

Meredith A. Ray
Assistant Professor of Biostatistics

University Address

University of Memphis
Robison Hall 220
Division of Epidemiology, Biostatistics, and Environmental Health
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Memphis, TN 38152
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Research Interest

Bayesian Methods, Semi-parametric modeling, fMRI Brain Imaging Data Analysis, Genetics and Epi-genetics, lung cancer, and Bioinformatics.

Education

2010-2014	Doctorate of Philosophy in Biostatistics, Arnold School of Public Health, University of South Carolina, Columbia, SC
2007-2009	Master of Public Health in Biostatistics, College of Public Health, University of Georgia, Athens, GA
2004-2007	Bachelor of Science in Mathematics, Piedmont College, Demorest, GA

Professional Experience

2015-present	Assistant Professor
2014-present	Statistical Consultant
2013-2015	Research Assistant University of Memphis, Memphis, TN, USA
2010-2013	Research Assistant University of South Carolina, Columbia, SC, US
2013	Student Consultant University of South Carolina, Columbia, SC, USA
2007-2010	Research Assistant University of Georgia, Athens, GA, USA
2009	Assistant Consultant Ted Simon LLC, Independent Consultant, Atlanta, GA, USA

Memberships and Committees

Memberships

2018-present	International Association for the Study of Lung Cancer
2017-present	American Society of Clinical Oncology
2015-present	Western Tennessee Chapter of the American Statistical Association
2014-present	American Statistical Association
2006-present	Chi Alpha Sigma National Honor Society
2006-present	Kappa Mu Epsilon Honor Society for Mathematics Majors
2006-present	Delta Epsilon Iota Academic Honor Society
2013-present	Golden Key International Honor Society
2007-present	Piedmont Torch Honor Society

University/College Committees

2018-present	School of Public Health Marketing Committee, University of Memphis
2018-present	School of Public Health, Masters of Science in Biostatistics Admission Committee Chair, University of Memphis
2017-present	Division of Epidemiology, Biostatistics, and Environmental Health Colloquium Leader
2016-present	Epidemiology PhD Qualification Examination Committee, University of Memphis
2015-present	School of Public Health, Masters of Public Health Admission Committee, University of Memphis
2012-2013	Fun and Frolic Committee - Student Representative, Department of Epidemiology and Biostatistics, University of South Carolina

Community Service *Outreach Service*

Assisted with a "Crash Course in R" workshop at the 2012 International Society for Environmental Epidemiology (ISEE) Conference in Columbia, SC

Professional Consulting

2014-present	Statistical consultant for Virginia Tech Carilion School of Medicine and Research Institute, Roanoke, VA
2015-2018	Statistical Consultant for Secure Food Solutions

Journals Reviewed

Quaesitum (University of Memphis undergraduate journal)
Computational and Mathematical Methods in Medicine
Journal of Psychosomatic Research
The American Journal of Medical Sciences
Springer: 6th Workshop in Biostatistics and Bioinformatics

Honors/Awards

2014	Outstanding Student for Biostatistics Department 2014
2014	Piedmont College P-Club Hall of Fame Member
2012-2013	HRSA Fellowship 2012-2013
2011-2012	ARRA Funding Award 2011-2012
2011	Best Presentation Award, 14 th International Workshop on QSARs in Environmental and Health Sciences Conference

Research Support

Grants funded:

1R03AI128227-01A1 Ray (PI) 01/2018-12/2019
Title: Joint Patterns of multi-genetic/epigenetic factors via non-parametric clustering and their association with allergic disease

Source: NIAID/NIH

Role: Principal Investigator

American Heart Association Pence (PI) 04/2018-03/2020
Title: Glycolytic Metabolism and Cellular function in Monocytes from Older Adults

Source: AHA

Role: Statistician

R15AG058225 Ullmann (PI) 08/2018-07/2021
Title: Effects of mindful Feldenkrais exercises & strength training on cognitive executive function in independent living older adults

Source: NIA/NIH

Role: Co-investigator

2R01CA172253-06 Osarogiagbon (PI) 08/2018-06/2023
Title: Improving N1 lymph node examination in a high US lung cancer mortality region

Source: NCI/NIH

Role: Co-investigator

Grants Completed:

Epidemiology, Biostatistics, and

Data Coordinating Center (PI: Matthew Smeltzer, PhD) 07/2017-12/2018

Title: Creating an Optimal Care Coordination Model for Lung Cancer Patients on Medicaid

Source: Association of Community Cancer Centers

Role: Co-Investigator

R01CA172253 (PI: Raymond Osarogiagbon, MD, MBBS, FACP) 04/01/2013-03/31/2018

Title: Dissemination of a Corrective Intervention to Improve Lymph Node Examination in Resected Lung Cancer

Source: NCI/NIH

Role: Co-Investigator

IH-1304-6147 (PI: Raymond Osarogiagbon, MD, MBBS, FACP) 02/03/2014 – 07/31/2017

Title: Building a Multidisciplinary Bridge Across the Quality Chasm in Thoracic Oncology.

