PROMOTION RECOMMENDATION
The University of Michigan
School of Public Health
Department of Biostatistics

Brisa N. Sanchez, assistant professor of biostatistics, Department of Biostatistics, School of Public Health, is recommended for promotion to associate professor of biostatistics, with tenure, Department of Biostatistics, School of Public Health.

Academic Degrees:

Ph.D.	2006	Harvard University
M.Sc.	2003	Harvard School of Public Health
M.S.	2001	University of Texas at El Paso
B.S.	2000	University of Texas at El Paso

Professional Record:

2012-present	John G. Searle Assistant Professor of Biostatistics, University of Michigan
2008-present	Assistant Professor, Department of Biostatistics, University of Michigan
2006-2008	Assistant Research Professor, Department of Biostatistics, University of Michigan
2001-2006	Teaching Assistant, Department of Biostatistics, Harvard School of Public Health
2005	Teaching Assistant, Department of Biostatistics, Kitasato University, Tokyo, Japan
2003	Summer Exchange Student, Medical Epidemiology and Biostatistics Department, Karolinska Institute, Stockholm, Sweden
200-2001	Teaching Assistant, Mathematics Department, University of Texas at El Paso
1999-2000	Undergraduate Researcher, Mathematical and Theoretical Biology Institute, Cornell University, Ithaca NY
2000	Undergraduate Researcher, Models Institutions for Excellence Program, University of Texas at El Paso

Summary of Evaluation:

Teaching -- Professor Sanchez has taught Biostat 513 for five years, receiving excellent ratings. Even a cursory glance at the written comments from the students indicates that she is an articulate and very caring instructor. She also taught Biostat 581, Repeated Measures Analysis for our OJOC program. This course is perhaps one of the most difficult in the entire program and Professor Sanchez received high scores: a testament to her great teaching abilities. Upon noting that she has been only teaching 500 level courses since joining the department, she was asked to teach Biostat 699. Biostat 699 is our capstone course taught by two instructors each having 100% responsibility. She has done an outstanding job here as well. For Fall 2012, she has developed a new course on Latent Variable Modeling, a topic of great interest but our students were never exposed to the material. She received outstanding score for this course as well.

Professor Sanchez is currently chairing two student dissertation committees, and her first student successfully defended his dissertation in September 2012. One of his thesis papers has won the coveted ENAR student travel award. Professor Sanchez also serves on numerous dissertation committees of students from other departments where her expertise teaches students to apply sophisticated statistical methods to answer their dissertation research questions.

Research -- Professor Sanchez has a solid research record. She has 61 published or in press articles and another 12 submitted for peer review. Of the 61 published articles, eight first authored papers were published in journals such as *Journal of American Statistical Association (JASA)*, *Biometrics*, and *Statistics in Medicine*. Her first authored papers published in journals such *as American Journal of*

Epidemiology and *Environmental Health Perspectives* show methodology leadership and her collaborative papers indicate statistical leadership in the design and analysis of research investigation.

Professor Sanchez's methodological research deals more broadly with latent variable modeling with applications in environmental sciences and epidemiology. She has considered the latent variable modeling in both cross-sectional and longitudinal settings. Her paper in *JASA* is an excellent contribution showing how many problems in environmental epidemiology can be set up in a latent variable framework. She continued this work in fine tuning the methodology including development of model diagnostics for latent variable models. Her methodological research is motivated by applications and is in the best tradition of biostatistics methods research.

Her work on combining data from surveys and development of methods on approaches to summarize person-level profile of salivary cortisol are shining examples of research that emanated from the collaborative research projects with Dr. Ana Diez-Roux, chair of the Department of Epidemiology. Another strong collaborator at the school is Dr. O'Neill. Similarly, she is now bringing the latent variable modeling framework to investigate gene-environment interaction.

Professor Sanchez's other area of substantive research is in childhood obesity and stroke. She has published first authored papers in both these areas. This is again a demonstration of her contributions as methodologist as well as substantive researcher. For the stroke research, her focus has been on health disparities. She has been mentoring K23 awardees from neurology.

Since coming to Michigan, Professor Sanchez she has been well funded. As is typical, she has been funded mostly on collaborative grants. She successfully obtained two grants from the Robert Wood Johnson Foundation as a PI, one on studying childhood obesity and another on dynamic modeling of multilevel intervention for stroke prevention in minority population. She also has been director of the biostatistics core on P01 grants. In addition, the R21 grant award with Ana Diez-Roux as a PI is based on work pioneered by Professor Sanchez.

It is clearly evident that Professor Sanchez's research is of very high caliber and relevant to practical problems. Her research contributions have been critical for at least two departments within the SPH.

Recent and Significant Publications:

Sanchez, B.N., Wu, M., Raghunathan, T.E., Diez-Roux, A. (2012). Modeling the Salivary Cortisol Profile in Population Research: The Multi Ethnic Study of Atherosclerosis. *American Journal of Epidemiology*, 175(10):918-28.

