

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Rao, Sowmya R

eRA COMMONS USER NAME (credential, e.g., agency login): SOWRAO

POSITION TITLE: Statistician

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

| INSTITUTION AND LOCATION                           | DEGREE<br>(if applicable) | Completion Date<br>MM/YYYY | FIELD OF STUDY |
|--|---------------------------|----------------------------|----------------|
| Madras Christian College, Madras University, India | B.S.                      | 1983                       | Statistics     |
| Bangalore University, India                        | M.S.                      | 1985                       | Statistics     |
| State University of New York at Buffalo, NY        | M.A.                      | 1992                       | Statistics     |
| Boston University                                  | Ph.D.                     | 2001                       | Biostatistics  |
| Madras Christian College, Madras University, India | B.S.                      | 1983                       | Statistics     |

**A. Personal Statement**

I am a Biostatistician with a broad, robust background in statistics and survey methods. I have over 20 years of experience in applying statistical techniques to the fields of epidemiology and health services research, and to topics within each of these, including measurement/surveillance of disease outcomes, disparities in health care, adoption of Electronic Health Records, impact of clinical tools, and survey research. In the past 5 years I have been more involved in Global Health as a consultant with UNICEF and WHO and recently, a part-time Senior Research Scientist with the Department of Global Health at Boston University School of Public Health. I have worked closely with Edward Ryan's team, and together we have co-authored 21 publications.

- a. Hyle EP, Fields NF, Fiebelkorn AP, Walker AT, Gastañaduy P, **Rao SR**, Ryan ET, LaRocque RC, Walensky RP; The Clinical Impact and Cost-effectiveness of MMR Vaccination to Prevent Measles Importations among US International Travelers, *Clin Infect Dis.* 2018 Oct 11. (2018). PMID: PMC6603268
- b. Sbaih N, Buss B, Goyal D, **Rao SR**, Benefield R, Walker AT, Esposito DH, Ryan ET, LaRocque RC, Leung DT, Global TravEpiNet Consortium; Potentially Serious Drug Interactions Resulting From the Pretravel Health Encounter, *Open Forum Infectious Diseases.* Oct 22;5(11):ofy266. (2018). PMID: PMC6239081
- c. Yates JA, **Rao SR**, Walker AT, Esposito DH, Sotir M, LaRocque RC, Ryan ET, Global TravEpiNet Consortium. Characteristics and Preparation of the Last Minute Traveler: Analysis of Vaccine Usage in the Global TravEpiNet Consortium. *Journal of Travel Medicine* May 1;pii: taz031. (2019). DOI: 10.1093/jtm/taz031
- d. Hyle EP, **Rao SR**, Bangs AC, Gastañaduy P, Fiebelkorn AP, Hagmann SHF, Walker AT, Walensky RP, Ryan ET, LaRocque RC. Clinical Practices for Measles-Mumps-Rubella (MMR) Vaccination Among US Pediatric International Travelers. *JAMA Pediatrics.* (2019). DOI:https://doi.org/10.1001/jamapediatrics.2019.4515

## B. Positions and Honors

### Positions and Employment

|              |  |
|--------------|--|
| 1985–1989    | Senior Programmer, Eiko Computers Pvt. Ltd., India   |
| 1989–1990    | Systems Executive, Grandslam Computers Pvt. Ltd., India  |
| 1990–1992    | Teaching Assistant, Department of Statistics, State University of New York at Buffalo, Buffalo, NY                                       |
| 1992–2001    | Research Data Analyst/ Statistical Analyst, Slone Epidemiology Center, Boston University School of Public Health, Boston, MA             |
| 2001–2004    | Postdoctoral Fellow, National Cancer Institute, Rockville, MD  |
| 2004–2005    | Associate Scientist, Abt Associates Inc., Cambridge, MA  |
| 2005–2010    | Biostatistician, MGH Biostatistics Center, Massachusetts General Hospital, Boston, MA  |
| 2005–2010    | Assistant Professor, Harvard Medical School and Massachusetts General Hospital, Boston, MA   |
| 2011–2015    | Senior Statistician, Center for Healthcare Organization and Implementation Research, Veterans Administration Medical Center, Bedford, MA |
| 2015–2017    | Statistician (Part-Time), Department of Surgery, Boston University, Boston, MA   |
| 2018–present | Senior Research Scientist (Part-Time), Department of Global Health, Boston University School of Public Health, Boston, MA                |
| 2016–present | PhD Statistician (Part-Time), MGH Biostatistics Center, Massachusetts General Hospital, Boston, MA                                       |

### Other Experience and Professional Memberships

|              |  |
|--------------|--|
| 2005–present | Assisted in teaching Introductory Statistics courses in graduate school. Also conducted workshops in statistical data analysis using SPSS and STATA for statisticians at Statistics, Sierra Leone. Provided mentoring and supervision to Pediatric Fellows and Doctoral candidate. |
| 2012         | Patient-Centered Outcomes Research Institute, Grant Reviewer   |
| 2006         | Health Services Research Competitive Research Grant, Ministry of Health, Singapore, Reviewer   |
| 2004         | American Institute of Biological Sciences, US Army, Review of Final Report   |
| 1993–present | American Statistical Association   |
| 2010–present | Statistics Without Borders   |
| 1997–2002    | Society for Epidemiological Research   |