Source: PCORI

Role: Co-Investigator

Grants not funded:

Research Scholar Grant (PI: Brook Harmon, PhD, RD, FAND)

September 2018

Title: Adaptive Intervention to Decrease Inflammation in Cancer Survivors

Source: ACS

Resubmission

Role: Co-Investigator/Statistician

R21

(PI: Matthew Smeltzer)

February 2018

Title: Assessing the Risk of Post-Operative Mortality After Curative Intent Surgery for Non-Small Lung Cancer in the United States.

Source: NIH

New Submission

Role: Co-Investigator

Grants submitted:

R01

(PI: Raymond Osarogiagbon)

September 2018

Title: Improving the Reach and Quality of Cancer Care in Rural Populations

Source: NIH

New Submission

Role: Co-Investigator

1R21CA242959-01

(PI: Meredith Ray, PhD)

October 2018

Title: A semi-parametric approach to clustering binary variables in association with clinical outcomes in lung cancer patients

Source: NCI/NIH

Resubmission

Role: Principal Investigator

USDA

(PI: Debra Bartelli)

January 2019

Title: Understanding Senior Food Insecurity and What Works to Address It

Source: USDA – University of Kentucky

New Submission

Role: Co-Investigator

Publications***Articles accepted or in press or epub ahead of print******Articles published***

Ray M, Kang J, Zhang H, **2018**. Detecting Spatial Clusters via a Mixture of Dirichlet Processes. *Journal of Probability and Statistics*, 2018:3506794. Doi: 10.1155/2018/3506794.

Ray M, Faris N, Smeltzer M, Fehnel C, Houston-harris C, Levy P, Wiggins L, Sachdev V, Robbins T, Spencer D, Osarogiagbon R, **2018**. Effectiveness of Implemented Interventions on Pathologic Nodal Staging of Non-Small Cell Lung Cancer. *Ann Thorac Surg*. pii: S0003-4975(18)30333-3. doi: 10.1016/j.athoracsur.2018.02.021. [Epub ahead of print]. PMID:29534956

Smeltzer MP, Faris NR, **Ray MA**, Fehnel C, Houston-Harris C, Ojeabulu P, Akinbobola O, Lee YS, Meadows M, Signore S, Wiggins L, Talton D, Owen E, Deese LE, Eubanks R, Wolf BA, Levy P, Robbins ET, Osarogiagbon RU, **2018**. Survival before and after direct surgical quality feedback in a population-based lung cancer cohort. *Ann Thorac Surg*. pii: S0003-4975(18)31859-9. doi: 10.1016/j.athoracsur.2018.11.058. [Epub ahead of print]

Smeltzer M, Faris N, **Ray M**, Osarogiagbon R, **2018**. Association of pathologic nodal staging quality with survival among patients with non-small cell lung cancer after resection with curative intent. *JAMA Oncol*. doi: 10.1001/jamaoncol.2017.2993. [Epub ahead of print] PMID:28973110

Smeltzer M, Rugless F, Jackson B, Berryman C, Faris N, **Ray M**, Meadows M, Patel A, Roark K, Kedia S, DeBon M, Crossley F, Oliver G, McHugh L, Hastings W, Osborne O, Osborne J, Ill T, Ill M, Jones W, Lee H, Signore R, Fox R, Li J, Robbins E, Ward K, Klesges L, Osarogiagbon RU, **2018**. Pragmatic trial of a multidisciplinary lung cancer care model in a community healthcare setting: study design, implementation evaluation, and baseline clinical results. *Transl Lung Cancer Res*. 7(1):88-102. doi: 10.21037/tlcr.2018.01.02. PMID:29535915.

Smith A, **Ray M**, Chalet S. **2018**. Primary Palate Trauma in Patients Presenting to US Emergency Departments, 2006-2010. *JAMA Otolaryngology*, 144(3):244-251. doi: 10.1001/jamaoto.2017.3071.

Etchison AR, Bos L, **Ray M**, McAllister KB, Mohammed M, Park B, Phan AV, Heitz C, **2018**. Low-dose Ketamine Does Not Improve Migraine in the Emergency Department: A Randomized Placebo-controlled Trial. *West J Emerg Med*. 19(6):952-960. doi: 10.5811/westjem.2018.8.37875. [Epub 2018 Sep 10].

Smith A, **Ray M**, Jain N, Zhang H, and Sebelik M, **2017**. The burden of angioedema on United States emergency departments: 2006–2010. *The Laryngoscope*, 127(4), 828-834.

