Shawn Garbett

Assistant in VUMC Biostatistics

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615.397.8737   February 29th 2024

Education

B.S. Electrical & Computer Engineering   *August 1990*
Tulane University, New Orleans, LA

M.S. Applied Statistics   *December 2014*
The Pennsylvania State University, University Park, PA

Academic Appointments

Director of Informatics Software Development, *VUMC*   *Jan 2021 - present*
Management of software development staff for Biostatistics.
Assistant in Biostatistics, *Vanderbilt University Medical Center*   *Dec 2019 - present*
Leading Data Science efforts in Vanderbilt University Medical Center Biostatistics.

Professional Organizations

Member of Society for Medical Decision Making.
Member of International Biometric Society
Member of American Statistical Association

Intramural

2018 Biostatistics Retreat Planning Committee.
2019–2020 Biostatistics Strategic Directions Committee.
2020–present Biostatistics Resource Allocation Committee.
2021–present Biostatistics Chairperson of IT Staff Search Committee.
2021–2022 UseR! 2022 Planning committee.
2021–2022 Biostatistics Staff Promotions Committee.
2022–present Biostatistics IT Staff Promotions Committee.

Extramural

2010 Journal of Theoretical Biology, Ad Hoc Reviewer.
2016 Borders, Trade and Immigration Institute (BTI) External Grant Reviewer.
2018 Springer Nonlinear Dynamics, Ad Hoc Reviewer.
2020 Modeler for State of Tennessee COVID-19 forecasting.
2021-2022 UseR! 2022 Conference Organizer Committee.
2021 Consultant on Committee for Recommending User Security Practices for REDCap.
2023-2024 Co-chair, Program Book and Website Committee, International Chinese Statistical Association Applied Statistics Symposium.

Awards

2021 Author of one of ten key papers in Genomics, see "*Genomic Medicine Year in Review: 2021*".
The American Journal of Human Genetics 108(12), 2210-2214, 2021.
2022 Department IT Innovation Award for Biostatistics Reporting Server (BRS)
2022 Author of one of ten key papers in Genomics, see "*Genomic Medicine Year in Review: 2022*".
The American Journal of Human Genetics 109, 2101-2104, 2022.
2023 Author of one of ten key papers in Genomics, see "*Genomic Medicine Year in Review: 2023*".
The American Journal of Human Genetics 110(12), 1992-1995, 2023.

OTHER PROFESSIONAL ACTIVITIES

Student Researcher, *Tulane University Chemistry Department*   *Sep 1987 - Apr 1988*
Developed vector visualization of spin state changes in nuclear magnetic resonance given different electromagentic pulse sequences.

Student Researcher, *Tulane University Computer Science Department*   *Sep 1988 - Apr 1989*
Part of team developing automated analysis of English specifications using formal parser theory under an NSF research grant.

Engineer in Training, *Tennessee Valley Authority*   *Jan 1990 - Dec 1994*
Developer first real time heat rate monitoring system for linear optimization of coal burning efficiency. System currently saves TVA tens of millions of dollars a year in coal expenses. Worked on linear program model of the Tennessee Valley reservoir system.

Programmer Analyst, *Machine View Inc*   *Dec 1994 - Sep 1995*
Researched and developed a multi-threaded embedded system in C to control a 1.1 megawatt diesel gen-set powered by a 16 cylinder diesel with load grid synchronization for the Army.

Staff Consultant, *Oracle*   *Dec 1995 - Sep 1996*
Researched and developed multidimensional indexing of spatial data for CON/ED in Brooklyn to track modifications to power transmission grid using Oracle and ARC/Info.

Programmer Analyst, *Computational Systems Inc.*   *Sep 1996 - Aug 1999*
Researched and developed embedded computer to record engine vibration and electrical profiles (FFT / timeseries) for predictive preventative maintenance.

Senior Consultant, *Nexware Corporation*   *Aug 1999 - Aug 2001*
Designed 2-ton gantry control system for PET/SPECT imaging with active radiation using statebox theory. Completed risks and hazard analysis for FDA product acceptance.

Senior Consultant, *Wisdom Software*   *Aug 2001 - Jan 2004*
Developed for Walter Reed Army Institute of Research an infusion pump for battlefield medical aid. Delivered zero defect embedded software in C for the medical feedback device and performed risk analysis leading to first closed-loop medical device approval by the FDA. First unit installed in the oval office, next units sold to Air Force One.

