CAPSTONE 1: 2017 INDIA RURAL HEALTH STATISTICS ANALYSIS

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India Rural Health Statistics Analysis - Executive Summary

- India Rural Health Statistics - 2017
  - Infrastructure, staffing and rural infant mortality / state
  - 2011 India Census – Population Data

- Hypothesis: States with less healthcare infrastructure and staffing will have higher rural infant mortality rates.

- Results: Rural Infant Mortality Rates Do Not Appear to Be Correlated to Staffing & Infrastructure Variable

- Next Level of Research: Lurking unseen variables associated with rural infant mortality.

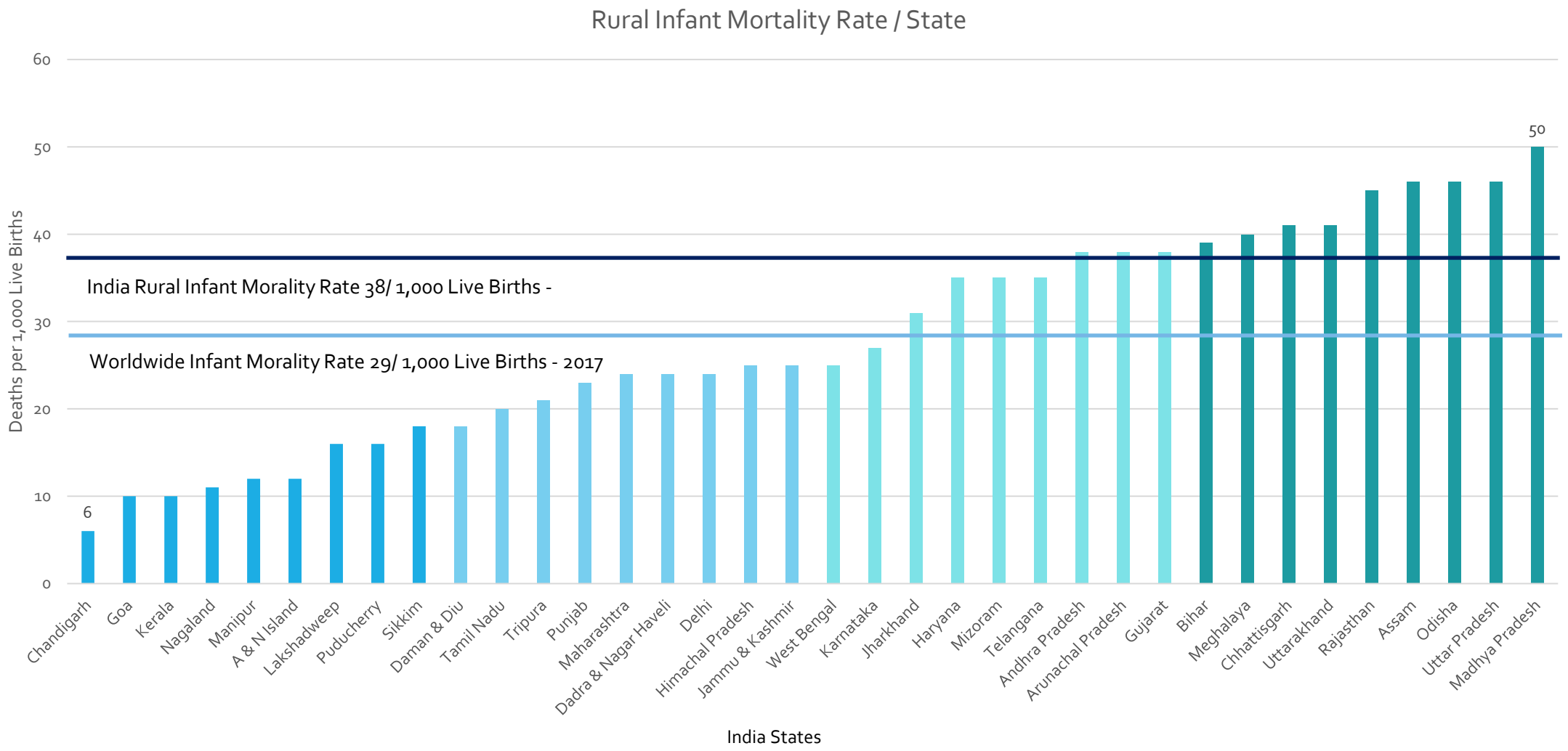
Is There a Relationship Between Healthcare Staffing & Infrastructure and Rural Infant Mortality in India?

