Public Health Informatics and Georgia's Nursing Workforce

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Summary Report

1. Introduction

Public health informatics plays an important role in improving how health systems collect, manage, and use data to support decision-making. By integrating technology with public health practice, informatics allows organizations and policymakers to better monitor workforce trends, identify shortages, and plan for future healthcare needs. Workforce data systems and dashboards provide accessible information that can guide planning, resource allocation, and policy development (Wholey et al., 2018).

Georgia faces increasing demand for nursing services due to population growth, an aging population, and greater healthcare complexity. The state's population grew by 10.6% from 2010 to 2020, and more than 20% of residents are projected to be age 60 or older by 2030, significantly increasing the need for healthcare services. Additionally, rising rates of chronic conditions further intensify demand for nursing care (Georgia Healthcare Workforce Commission, 2022). To address these challenges, workforce monitoring systems collect and

analyze data related to nurse education, licensure, employment trends, and geographic distribution. These systems allow policymakers, educators, and healthcare organizations to make more informed decisions regarding workforce planning and healthcare capacity.

This report examines how public health informatics supports nursing workforce monitoring in Georgia. Specifically, it analyzes workforce data systems and dashboards to identify keyways informatics strengthens workforce planning, health system efficiency, and population health outcomes.

2. Overview of Georgia's Nursing Workforce Data Systems

Key data sources may include Georgia Board of Nursing workforce data, nursing education program reports, workforce dashboards and public health data portals, and health workforce reports produced by state agencies or research centers.

These dashboards demonstrate how public health informatics translates complex workforce data into accessible, visual tools that support real-time monitoring, geographic analysis, and evidence-based workforce planning.

Georgia Board of Health Care Workforce Dashboard:

https://healthcareworkforce.georgia.gov/https%3A/gdac.georgia.gov/health-0/healthcare-workforce-dashboard

Nursing Workforce Visualization Tool (Georgia):

https://healthcareworkforce.georgia.gov/news/2024-02-29/nursing-visualization-tool-live

Georgia Department of Public Health – OASIS (Online Analytical Statistical Information System)

- Provides county-level data on population health, demographics, and disease burden
- Useful for linking workforce supply to population health needs
- https://oasis.state.ga.us/

Additional data sources, including the Georgia Department of Public Health OASIS system, HRSA workforce projections, and national datasets from BLS and NCSBN, further enhance workforce analysis by linking nursing supply with population health needs, labor market trends, and projected shortages. Integrating these systems strengthens the ability to conduct comprehensive, multi-level workforce planning.

These data systems provide information on workforce supply, workforce distribution, educational capacity, and employment trends. By consolidating these datasets, public health informatics tools help stakeholders better understand workforce needs and make evidence-based decisions.

3. Role of Public Health Informatics in Workforce Planning

Public health informatics supports workforce planning by collecting, integrating, and analyzing data from multiple sources using dashboards and analytic tools. It improves access to timely data, enables predictive analytics to anticipate future workforce needs, and helps identify shortages and geographic disparities. By reducing data silos and improving data integration, these systems provide more accurate and comprehensive insights for decision-makers. Overall,

informatics transforms complex data into actionable information that supports proactive workforce planning, better resource allocation, and improved population health outcomes.

4. Key Benefits of Informatics for the Nursing Workforce

Benefit 1: Improved Workforce Planning

Public health informatics improves workforce planning by providing data on nursing supply, retirement trends, and future demand, allowing policymakers to make evidence-based decisions rather than relying on estimates. Data from the Georgia Nursing Workforce Center indicate that Georgia's nursing workforce is not expanding at a pace sufficient to meet increasing healthcare demand. The state currently has approximately 83,000–90,000 actively licensed registered nurses, yet workforce distribution remains uneven, particularly in rural and underserved regions. In addition, the workforce is aging, with an estimated 30–35% of registered nurses age 50 or older, signaling a substantial portion approaching retirement within the next decade. Georgia also continues to rank below the national average in registered nurses per 100,000 population, reflecting a comparatively limited workforce supply. These factors, combined with population growth and rising healthcare needs, contribute to a widening gap between nurse supply and demand, increasing the risk of future workforce shortages (*Nell Hodgson Woodruff School of Nursing*, n.d.). By using these insights, healthcare leaders can proactively plan by expanding nursing education, improving retention, and addressing anticipated workforce gaps. Overall, informatics supports more accurate forecasting and helps ensure a stable and sufficient nursing workforce to meet future healthcare needs.

Benefit 2: Better Geographic Distribution of the Workforce

Similarly, workforce dashboards enhance understanding of the geographic distribution of nurses by providing detailed, location-based data. For instance, the Georgia Board of Health Care Workforce provides interactive dashboards that classify the nursing workforce at both state and county levels, allowing stakeholders to identify regional disparities (Georgia Board of Health Care Workforce, 2024) . Data from these systems show that approximately 75.3% of nurses in Georgia work in urban areas, while only 24.7% serve rural communities, highlighting a clear imbalance in workforce distribution (Georgia Board of Healthcare Workforce, 2023) . This type of insight enables policymakers to design targeted interventions such as rural incentives or training placements to address shortages and improve healthcare access. Together, these examples demonstrate how informatics systems strengthen workforce planning by aligning education with demand and ensuring a more equitable distribution of healthcare providers across populations.