### Honors

|      |  |
|------|--|
| 1985 | Bangalore University Merit List, Bangalore, India  |
| 2002 | National Cancer Institute-Division of Cancer Epidemiology and Genetics Fellowship Recognition Award, Rockville, MD, USA  |
| 2003 | Fellows Award for Research Excellence, NIH, Bethesda, MD, USA  |
| 2003 | National Cancer Institute-Division of Cancer Epidemiology and Genetics Fellowship Recognition Award, Rockville, MD, USA  |
| 2009 | MGH Clinical Research Day Team Award for research on Electronic Health Records and Quality of Care (Catherine DeRoches, PI), Boston, MA, USA   |
| 2011 | American Board of Internal Medicine Foundation Best Article Award for the professionalism in practice category for the article “Physicians’ Perceptions, Preparedness for Reporting, and Experiences Related to Impaired and Incompetent Colleagues” was published in Journal of the American Medical Association. (Catherine DeRoches, PI), USA |

## C. Contribution to Science

1. **Travel Health:** I am the principal statistician on a project funded by the U.S. Centers for Disease Control that is designed to assess the prevalence of travel vaccines among international travelers. Because of the multi-centered nature of the study, we have had to apply appropriate statistical techniques for the analysis of data. Results from this study will facilitate easier and more cost-efficient methods of obtaining travel vaccines and reducing the burden of travel-related disease conditions (e.g., malaria, typhoid). We have also developed free on-line dynamic tools (<http://www2.massgeneral.org/id/globaltravepinet/tools/>) that can

be accessed by travelers and physicians for pre-travel advice with the hope that diseases brought into the country by international travelers will be minimized.

- a. Lammert S, Walker AT, Erskine S, **Rao SR**, Esposito DH, Ryan ET, Robbins GK, LaRocque RC. Characteristics of US Travelers to Zika Virus-Affected Countries in the Americas, March 2015-October 2016. *Emerging Infectious Diseases*; 23(2):324-327. (2017)
- b. Hyle EP, **Rao SR**, Jentes ES, Fiebelkorn AP, Hagmann SH, Walker AT, Walensky RP, Ryan ET, LaRocque RC. Missed Opportunities for Measles, Mumps, Rubella Vaccination Among Departing U.S. Adult Travelers Receiving Pretravel Health Consultations. *Annals of Internal Medicine*;167(2):77-84. (2017) : DOI: 10.7326/M16-2249
- c. Hagmann SHF, **Rao SR**, LaRocque RC, Erskine S, Jentes ES, Walker AT, Barnett ED, Chen LH, Hamer DH, Ryan ET, Global TravEpiNet Consortium and the Boston Area Travel Medicine Network. Travel Characteristics and Pretravel Health Care Among Pregnant or Breastfeeding U.S. Women Preparing for International Travel. *Obstet Gynecol.* 2017 Dec;130(6):1357-1365. (2017). PMID: PMC5909816
- d. Lash RR, Walker AT, Lee CV, LaRocque R, **Rao SR**, Ryan ET, Brunette G, Holton K, Sotir MJ. Enabling clinicians to easily find location-based travel health recommendations—is innovation needed? *J Travel Med.* 2018 Jan 1;25(1). (2018). PMID: PMC5991802

2. **Disparities/Vulnerable Populations/Global Health:** My primary research interest is in developing statistical methods that utilize survey data to address questions of epidemiologic and public health importance, such as identifying factors that explain disparities due to gender/race/disability status in health care access and obtaining appropriate treatments using data collected in national health surveys. I have applied novel methods (Peters-Belson) used in legal cases to the area of health care to study and explain the disparities due to gender/race-ethnicity/disability status in cancer screening rates using several years of data from the National Health Interview Survey. These studies found that having health insurance and access to regular care would reduce disparities and could possibly help change to policies. I have also contributed to the Global Burden of Disease manuscripts studying the mortality and morbidity of the global populations.

- a. **Rao, RS**, Graubard BI, Breen N, Gastwirth JL. Understanding the factors underlying disparities in cancer screening rates using the Peters-Belson approach. *Medical Care*:42;789-800. (2004)
- b. Graubard BI, **Rao, RS**, Gastwirth, JL. Using the Peters-Belson Method to Measure Disparity in Complex Surveys. *Statistics in Medicine*;24:2659-2668. (2005)
- c. Patel A, Pusdekar Y, Prakash AA, Simmons E, Waikar M, **Rao SR**, Hibberd PL. Trends and Determinants of Increasing Cesarean Sections from 2010-2013 in a Prospective Population-Based Registry in Eastern Rural Maharashtra, India. *British Medical Journal Open* 2019;9:e024654. DOI:10.1136/ bmjopen-2018-024654
- d. Arlington L, Patel AB, Simmons E, Kurhe K, Prakash A, **Rao SR**, Hibberd PL. Duration of Solid Fuel Cookstove Use is Associated with Increased Risk of Acute Lower Respiratory Infection Among Children Under Six Months in Rural Central India. *PLoS One* 2019 Oct 24; 14(10):e0224374. DOI: 10.1371/journal.pone.0224374. eCollection 2019

3. **Survey Research:** A lot of resources are used to follow-up non-respondents in surveys with multiple-waves of follow-up. Optimal strategies to stop follow-up are usually based on achieving a given precision for minimum cost or reducing cost for a given precision and are mostly used in Phase I clinical trials. I have studied the impact of non-response on survey estimates and developed stopping rules for surveys with multiple waves of non-respondent follow-up that are based on assessing whether successive waves of sampling provide evidence that the parameter of interest is changing.