Afeiche, M., Peterson, K.E., Sanchez, B.N., Hu, H., Cantonwine, D., Lamadrid-Figueroa, H., Mercado-García, A., Ettinger, A.S., Wright, R.O., Hernández-Avila, M., Téllez-Rojo, M. (2012) Windows of Lead Exposure Sensitivity, Attained Height, and BMI at 48 Months. *Pediatrics*, 160(6):1044-1049.

White-Newsome, J.L., Sanchez, B.N., Jolliet, O., Zhang, Z., Dvonch, J.T., O'Neil, M.S. (2012) Climate Change and Health: Indoor Heat Exposure in vulnerable Populations. *Environmental Research*, 112: 20-27.

Sanchez, B.N., Kang, S., Mukherjee, B. (2012) A Latent Variable Approach to Studies of Gene-Environment Interactions in Presence of Multiple Correlated Exposures. *Biometrics*, 68:466-476.

Burke, J.F., Brown, D.L., Lisabeth, L.D., Sanchez, B.N., Morgenstern, L.B. (2011) Enrollment of Women and Minorities in NIHDS Trials. *Neurology*, 76:354-360.

Lisabeth, L.D., Morgenstern, L.B., Wing, .J.J, Sanchez, B.N., Zahuranec, D.B., Skolarus, L.E., Burke, J., Kleerekoper, M., Smith, M.A., Brown, D.L. (2011) Post-stroke Fractures in a Bi-ethnic Community. *J of Stroke and Cerebrovascular Diseases*, 21(6):471-477.

Sanchez, B.N., Hu, H., Litman, H., Tellez-Rojo, M.M. (2011) Statistical Methods to Study Timing of Vulnerability with Sparsely Sampled Data on Environmental Toxicants. *Environmental Health Perspectives*, 119:409-415.

Lisabeth, L.D., Sanchez, B.N., Escobar, J., Hughes, R., Meurer, W.J., Zuniga, B., Garcia, N., Morgenstern, L.B. (2010) The Food Environment in a Mexican American Community. *Health Place*, 16: 598-605.

Service -- Professor Sanchez has been an energetic and helpful member of a number of the departmental committees, including the admissions, faculty search, computing, web, student affairs, and alumni relations committees. She also organized Environmental Statistics Day Symposium that was a great success. Professionally, she is serving on a National Research Council committee to study the effects of lead exposure. She is also an associate editor for *Statistics in Medicine*, and serves on the Regional Advisory Board of the Eastern North American section of the International Biometric Society. She is active in the American Public Health Association and has been elected to serve as a chair of the Statistics Section.

External Reviewers:

Reviewer (A): "She is becoming an excellent role model for new generations of biostatisticians…She has developed new methods and tailored existing methods to address important questions in environmental health, social epidemiology, and health disparities. She is on an excellent trajectory and I am confident she will continue o be a very valuable and productive faculty member."

Reviewer (B): "She has made important methodological contributions as well as vital collaborative contributions in a variety of fields. Despite a very full plate of collaborative responsibilities… Dr. Sanchez has been able to excel at her own methodological research, with many notable publications. What is very interesting about Dr. Sanchez's work is her combination of statistical rigor with practical consideration. Her contribution to science is impressive."

Reviewer (C): "Her research productivity…is exceptional for a biostatistician in her career stage. Dr. Sanchez's record indicates expertise in a number of areas…Dr. Sanchez's record of service to her profession… to be outstanding. I enthusiastically recommend Dr. Sanchez for promotion to Associate Professor with tenure. I believe that she will continue to be a credit to the field of Biostatistics and to her home institution."
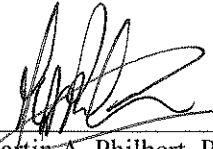
Reviewer (D): "She has developed an impressive portfolio of theoretical and applied research in the areas of environmental and social epidemiology and biostatistics, and has already covered a lot of ground. Her productivity is high."

Reviewer (E): "Regarding Brisa's national recognition…I consider her 2005 *Journal of the American Statistical Assocation*…paper on structural equation models to be extremely important paper for anyone interested in SEM…I have suggested this paper to many people…Brisa's scholarly work would definitely meet the requirements for promotion at [my institution]."

Reviewer (F) "Stepping out of the traditional role of consulting biostatistician, Dr. Sanchez has also 'crossed-over' into taking the lead on two applied research articles…Dr. Sanchez has built an impressive track record of scholarly publications, external funding, teaching, research advising, and service and shows clear promise of future sustained scholarly activity."

<u>Summary of Recommendation</u>:

Professor Sanchez has made enormous contributions to research, teaching and service. Individuals of her caliber with strong methodological skills, contributions to substantive research and deep involvement in collaboration are very rare indeed. I am pleased to recommend Professor Brisa N. Sanchez for promotion to associate professor of biostatistics, with tenure, Department of Biostatistics, School of Public Health.

Martin A. Philbert, Ph.D.
Dean, School of Public Health

May 2013