

Infection Prevention and Control (IPC) at Continental U.S. and Puerto Rican Home Health Agencies During COVID-19

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BACKGROUND

- Infection prevention and control (IPC) in home health care (HHC) prior to the COVID-19 pandemic were suboptimal.¹
- IPC in HHC has been studied among agencies in the continental U.S. and Hawaii,¹⁻³ but little is known about the situation in Puerto Rico (PR).

STUDY AIMS

Examine HHA coverage in PR and the differences in IPC at HHC agencies located in PR and the continental U.S. (including Hawaii) during the COVID-19 pandemic while considering agency and patient characteristics.

METHODS

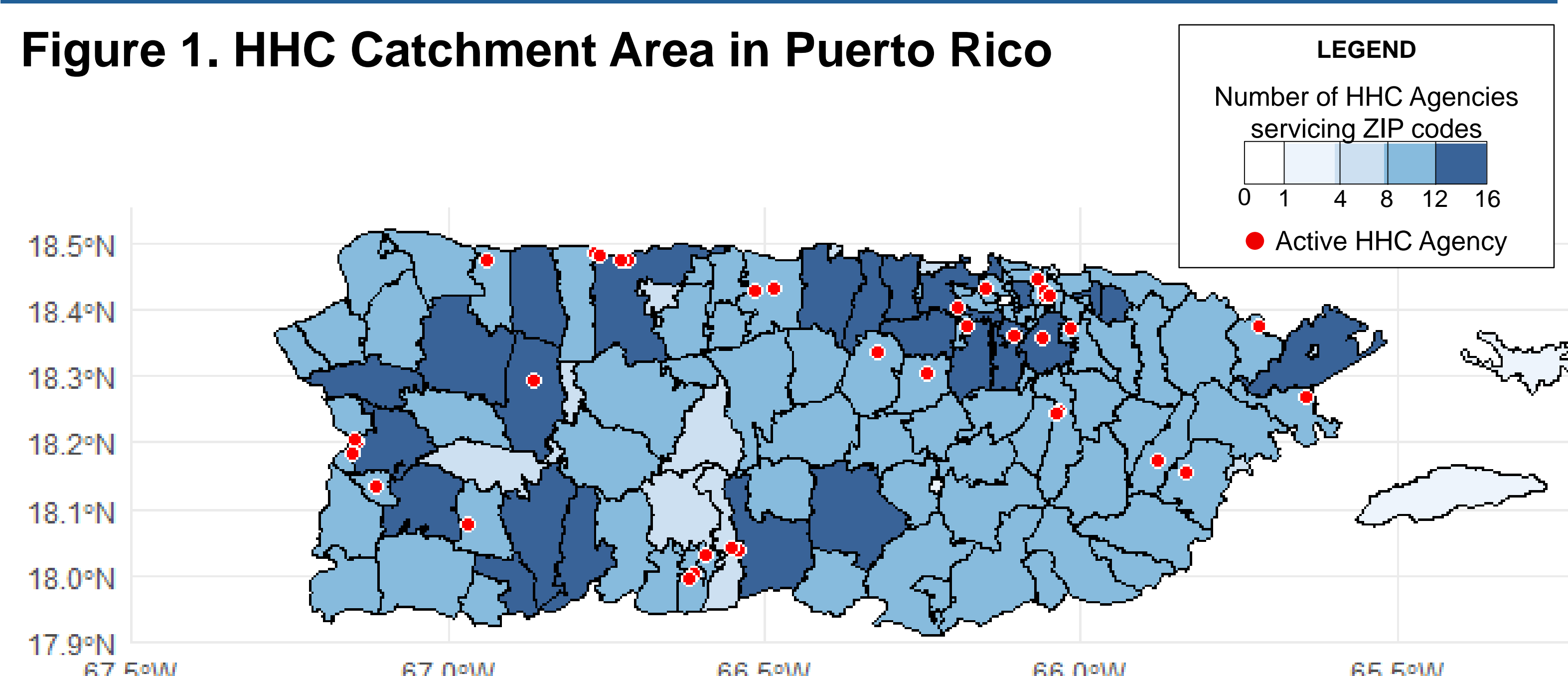
	Data File Name	Year	Use
Data	U.S. Census Bureau ZIP Code Tabulation Areas (ZCTAs)	2020	Catchment area map
	Home Health Compare - Zip Code File	2022	Catchment area map
	Home Health Compare - Provider File	2022	Agency characteristics
	Medicare Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files	2022	Agency characteristics
	Provider of Services	2022	Agency characteristics
	Agency-level survey data	2023	Survey analysis

- Sample**
- **Map:** catchment area of 35 HHC agencies across 131 ZIP codes in PR
 - **Agency characteristics:** 8,166 HHC agencies total; 8,131 from continental US and Hawaii; 35 from PR
 - **Survey analysis:** 474 agency responses; 462 from continental US and Hawaii, and 12 from PR