Kaushal A, Zhang H, Karmaus WJJ, **Ray M**, Torres M, Smith A, and Wang S, **2017**. Comparison of different cell type correction methods for genome-scale epigenetics studies. *BMC Bioinformatics*.

Osarogiagbon R, **Ray M**, Faris N, Smeltzer M, Fehnel C, Houston-Harris C, Signore R, McHugh L, Levy P, Wiggins L, Sachdev V, and Robbins E, **2017**. Prognostic Value of National Comprehensive Cancer Network Lung Cancer Resection Quality Parameters. *The Annals of Thoracic Surgery*.

Bowers K, McAllister K, **Ray M** and Heitz C, **2017**. Ketamine as an Adjunct to Opioids for Acute Pain in the Emergency Department: A randomized controlled trial. *Academic Emergency Medicine*.

Smith A, Thimmappa V, Shepherd B, **Ray M**, Sheyn A, and Thompson J, **2016**. Invasive fungal sinusitis in the pediatric population: Systematic review with quantitative synthesis of the literature. *International Journal of Pediatric Otorhinolaryngology*, 90, pp.231-235.

Lockett GA, Soto-Ramírez N, **Ray M**, Everson TM, Xu CJ, Patil VK, Terry W, Kaushal A, Rezwan FI, Ewart SL, and Gehring U, **2016**. Association of season of birth with DNA methylation and allergic disease. *Allergy*, 71(9), pp.1314-1324.

Ray M, Tong X, Lockett GA, Zhang H, and Karmaus WJ, **2016**. An efficient approach to screening epigenome-wide data. *BioMed research international*, 2016.

Ray M, Kang J, and Zhang H, **2016**. Identifying Activation Centers with Spatial Cox Point Processes Using fMRI Data. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 13(6), pp.1130-1141.

Alexander, M., **Ray, M.**, Hébert, J.R., Youngstedt, S.D., Zhang, H., Steck, S.E., Bogan, R.K. and Burch, J.B., **2015**. The National Veteran Sleep Disorder Study: Descriptive Epidemiology and Secular Trends, 2000-2010. *Sleep*, 39(7), pp.1399-1410.

Quraishi, B.M., Zhang, H., Everson, T.M., **Ray, M.**, Lockett, G.A., Holloway, J.W., Tetali, S.R., Arshad, S.H., Kaushal, A., Rezwan, F.I. and Karmaus, W., **2015**. Identifying CpG sites associated with eczema via random forest screening of epigenome-scale DNA methylation. *Clinical epigenetics*, 7(1), p.68.

Alexander, M., Burch, J.B., Steck, S.E., Chen, C.F., Hurley, T.G., Cavicchia, P., **Ray, M.**, Shivappa, N., Guess, J., Zhang, H. and Youngstedt, S.D., **2015**. Case-control study of the PERIOD3 clock gene length polymorphism and colorectal adenoma formation. *Oncology reports*, 33(2), pp.935-941.

Ray, M., Youngstedt, S.D., Zhang, H., Robb, S.W., Harmon, B.E., Jean-Louis, G., Cai, B., Hurley, T.G., Hébert, J.R., Bogan, R.K. and Burch, J.B., **2014**. Examination of wrist and hip actigraphy using a novel sleep estimation procedure. *Sleep science*, 7(2), pp.74-81.

Zhang, H., Tong, X., Holloway, J.W., Rezwan, F.I., Lockett, G.A., Patil, V., **Ray, M.**, Everson, T.M., Soto-Ramírez, N., Arshad, S.H. and Ewart, S., **2014**. The interplay of DNA methylation over time with Th2 pathway genetic variants on asthma risk and temporal asthma transition. *Clinical epigenetics*, 6(1), p.8.

Mumtaz, M.M., **Ray, M.**, Crowell, S.R., Keys, D., Fisher, J. and Ruiz, P., **2012**. Translational Research to Develop a Human PBPK Models Tool Kit—Volatile Organic Compounds (VOCs). *Journal of Toxicology and Environmental Health, Part A*, 75(1), pp.6-24.

Ruiz, P., **Ray, M.**, Fisher, J. and Mumtaz, M., **2011**. Development of a human physiologically based pharmacokinetic (PBPK) toolkit for environmental pollutants. *International journal of molecular sciences*, 12(11), pp.7469-7480.

Statistical Packages

Terry W, **Ray M**, and Zhang H, **2016**. PathSeletMP: Backwards Variable Selection for paths using M Plus. R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL: <http://www.R-project.org>. (package co-author)

Ray M, Tong X, and Zhang H, **2014**. ttScreening: Genome-wide DNA methylation sites screening by use of training and testing samples. R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL: <http://www.R-project.org>. (package maintainer)

Bao W, Tong X, **Ray M**, and Zhang H, **2014**. RegClust: Cluster analysis via regression coefficients. R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL: <http://www.R-project.org>. (package maintainer)

Abstracts/Presentations (last 5 years)

Invited Oral Presentations.