Benefit 3: Support for Educational Capacity and Training Programs

Public health informatics systems play a critical role in supporting both educational capacity and the geographic distribution of the nursing workforce. First, informatics systems provide valuable data on nursing education programs, graduation rates, and workforce entry, allowing policymakers and academic institutions to better align educational capacity with workforce demand. For example, reports from the Georgia Nursing Workforce Center indicate that Georgia has over 80–90 pre-licensure nursing programs (including ADN and BSN programs) and 50+ post-licensure programs (such as RN-to-BSN, MSN, and doctoral programs) across the state. Despite this extensive education infrastructure, workforce data related to student enrollment,

graduation rates, and program capacity have historically been collected and reported separately by institutions and systems, resulting in fragmented datasets. This fragmentation makes it difficult to fully track the nursing education pipeline from training to workforce entry and limits the ability to conduct comprehensive statewide workforce analyses (Kieve, 2024).By consolidating and analyzing this data, informatics systems help identify gaps in training capacity, highlight shortages in specialized fields, and support decisions about expanding programs or allocating educational resources more effectively.

5. Strengths of Current Workforce Data Systems

Georgia's workforce monitoring systems offer several important strengths that enhance public health planning and decision-making. Centralized data collection from multiple sources such as licensing boards, educational institutions, and healthcare organizations allows for a more comprehensive and unified view of the nursing workforce, reducing fragmentation and improving data consistency. The availability of accessible public dashboards further strengthens these systems by making workforce data easier to interpret and use, enabling stakeholders to quickly identify trends, shortages, and distribution patterns. In addition, improved transparency ensures that policymakers, educators, and healthcare leaders have shared access to the same information, which promotes accountability and more coordinated efforts across sectors. Finally, the availability of reliable, data-driven insights supports evidence-based decision-making, allowing leaders to develop more targeted and effective workforce policies and interventions. Together, these strengths highlight how public health informatics enhances collaboration and coordination among healthcare systems, educational institutions, and government agencies, ultimately contributing to more efficient workforce planning and improved population health outcomes.

6. Areas for Improvement

Despite these strengths, there are still opportunities to improve workforce data systems, as several key gaps persist. These limitations include incomplete or delayed workforce reporting, gaps in data related to workforce diversity or specialty areas, and limited use of predictive analytics for long-term workforce planning. These gaps exist largely because workforce data systems are complex and decentralized, with information collected from multiple sources such as licensing boards, educational institutions, and healthcare organizations that may use different reporting timelines, standards, and technologies. Additionally, limited resources, inconsistent data collection practices, and concerns related to data sharing and privacy can further contribute to these challenges. As a result, these gaps can negatively impact workforce planning and policy development by contributing to delayed, incomplete, or inaccurate decision-making. This limits the ability of policymakers and healthcare organizations to respond quickly to workforce shortages, particularly in high-demand or rapidly changing environments. Additionally, fragmented or insufficient data reduces the capacity to identify and address disparities in underserved or rural populations, where workforce needs are often greatest, ultimately leading to less targeted and less effective interventions. Furthermore, without advanced predictive analytics, workforce planning remains largely reactive rather than proactive, making it difficult to anticipate future healthcare needs. Addressing these gaps could significantly improve the accuracy, timeliness, and overall usefulness of workforce data, ultimately strengthen data-driven decision-making and support more effective health system planning and policy development.

7. Recommendations

Based on the analysis of Georgia's nursing workforce data systems, several recommendations can strengthen the use of public health informatics:

1. Expand data integration between licensing boards, educational institutions, and health systems.

   This recommendation was chosen because workforce data is often fragmented across multiple systems**,** making it difficult to get a complete picture of the nursing workforce. By integrating these data sources, policymakers can better track workforce supply, education pipeline trends, and employment patterns in one place. This leads to more coordinated and accurate decision-making**.**

2. Increase the use of predictive analytics to forecast future workforce needs.

   This recommendation addresses the limitation that many current systems are reactive rather than proactive. Predictive analytics is the use of historical data, statistical algorithms, and machine learning techniques to identify patterns and predict future outcomes or trends (Predictive Analytics, n.d.). Predictive analytics allows stakeholders to anticipate future shortages based on trends like population growth, aging, and nurse retirement. This helps shift workforce planning toward long-term, forward-looking strategies instead of responding only after shortages occur.

3. Improve public access to workforce dashboards and workforce data reports.

This was included to promote transparency and accessibility of data**.** When workforce information is easily available, a wider range of stakeholders including policymakers, educators, and healthcare organizations can use the data to inform decisions. Increased access also supports collaboration and accountability across the health system.

4. Encourage regular data updates to ensure accurate workforce monitoring.

   This recommendation was chosen because outdated or infrequently updated data can lead to misinformed decisions**.** Regular updates via platforms such as websites, newsletters, and etc. ensure that workforce trends reflect current conditions, allowing for more timely and effective responses to issues such as staffing shortages or shifts in demand.

Strengthening these informatics systems improves the accuracy timeliness, and integration of workforce data, allowing policymakers to make more informed. Evidence-based decisions. With better data they can identify workforce shortages, target resources effectively, and align education with healthcare needs. Additionally, advanced tools like predictive analytics support long-term planning by anticipating future workforce demands, helping create more stable, equitable, and sustainable nursing workforce.

8. Conclusion

Public health informatics plays an essential role for addressing ongoing challenges in Georgia's nursing workforce including shortages, burnout, and uneven distribution. While current data systems support more informed, proactive workforce planning, limitations in data integration, timeliness, and predictive capabilities remain. Future research should focus on enhancing

predictive analytics, improving real-time data integration, and expanding workforce data to better capture diversity, specialties, and retention trends. Strengthening these systems will support more effective workforce planning, improve healthcare access, and ultimately lead to better population health outcomes.

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