Welcome to the DMIG Session #3

Agenda:

Hosts: Kit Carson, Todd Nesson
Title: Data & Analysis Support Services

- **BEAD Core** (Jacky Jennings)
- **ICTR Biostatistics Core** (Gayane Yenokyan)
- **JHU Data Services** – Data Access / Data Visualization (Pete Lawson)
To find previous DMIG webinars and other past ICTR recorded events please visit:

https://ictr.johnshopkins.edu/all-events/presentations/
A powerful presentation

Biostatistics, Epidemiology And Data Management

BEADCore@jhmi.edu
BEAD Core Team

• LEAD TEAM
  • Amie Bettencourt, PhD – Lead Faculty, Psych & Behav Hlth
  • Amelia Brandt, PhD – Lead Sr. Staff & Lecturer, Consultant
  • Cyd Eaton, PhD – Lead Faculty & Lecturer, Pediatrics
  • Ethan Gough, PhD – Lead Faculty & Lecturer, Biostatistics/SPH
  • Suzanne Grieb, PhD – Lead Faculty & Lecturer, Pediatrics
  • Miranda Jones, PhD, MHS – Lead Faculty, Epidemiology/SPH
  • Jamie Perin, PhD – Lead Faculty, Biostatistics/SPH
  • Sean Tackett, PhD – Lead Faculty & Lecturer, GIM
  • Megan Tschudy, MD, MPH – Lead Faculty, Pediatrics
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  • Carla Tilchin, MSPH, PhD Candidate
  • Chunyi Xia, MHS Candidate
  • Alisa Zayas, RN, Bioinformatics Candidate
  • Junyi Zhou, MHS Candidate

LEADERSHIP TEAM – executive leadership and administration
Kameryn Atkinson, BS – Research Program Assistant
Jacky Jennings, PhD, MPH – Dir, Pediatrics/Epidemiology
Kevin Psoter, PhD, MPA – Assoc Dir, Lead faculty, & Lecturer, Pediatrics
Laura Prichett, PhD – Assoc Dir, Lead Faculty & Lecturer, Pediatrics
Jay Vaidya, MPH, PhD, MBBS – Assoc Dir, Lead Faculty & Lecturer, GIM
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Mission
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- Epidemiologic study design and approach
- Quantitative and qualitative analyses
- Grant submissions, scientific manuscripts, reports
- Data collection instruments
- Sample, power and effect size calculations
- Research training and education workshops
Core Values - RISE

1. **RESPECT** for intellectual curiosity and all forms of knowledge and inquiry

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BEAD Core Locations & Subscribers Over Time

- **Locations**: East Baltimore, JHBMC, as needed other sites

- **Subscribing Departments/Units**
  - 2000 Sponsored funding with multiple grants and contracts
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  - 2013 **Pediatrics**: Dr. Tammy Brady, Dr. Sanjay Jain, Dr. Maggie Moon
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  - 2019 **Gynecology/Obstetrics**: Dr. Vicki Handa, Dr. Andy Satin, Dr. James Segar
  - 2020 **SKCCC/ICTR**: Patient reported outcomes (PROs): Dr. William Nelson, Dr. Dan Ford
  - 2020 **COVID-19 Rapid Response Consult (CRRC) service**: on 4/1/20 to be responsive to the urgent need for pandemic research, the BEAD Core stood up a CRRC service in partnership with the COVID-19 And Data Research Evaluation (CADRE/Stuart Ray, Chair).
  - 2020 **PMCOEs**: Education, COPD, Adult Primary Care, NCU, etc.
  - 2021 **Physical Medicine & Rehabilitation** (pilot): Dr. Pablo Celnik, Dr. Preeti Raghavan
  - 2021 **Anesthesiology & Critical Care Medicine**: Dr. Adam Sapirstein, Dr. Sapna Kudchadkar
What do Subscribing Departmental Faculty receive?

- Subscribing departments/service lines: ACCM, DOM, GYN/OB, PEDS, PROs, pilot PMR
- 20 hours per investigator annually for faculty and their trainees
  - Additional 20 hours per trainee with primary faculty mentor
  - Additional 20 hours for grants
- 20 hours for any patient reported outcomes (PROs) for any investigator at Hopkins
- Multiple investigators on a project can pool hours
- Projects can extend over multiple years; hours do not carry forward
- If additional hours are required, transition to direct-fee-for-service
- Rates in line with other institutional support services
How does the BEAD Core model work?

