

## Abstract

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### **Trend Analysis and Clustering of Public Health Informatics Practice within Local Health Departments in the United States**

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**Introduction:** Informatics and data analytics work has been identified by local health departments (LHDs) and the National Association of County and City Health Officials (NACCHO) as a critical priority for LHDs to develop and improve over the coming years. NACCHO collects data from all LHDs in the United States via a semi-annual survey, the National Profile of Local Health Departments (Profile survey), which has been deployed to include consistent informatics questions every three years since 2010. Information is collected on a variety of topics including jurisdiction and governance, leadership, workforce, and informatics capacity and implementation.

**Methods:** The NACCHO Profile data was downloaded for 2010-2022. Questions on implementation of informatics activities were extracted for electronic health record, health information exchange, immunization registry, electronic surveillance systems, and electronic laboratory reporting. ARMA time-series analysis was applied to each informatics capacity to identify if additional insight was gained beyond the weighted implementation percentages currently calculated. Additionally, cluster identification was performed on the 2022 survey data to identify governance and information technology management characteristics which correlate with higher levels of informatics capacity. Finally, spatial autocorrelation was completed using Moran's I to explore geographic clustering of informatics implementations.

**Results:** Values for all informatics initiatives show an increasing number of LHDs who have implemented each initiative during the study time periods with the highest overall implementation of IIS at 92% and the lowest for HIE at 32% by 2022. The largest overall change in implementation was for EHR which increased 42 percentage points from 19% in 2010 to 61% by 2022. Time-series analysis did not add any additional statistical certainty to these estimates. None of the structural governance characteristics such as presence of BoH or shared governance with the state were statistically significant when examining the informatics capacity typology. Five of the seven IT-related tasks were statistically significantly different between Low v Medium and Low v High comparisons.

**Discussion:** Overall, informatics initiatives continue to increase in implementation across LHDs. However, some LHDs have continued at a slower pace of adoption than others. Examining this difference in adoption identified that overall governance by a local BoH did not significantly influence adoption nor did overall statewide governance. However, specific IT capacities were related to overall informatics capacities for Low-capacity jurisdictions. This may highlight part of the anecdotally reported informatics and IT divide between high capacity/high resource jurisdictions and those without the same staffing, dollars, or organizational support.

Administration, management, leadership Other professions or practice related to public health Public health administration or related administration Public health or related research