The presenter is listed as the first author.

Ray M, Kang J, and Zhang H, **2018**. Identifying significant regions of brain activation with the use of fMRI meta data. Invited speaker at the International Conference on Mathematics and Statistics on May 9 in Memphis, TN.

Conference/Workshop Oral presentations.

The presenter is listed as the first author.

Ray, M., Faris, N., Fehnel, C., Houston-Harris, C., Smeltzer, M., and Osarogiagbon, R. **2018**. Improvement of National Quality Parameters across Kit and Pathologic Interventions. Oral presentation at the Mid-South Lung Cancer Surgery Symposium at Baptist Memorial Hospital on March 1st in Memphis, Tennessee.

Faris N, Lee Y, Smeltzer M, **Ray M**, Fehnel C, Houston-Harris C, Akinbobola O, Ojeabulu P, Owen E, Eubanks R, Dox H, Talton D, Valaulika G, Wiggins H, Wofl B, Levy P, Robbins E, Osarogiagon R, **2018**. MA25. 05 Characteristics and Survival of Resected Stage IV Non-Small Cell Lung Cancer (NSCLC) in the Mid-South Quality of Surgical Resection Cohort. Journal of Thoracic Oncology. Oct 1;13(10):S447.

Ray, M., Bowman, D., Van Arsdale, R., and Zhang, H. **2017**. Modeling Spatiotemporal Patterns of Earthquake Epicenters. Presented at the University of Memphis, School of Public Health's EBE Colloquium in April in Memphis, TN.

Ray, M., Bowman, D., Van Arsdale, R., and Zhang, H. **2017**. Detecting earthquake epicenter temporal patterns via Dirichlet Process. Speed presentation (with short e-poster session afterwards) at the 2017 Joint Statistical Meetings in July in Baltimore, MD.

Ray, M., Faris, N., Fehnel, C., Houston-Harris, C., Smeltzer, M., and Osarogiagbon, R. **2017** Using the Reach and Adoption Domains to Study Implementation of the Lymph Node Collection Kit. Oral Presentation at the Mid-South Lung Cancer Surgery Symposium at Baptist Memorial Hospital on April 6th in Memphis, Tennessee.

Smeltzer, M., Lee, Y., Faris, N., **Ray, M.**, Fehnel, C., Houston-Harris, C., Ojeabulu, P., Akinbobola, O., Deese, L., Owen, E., Wolf, B., Wiggins, H., Mutrie, C., Sachdev, V., Levy, P., Signore, R., Robbins, E., and Osarogiagbon, R. **2017**. Thoroughness of staging and the outcomes of surgical resection outcomes in potentially curable non-small cell lung cancer (NSCLC). Oral presentation at 18th World Conference on Lung Cancer; October 15-18, 2017; Yokohama, Japan.

Ward, K., Smeltzer, M., Rugless, F., Faris, N., **Ray, M.**, Jackson, B., Foust, C., Patel, A., Meadows, M., Boateng, N., Roark, K., Crossley, F., Oliver, G., McHugh, L., Hastings, W., Osborne, O., Osborne, J., Ill, T., Ill, M., Signore, R., Fox, R., Robbins, E., and Osarogiagbon R. **2017**. Prospective Comparative Evaluation of Patient and Caregiver Perspectives on a Multidisciplinary Model of Lung Cancer Care. Oral session presented at 18th World Conference on Lung Cancer; October 15-18, 2017; Yokohama, Japan

Smeltzer, M., Rugless, F., Lee, H., Ward, K., Faris, N., **Ray, M.**, Meadows, M., Jiang, B., Jaskson, B., Foust, C., Patel, A., Boateng, N., Kedia, S., Roark, K., Houston-Harris, C., Fehnel, C., Signore, R., Fox, R., Robbins, E., Li, J., and Osarogiagbon R. **2017**. A Prospective Comparative Evaluation of the Process of Care in a Multidisciplinary (MD) Clinic for Non-small Cell Lung Cancer (NSCLC): Timeliness, Thoroughness, and Patient/Caregiver Perspectives. Oral session presented at IASLC Chicago MD Symposium in Thoracic Oncology; September 14-16, 2017; Chicago, IL.

Smith, A., Liddle, V., **Ray, M.**, Basura, G., and Chaiet, S. **2017**. Imaging for Primary Bell's Palsy in United States Emergency Rooms - Oral Presentation at the International Facial Nerve Symposium August 3-6 2017, Los Angeles, CA.

Smith, A., Liddle, V., **Ray, M.**, and Chalet, S. **2017**. Nasal Valve Surgery: Trends in Ambulatory Surgery Centers from 2008 to 2013 - Oral Presentation at American Academy of Facial Plastic And Reconstructive Surgery Annual Meeting, October 26-28, 2017, Phoenix, AZ.