Software Architect, *Centerstone*   *Jan 2004 - Jan 2006*
Researched and developed static code analysis tool in Haskell to manage 400,000 lines of undocumented PL/SQL. Responsible for maintenance and upgrade of a 24/7 web based mental health database with 1000+ users and 140,000 clients.

Vice President of Development, *Greatlodge*   *Feb 2006 - Feb 2007*
Managed 15 developers for state fishing and hunting license sales. System had 50TPS peaks running Perl and Ruby on Rails on an Oracle 10g grid. Responsible for ACH bank transfers.

Development Manager, *Centerstone*   *Feb 2007 - Dec 2008*

Manager of 5 developers for an electronic medical record system. Researched and developed analytical data warehouse for informing evidence based treatment using Oracle.

Health System Engineer, *Vanderbilt University Medical Center*   *Jan 2009 - Jan 2014*
Formulated statistical estimators for estimating rates of cellular division, death and quiescence from microscopy data. Optimized likelihood computation for strategic sampling with high exposure. Wrote routines using BLAS, and C interfacing with R. Derived the Heterogeneous Growth Model (HGM), to model cancer relapse in the absence of drug resistance mutations.

Director of Application Development, *Change Healthcare*   *Jan 2014 - Feb 2016*
Responsible for technical direction of a team of 17 developers for cost prediction of medical services. Scaled application from 750k users to 9M.

Senior Application Developer, *VUMC Biostatistics*   *Mar 2016 - Dec 2019*
Leading reproducible research efforts in biostatistics department. Math modeling (time-delay differentials, discrete event simulations, Markov models) for evaluation of Health Policy in the presence of genomic information. Data curator for All Of Us project.

TEACHING ACTIVITIES

Guest Lecturer, *Mathematics of Growth and Motility Processes.*   *2011 - 2013*
Cancer Systems Biology CAN347, Professor Lourdes Estrada, Vanderbilt University.

Mentor, Sarah Fletcher, undergraduate   *2010*
Developed quality assurance for quantification of microscopy data.

Mentor, Sam Hooke, undergraduate   *2012*
Developed high accuracy segmentation program for image stacks in Matlab.

Mentor, Oscar Ortega, undergraduate   *2012*
Developed automated signaling network reduction using tropical algebra.

Lecturer, *R and RStudio Workshop*, RMS Short Course, Vanderbilt   *May 2019*

Assistant Course Director, CPBP 8329-01 Introduction to Data Science and Statistics   *Fall 2020*
Developed syllabus, lectures, assignments and quizes for 2 credits in Vanderbilt University's Chemical and Physical Biology Graduate Program.

Lecturer, *R and RStudio Workshop*, RMS Short Course, Vanderbilt   *May 2020*

Lecturer, *Short Introduction to R*, CDC RMS Workshop, Vanderbilt   *Sep 2021*

Lecturer, *R and RStudio Workshop*, RMS Short Course, Vanderbilt   *May 2022*

Instructor, *What They Didn't Teach You About Decision Making*, SMDM 18th Biennial European Conference, Short Course, Berlin   *May 2023*

Instructor, *Introduction to SQL*, Biostatistics Summer Institute   *July 2024*

RESEARCH PROGRAM

Multiscale Mathematical Modeling of Cancer Progression
2009–2014 Grant NIH/NCI 5U54CA113007 PI: Vito Quaranta. Role: Numerical Analyst.
To quantify the impact of cancer cell heterogeneity in tumor growth and treatment resistance with respect to phenotypic traits (Proliferation, Motility and Metabolism). Quantification using high-content microscopy followed by statistical fitting and modeling with differential equations, and agent based models.

Image Driven Multi-Scale Modeling to Predict Treatment Response in Breast Cancer

2011-2013 Grant NIH U01CA174706-01 PI: Thomas Yankeelov. Role: Numerical Analyst. To research an identification method early in the course of therapy cancer patients who are not responding to a neoadjuvant regimen such that treatment could be switched. In particular, measurements from cellular to physiological scales are integrated to predict breast tumor response outcomes after a single cycle of trastuzumab and/or lapatinib.

Outcome Dependent Sampling of Longitudinal Data: Design and Analysis
2011–2012 Grant NIH R01HL094786 PI: Jonathan Schildcrout. Role: Numerical Analyst. The development of outcome dependent sampling designs and analysis approachs for use in longitudinal studies. Focused on efficiency of design when ascertainment of key exposure or covariate is costly.

