Lessons Learned From Needs Assessments on Medicaid Rational Service Areas (RSAs) in New York

CHWS Center for Health Workforce Studies

Shen Wang, MPH, MPA, Nafin Harun, MA, Robert Martiniano, DrPH, MPA
Center for Health Workforce Studies, School of Public Health, University at Albany, SUNY

ABSTRACT

Objective: This project is to understand the challenges of needs assessments on Medicaid rational service areas (RSAs) in New York. This is becoming more important as states are now required to develop and assess statewide sets of RSAs for primary care, dental health, and mental health.

Study Design: RSAs are geographic areas in which most area residents could seek their health care services. New York State Medicaid claims data from 2014 to 2016 were used to develop RSAs for primary care, dental health, and mental health subsequently on an annual basis.

Based on literature reviews, different indicators were selected to assess needs for each set of RSAs. Composite indicator (CI) methods were used by aggregating individual indicators to rank RSAs and identify those with greater health needs. As a tool for ranking, CI is useful as it illustrates a comprehensive view on a phenomenon that cannot be captured by a single indicator. The CI methods were reviewed and revised to improve needs assessments during projects.

Population Studied: Medical services for 4 million unique NYS Medicaid patients of over 3,000 zip codes were analyzed.

Conclusions: A robust needs assessment on RSAs serve as a solid foundation for states to design health professional shortage areas regulated by HRSA.

Implications: The evolving CI methods on ranking RSAs offer a comprehensive way to analyze health needs and access to care issues in New York. Future RSA needs assessments will be conducted according to the updated knowledge base. Understanding the challenges of conducting needs assessment on RSAs may facilitate future collaborations between state and local health agencies, communities and academic partners.

CONTACT

Center for Health Workforce Studies

518-402-0250
info@chwsny.org
www.chwsny.org

INTRODUCTION

RSAs are geographic areas that represent how and where the population residing within that area "reasonably" could or do seek certain health services.

HRSA requires all states to have Health Professional Shortage Area (HPSA) designations based on RSAs for:

- Primary Care
- Dental Health
- Mental Health

RSA Projects in NY:

- 8 million+ Medicaid Claims
  - Over 4 million NY Medicaid patients
- 3 Sets of RSAs
  - Mapped based on patients' commuting patterns pairing patients zip codes and providers zip codes

Figure 1. Mental Health RSAs in NY

*RSA is an area with same color, consist of zip codes.
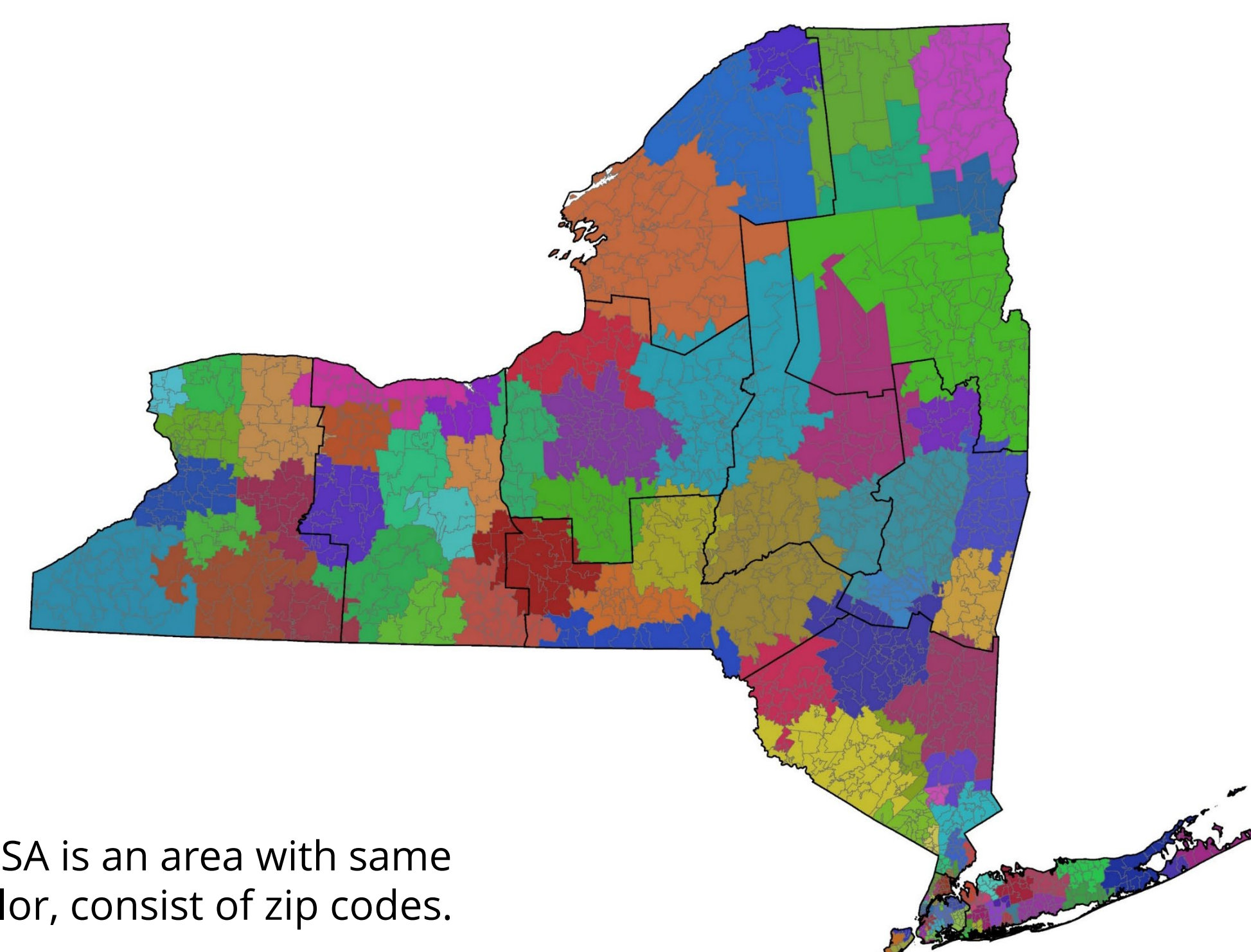
- Needs Assessments
  - Conducted using indicators with improved method

