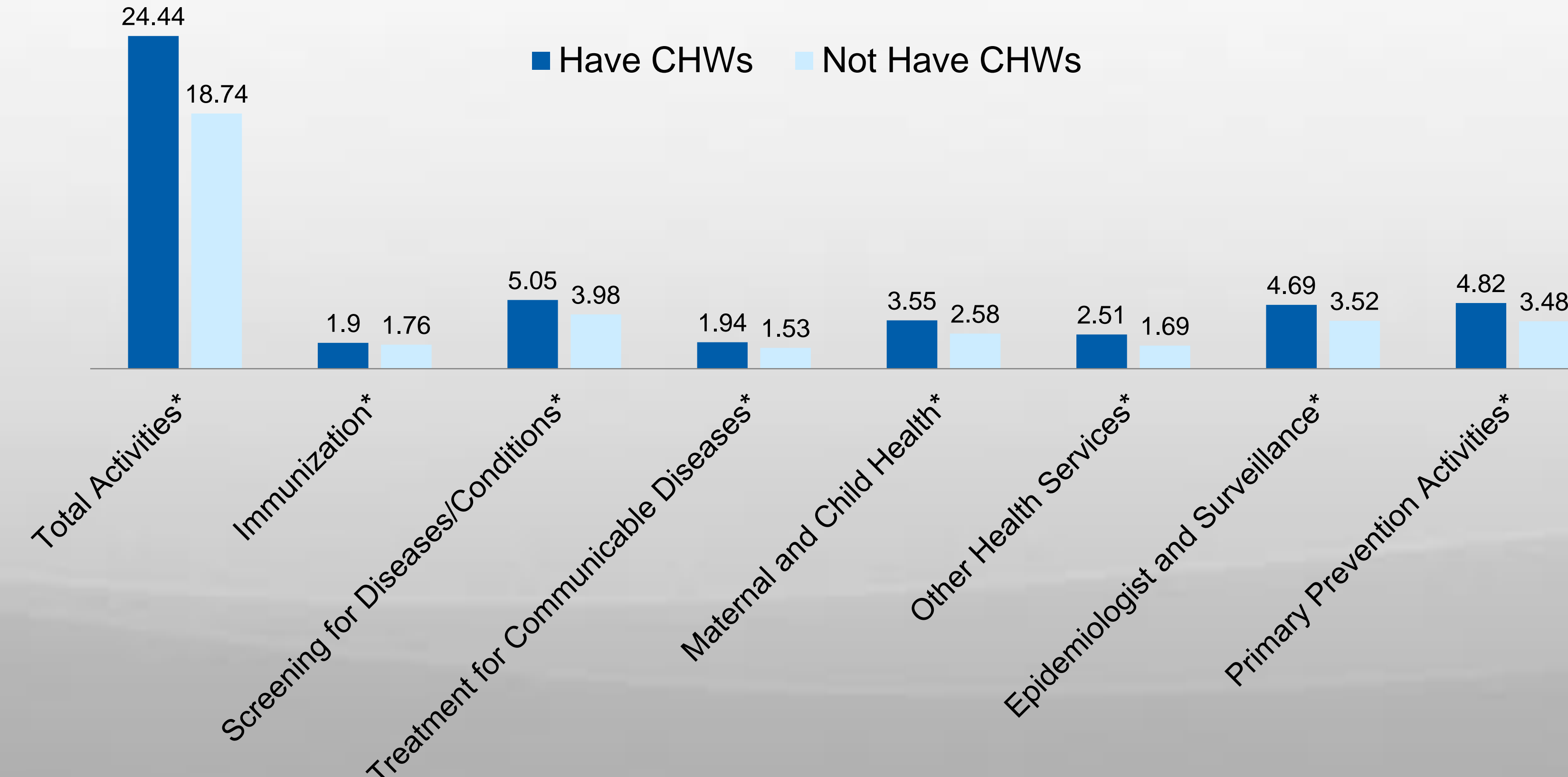


Table 1. Logistic Regression modeling for CHW (Ref='No')

Variable	Odds Ratio	95% C.I.	P-value
Governance Type(ref='State')			
Local	1.134	0.611 2.106	0.4779
Shared	2.061	1.15 3.695	0.0388
Apply Community Guide(ref='Yes')	0.632	0.429 0.93	0.20
Revenue per capita	1.005	1.001 1.009	0.0081
Manager(ref='No')	1.969	1.069 3.625	0.0296
Public Health Physician(ref='No')	1.598	1.07 2.386	0.022
Epidemiologist(ref='No')	1.947	1.285 2.949	0.0017
Health educator(ref='No')	1.854	1.158 2.968	0.0102
Behavioral health professional(ref='No')	2.398	1.499 3.834	0.0003
Laboratory worker(ref='No')	1.929	1.232 3.02	0.0041
MCH home visits(ref='No')	1.717	1.129 2.611	0.0115

*Backward selection, with selection criteria $p=0.05$

Table 2. Negative binomial regression for numbers of CHW

Parameter	Rate Ratio	95% C.I.	p-value
Governance Type(ref='State')			
Local	0.7095	0.4024 1.2507	0.2354
Shared	2.3318	1.5096 3.6019	0.0001
Population Size(ref='Small')			
Medium	2.5606	1.6744 3.9158	<0.0001
Large	11.0169	5.5879 21.7204	<0.0001
Apply Community Guide(ref='Yes')	1.6578	1.1845 2.3202	0.0032
Revenue per capita	1.0059	1.0027 1.0091	0.0003
Manager(ref='No')	3.0398	1.6084 5.7451	0.0006
Public Health Physician(ref='No')	1.6272	1.1384 2.3258	0.0076
Epidemiologist(ref='No')	1.1393	0.7935 1.6358	0.4799
Health educator(ref='No')	1.8348	1.1919 2.8245	0.0058
Behavioral health professional(ref='No')	1.9317	1.3432 2.7779	0.0004
Laboratory worker(ref='No')	1.7726	1.2305 2.5536	0.0021
MCH home visits(ref='No')	1.5231	1.0703 2.1675	0.0194

Discussion and Conclusion

- Compared to LHDs with state governance, the odds to have CHWs for LHDs with shared governance type was 2.061 more. No difference was found between state and local governance. However, for both local (RR=0.7095) and shared (RR=2.3313) governance tend to have less CHWs compare to LHDs with state governance.
- Population size was an indicator for estimate the number of CHWs in LHDs, but not an indicator for having CHWs in LHDs. LHDs served medium (RR=2.5606) and large (RR=11.0169) size of population had more CHWs, compared to LHDs with population smaller than 5,000.
- LHDs that reported utilizing the *Guide to Community Preventive Services* were more likely to hire CHWs. However, the number of CHWs for LHDs utilizing the *'Guide'* was less which indicated *'Guide'* applied as a standard approach for managing CHWs.
- Higher revenues allowed LHDs hire CHWs, as well as hire more CHWs.
- The presence of public health managers, public health physicians, epidemiologists, health educators, behavioral health professionals, and laboratory workers in LHDs were positively associated with having CHWs, as well as a higher number of CHWs.
- The provision of Maternal and Child Health home visits was associated with the presence of CHWs in LHDs, as well as higher numbers of CHWs. This suggests future studies should examine the relationship between CHWs and MCH activities.
- CHWs did not have associations with registered nurse as expected, even though RNs and CHWs might function similarly in community.
- In some regions, CHWs were employed as part-time or voluntary workers. Future researches is needed to clarify the difference between CHWs as part-time, voluntary and full-time workers.