Studies of Receptor Mediated Signal Transduction Processes in Mammalian Cancer
2013–2014 Grant NIH K22CA151918 PI: Carlos Lopez. Role: Numerical Analyst
A systems approach to develop and implement novel method exploring model receptor-mediated signaling in extrinsic apoptosis in mammalian cells based on experimental data.

Breast Cancer Research Program
2013–2014 Grant NIH/NCI P30CA068485 PI: Carlos Arteaga. Role: Statistician. Investigation of translation research from a single cell analysis of cancer cells to discovery of actionable therapy targets.

Subcontract Project/Moffitt/Theoretical/Experiment
2014 Grant NIH U54CA113007 PI: Alexander Anderson. Role: Numerical Analyst. Integration into a single mathematical model laboratory measurements of cancer cells with differing spatial and temporal scales of cancer progression.

Rational Integration of Genomic Healthcare Testing
2016-2018 Grant NIH U01HL122904 PI: Joseph Peterson. Role: Numerical Analyst. Investigation of the feasibility and cost-effectiveness of large-scale pharmacogenomics testing for current health systems. To provide evidence of the societal value of genetic panel tests in determining health care spending and patient outcomes. Developing simulations for estimation of the impact of panel based genomic screening. This project follows outcomes in the Pharmacogenomic Resource for Enhanced Decisions in Care and Treatment (PREDICT) by following 10,000 Vanderbilt Health System patients enrolled in PREDICT. Estimates of effect will be tested against actual patient data, and evaluate three strategies for pharmacogenomic implementation.

Rational Integration of Clinical Sequencing
2017–present Grant NIH HG009694 PI: Joseph Peterson. Role: Numerical Analyst. Project Narrative Uncertainty surrounding the clinical and economic value of genetic sequencing is a major impediment to broader adoption of this technology. The Rational Integration of SEquencing (RISE) project will estimate the long term clinical and economic value of sequencing adults and using the information to diagnose genetic diseases, personalize preventative care, and tailor therapies based on genetic risks. The project will also help prioritize research and implementation projects and provide a foundation for the implementation of Precision Medicine.

Data and Research Support Center
2019–2024 Grant NIH U2COD023196 PI: Joshua Denny. Role: Data Curation. The Precision Medicine Initiative's seeks to transform our understanding of factors that contribute to health and disease. This grant is for operationalization of a longitudinal cohort of 1 million individuals.

Advancing Treatment Outcomes for Pregnant Women with Opioid Use Disorder
2020–present Grant NIH K01-DA050740-01 PI: Ashley Leech. Role: Model Construction.
This training grant seeks to identify and improve the delivery of high-value health services to address the specialized needs of reproductive age and pregnant women in the US.This training grant will support her career goal of becoming a leading investigator who specializes in decision science methodology to empirically inform decision making on health services and resource priorities for marginalized women and their children in the US. Specifically, by evaluating real-world tradeoffs associated with treatment strategies and assessing the value of conducting further research to reduce decision uncertainty and optimize treatment benefits, she aims to provide a strong evidence base to improve the care for pregnant women afflicted by addiction.

Single-Center Long-Term Outcomes of Conventional Lipiodol Chemoembolization (cTACE) of Hepatocellular Carcinoma (HCC)
2020–present Private Grant from Guerbert PI: Daniel Brown. Role: Statistical Analyst.
This grant seeks to analyze factors relating to readmission and survival from an observational registry of chemoembolization surgeries on hepatocellular carcinoma patients. Goasl are the development of the registry such that it can be easily used by practitioners. Also the ability to produce statistical analysis in a repeatible fashion, so that it can be quickly revisited in the future as the number of patients in the registry grows.

Rational Integration of Polygenic Risk Scores (RIPS)
2022–present. Grant: NIH R01HG012262 PI: Josh Peterson. Role: Numerical Modeling, Website.
Evaluation of published and real-world evidence on the clinical value of adding polygenic risk scores (PRS) to inform comprehensive genomic risk assessment. To understand the impact of PRS performance and return risk thresholds on incremental clinical benefit and cost effectiveness. Development of research priorities for equity in implementation of PRS for underserved and underrepresented populations.