The Composite Indicator (CI) method is:

- A multidimensional measure
- Methodologically feasible
- Easy for audiences to interpret

Table 1. Summary of RSAs Needs Assessments in NY

RSAs Project	# of RSAs	Needs Assessment	# of Indicators
Primary Care	277	Rank each indicator & combine quartile score	5 Health Indicators + 5 Demographic
Dental Health	178	Composite Indicator (CI) ranking w/ **revisit**	8 Health + 3 Demo + 1 Geographical
Mental Health	107	Improved CI ranking	3 Health + 11 Demo

LESSONS LEARNED

Comprehensive literature reviews (LRs) are important.

- Determine what has been done
- Identify needs (primary care, dental, mental)
- Consider multi-dimensional aspects (socioeconomic, patient, provider)
- Set your boundaries (your goal/focus/timeline)

Indicator selection is crucial.

- Rationalize your selection (LRs, social norms, regulations)
- Data availability (resources, data source, zip code level)

Test Indicators on correlation & compensability issue.

- 2+ indicators measure the same dimension of need <u>% single female headed</u> vs <u>% household below 200% FPL</u>
- A surplus in one dimension can offset a deficit in another <u>% covered by private insurance</u> vs <u>% Medicaid coverage</u>

The construction of CI involves stages where subjective judgement has to be made.

- Selection of indicators
- Treatment of missing values
- Choice of aggregation model
- Weights of the indicators, etc.

Weighting should be minimized to maximize objectivity.

- Use equal weighting
- Principle components analysis (PCA)/factor analysis
  - Assign statistical weights
  - Summarize a set of indicators while preserving the maximum possible proportion of the total variation in the original data set

Scientific data preparation is required.

- Outlier detection and handling
  - "0" value on certain indicator(s) for less populated RSAs
- Skewness of data
  - Square root, cube root, or log (eg, Population Density)
- Data transformation
  - Normalization methods (Min-max, Z-score)

Rank after aggregating normalized indicators is more unbiased, compared to rank each indicator beforehand.

- Mental/Dental RSA ranking (4 normalized ranks)
- PC RSA ranking (rank each indicator first, then combine)

LESSONS LEARNED (cont.)

Sensitivity analysis is necessary to test the shifts in ranking to ensure robustness.

Table 1. Example of Top 10 High Need Dental Health RSAs in NY

RSA#	R1: EW-Z	R2: EW-MM	R3: PCA-Z	R4: PCA-MM	Final Rank	NY Region	R/U
4	177	178	177	178	1	Mid Hudson	Rural
96	178	177	178	177	1	Capital Region	Urban
178	176	176	176	175	3	Finger Lakes	Urban
176	175	174	175	174	4	Finger Lakes	Rural
98	174	173	174	172	5	Capital Region	Urban
114	167	175	172	176	5	North Country	Rural
103	173	172	173	173	7	Capital Region	Rural
25	171	171	171	164	8	New York City	Rural
104	169	169	168	169	9	Capital Region	Rural
60	172	167	170	160	10	New York City	Urban
92	164	170	167	170	10	Mohawk Valley	Rural

To understand and interpret the needs correctly, CI de-constructing could be useful.

- Looking back at separate health indicators can help to extend the assessment to facilitate interpretation.

While 3 RSA projects share similar demographic indicators, the differences and uniqueness in selected health indicators should be emphasized by researchers when comparing RSAs.

RSA needs assessments should be revisited and updated when significant health care conditions/environmental changes happen.

- Population in-migration/out-migration
- ACA, Medicaid expansion
- HRSA HPSA new requirement

CONCLUSIONS

- A robust needs assessment on RSAs would serve as a solid foundation for HPSA designations.
- The evolving CI ranking methods on RSAs offer a comprehensive way to analyze health needs and access to care issues in New York.
- Future RSA needs assessments will be conducted according to the updated knowledge base.
- Understanding the challenges of conducting needs assessment on RSAs may facilitate future collaborations between state and local health agencies, communities and academic partners.

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