Smith, A., **Ray M.**, Zhang, H., and Sebelik M., **2016**. The Burden of Angioedema Presenting to United States EDs: 2006-2010. Oral presentation delivered at Triological Society Meeting at COSM, Chicago, IL.

Bowers, K., McAllister, K., **Ray, M.** and Heitz, C., **2015**. Ketamine as an Adjunct to Opiates for Acute Pain in the Emergency Department. Oral presentation delivered at American College of Emergency Physicians (ACEP), Scientific Assembly, Boston, MA.

Ray, M., Zhang, H., and Kang, J., **2015**. Identifying significant regions of brain activation with the use of fMRI meta data. Oral presentation delivered at the Joint Statistical Meetings (JSM)-American Statistical Association, Seattle, WA.

Cantwell, L.M., **Ray, M.** and Fortuna, T.J., **2015**. The Effect of Helmet Cameras on Risk-Taking Behavior Among Mountain Bikers. Oral presentation delivered at Wilderness & Environmental Medicine, Annual Meeting, Breckenridge, CO.

Ray, M., Zhang, H., and Kang, J., **2015**. Methods for Identifying Activation Centers within the Brain using fMRI Meta-data. Oral presentation delivered at the University of Memphis, Mathematics Department, Memphis, TN.

Ray, M., Tong, X., Zhang, H., and Karmaus, W.J.J., **2015**. Screening genome-wide DNA methylation CpG sites via training and testing data utilizing surrogate variables. Oral presentation delivered at the University of Memphis, Bioinformatics Department, Memphis, TN.

Ray, M., Tong, X., Zhang, H., and Karmaus, W.J.J., **2014**. Screening genome-wide DNA methylation CpG sites via training and testing data utilizing surrogate variables. Oral presentation delivered at the University of Memphis, Division of Epidemiology, Biostatistics, and Environmental Science, Memphis, TN.

Ray, M., Zhang, H., and Kang, J., **2014**. Clustering fMRI meta data to identify significant regions of brain activation. Oral presentation delivered at the Joint Statistical Meetings (JSM)-American Statistical Association, Boston, MA.

Lockett, G.A., Soto-Ramírez, N., **Ray, M.**, Zhang, H., Rezwan, F., Ewart, S.E., Arshad, S.H., Karmaus, W., and Holloway, J.W., **2014**. Association of Season of Birth with DNA methylation. Oral presentation delivered at the European Academy of Allergy and Clinical Immunology, Copenhagen, Denmark.

Ray, M., Zhang, H., and Kang, J., **2014**. Clustering Significant Regions of Brain Activation Using fMRI Meta Data. Contributed Paper: Bayesian Methods. Oral presentation delivered at the Eastern North American Region (ENAR), Baltimore, MD.

Poster Presentations

The presenter is listed as the first author.

Smeltzer M, Faris N, Kethireddy J, Meadows M, Nalan M, **Ray M**, Epperson A, Richards D, Adams K, Fulford A, Wagh A, Machin J, Tonkin K, Optican R, Wright J, Robbins E, and Osaorgiagbon R, **2018**. P1. 11-11 Comparing Lung Cancer Diagnosed by Low Dose CT (LDCT), Incidental Lung Nodule Program (ILNP), and Non-Program-Based Detection. Journal of Thoracic Oncology. Oct 1;13(10):S569.

Marbaugh A, Asfeldt T, Oyer R, Lathan C, Smeltzer M, Nolan V, **Ray M**, Faris N, Nalan M, Stevens W, Kramar A, Lucas L, and Osarogiagbon R, **2018**. P1. 15-21 Creating an Optimal Care Coordination Model to Improve Multidisciplinary Care for Lung Cancer Patients on Medicaid. Journal of Thoracic Oncology. Oct 1;13(10):S619-21.

Smeltzer M, Faris N, **Ray M**, Fehnel C, Akinbobola O, Houston-Harris C, Ojeabulu P, Lee Y, Owen E, Eubanks R, Dox H, Talton D, Wiggins H, Wolf B, Levy P, Robbins E, and Osarogiagbon R, **2018**. P1. 16-46 A Population-Based Validation Study of the Proposed 'R-Factor' Classification in a Lung Cancer-Endemic Region of the US. Journal of Thoracic Oncology. Oct 1;13(10):S646.

Ray M, Smeltzer M, Faris N, Lee Y, Fehnel C, Houston-Harris C, Akinbobola O, Ojeabulu P, Owen E, Eubanks R, Dox H, Talton D, Valaulikar G, Wiggins H, Wolf B, Levy P, Robbins E, and Osarogiagbon R, **2018**. P1. 17-11 Pattern and Survival Impact of Neoadjuvant Treatment of Non-Small Cell Lung Cancer (NSCLC) in a Prospective Lung Resection Cohort. Journal of Thoracic Oncology. Oct 1;13(10):S659-60.