CODA: COvid and Diabetes Assessment
2024–present. Grant: NIH 1U01DK137533 PI: Russell Rothman. Role: Informatics Director.
Recent studies have found that infection with SARS-CoV-2 and COVID-19 diagnosis are associated with the development and progression of both Type 1 (T1D) and Type 2 Diabetes (T2D). The proposed study will engage 15 sites from the National Patient-Centered Clinical Research Network (PCORnet) and the T1D Exchange to recruit 1600 English- and Spanish-speaking pediatric and adult patients with recently diagnosed T1D or T2D who have had a known COVID-19 infection in the past 90 days or no recent diagnosis of COVID- 19 infection in the past year. The study will follow this population for 2 years and will utilize linked electronic health data from PCORnet sites to understand the impact of COVID-19 on diabetes.

The HIV Care Continuum and Health Policy: Changes through Context and Geography
2024–present. Grant: NIH 1K01AI131895 PI: Peter Rebeiro. Role: Analytic Support.
HIV remains a massive public health challenge both domestically and internationally; the HIV Care Continuum is a widely used and powerful epidemiologic framework applicable to those suffering from HIV, and the influence of public health and health system policies across the Continuum may be profound. By assessing the dynamic process of the HIV Care Continuum in discrete stages, and examining disparities by health policy, geography, and individual context, transitions that demand improvement and specific targets for public health and clinical interventions can more easily be identified.

Invited Speaker, *Building R Packages for Reproducible Research*, Statistical Practice in Cancer Conference, Moffitt   March 2017

Oral Presentation, *Cost Effectiveness Markov Model Bias and Correction* Annual Meeting of the Society for Medical Decision Making, Montreal   October 2018

Contributor, *Six-Year Evaluation of Same-Day Discharge Following Conventional Transarterial Chemoembolization (cTACE) of Hepatocellular Carcinoma* Society of Interventional Radiology 47th Annual Scientific Meeting, Boston MA. Frantz S, Wu H, Adeniran O, Wong T, Borgmann A, Matsuoka L, Geevarghese S, Alexopoulos S, Shingina A, Meranze S, Baker J, Garbett S, Brown D.   June 11-16, 2022

Poster, *Preservation of non-linear correlation between birth outcomes calibrated to known marginals among infants affected by opioids*, Society for Medical Decision Making, Seattle, WA Meeting. Shawn Garbett, Elizabeth McNeer, Rashmi Bharadwaj, Stephen W. Patrick, Ashley A. Leech.   October 23rd, 2022

Poster, *Modeling the diffusion and impact of health technology uptake among family members: cascade genomic sequencing*, Soceity for Medical Decision Making, Seattle WA Meeting. Shawn Garbett, John Graves, Gregory F Guzausakas, David Veenstra, Josh F Peterson.   October 25th, 2022

Poster, *redcapAPI: Analysis-Ready Data Retrieval from REDCap with Advanced Processing Capabilities in R* Vanderbilt University Medical Center Biostatistics 20th Anniversary Symposium.   September 29th, 2023

redcapAPI 2022–present CRAN R Package. Role: Maintainer
An interface between REDCap and R.

emg 2010–present CRAN R Package. Role: Creator
Extend R programming language with statistical mixture of a normal and an exponential random variable.

fracprolif 2010–present CRAN R Package. Role: Creator
Share microscopy data for cancer cell cycle with likelihood tools and tests for fitting distribution assumptions.

tangram 2016-present CRAN R Package. Role: Creator
A package to create publication quality tables directly from R for reproducible research. Renders to text, LaTex, RTF, and HTML5. Provides for automated definitions of variable summary tables definable by R formula, with the provided reference from Frank Harrell's `Hmisc`. Output styles include Lancet and NEJM.

acepack 2016-present. CRAN R Package Role: Maintainer
Two nonparametric methods for multiple regression transform selection are provided. The first, Alternative Conditional Expectations (ACE), is an algorithm to find the fixed point of maximal correlation, i.e. it finds a set of transformed response variables that maximizes R^2 using smoothing functions. Also included is the Additivity Variance Stabilization (AVAS) method which works better than ACE when correlation is low.

rccola 2021-2024. CRAN R Package Role: Creator

RedCap CryptO Locker for Api keys. A package to make the best security practices for managing api keys locally the easiest practice for R report generation. Now folded into `redcapAPI`.

yaml 2022-present. CRAN R Package Role: Maintainer
A key package to the entire R community with 700,000 downloads a month. Reads/write yaml files with strong dependencies from RStudio and Rmarkdown.