- Analysis**
- 2-layer catchment area map of PR HHC agencies was constructed via R.4.2.2
 - Descriptive statistics of agency and patient characteristics calculated via Stata 17
 - Descriptive statistics of agency-level survey data calculated via Stata 17; probability weights were applied to generate nationally-representative estimates

RESULTS

Figure 1. HHC Catchment Area in Puerto Rico



Results: In 2022, seven or more HHC agencies provided services to all ZIP codes on the main island, except Aibonito, indicating high levels of coverage

REFERENCES & ACKNOWLEDGEMENTS

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 3. Harrison JM, Dick AW, Stone PW, Chastain AM, Sorbero M, Furuya EY, Shang J. Infection trends in home health care, 2013-2018. *Infect Control Hosp Epidemiol.* 2021 Nov;42(11):1388-1390.
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RESULTS (continued)

Table 1. HHC Agency Characteristics

		US Agencies, excluding PR (n = 8,131)	Puerto Rico (n = 35)	
		N (%)	N (%)	
Agency Characteristics				
Urbanicity	Rural	1,326 (16.3)	0 (0)	
	Urban	6,801 (83.7)	35 (100)	
Ownership	For-Profit	6,575 (80.9)	18 (51.4)	
	Nonprofit	1,283 (15.8)	17 (48.6)	
	Government	273 (3.4)	0 (0)	
		Mean (SD)	Mean (SD)	p-value
Ratings				
Patient Satisfaction		3.5 (1.0)	2.7 (0.87)	0.0001
Quality of Patient Care		3.3 (1.0)	3.7 (0.73)	0.0032

p-values are significant at $\alpha < 0.05$, bolded above

Results: In 2022, the average Quality of Patient Care (QoPC Star) Rating was higher in PR compared to continental U.S. and Hawaii, while patient satisfaction (from Home Health Care CAHPS Survey) was lower.

Table 2. Infection control training and related activities at U.S. and PR HHC Agencies

	Total (N = 474)	US (no PR) (N = 462)	PR (N = 12)	
	WN=8288.27	WN=8253.27	WN=35.00	
	%			p-value
What are the three-infection control-related activities that take up the most time at the agency?†				
Staff education	84.27	84.33	68.21	0.2871
Monitoring employee adherence to policy (e.g., OSHA, handwashing)	67.83	67.74	87.14	0.1127
Collecting and reporting infection data	71.01	71.15	37.14	0.0215
Vaccination and immunization of patients	14.78	14.63	50.00	0.0240
Monitoring employee vaccinations	23.51	23.42	44.64	0.1854
Infection control policy development	36.68	36.79	12.86	0.0479
How frequently does the agency typically conduct staff training on infection control topics, other than topics mandated by OSHA?*				
Annually or biannually	70.77	70.70	87.14	0.1740
Quarterly or more frequently	30.22	30.29	12.86	0.1542
At new employee orientation	52.86	52.98	25.00	0.0419
When an infection control issues/outbreak arises	42.89	42.91	37.86	0.7466

All data shown are % and weighted. p-values are significant at $\alpha < 0.05$, bolded above. Totals varied due to missing data or skip patterns. Column totals may not add to 100% due to: *response choices were select all that apply, or †responses were mutually exclusive but Other and Don't Know categories are not shown.

Results: Most continental U.S., Hawaii and PR agencies cited staff education and monitoring IPC policy adherence as time-consuming IPC-related activities. Half of PR agencies also reported patient vaccination as time-consuming. Most agencies conduct staff training on IPC bi/annually, but PR agencies are less likely to do training at new employee orientation.

CONCLUSION

- Differences related to quality measures and IPC policies/practices emerged among HHC agencies in PR, compared to those in the continental U.S. and Hawaii.
- More research is needed to better understand these differences and potential solutions to address these gaps, ensuring high-quality, equitable care for patients across the U.S. and its territories.

STUDENT CONTRIBUTION

1. Cleaned and merged data for catchment map, used R.4.2.2 to create 2-layer map
2. Translated survey text responses from Spanish to English (from 12 agencies)
3. Coded interview transcripts using thematic analysis (n=12)
4. Cleaned survey data in SPSS, including recoding of text responses (from 474 agencies)
5. Descriptive statistics of publicly-available data, and unweighted and weighted survey data in Stata
6. Simple regressions and means comparisons of publicly-available data and weighted survey data in Stata
7. Triangulation of findings from publicly-available, survey and interview data

COMPETENCIES

Competency	I applied it by...
Appraise epidemiological literature critically in a defined problem area using advanced bibliographic and informatics resources for purposes of evaluation, summary, and translation	Conducted a search of current literature related to IPC in Puerto Rico; conducted a review to provide background for the manuscript that is being written for a mixed-method analysis (in progress).
Apply appropriate epidemiologic and statistical measures to generate, calculate, and draw valid inferences from public health data.	Conducted descriptive statistic analysis of HHC agency characteristics (in the US and PR) and survey data related to infection control training and related activities in the US and PR.