• Goals: to produce scholarly products and advance careers

1. Write BEADCore@jhmi.edu to get started
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4. Scope of work and quote for services
5. Scientific teamwork commences work including faculty client and BEAD Core lead faculty/staff
6. Work completed; scholarly products submitted
7. Final invoice
FY22 BEAD Core Annual Deliverables

Overall

Most successful year-to-date!

• 446 Faculty and their trainees were provided research support services
  • 7% (418) increase compared to FY21
  • The majority (74%) of clients served were < Assistant Professors

• 537 Projects for a total of 6,515 hours
  • 3% (523) increase in projects and 19% (5,486) increase in hours compared to FY21

• 145 manuscripts and 54 grants supported
  • 10% (132) increase in manuscripts and similar (54) grants compared to FY21

• Patient Reported Outcomes (PRO) Service Line
  • 70 faculty and their trainees supported; 112% (33) increase compared to FY21
  • 46 projects; 84% (25) increase compared to FY21

• 4 Research training and education workshop/seminars
  • Topics included microbiome research, PMAP, and qualitative methods and data analysis
## FY22 BEAD Core Clients by Faculty Appointment

### 74% Junior Faculty (< Assistant Professor)

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<tr>
<td>Associate Professor</td>
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</tr>
<tr>
<td>Assistant Professor</td>
<td>178</td>
<td>40</td>
</tr>
<tr>
<td>Instructor/Clinical Associate/Research Associate</td>
<td>24</td>
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<tr>
<td>Fellow</td>
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<td>Resident</td>
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Institute for Clinical & Translational Research
FY22 Highest level of GYN/OB Faculty supported to-date!

Gynecology and Obstetrics Faculty Served (FY20-FY22)
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<td>Psychiatry and Behavioral Sciences</td>
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<td>&lt;1</td>
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<td>Pharmacology</td>
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<td>&lt;1</td>
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<td>Urology</td>
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<td>Emergency Medicine</td>
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<tr>
<td>Radiology</td>
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<td>&lt;1</td>
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<td><strong>Total</strong></td>
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<td><strong>100%</strong></td>
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<td>Research Support Service Hours by Type*</td>
<td>Hours (n)</td>
<td>%</td>
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<tr>
<td>Complex (n=884) &amp; Basic Biostatistical Analyses (n=1084)</td>
<td>1968</td>
<td>30</td>
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<tr>
<td>Epidemiological Study Design &amp; Consultation</td>
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<td>Data Cleaning and Management</td>
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<tr>
<td>Database Development/Design/Management</td>
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<tr>
<td>Manuscript Preparation</td>
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<td>5</td>
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<tr>
<td>Epic Data Extraction</td>
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<tr>
<td>Qualitative Data Analyses &amp; Analysis Plans</td>
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<td>3</td>
</tr>
<tr>
<td>Survey Review &amp; Data Collection Form Design</td>
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<td>2</td>
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<tr>
<td>Grant Preparation/Review</td>
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<td>2</td>
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<tr>
<td>Statistical Analytic Plans</td>
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<tr>
<td>IRB Review</td>
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<td>1</td>
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<tr>
<td>Power/Sample Size Calculation</td>
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<td>1</td>
</tr>
<tr>
<td>Geographic Information System (GIS) Mapping</td>
<td>27</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Admin (marketing, R/D, budget, staff dev/management, etc.)</td>
<td>588</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,515</strong></td>
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Objective: To facilitate application of core research skills while broadening understanding of important issues in clinical research such as power and sample size calculations.

Investigations into the Human Microbiome: A Primer, Ethan Gough, PhD – November 2021 12pm-1pm; 50 attendees. This seminar covered sequencing options, costs, and analytic considerations for human microbiome research projects.

Qualitative Methods: How to get Started, Amelia Brandt, DrPH – January 2022 12pm-1pm; 70 attendees. This seminar covered the nuts and bolts of timing, cost and development of research questions for qualitative research projects.

PMP in Practice: Research from the COVID KIDS Group, Oluwakemi Badaki-Makun, MD, CM, Amyna Husain, MD, Daniel Hindman, MD, Ann Kane, MD – February 2022 12pm-1pm; 30 attendees. What is the Precision Medicine Analytics Platform (PMP) and how is it used for research? The Pediatric Emergency Department presented highlights from recent research, including evaluation of pediatric COVID testing protocols in the ED setting and fever protocols in the age of COVID-19.