PUBLICATIONS

Shawn Garbett. "**Cross Platform CD Indexing**," in *Linux Journal*. December 2003.

Shawn Garbett. "**Cleanroom Software Engineering**," in *Dr. Dobbs*. August 2003.

Quaranta V, Tyson DR, Garbett SP, Weidow B, Harris MP, Georgescu W. "**Trait variability of cancer cells quantified by high-content automated microscopy of single cells**," in *Methods in Enzymology*. 2009;467:23-57. doi: 10.1016/S0076-6879(09)67002-6.

Quaranta V, Garbett SP. "**Not all noise is waste**," in *Nature Methods*. 2010 Apr;7(4):269-72. doi: 10.1038/nmeth0410-269.

Hassanein M, Weidow B, Koehler E, Bakane N, Garbett S, Shyr Y, Quaranta V. "**Development of high-throughput quantitative assays for glucose uptake in cancer cell lines**," in *Molecular Imaging and Biology* 2011 Oct;13(5):840-52. doi: 10.1007/s11307-010-0399-5.

Gabriel P, Garbett SP, Quaranta V, Tyson DR, Webb GF. "**The contribution of age structure to cell population responses to targeted therapeutics**," in *Journal Theoretical Biology*. 2012 Oct 21;311:19-27. doi: 10.1016/j.jtbi.2012.07.001.

Tyson DR, Garbett SP, Frick PL, Quaranta V. "**Fractional proliferation: a method to deconvolve cell population dynamics from single-cell data**," in *Nature Methods*. 2012 Sep;9(9):923-8. doi: 10.1038/nmeth.2138.

Schildcrout JS, Garbett SP, Heagerty PJ. "**Outcome Vector Dependent Sampling with Longitudinal Continuous Response Data: Stratified Sampling Based on Summary Statistics**," in *Biometrics*. 2013 Feb 14. doi: 10.1111/biom.12013.

Markov DA, Little EM, Garbett SP, McCawley LJ. "**Variation in diffusion of gases through PDMS due to plasma surface treatment and storage conditions**," in *Biomed Microdevices*. 2014 Feb;16(1):91-6. doi: 10.1007/s10544-013-9808-2.

Schildcrout JS, Rathouz PJ, Zelnick LR, Garbett SP, Heagerty PJ. "**Biased Sampling Designs to Improve Research Efficiency: Factors Influencing Pulmonary Function over Time in Children With Asthma**," in *Ann Appl Stat*. 2015 Jun;9(2):731-753. PMID: 26322147

Harris LA, Frick PL, Garbett SP, Hardeman KN, Paudel BB, Lopez CF, Quaranta V, Tyson DR. "**An unbiased metric of antiproliferative drug effect in vitro**," in *Nat Methods*. 2016 Jun; 13(6):497-500. doi: 10.1038/nmeth.3852

Schildcrout JS, Haneuse S, Tao R, Zelnick LR, Schisterman EF, Garbett SP, Mercaldo ND, Rathouz PJ, Heagerty PJ. "**Two-phase, generalized case-control designs for quantitative longitudinal outcomes.**" in *Am J Epidemiol*. 2019 Jun 5. pii: kwz127. doi: 10.1093/aje/kwz127.

Graves JA, Zilu Z, Garbett SP, Peterson J. "**The Value of Pharmacogenomic Information**" in *Economic Dimensions of Personalized and Precision Medicine*. National Bureau of Economic Research. University of Chicago Press. 2019. Chapter 3.

Shi Y, Graves JA, Garbett SP, Zhou Z, Marathi R, Wang X, Harrell FE, Lasko TA, Denny JC, Roden DM, Peterson JF, Schildcrout JS. "**A Decision-Theoretic Approach to Panel-Based, Preemptive**

Genotyping" in *MDM Policy Pract.* 2019 Aug 17;4(2). doi: 10.1177/2381468319864337.

Nita Limdi, L Cavallari, Craig Lee, William Hillegass, Ann Holmes, Todd Skaar, Maria Pisu, Chrisly Dillon, Amber Beitelshees, Philip Empey, Julio Duarte, Vakaramoko Diaby, Yan Gong, Julie Johnson, John Graves, Shawn Garbett, Zilu Zhou, and Josh Peterson. "**Cost-effectiveness of CYP2C19-guided antiplatelet therapy in patients with acute coronary syndrome and percutaneous coronary intervention informed by real-world data**" in *Pharmacogenomics.* 2020 Feb 11. doi:10.1038/s41397-020-0162-5.