Lee Y, Smeltzer M, **Ray M**, Faris N, Fehnel C, Houston-Harris C, Akinbobola O, Ojeabulu P, Owen E, Eubanks R, Dox H, Talton D, Wiggins H, Wolf B, Levy P, Robbins E, and Osarogiagbon R, **2018**. P2. 16-32 Survival Implications and Factors Associated with the Anatomic Level of Incomplete Non-Small-Cell Lung Cancer (NSCLC) Resection. Journal of Thoracic Oncology. Oct 1;13(10):S844.

Ray M, Smeltzer M, Faris N, Lee Y, Fehnel C, Houston-Harris C, Akinbobola O, Ojeabulu P, Owen E, Eubanks R, Dox H, Talton D, Valaulikar G, Wiggins H, Wolf B, Levy P, Robbins E, and Osarogiagbon R, **2018**. P2. 16-38 Characteristics of Preoperative N Staging in Patients with Optimal Pathologic N Staging of Non Small Cell Lung Cancer (NSCLC). Journal of Thoracic Oncology. Oct 1;13(10):S846-7.

Ray M, Smeltzer M, Faris NR, Fehnel C, Houston-Harris C, Ojeabulu P, Akinbobola O, Wiggins L, Talton D, Owen E, Deese L, Eubanks R, Wolf BA, Robbins T, and Osarogiagbon R, **2018**. Implementing improved pathologic nodal (pN) staging during non-small cell lung cancer (NSCLC) resection: A population-based study. Poster session at the annual American Society of Clinical Oncology meeting in Chicago, IL.

Osarogiagbon RU, Smeltzer M, Faris NR, Ray M, Fehnel C, Houston-Harris C, Ojeabulu P, Akinbobola O, Wiggins L, Talton D, Owen E, Deese L, Eubanks R, Wolf BA, and Robins T, **2018**. Pragmatic study of a lymph node (LN) collection kit for non-small cell lung cancer (NSCLC) resection. Poster session at the annual American Society of Clinical Oncology meeting in Chicago, IL.

Smeltzer M, Ray M, Faris NR, Meadows MB, Fehnel C, Houston-Harris C, Ojeabulu P, Akinbobola O, Lee YS, Wiggins L, Talton D, Owen E, Deese L, Eubanks R, Wolf BA, Robbins T, and Osarogiagbon R, **2018**. Survival in the population-based Mid-South Quality of Surgical Resection (MSQSR) Cohort. Poster session at the annual American Society of Clinical Oncology meeting in Chicago, IL.

Faris, N., Smeltzer, M., Fehnel, C., Houston-Harris, C., Ojeabulu, P., Akinbobola, O., **Ray, M.**, Lee, Y., Deese, L., Owen, E., Wolf, B., Wiggins, H., Mutrie, C., Sachdev, V., Levy, P., Signore, R., Robbins, E., and Osarogiagbon, R. **2017**. Improving Survival with a Lymph Node {LN} Collection Kit for Non-Small Cell Lung Cancer {NSCLC} Resections. Poster session at 18th World Conference on Lung Cancer on October 15-18, 2017 in Yokohama, Japan.

Rugless, F., **Ray, M.**, Smeltzer, M., Jackson, B., Foust, C., Patel, A., Boateng, N., Faris, N., Houston-Harris, C., Fehnel, C., Meadows, M., Roark, K., McHugh, L., Signore, R., Robbins, E., Fox, R., and Osarogiagbon, R. **2017**. Prospective cohort study of patterns of staging and treatment selection with or without multidisciplinary {MD} care. Poster session presented at 18th World Conference on Lung Cancer on October 15-18, 2017 in Yokohama, Japan

Lee, Y. S., Smeltzer, M. P., Meadows, M. B., Robbins, E. T., Faris, N. R., Mutrie, C., **Ray, M.**, Signore, S., Fehnel, C., Higgins, D., Houston-Harris, C., Osarogiagbon, R. **2017**. Sex as an Effect Modifier for the Association of Age and Post-Operative Mortality in Non-Small Cell Lung Cancer (NSCLC). *Annals of Epidemiology*, 27(8), 509.

Smeltzer, M.P., Meadows, M.B., Faris, N.R., Rugless-Stewart, F.E., **Ray, M.**, Lee, Y.S., Boateng, N., Foust, C., Jackson, B., Patel, A., Fehnel, C., Houston-Harris, C., Signore, R.S., Robbins, E.T., Osarogiagbon, R.U. **2017**. Increased Use of PET-CT, Invasive Staging, and Surgical Resection with a Multidisciplinary Lung Cancer Care Model: Effectiveness Endpoints form an Implementation Study. *Annals of Epidemiology*, 27(8), 507.