BEAD Core Seminar: An Introduction to Qualitative Data Analysis with NVivo, Sakinah Suttiratana, PhD, MPH, MBA – June 2022 12pm-1pm; 45 attendees. External speaker from the Yale School of Public Health; hands-on course on using NVivo software for qualitative data analysis; Co-hosted by the Behavioral and Implementation Research to Change Healthcare (BIRCH) Center.
Patient Reported Outcomes (PROs) Service Line: Incorporating the Patient Voice – available to all JHMI faculty

— Patient-reported outcome measures (PROs)

• Defined as standardized, validated questionnaires completed by patients to measure their perception of their functional well-being and health status (National Health Service, 2009)

• Examples include symptoms, health-related quality of life (HRQOL), or patient perceived health status, reported directly by the patient

• PROs can be powerful tools to inform patients, clinicians, and policy-makers about morbidity and 'patient suffering', especially in chronic diseases.

— Funding: Sidney Kimmel Comprehensive Cancer Center (SKCCC) and ICTR
Qualitative Methods Service Line

—Qualitative research methods are a powerful tool to achieve a deep understanding of complex issues and enable bringing patient and participant narratives to the fore

• Common methods include in-depth interviews, focus group discussions, observation, and case studies

• The BEAD Core can support qualitative research throughout the research process.

• **Services** include:
  • Guidance on qualitative approach
  • Review of data collection tools (e.g., interview or focus group discussion guides)
  • Data analysis support (e.g., developing codebook)
  • Manuscript support
BEAD Core Research Support for PMCOE/PMAP Groups

• New support for the data science and hypothesis testing needs of Precision Medicine Centers of Excellence (PMCOE) utilizing the Precision Medicine Analytics Platform (PMAP).

• Specific expertise in SQL/Python and clinical data management and analyses.

• The BEAD Core is supporting multiple PMCOE/PMAP research groups, with more groups on the horizon including
  • Adult Primary Care
  • Precision Medical Education
  • COPD
  • Others
NIH Data Management and Sharing Plan
Requirement – effective JAN 25 2023!

- **Policy goals:** (1) advance rigorous and reproducible research, (2) promote public trust
- **Requirement:** expectation (1) to maximize data sharing with caveats, (2) that data are of sufficient quality to validate and replicate research findings
- **Elements of a DMSP**
  1. Brief description of scientific data to be managed, preserved and shared (data modality, level of aggregation, degree of data processing/curation)
  2. Indication of the tools/software needed or utilized to access or manipulate the shared scientific data to support replication or reuse
  3. Specification of the standards to apply to the scientific data and associated metadata
  4. Name of data repository, how data will be findable and identifiable, timeline
  5. Citation guidance, whether modification of research product is possible, use of research product for commercial purposes
  6. Indicate how compliance with the plan will be monitored and managed, frequency of oversight and by whom (typically PIs)
- **Allowable costs:** (1) curating data and developing supporting documentation, (2) local data management consideration, (3) preserving and sharing data through established repositories, (4) de-identifying data
Department of Medicine Investigator Testimonials

• “BEAD Core group has been outstanding to work with. I have used BEAD for several research projects and have found their services extremely helpful. The process of contacting and establishing with a BEAD representative was straightforward and quite prompt.” – DOM Faculty Investigator

• “My impression is that the BEAD Core perfectly fits the needs of many faculty and trainees within our department and fits particularly well for QI projects…I see access to the BEAD Core as an essential part of ensuring our department can carry out a robust, academically-aligned quality and safety agenda.” – DOM Faculty Investigator

• “BEAD has been instrumental in getting my research projects to the finish line since I joined Hopkins in 2019 as a junior faculty. I am very thankful to BEAD and to our BEAD Core lead for providing these excellent services to the SOM faculty.” – DOM Faculty Investigator
Pediatrics Investigator Testimonials

• "My research team and I recently had a great experience with a team from BEAD as a consult - they were smart, insightful, thoughtful and practical. We are writing a grant and looking to involve them going forward.”
  – Pediatric Investigator

• "The BEAD Core is a hidden gem at Hopkins. They are responsive, efficient and do excellent work. I have worked with the BEAD Core … on several data projects - some where [the BEAD] team pulled the data and then analyzed it, others where we have provided the data for analysis. [Their work is superb and has resulted in publications in high impact journals.]
  – Pediatric Investigator

• “Just wanted to let you know that [our] R01 was submitted today and is officially in the queue at the NIH. Thank you for all of your help in developing and preparing the sample size and analysis plan.
  Your contributions were instrumental to the [R01] proposal.”
  – Pediatric Investigator
It has been a great experience to work with BEAD Core Lead and BEAD Core analyst, and none of these projects would have been completed without their help. We had a lot of very complicated data which they led the way in organizing and analyzing. Dr. Lead knows this stuff incredibly well, and even more amazing, he’s patient and very good at explaining it to clinicians. Lead BEAD Core Faculty has been worth their weight in gold in terms of completing these projects. They certainly deserve kudos for helping us accomplish these projects with all that biomarker data.”