Gregory F. Guzauskas, Shawn Garbett, Zilu Zhou, Scott J. Spencer, Hadley S. Smith, Jing Hao, Dina Hassen, Susan R. Snyder, John A. Graves, Josh F. Peterson, Marc S. Williams, David L. Veenstra. "**Cost-effectiveness of Population-Wide Genomic Screening for Hereditary Breast and Ovarian Cancer in the United States**" in *JAMA Netw Open.* 2020;3(10):e2022874. doi:10.1001/jamanetworkopen.2020.22874

Graves, John, Shawn Garbett, Zilu Zhou, Jonathan Schildcrout, Josh Peterson. "**Comparison of Decision Modeling Approaches for Health Technology and Policy Evaluation**." in *Medical Decision Making.* 2021, March 18. doi:10.1177/0272989X21995805

Schildcrout, Jonathan S., Frank E. Harrell, Jr., Patrick J. Heagerty, Sebastien Haneuse, Chiara Di Gravio, Shawn Garbett, Paul J. Rathouz, Bryan E. Shepherd. "**Model-assisted analyses of longitudinal, ordinal outcomes with absorbing states**" in *Statistics in Medicine.* 2022. doi: 10.1002/sim.9366

Guzauskas GF, Jiang S, Garbett S, Zhou Z, Spencer SJ, Snyder SR, Graves JA, Williams MS, Hao J, Peterson JF, Veenstra DL. "**Cost-effectiveness of population-wide genomic screening for Lynch syndrome in the United States**". Genet Med. 2022 May;24(5):1017-1026. doi: 10.1016/j.gim.2022.01.017. Epub 2022 Feb 25. PMID: 35227606; PMCID: PMC9673900.

Cheryl N. Miller, Keri N. Althoff, David J. Schlueter, Hoda Anton-Culver, Qingxia Chen, Shawn Garbett, Francis Ratsimbazafy, Isaac Thomsen, Elizabeth W. Karlson, Mine Cicek, Ligia A. Pinto, Bradley A. Malin, Lucila Ohno-Machado, Carolyn Williams, David Goldstein, Aymone Kouame, Andrea Ramirez, Kelly A. Gebo, Sheri D. Schully. "**Concordance of SARS-CoV-2 Antibody Results during a Period of Low Prevalence**" in *American Society for Microbiology.* 2022 Oct 26;7(5). doi: 10.1128/msphere.00257-22

Hund HC, Frantz SK, Wu H, Adeniran OR, Wong TY, Borgmann AJ, Matsuoka L, Geevarghese S, Alexopoulos S, Shingina A, Meranze SG, Baker JC, Garbett S, Brown DB. "**Six-Year Evaluation of Same-Day Discharge Following Conventional Chemoembolization of Hepatocellular Carcinoma**" J Vasc Interv Radiol. 2023 Mar;34(3):378-385. doi: 10.1016/j.jvir.2022.11.029.

Gregory F Guzauskas, Shawn Garbett, Zilu Zhou, Jonathan S Schildcrout, John A Graves, Marc S Williams, Jing Hao, Laney K Jones, Scott J Spencer, Shangqing Jiang, David L Veenstra, Josh F Peterson. "**Population Genomic Screening for Three Common Hereditary Conditions : A Cost-Effectiveness Analysis**" Ann Intern Med. 2023 May;176(5):585-595. doi: 10.7326/M22-0846.

Ortega OO, Ozen M, Wilson BA, Pino JC, Irvin MW, Ildefonso GV, Garbett SP, Lopez CF. "**Signal execution modes emerge in biochemical reaction networks calibrated to experimental data**". iScience. 2024 May 16;27(6):109989. doi: 10.1016/j.isci.2024.109989. PMID: 38846004; PMCID: PMC11154230.

Guide A, Sulieman L, Garbett S, Cronin RM, Spotnitz M, Natarajan K, Carroll RJ, Harris P, Chen Q. "**Identifying erroneous height and weight values from adult electronic health records in the All of Us research program**". J Biomed Inform. 2024 Jul;155:104660. doi: