



Comparison of Mental Health Estimates by Sociodemographic Characteristics in RANDS 3 and 2019 NHIS

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FCSM Research and Policy Conference

November 3, 2021



Research Motivation

- This research is motivated to better understand the comparability of major depressive disorder (depression) and generalized anxiety disorder (GAD) estimates between two different types of data sources:
 - web-based panel survey, Research and Development Survey Round 3 (RANDS 3)
 - traditional household survey, 2019 National Health Interview Survey (2019 NHIS)
- Important for national surveys to accurately measure and report mental health estimates



Research Questions

1. How do **national estimates** of depression and generalized anxiety disorder symptomology compare between RANDS 3 and 2019 NHIS?
2. How do these mental health **subgroup estimates** by select sociodemographic characteristics (sex, age, race and Hispanic origin, education, Census region) compare across the two data sources?
3. How do **associations** by the select sociodemographic characteristics compare across the two data sources?



Data Sources



Research and Development Survey (RANDS)

- RANDS is a primarily web-based, series of probability-sampled commercial panel surveys, established by NCHS in 2015
- Survey questions focus on a range of health-related topics such as chronic health conditions, and access to healthcare and utilization
- The strengths of RANDS include its cost-effective and timely production of national health estimates
- RANDS has been used for methodological and evaluation research purposes i.e., calibration weights, question-response patterns



Research and Development Survey Round 3 (RANDS 3)

- RANDS round 3 (n=2,646) was collected in April 2019 using NORC at the University of Chicago's AmeriSpeak® panel
- The cumulative response rate was 18.1%
- Calibration: raking approach to create calibrated weights based on using the following variables from the 2019 NHIS as the reference data set
 - Demographic characteristics: age, sex, race/ethnicity, education, household income, census region
 - Health conditions: ever diagnosed high cholesterol, ever diagnosed asthma, ever diagnosed hypertension and ever diagnosed diabetes



National Health Interview Survey (NHIS 2019)

- The NHIS is a cross-sectional household interview survey and is one of the major data collection programs of NCHS
- The main objective of the NHIS is to monitor the health of the U.S. population through the collection and analysis of data on a broad range of health topics
- The U.S. Census Bureau was the data collection agent for the 2019 NHIS (n= 31,997)
- The response rate for the sample adult data file was 59.1%



Methods



Methods

- Measures: 8-item Patient Health Questionnaire (PHQ-8), 7-item Generalized Anxiety Disorder scale (GAD-7)
- Statistical analysis: descriptive statistics, Rao-Scott chi-squared tests
- Sociodemographic characteristics:
 - Sex (Male, Female)
 - Age (18-44 years, 45-64 years, 65+ years)
 - Race and Hispanic origin (Hispanic, NH Black, NH White, NH Other)
 - Education (High School Graduate or Less, Some College, Bachelor's Degree or Above)
 - Census region (Northeast, Midwest, South, West)



Patient Health Questionnaire (PHQ-8)

The eight-item Patient Health Questionnaire (PHQ-8) was used to measure level of depressive symptomology by asking respondents how often they have been bothered by the following symptoms in the past 2 weeks:

1. “Little interest or pleasure in doing things”
2. “Feeling down, depressed, or hopeless”
3. “Trouble falling or staying asleep, or sleeping too much”
4. “Feeling tired or having little energy”
5. “Poor appetite or overeating”
6. “Feeling bad about yourself, or that you are a failure, or have let yourself or your family down”
7. “Trouble concentrating on things, such as reading the newspaper or watching television”
8. “Moving or speaking so slowly that other people could have noticed? Or the opposite, being so fidgety or restless that you have been moving around a lot more than usual”



Scoring of PHQ-8: Measure of Depressive Symptomology

- Response options were “not at all”, “several days”, “more than half of days”, and “nearly every day” with values ranging from 0 to 3, respectively
- Summed scores were categorized as the follows:
 - none-minimal severity (scores of 0-4)
 - mild severity (scores of 5-9)
 - moderate severity (scores of 10-14)
 - severe severity (scores of 15-24)
- Any level of depressive symptomology includes mild, moderate and severe levels



Generalized Anxiety Disorder Scale (GAD-7)

The seven-item Generalized Anxiety Disorder scale (GAD-7) was used to measure level of generalized anxiety disorder symptomology by asking respondents how often they had been bothered by the following symptoms in the past 2 weeks:

1. “Feeling nervous, anxious, or on edge”
2. “Not being able to stop or control worrying”
3. “Worrying too much about different things”
4. “Trouble relaxing”
5. “Being so restless that it’s hard to sit still”
6. “Becoming easily annoyed or irritable”
7. “Feeling afraid as if something awful might happen”



Scoring of GAD-7: Measure of GAD Symptomology

- Response options were “not at all”, “several days”, “more than half of days”, and “nearly every day” with values ranging from 0 to 3, respectively
- Summed scores were categorized as follows:
 - none-minimal severity (scores of 0-4)
 - mild severity (scores of 5-9)
 - moderate severity (scores of 10-14)
 - severe severity (scores of 15-21)
- Any level of generalized anxiety disorder symptomology includes mild, moderate and severe levels