– GYN/OB Faculty investigator

"It has been delightful to collaborate with you on this project."
A POWERFUL PRESENTATION

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<tr>
<td>Research Support Service Hours by Type*</td>
<td>Hours (n)</td>
<td>%</td>
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<tr>
<td>Epidemiological Study Design &amp; Consultation</td>
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<td>Database Development/Design/Management</td>
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<td>6</td>
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<td>Manuscript Preparation</td>
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<td>5</td>
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<tr>
<td>Epic Data Extraction</td>
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<tr>
<td>Qualitative Data Analyses &amp; Analysis Plans</td>
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<td>Survey Review &amp; Data Collection Form Design</td>
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<td>Grant Preparation/Review</td>
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<tr>
<td>Statistical Analytic Plans</td>
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<td>IRB Review</td>
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<td>Power/Sample Size Calculation</td>
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<td>Admin (marketing, R/D, budget, staff dev/management, etc.)</td>
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<td><strong>Total</strong></td>
<td><strong>6,515</strong></td>
<td><strong>100%</strong></td>
</tr>
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</table>
BEAD Core Research Training & Education in FY22

**Objective:** To facilitate application of core research skills while broadening understanding of important issues in clinical research such as power and sample size calculations

**Investigations into the Human Microbiome: A Primer, Ethan Gough, PhD** – November 2021 12pm-1pm; 50 attendees. This seminar covered sequencing options, costs, and analytic considerations for human microbiome research projects.

**Qualitative Methods: How to get Started, Amelia Brandt, DrPH** – January 2022 12pm-1pm; 70 attendees. This seminar covered the nuts and bolts of timing, cost and development of research questions for qualitative research projects.

**PMAP in Practice: Research from the COVID KIDS Group, Oluwakemi Badaki-Makun, MD, CM, Amyna Husain, MD, Daniel Hindman, MD, Ann Kane, MD** – February 2022 12pm-1pm; 30 attendees. What is the Precision Medicine Analytics Platform (PMAP) and how is it used for research? The Pediatric Emergency Department presented highlights from recent research, including evaluation of pediatric COVID testing protocols in the ED setting and fever protocols in the age of COVID-19.

**BEAD Core Seminar: An Introduction to Qualitative Data Analysis with NVivo, Sakinah Suttiratana, PhD, MPH, MBA** – June 2022 12pm-1pm; 45 attendees. External speaker from the Yale School of Public Health; hands-on course on using NVivo software for qualitative data analysis; Co-hosted by the Behavioral and Implementation Research to Change Healthcare (BIRCH) Center.
Patient Reported Outcomes (PROs) Service Line: Incorporating the Patient Voice – available to all JHMI faculty

Patient-reported outcome measures (PROs)

- Defined as standardized, validated questionnaires completed by patients to measure their perception of their functional well-being and health status (National Health Service, 2009)
- Examples include symptoms, health-related quality of life (HRQOL), or patient perceived health status, reported directly by the patient
- PROs can be powerful tools to inform patients, clinicians, and policy-makers about morbidity and 'patient suffering', especially in chronic diseases.

Funding: Sidney Kimmel Comprehensive Cancer Center (SKCCC) and ICTR
Qualitative research methods are a powerful tool to achieve a deep understanding of complex issues and enable bringing patient and participant narratives to the fore.

- Common methods include in-depth interviews, focus group discussions, observation, and case studies.
- The BEAD Core can support qualitative research throughout the research process.

**Services** include:

- Guidance on qualitative approach
- Review of data collection tools (e.g., interview or focus group discussion guides)
- Data analysis support (e.g., developing codebook)
- Manuscript support
BEAD Core Research Support for PMCOE/PMAP Groups

New support for the data science and hypothesis testing needs of Precision Medicine Centers of Excellence (PMCOE) utilizing the Precision Medicine Analytics Platform (PMAP).

Specific expertise in SQL/Python and clinical data management and analyses.

The BEAD Core is supporting multiple PMCOE/PMAP research groups, with more groups on the horizon including

• Adult Primary Care
• Precision Medical Education
• COPD
• Others
NIH Data Management and Sharing Plan Requirement –
effective JAN 25 2023!