Are there infrastructure improvements that can be made to decrease rural infant mortality in India from 38 /1,000 live births to 29 / 1,000live births in 3-5 years.

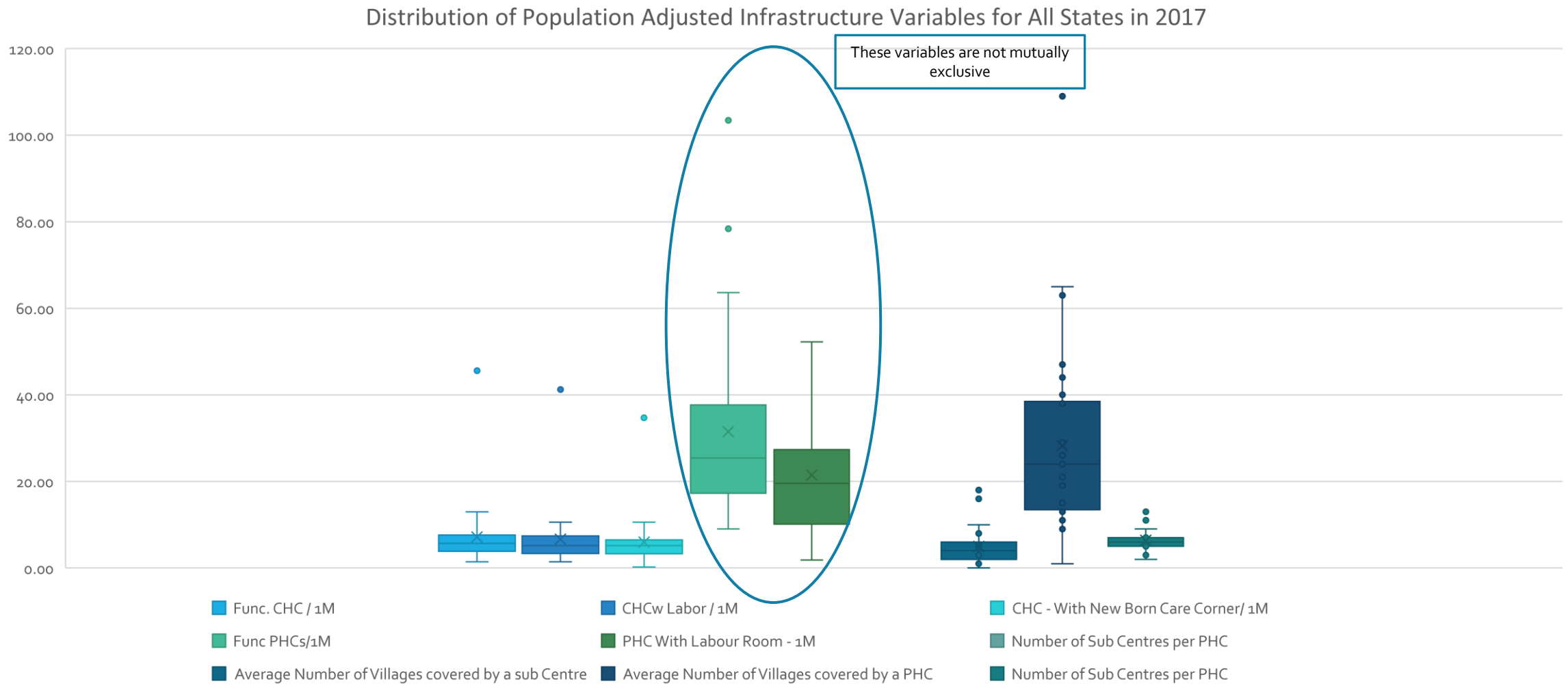
Descriptive Statistics were utilized to identify the variables that were most correlated with infant mortality.

Inferential Statistics were used to confirm our descriptive finding using Pearson Correlation to develop a multivariate equation for the predictive model using regression modelling.