Findings



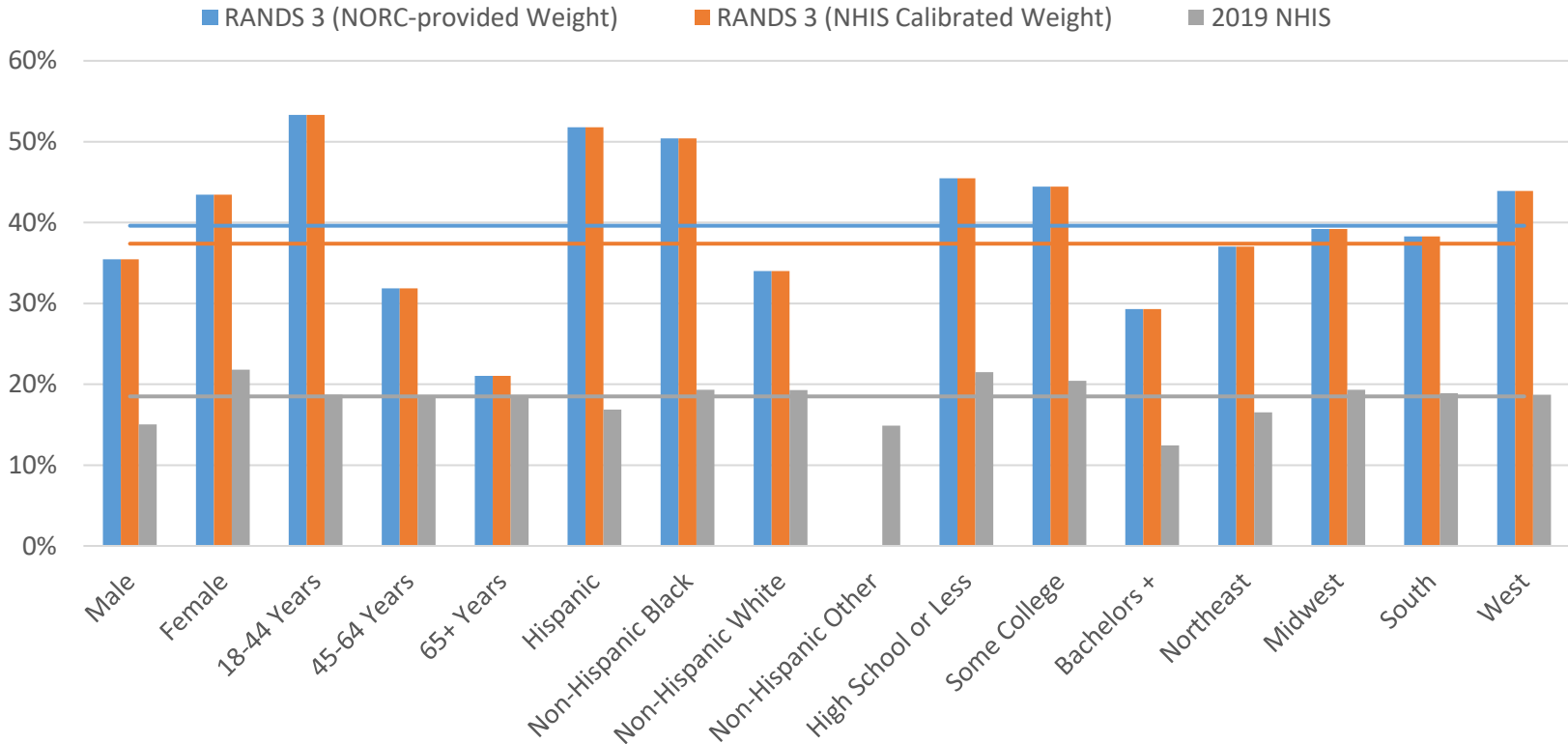
Comparison of National Estimates of Depression

- The national estimate of the percent of U.S. adults experiencing any level of severity of depression symptoms was significantly higher based on RANDS 3 compared to 2019 NHIS
- The use of calibrated weights in RANDS 3 improved the national estimate of depression symptoms by reducing the standardized bias

| Data Source | n | Percent (SE) | Standardized Bias |
|----------------------------------|-------|--------------|-------------------|
| RANDS 3 (NORC-provided Weight) | 499 | 39.6 (1.79) | 0.54 |
| RANDS 3 (NHIS-Calibrated Weight) | 499 | 37.4 (1.87) | 0.49 |
| 2019 NHIS | 5,898 | 18.5 (0.33) | N/A |



Comparison of Depression Subgroup Estimates



Sociodemographic Associations with Depression

- Based on conducting Rao-Scott chi-squared testing, both data sources found associations with depressive symptomology by sex, age, race and Hispanic origin, and education
- However, the 2019 NHIS also identified associations with depressive symptomology by Census region