Policy goals: (1) advance rigorous and reproducible research, (2) promote public trust

Requirement: expectation (1) to maximize data sharing with caveats, (2) that data are of sufficient quality to validate and replicate research findings

Elements of a DMSP
1. Brief description of scientific data to be managed, preserved and shared (data modality, level of aggregation, degree of data processing/curation)
2. Indication of the tools/software needed or utilized to access or manipulate the shared scientific data to support replication or reuse
3. Specification of the standards to apply to the scientific data and associated metadata
4. Name of data repository, how data will be findable and identifiable, timeline
5. Citation guidance, whether modification of research product is possible, use of research product for commercial purposes
6. Indicate how compliance with the plan will be monitored and managed, frequency of oversight and by whom (typically PIs)

Allowable costs: (1) curating data and developing supporting documentation, (2) local data management consideration, (3) preserving and sharing data through established repositories, (4) de-identifying data
Department of Medicine Investigator Testimonials

“BEAD Core group has been outstanding to work with. I have used BEAD for several research projects and have found their services extremely helpful. The process of contacting and establishing with a BEAD representative was straightforward and quite prompt.” – DOM Faculty Investigator

“My impression is that the BEAD Core perfectly fits the needs of many faculty and trainees within our department and fits particularly well for QI projects… I see access to the BEAD Core as an essential part of ensuring our department can carry out a robust, academically-aligned quality and safety agenda.” – DOM Faculty Investigator

“BEAD has been instrumental in getting my research projects to the finish line since I joined Hopkins in 2019 as a junior faculty. I am very thankful to BEAD and to our BEAD Core lead for providing these excellent services to the SOM faculty.” – DOM Faculty Investigator
Pediatrics Investigator Testimonials

"My research team and I recently had a great experience with a team from BEAD as a consult - they were smart, insightful, thoughtful and practical. We are writing a grant and looking to involve them going forward.”
– Pediatric Investigator

"The BEAD Core is a hidden gem at Hopkins. They are responsive, efficient and do excellent work. I have worked with the BEAD Core … on several data projects - some where [the BEAD] team pulled the data and then analyzed it, others where we have provided the data for analysis. [Their] work is superb and has resulted in publications in high impact journals.”
– Pediatric Investigator

“Just wanted to let you know that [our] R01 was submitted today and is officially in the queue at the NIH. Thank you for all of your help in developing and preparing the sample size and analysis plan. Your contributions were instrumental to the [RO1] proposal.”
– Pediatric Investigator
"It has been a great experience to work with BEAD Core Lead and BEAD Core analyst, and none of these projects would have been completed without their help. We had a lot of very complicated data which they led the way in organizing and analyzing. Dr. Lead knows this stuff incredibly well, and even more amazing, he’s patient and very good at explaining it to clinicians. Lead BEAD Core Faculty has been worth their weight in gold in terms of completing these projects. They certainly deserve kudos for helping us accomplish these projects with all that biomarker data."

– GYN/OB Faculty investigator

"It has been delightful to collaborate with you on this project. Thank you!"

– GYN/OB Faculty investigator
Biostatistics, Epidemiology And Data Management

BEADCore@jhmi.edu
Beadcore.jhu.edu
Working with the Biostatistics Center, Your Partner Across the Research Life Cycle

Gayane Yenokyan, MD, MPH, PhD
Executive Director, Johns Hopkins Biostatistics Center
Co-Program Director, ICTR Biostatistics Program
Associate Scientist, Department of Biostatistics
Johns Hopkins Bloomberg School of Public Health
Outline

• Introduction: Biostatistics Center as a first-rate resource for biostatistics and data management support
• Breadth and scope of our consultations
• Tips to make the most from your consultation
• Questions/Comments
Johns Hopkins Biostatistics Center (JHBC): A Snapshot

• The consulting and practice arm of the world-renowned Department of Biostatistics since 1997
• Broad expertise in data management, programming, data science and biostatistics
• Proven track record of support for biomedical research, education and practice
• High demand for and high satisfaction of our work
• Support clinical and translational research community as a member of the ICTR Quantitative Methods core
Biostatistics Consulting Center

The Johns Hopkins Biostatistics Center is the practice arm of our Department, providing the latest in biostatistical and information science expertise to a wide range of clients both within and outside Johns Hopkins.

READ MORE ABOUT THE CENTER

https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-biostatistics-center/
JHBC Team

2 branches: Biostatistics and Data Informatics Services Core (DISC)

Faculty appointments in the Department of Biostatistics at ranks Research Associate to Senior Scientist

Data managers and computer programmers

Administrative team
Johns Hopkins Biostatistics Center (JHBC)
Mission

Advancing public health and medicine using best practices and comprehensive expertise in biostatistics and data science, through consulting and education.
Why Choose JHBC?