Rural Infant Mortality Varies Dramatically State to State in India

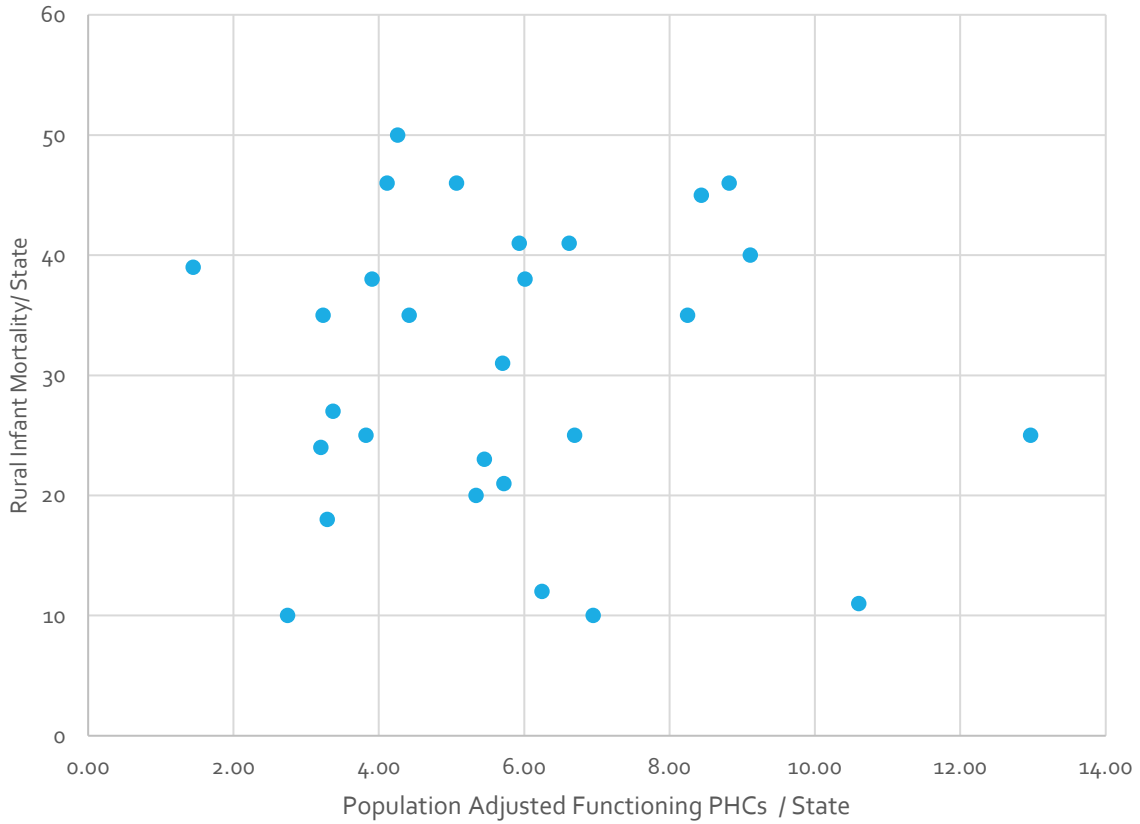


With the Exceptions of, Number of Functioning Primary Health Centers (PHCs) and The Number of PHCs with Labor Rooms, The Infrastructure Variables Did Not Vary Dramatically Among States.