Reish, L., Aizezi, S., Sweat, D., Mzayek, F., and **Ray, M.** **2017**. Investigating Missed Opportunities for Prevention of Mycobacterium Tuberculosis Transmission within Contacts of Tuberculosis Cases in Shelby County, Tennessee. Poster presentation delivered at the American College of Epidemiology (ACE) Annual Meeting, September 24-26 at the Westin Hotel at the Canal, New Orleans, Louisiana.

Reish, L., Aizezi, S., Sweat, D., Mzayek, F., and **Ray, M.** **2017**. Investigating Missed

Opportunities for Prevention of Mycobacterium Tuberculosis Transmission within Contacts of Tuberculosis Cases in Shelby County, Tennessee. Poster presentation delivered at the Tennessee Public Health Association (TPHA) Conference, September 13-15 at the Cool Springs Conference Center in Franklin, Tennessee.

Ray, M., Faris, N.R., Rugless Stewart, F.E., Smeltzer, M., Boateng, N., Meadows, M.B., Faust, C., Jackson, B., Boateng, N., Patel, A., Fehnel, C., Houston-Harris, C., Signore R.S., Robbins, E.T., and Osarogiagbon, R. **2017**. Treatment of lung cancer patients in multidisciplinary (MDC) and serial care (SC) clinics. *Journal of Clinical Oncology*. 35:15_suppl, 8522-8522.

Ray, M., Faris, N., Rugless, F., Smeltzer, M., Faust, C., Jackson, B., Boateng, N., Patel, A., Fehnel, C., Houston-Harris, C., and Osarogiagbon, R., **2017**. Multidisciplinary (MultiD) Care and the Use of Treatment Modalities for Non-Small Cell Lung Cancer (NSCLC) in a Large Community Healthcare Setting. Poster presentation delivered at the Multidisciplinary Thoracic Symposium, San Francisco, CA.

Smeltzer, M., Lee, Y. S., Robbins, E., Faris, N., Mutrie, C., **Ray, M.**, Signore, S., Fehnel, C., Houston-Harris, C., Meadows, M. and Osarogiagbon, R., **2017**. P1. 08-021 Predictors of Post-Operative Mortality in Non-Small Cell Lung Cancer (NSCLC) in a High Mortality Region of the US: Topic: Risk Assessment and Prognostic Factors. *Journal of Thoracic Oncology*, 12(1), S743.

Faris, N., Lee, Y. S., Meadows, M., Smeltzer, M., **Ray, M.**, Ward, K., Fehnel, C., Houston-Harris, C. and Osarogiagbon, R., **2017**. P1. 01-021 The Impact of Smoking Status on Overall Survival in a Population-Based Non-Small Cell Lung Cancer (NSCLC) Surgical Resection Cohort: Topic: Protective Factors, Risk Reduction, Smoking Cessation. *Journal of Thoracic Oncology*, 12(1), S461.

Faris, N., **Ray, M.**, Smeltzer, M., Fehnel, C., Houston-Harris, C., Levy, P., Mutrie, C., Wolf, B., Deese, L., Wiggins, L. and Sachdev, V., **2017**. P1. 08-020 The Effect of Two Interventions on Attainment of Surgical Quality Measures in Resected Non-Small Cell Lung Cancer (NSCLC): Topic: Risk Assessment and Prognostic Factors. *Journal of Thoracic Oncology*, 12(1), S742-S743.

Lee, Y. S., Smeltzer, M., Faris, N., **Ray, M.**, Fehnel, C., Houston-Harris, C., Meadows, M., Levy, P., Mutrie, C., Wolf, B. and Deese, L., **2017**. P1. 01-030 Factors Associated with Margin Positive Resections for Non-Small Cell Lung Cancer (NSCLC) in the Mid-South Region of the US: Topic: Lung Cancer Screening, Diagnosis. *Journal of Thoracic Oncology*, 12(1), S466-S467.

Osarogiagbon, R., Faris, N., Smeltzer, M., **Ray, M.**, Fehnel, C., Houston-Harris, C., Levy, P., Mutrie, C. Wolf, B., Dees, L. and Wiggins, L., **2017**. P1. 08-027 Evolution of Survival in a Regional Population-Based US Lung Cancer Resection Cohort: Topic: Epidemiologic Studies in Surgery for NSCLC. *Journal of Thoracic Oncology*, 12(1), S747.

Smeltzer, M., Faris, N., Fehnel, C., Houston-Harris, C., **Ray, M.**, Lee, Y. S., Meadows, M., Signore, S., Mutrie, C., Robbins, E. and Osarogiagbon, R., **2017**. P1. 05-044 The Impact of IASLC 8th Edition Updates for T-Classification for Lung Cancer in a US Population-Based Surgical Resection Cohort: Topic: Surgery. *Journal of Thoracic Oncology*, 12(1), S640-S641.