**Expertise:** Our methodological expertise spans both traditional and cutting-edge models in data science and biostatistics, and our teams have years of experience across research disciplines

**Quality:** Our commitment to best practices and problem-solving helps ensure our collaborators’ work is consistently published in leading journals, garners awards for excellence, and is cited with confidence

**One-stop services:** We offer full-lifecycle services from data capture or data manipulation and study design to reporting and understanding review responses

**People:** Our data scientists and biostatisticians are committed to your success, approachable, and recognized for both outstanding knowledge and service
Consulting Across the Research Life Cycle

- Clinical Trial Design
- Observational Study Design
- Grant/proposal Applications

- Manuscript preparation
- Scientific report-writing
- Study monitoring reports

- Database and instruments optimization
- REDCap support
- Data security

- Data conversion and merging
- Quality assurance
- Programming and reproducible workflows

JHBC:
One-stop Research Resource
Focused Areas of Expertise

- Clinical trial design, conduct, reporting, analysis
- Causal Inference methods / treatment effect estimation
- Reproducible research / programming workflows for reporting
- Big Data
- Missing data solutions
- Machine Learning
- Data Capture Systems, Database design, and Programming
- Large public databases (NHANES, HCUP etc.)
- Data from wearable devices and trajectory modeling
- Meta-analysis methods
- Multivariate analysis methods (PCA and FA)
JHBC Specialized Software Expertise

- Stata
- R
- R Studio
- REDCap
- Python
- Shiny
- tidy
- knitr
- ggplot2
- SAS
- markdown
- NCSS
- SPSS
- SQL
- PASS

Research Electronic Data Capture
Mechanisms of Consultation

- **Free Support** for clinical and translational research projects through the ICTR Biostatistics Program
  - ICTR Biostatistics Program promotes the appropriate use of rigorous research methods in the design, implementation, analysis and interpretation of clinical and translational (CT) studies.
- **Fee-for-service (FFS)** projects based on hourly rates
- **Level of effort on grants**
ICTR Biostatistics Program: Overview of Free Services

- 30-minute biostatistics consulting clinics for short questions
- Extended biostatistical and/or data management consultations (up to 5 free hours per project)
- Letters of support for grant applications
- Translational Research Evaluation Committee (TREC) members review protocols submitted for BOOST and PROPEL programs that award Clinical Research Unit (CRU) resources to ICTR investigators
Biostatistics Consulting Clinics

- **Who is eligible:** JHU researchers: faculty, staff, post-doctoral fellows and residents, for faculty-led research

- **When:**
  - Tuesday 1:30 p.m. - 2:30 p.m. - SAS
  - Wednesday 11:00 a.m. - 12:00 p.m. - R
  - Thursday 11:00 a.m. - 12:00 p.m. - STATA

- **Scope:** These consultations are designed for short questions that can be addressed within 20- to 30-minute sessions. Consultations are provided on a first-come, first-served basis

- **How to participate:** Send an email to jhbc@jhu.edu an hour in advance of clinic time. First 3 will get confirmation email.

- **Format:** The virtual clinics via MS Teams
Biostatistics and Data ICTR Requests

- **Up to 5 free hours** of biostatistics and data management help **per project**
- Requests are submitted through the ICTR portal
- Confirmation by email
- Requests are assigned on rotating basis among MS / PhD biostatistics faculty or a data manager/programmer
- Match by expertise / opportunity to work with a biostatistician you worked with before
- Fee-for-service option beyond the allotted time
- **For questions: email** jhbc@jhu.edu.

JHBC website: https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-biostatistics-center/services
How to Submit a Request

Submit a Request
How to Submit a Request

Begin a New Project
Select the service or services you would like to use, then click the “proceed” button. If you need more information about a particular program, just click on that program’s name.

We’ll ask you some questions, give you the opportunity to upload some supporting documents, and then pass your request on to our experts. You’ll receive an email acknowledgement of your submission right away.

ICTR Services

- Biostatistics Consulting

Analysis/Biostatistics

- Biostatistics Consulting - Details
Heart rate increase after pulmonary vein isolation predicts freedom from atrial fibrillation at 1 year

Zackary D. Goff MD1, Balint Laczay MD1, Gayane Yenokyan PhD2, Bhradeev Sivasambu MD3, Sunil K. Sinha MD3, Joseph E. Marine MD3, Hiroshi Ashikaga MD3, Ron D. Berger MD3, Tauseef Akhtar MD3, David D. Spragg MD3, Hugh Calkins MD3

1Department of Medicine, Johns Hopkins Hospital, Baltimore, Maryland
2Johns Hopkins Biostatistics Center, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland
3Division of Cardiology, Johns Hopkins Hospital, Baltimore, Maryland

Correspondence
Hugh Calkins, MD, Department of Medicine, Division of Cardiology, Johns Hopkins Hospital, 1800 Orleans Street, Zayed Tower 7125R, Baltimore, MD 21287. Email: hcalkins@jhmi.edu

Disclosures: None.