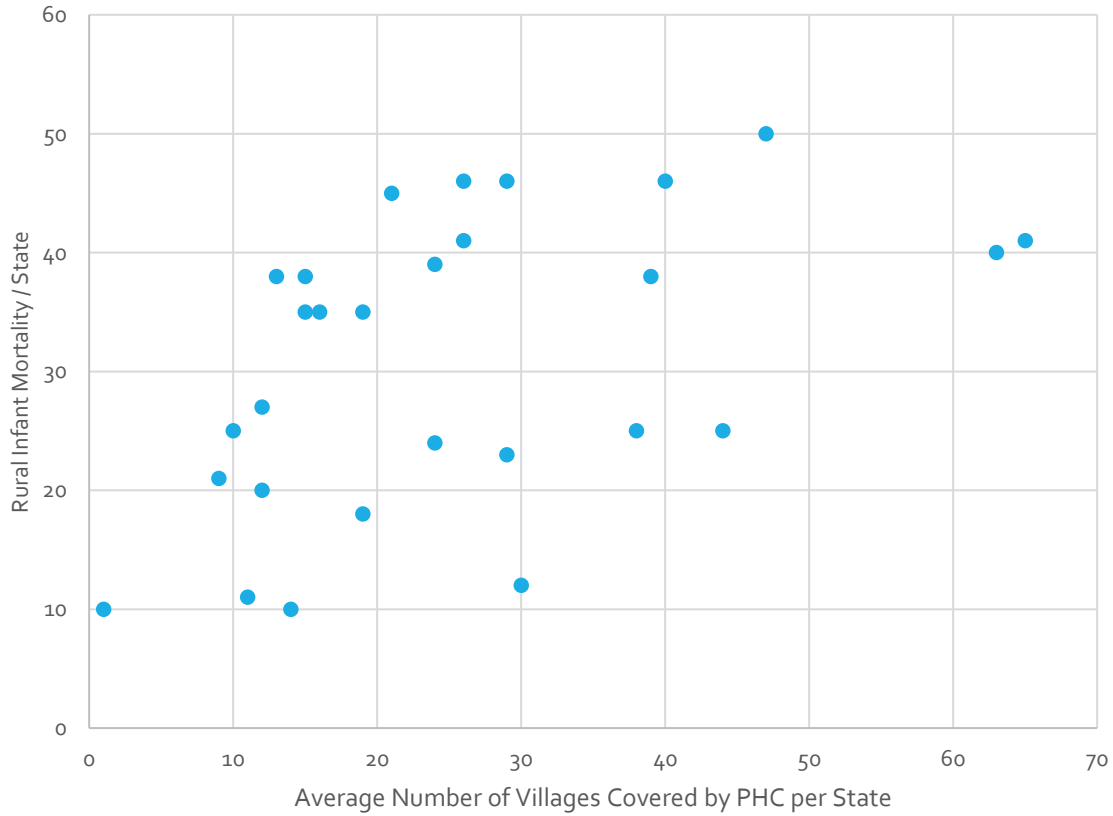
Neither Functioning PHCs (with or without Labor Rooms) or Average Number of Villages covered by PHCs Appear to Associated with Rural Infant Mortality Rate

Pop. Adjusted Number of Primary Health Centers/ Rural Infant Mortality Rate (per 1,000 live births)*



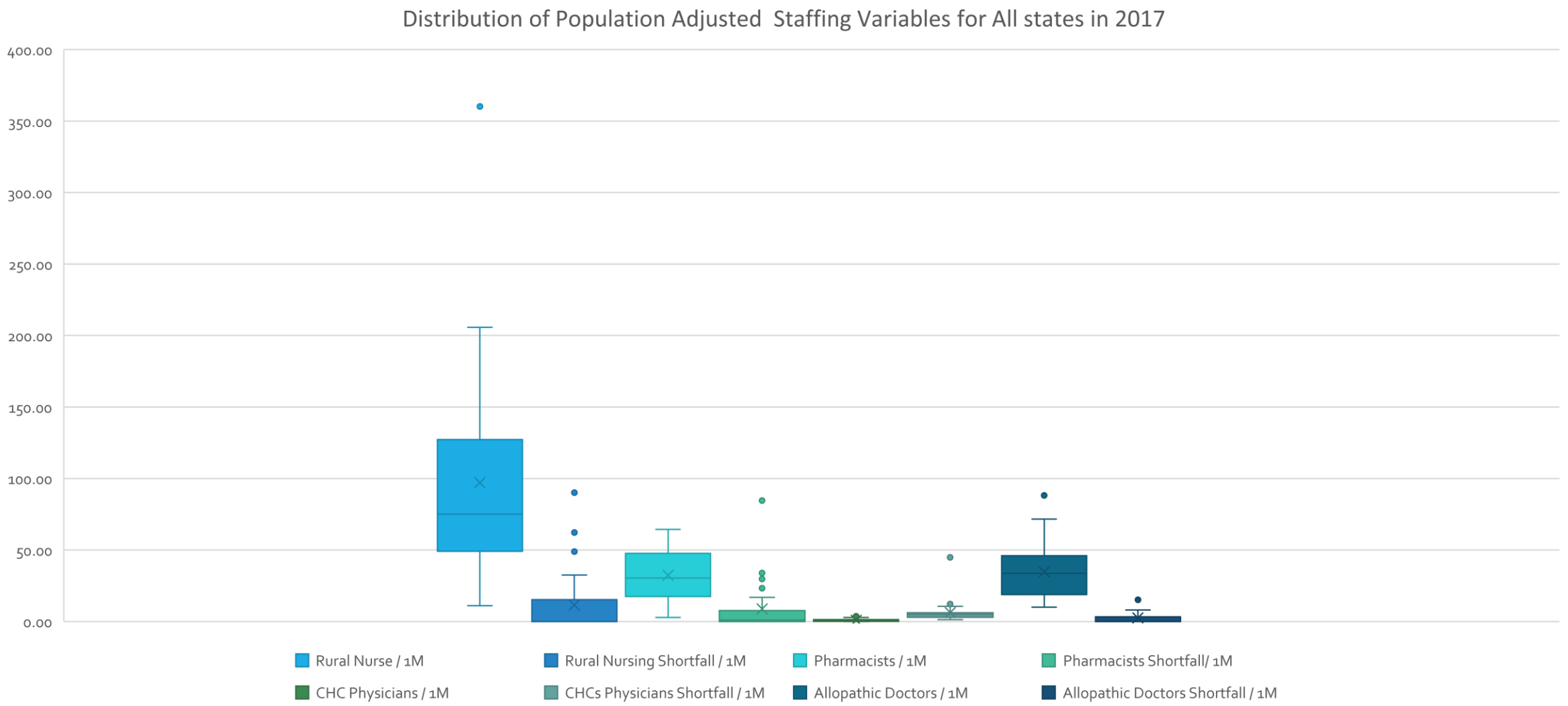
* Indian State Arunachal Pradesh was filtered out as an outlier; Rural Infant Mortality (38), Pop. Adjusted Functioning PHCs (45.57).

Average Number of Villages Covered by PHC / Rural Infant Mortality (per 1,000 live births)*



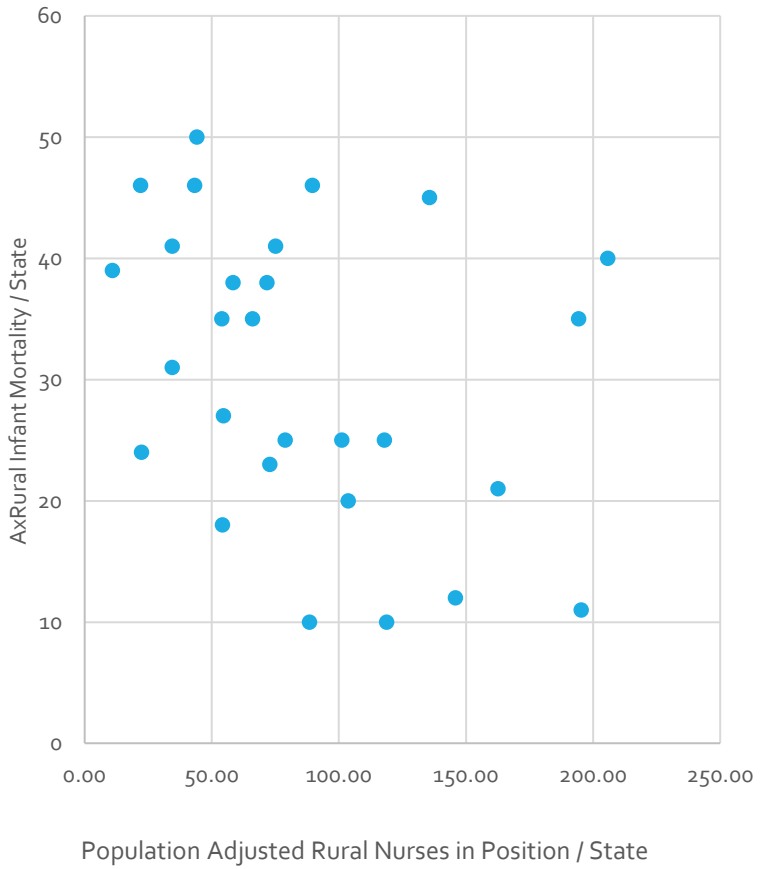
* Indian State Jharkhand was filtered out as an outlier; Rural Infant Mortality (31), Average Number of Villages Covered by PHC (109).

Population Adjusted Number of Rural Nurses in Position, Pharmacists in Position & Allopathic Doctors in Position were the Staffing Variables That Varied The Most Across States.