- a. **Rao RS**, Glynn RJ, Werler MM, Van Bennekom CM, Mitchell AA. Comparison of alternative survey methods for sensitive self-reported behaviours in a follow-up study of isotretinoin. *Journal of Epidemiology and Biostatistics*;5:133-136. (2000).
- b. **Rao RS**, Glickman ME, Glynn MJ. Use of covariates and survey wave to adjust for nonresponse. *Biometrical Journal*;46:579-588. (2004).
- c. **Rao RS**, Glickman ME, Glynn RJ. Stopping rules for surveys with multiple waves of non-respondent follow-up. *Statistics in Medicine*;27:2196-2213. (2008).

Complete List of Published Work in MyBibliography:

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/48052444/?sort=date&direction=ascending>

## D. Research Support

### Ongoing Research Support

- U01CK000490 LaRocque/Ryan (PI) 09/30/2016-09/29/2021  
Global TravEpiNet (GTEN): the Heading Home Healthy Program and Global Travelers' Health National Research Center Consortium, Guidance and Outreach Programs  
International travel may not only increase the risk of infection for an individual traveler, but may also contribute to the global spread of infections. A better understanding of this epidemiologically important population could lead to improved interventions (1) to promote the health of international travelers, and (2) to diminish the spread of infections within home communities. This application focuses on proposed efforts for the Global Travelers' Epidemiology Network (Global TravEpiNet; GTEN). GTEN's mission is to lessen illness among high-risk international travelers, including VFR travelers, and to reduce the likelihood of disease importation into the United States. GTEN is comprised of two components: (1) a consortium of over 20 clinical sites that collects real-time data on pre-travel health care provided across the United States (since inception: over 80,000 records have been collected), and (2) a public health outreach program ("Heading Home Healthy"; [www.headinghomehealthy.org](http://www.headinghomehealthy.org)) that includes web-tools and educational materials in multiple languages for high risk and VFR travelers, as well as a clinical guidance tool for non-expert providers who deliver the majority of pre-travel care to such travelers. We propose to expand upon the existing infrastructure developed by GTEN in order to (1) answer fundamental questions relating to the health care of US residents who travel internationally, and (2) improve the pre-travel health care provided to vulnerable US populations at highest risk of travel-related illness.  
Role: Co-Investigator
- R21HD0095240 lezzoni (PI) 09/13/18/2018-08/31/2020  
Exploring Timeliness of Cancer Diagnoses in Persons with Significant Physical Disability  
This exploratory and developmental project will examine whether "diagnostic overshadowing" relating to significant physical disability might delay the diagnosis of cancer, a potentially life-threatening comorbid health condition.  
Role: Co-Investigator
- 1R21HD0095240 lezzoni (PI) 09/13/18/2018-08/31/2020  
Exploring Timeliness of Cancer Diagnoses in Persons with Significant Physical Disability  
This exploratory and developmental project will examine whether "diagnostic overshadowing" relating to significant physical disability might delay the diagnosis of cancer, a potentially life-threatening comorbid health condition.  
Role: Co-Investigator
- 1R01AI134814-01A1 Charles (PI) 08/15/2018-07/31/2023  
Detection of asymptomatic Salmonella enterica serotype Typhi and Paratyphi A carriage by serum antibodies targeting YncE  
The major goal of this project is to assess whether anti-YncE serum antibodies can be used as a screening tool of S. Typhi and S. Paratyphi A carriage in a typhoid/paratyphoid endemic community.  
Role: Biostatistician
- UG1HD078439 Hibberd (PI) 06/03/2013-05/31/2023  
Boston University/Lata Medical Research Foundation and Indira Gandhi Government Medical Center Global Network for Women's and Children's Health Research

This is a network grant to provide mentorship and build capacity for the conduct of rigorous global health research studies in Nagpur India. The grant funds the conduct of network wide studies focused on reducing maternal and neonatal mortality. Several studies are led by our BU/Nagpur site.

Role: Senior Statistician

OPP1196678

Hibberd (PI)

11/05/2018–06/01/2020

Understanding Gaps and Needs for Integrated Bundles of Equipment to Improve Decision Making and Neonatal Outcomes in Special Newborn Care Units in India

The major goals of this study are to develop a platform for rapid and efficient testing and the development of device bundles to enhance newborn care in Special Neonatal Care Units (SNCUs) in India.

Role: Senior Statistician