Funding Information
Roz and Marvin H. Weiner and Family Foundation; Dr. Francis P. Chiramonte Foundation; Johns Hopkins Institute for Clinical and Translational Research (ICTR); Grant/Award Number: UL1 TR001076; Norbert and Louise Grunwald Cardiac Arrhythmia Research Fund; Mr. & Mrs. Larry Small AF Research Fund; Edward St. John Fund for AF Research; Marilyn and Christian Polidexter Arrhythmia Research Fund

Abstract
Introduction: Ablation of atrial vagal ganglia has been associated with improved pulmonary vein isolation (PVI) outcomes. Disruption of vagal reflexes results in heart rate (HR) increase. We investigated the association between HR change after PVI and freedom from atrial fibrillation (AF) at 1 year.

Methods and Results: Patients who underwent PVI for paroxysmal AF were identified from the Johns Hopkins Hospital AF registry. Electrocadioograms taken pre-PVI and post-PVI were used to determine the change in HR. Patients followed-up at 3, 6, and 12 months. Of 257 patients (66% male, age 59±11 years), 134 (52%) remained free from AF at 1 year. The average HR increased from 60.6±11.3 beats per minute (bpm) pre-PVI to 70.7±120 bpm post-PVI. Patients with recurrence of AF had lower post-PVI HR than those who remained free from AF (67.8±0.2 vs 73±130 bpm; P < .001). The probability of AF recurrence at 1 year decreased as the change in HR increased (estimated odds ratio [OR], 0.83; 95% confidence interval [CI, 0.74-0.93]; P = .002). HR increase more than 15 bpm was associated with the lowest odds of AF recurrence (estimated OR, 0.39; 95% [0.17-0.85]; P = .018) compared to HR decrease.

Conclusions: Resting HR was found to increase after PVI. Increase in HR more than 15 bpm has a positive association with remaining free from atrial fibrillation at 1 year.
JHBC Impact

- ~ 150 walk-ins /year
- ~ 250+ consult requests/year
- 500+ publications in last 10 years
- 5,000+ ongoing data service users
- 86-91% would recommend service to others
- Awards for teaching, papers, posters
How to Make the Most from Your Consultation
When Are Statisticians Contacted

Study is a twinkle in the researcher’s eye
Study is more thought out, but needs some polishing to proceed
Study design is defined, needs help with data collection considerations before study starts
Data has been collected, needs help with analysis
Data analysis has been performed by someone else, wants blessing
Manuscript has been submitted, and needs help with reviewer’s comments
Advantages of Starting Early

- Help clarify objectives of the research
- Formulate the research question as a statistical problem
- Help identify variables/measures that are important to the research objectives
- Start thinking about the most useful model that will be used for statistical analysis
- Important for the conclusions from the research to have a meaningful interpretation
Suggested timeframes for your biostatistics consultation

Approach JHBC as early as possible!

- Abstract Preparation: at least 1 month
- New Proposal Development: at least 1 month
- Re-submissions: at least 2 weeks to improve scores
- Manuscript Development/Scientific Writing: 1 to 2 months
- Manuscript Review: a minimum of 2 weeks
- Data Analysis: depends on complexity of analysis / status of data
Getting the most from your biostatistics consultation: Sample Size

Well-defined specific aims and primary outcomes

Minimal practically/clinically meaningful difference

Preliminary/pilot data and/or relevant literature on the topic

Measures of variability on primary outcomes

Idea about maximum sample size given the available resources.

There will be several iterations of sample size – keep good communication with the biostatistician to manage expectations, deadlines and other important developments that affect the study.
Getting the most from your biostatistics consultation: Data Analysis

Provide well-defined specific aims, primary outcomes, and study design description

Have a well-organized and documented dataset and how decisions were made (protocols, reports, meetings notes, emails)

Clarify work expectations in advance:

Scope of work, deliverables

Statistical software preference (STATA, SAS, SPSS, R)

Timeline, any relevant deadlines
What JHBC Brings to the Table

<table>
<thead>
<tr>
<th>JHBC has collaborated with hundreds of clinical and public health investigators providing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wide-range biostatistical and data expertise to find most effective solutions</td>
</tr>
<tr>
<td>Consistent support from dedicated consultants: from data to statistical analysis</td>
</tr>
<tr>
<td>Reproducible work using best practices</td>
</tr>
</tbody>
</table>