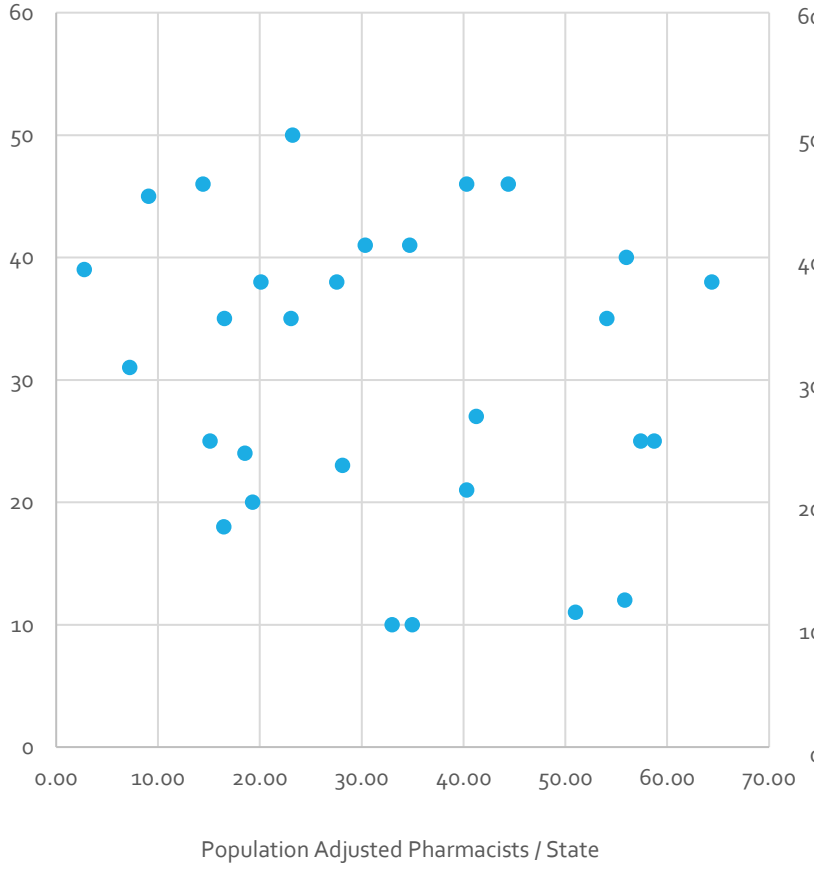
Only Population Adjusted Allopathic Doctors / State Appears to be Associated with Low Rural Infant Mortality Rates

Population Adjusted Rural Nurses in Position / Rural Infant Mortality Rate*

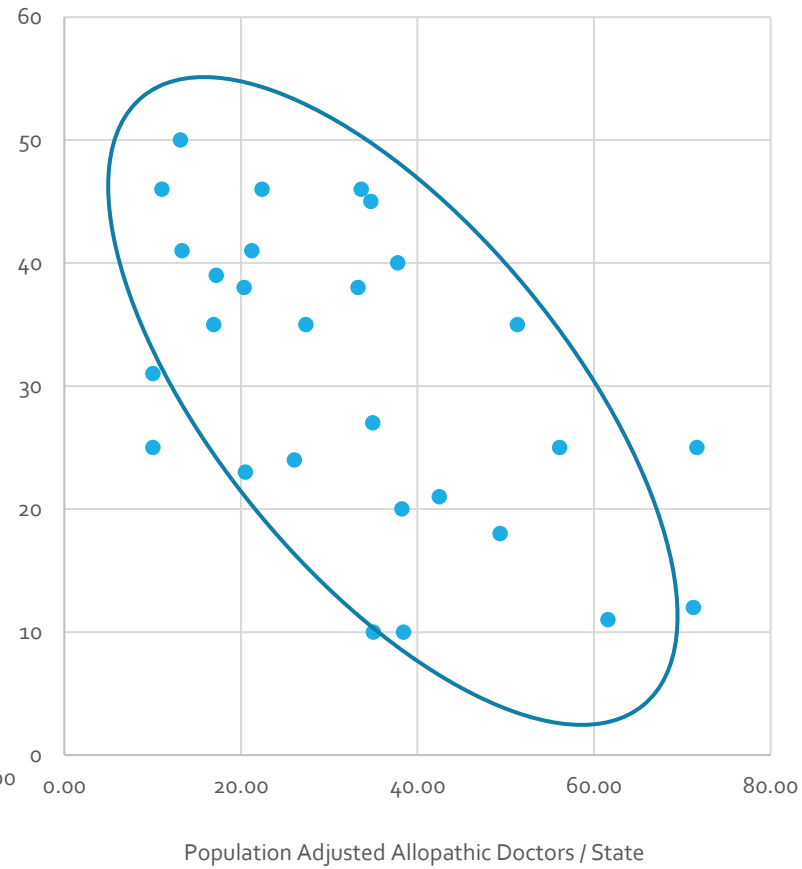


* Indian State Arunachal Pradesh was filtered out as an outlier; Rural Infant Mortality (38), Pop. Adjusted Rural Nurses in Position(360.19).