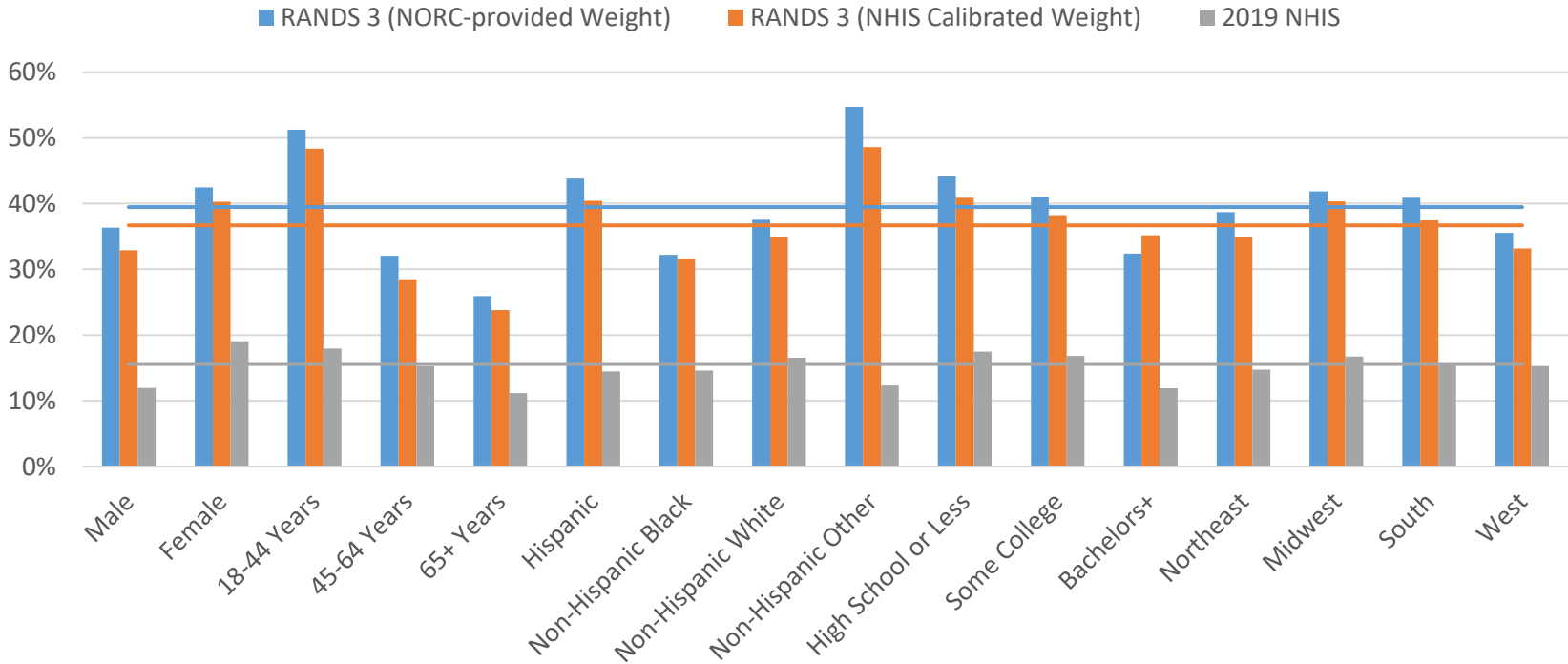
Comparison of National Estimates of GAD

- The national estimate of the percent of U.S. adults experiencing any level of generalized anxiety disorder symptoms was significantly higher based on RANDS 3 compared to the 2019 NHIS
- The use of calibrated weights in RANDS 3 improved the national estimate of GAD symptoms by reducing the standardized bias

| Data Source | n | Percent (SE) | Standardized Bias |
|----------------------------------|-------|--------------|-------------------|
| RANDS 3 (NORC-provided Weight) | 505 | 39.5 (1.84) | 0.66 |
| RANDS 3 (NHIS-Calibrated Weight) | 505 | 36.7 (2.00) | 0.58 |
| 2019 NHIS | 4,815 | 15.6 (0.29) | N/A |



Comparison of GAD Subgroup Estimates



Sociodemographic Associations with GAD

- Both data sources found associations with generalized anxiety disorder symptomology by age, race and Hispanic origin, and education, as well as no associations by Census region
- However, the 2019 NHIS also identified associations with generalized anxiety disorder symptomology by sex



Discussion & Summary



Discussion and Limitations

- Potential reasons for observed differences may include:
 - differences in response rates by data source (59.1% for 2019 NHIS and 18.1% for RANDS 3)
 - differences in survey mode; in-person and telephone survey mode for 2019 NHIS, and web-based panel survey mode for RANDS 3
- Limitations include that these results can not be generalized for other mental health measures or data sources



Summary

- The national and subgroup mental health estimates were significantly higher for nearly all sociodemographic groups based on RANDS 3 compared to 2019 NHIS
- In general, the calibrated weights improved the national and subgroup mental health estimates by reducing standardized bias
- Most (though not all) of the sociodemographic associations identified for depression and GAD symptoms were the same across the two data sources



<https://www.cdc.gov/nchs/rands>

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