Spencer, G., Smeltzer, M., Faris, N., Fehnel, C., Houston-Harris, C., **Ray, M.**, Finch-Cruz, C., Berry, a., Gianpapa, C., Hilsenbeck, H. and Sales, E., **2017**. P3. 01-031 Impact of a Novel Lung Gross Dissection Method on Intrapulmonary Lymph Node Yield: Topic: Morphology. *Journal of Thoracic Oncology*, 12(1), S1138-S1139.

Rugless, F., Smeltzer, **Ray, M.**, M., Patel, A., Boateng, N., Jackson, B., Foust, C., Klesges, L., Faris, N., Roark, K. and Signore, S., **2017**. P2. 08-010 The Reach and Adoption of a Multidisciplinary Thoracic Oncology Program within a US Community Healthcare System: Topic: Other. *Journal of Thoracic Oncology*, 12(1), S1115.

Smeltzer, M., Faris, N., Fehnel, C., Houston-Harris, C., **Ray, M.**, Lee, Y. S., Meadows, M., Robbins, E., Signore, S., Mutrie, C. and Osarogiagbon, R., **2017**. P1. 03-067 Validation of the IASLC 8th Edition (8E) TNM Classification for Non-Small Cell Lung Cancer by the Quality of Surgical Resection in a US Cohort: Topic: Staging. *Journal of Thoracic Oncology*, 12(1), S585-S586.

Smeltzer, M., Klesges, L., Lee, Y. S., Faris, N., Fehnel, C., Houston-Harris, C., **Ray, M.**, Robins, E. and Osarogiagbon, R., **2016**. Ps01. 39: Reach and Adoption of a Surgical Intervention to Improve Pathologic Nodal Staging Across Healthcare Systems within the Us Mid-south. *Journal of Thoracic Oncology*, 11(11), S293.

Smith, A., **Ray, M.**, Zhang, H., and Chaiet, S., **2016**. Palate Trauma Presenting to United States Emergency Rooms: 2006-2010. Poster Presentation delivered at the American Academy of Facial Plastic and Reconstructive Surgery (AAFPRS) meeting, Chicago, IL.

Bowers, K.J., McAllister, K.B., **Ray, M.**, and Heitz, C.R., **2015**. Ketamine as an Adjunct to Opiates for Acute Pain in the Emergency Department. Poster Presentation delivered at the Virginia Tech Carilion Research Day, Roanoke, VA.

Bowers, K.J., McAllister, K.B., **Ray, M.**, and Heitz, C.R., **2015**. Ketamine as an Adjunct to Opiates for Acute Pain in the Emergency Department. Poster Presentation delivered at the Carilion Clinic Research Day, Roanoke, VA.

Burch, J.B., Delage, A.F., Zhang, H., McLain, A.C., **Ray, M.**, Adams, S.A., and Hébert, J.R., **2015**. Sleep Disorders among Veterans: Implications for Cancer Risk. Poster Presentation delivered at the 39th Annual Meeting of the American Society of Prevention Oncology, Birmingham, AL.

Zhang, H., **Ray, M.**, Tong, X., and Karmaus, W.J.J., **2014**. Screening genome-wide

DNA methylaiton CpG sites via training and testing data utilizing surrogate variables.
 Section: Bioinformatics of Health and Disease (Poster # 4). Poster Presentation
 delivered at the UT-KBRIN Bioinformatics Summit 2014, Cadiz, KY.

Teaching Experience

Courses taught at the University of Memphis

Graduate courses

Spring 2016 - 2019	Biostatistical Methods II, PUBH 7152/8152 ('16-'18 Co-taught,'19 Indep)
Spring 2018	Biostatistical Methods II Online, PUBH 7152/8152 M50 (Co-taught)
Fall 2015- 2018	Biostatistical Methods I, PUBH 7150/8150 (Co-taught)
Fall 2015-2018	Biostatistical Methods I Online, PUBH 7150/8150 (Co-taught)

Guest Lectures at the University of Memphis

March 2017, 2018	Epidemiology in Public Health II, PUBH 7172
March 2016	Biostatistics in Bioinformatics, PUBH 7153/8153
April 2015	Genetic Epidemiology, PUBH 7445/8445

Workshops

2017, 2016	2-day <i>R Workshop</i> , Summer Institute at University of Memphis, Memphis, TN
2019,2014	2-day <i>R Workshop</i> , University of Memphis, Memphis, TN
2010-2013	Teaching Assistant, University of South Carolina, Columbia, SC
2013	Independent Tutor, Columbia, SC
2011	Teaching Practicum, University of South Carolina, Columbia, SC