Population Adjusted Pharmacists per State / Rural Infant Mortality Rate



Population Adjusted Allopathic Doctors per State / Rural Infant Mortality Rate*



* Indian State Arunachal Pradesh was filtered out as an outlier; Rural Infant Mortality (38), Pop. Adjusted Allopathic Doctor (88.24).

Pearson Correlation Corroborates The Lack of Strong Correlation Among Infrastructure & Staffing Variables and Rural Infant Mortality.

	CHC / 1M	*CHC w Labor/ 1M*	*CHC - New Born Care Corner/ 1M*	*Func PHCs/1M*	*PHC With Labour Room - 1M*	*Rural Nurse / M*	*Rural Nursing Shortfall / 1M*	*Pharmacists / 1M*	*Pharmacists Shortfall/ 1M*	*CHC Physicians / 1M*	*CHCs Physicians Shortfall / 1M*	*Allopathic Doctors/ 1M*	*Allopathic Doctors Shortfall / 1M*	*Average Number of Villages covered by a sub Centre*	*Average Number of Villages covered by a PHC*	*Number of Sub Centres per PHC*	*Rural Infant Mortality Rate*
Func. CHC / 1M	1																
CHCw Labor / 1M	0.991217	1															
CHC - With New Born Care Corner/ 1M	0.97026	0.99238	1														
Func PHCs/1M	0.801116	0.791252	0.767797	1													
PHC With Labour Room - 1M	0.556214	0.599968	0.634253	0.803164	1												
Rural Nurse / M	0.782332	0.793797	0.799822	0.709913	0.698922	1											
Rural Nursing Shortfall / 1M	0.552563	0.513134	0.46367	0.573256	0.14988	0.078374	1										
Pharmacists / 1M	0.522146	0.526198	0.527815	0.747506	0.626611	0.666119	0.275068	1									
Pharmacists Shortfall/ 1M	0.855249	0.841976	0.809077	0.773419	0.557142	0.594315	0.584218	0.231955	1								
CHC Physicians / 1M	0.033706	0.063485	0.056466	0.152864	0.216071	0.132172	-0.05433	0.239748	-0.00427	1							
CHCs Physicians Shortfall / 1M	0.991178	0.978484	0.95855	0.777358	0.525139	0.7614	0.557362	0.488081	0.852093	-0.09905	1						
Allopathic Doctors / 1M	0.624623	0.618699	0.600559	0.845298	0.698818	0.727307	0.338008	0.751511	0.609069	0.125292	0.60529	1					
Allopathic Doctors Shortfall / 1M	0.585485	0.572958	0.564668	0.485509	0.288041	0.219664	0.560395	0.291791	0.476134	-0.11677	0.598422	0.121833157	1				
Avg Number of Villages covered by a sub Centre	0.678529	0.688979	0.686688	0.512535	0.334565	0.434018	0.607004	0.399223	0.541122	0.29082	0.63701	0.303816013	0.460815	1			
Avg Number of Villages covered by a PHC	0.127308	0.140135	0.16254	-0.0987	-0.14563	-0.0969	0.305326	-0.11977	0.057909	0.118781	0.111002	-0.254321555	0.124474	0.640658	1		
Num. Sub Centres per PHC	-0.44526	-0.44135	-0.42005	-0.67876	-0.55488	-0.36828	-0.34912	-0.55391	-0.43204	-0.2663	-0.40801	-0.581103852	-0.3224	-0.36753	0.332082	1	
Rural Infant Mortality Rate	0.097154	0.130997	0.148014	-0.06215	-0.0043	-0.16468	0.186069	-0.19131	0.059657	0.192134	0.071252	-0.417289236	0.364446	0.347065	0.33686	-0.04311	1

Population Adjusted Allopathic Doctors / State is the most strongly correlated infrastructure or staffing variable, which is negatively correlated.

Limitations / Improvement Opportunities

- Using Data to Create a Hypothesis
  - Real World: Hypothesis ⟶ Data Sources
- Single Data Source
  - Additional Data Sources Could Identify Other Variables That Could Impact Rural Infant Mortality
- Data Limited To a Single Year
  - Having More Data Overall Might Have Better Highlighted Relationships