We focus our expertise on creating effective collaborations and guiding researchers in good data management and biostatistics practices.
Contact Information

Gayane Yenokyan  
JHBC Executive Director  
E-mail: gyenoky1@jhu.edu

Andre Hackman  
Associate Director / Data Informatics Services Core (DISC)  
E-mail: ahackman@jhu.edu

Erica Tunstall  
Program Coordinator  
Email: jhbc@jhu.edu
Pete Lawson, Ph.D.
Data and Visualization Librarian
JHU DATA SERVICES

FIND OUT MORE

GO TO: dataservices.library.jhu.edu
EMAIL: dataservices@jhu.edu
SHARE AT: archive.data.jhu.edu
How to engage Data Services:

- **Consultations**
  - We provide one-on-one or group consultations.
  - One-on-one meetings with researchers, students, or administrative staff
  - Consultations with research groups or labs
  - Data Management Plan (DMP) reviews

- **Instruction**
  - Regular webinars on topics including
    - Research data management and sharing
    - GIS and mapping
    - Introductory programming in R and Python
    - Data cleaning, manipulation, and visualization
    - Reproducible research
  - Course-integrated instruction

- **Research Data Sharing**
- **DOI Minting**
Areas of Expertise

• Data Archiving
• Data Management
• Data Visualization
• Discovering & Accessing Data
• Introductory Computational Computing in R & Python
• Accessing Geospatial Web Platforms & Desktop Software using Geoprocessing Tools
• Accessing & Analyzing Historical Maps & Atlases
Data Access and Discovery
Data Access and Discovery

- Strategies for finding openly available data
- Access to data licensed to JHU
- Working with researchers to acquire data and provide access

JHU Libraries Data Grant
Restricted Data Room
Data and Statistics Guide
Looking for Data?

Apply to the JHU Libraries

**Data Grant**

The data grant supports data purchases for JHU faculty, students, and staff actively conducting research.

Visit [bit.ly/jhu-data-grant](bit.ly/jhu-data-grant) for more information about the program, and how to apply.
GIS and Maps
JHU DATA SERVICES

GIS and Mapping

Data Services provides consultations on using GIS software, as well as accessing, analyzing and visualizing geospatial data and maps in your teaching, coursework, and research.

CONSULTATIONS Get help with accessing, finding, and visualizing geospatial data and maps, as well as technical help with Esri products.

WORKSHOPS Learn to use the suite of Esri supported applications: ArcGIS Pro, ArcGIS Online, StoryMaps, and more by attending our many GIS and mapping workshops.

SOFTWARE Access Esri software, including ArcGIS Pro, ArcGIS Online, ArcGIS StoryMaps, and many more applications.
Computational Research And Programming
Computational Research and Programming

• Develop computational research skills for data cleaning, wrangling, visualizing, etc.
• Promote open science and reproducible research
• Open source focused (e.g. R, Python, OpenRefine)
• Planning other offerings based on user feedback
Computational Research And Programming

Introductory Programming
Coding Fundamentals

• Are you interested in learning how to code but don’t know where to start?. Learn about coding terminology and concepts, and to jump start your journey into coding.

Introduction to R for Absolute Beginners

• Covers some basic concepts of coding and involves several hands-on activities to learn basic R skills, such as installing R packages, importing and exploring data.

Introduction to Python for Absolute Beginners

• Provide users with the fundamentals necessary to get started using Python. This workshop is heavily hands-on and will have users feeling comfortable coding and confident enough to leap from beginner to intermediate and beyond in no time.
Computational Research And Programming

Reproducible Research
Reproducible Research Series

Introduction to Reproducible Research
Getting Started with Jupyter Notebooks
Getting Started with R Markdown
Troubleshooting Git and GitHub Installation
Version Control: Using Git and GitHub
Computational Research And Programming

Data Visualization
Data Visualization

Design

- We can help you **design** a data visualization.
- We can provide **feedback** on a data visualization, and suggest improvements based on design best-practices.
Data Visualization

Creation

- We can assist with implementing a data visualization in software.
- We primarily support open-source programming languages R and Python.
## Data Visualization

### Creation

<table>
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<th>R</th>
<th>Python</th>
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</thead>
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<table>
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<tr>
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Data Visualization

Learn

Designing Effective Data Visualizations
Tuesday, February 14, 2023 | 12-2pm
Virtual – Register Here

Introduction to Data Visualization in Python
Tuesday, February 21, 2023 | 1-4pm
Virtual – Register Here

Data Visualization in R with ggplot2
Tuesday, March 7, 2023 | 1-4pm
Virtual – Register Here
Data Management
Data Management Services at JHU

- Assist with data management plans (DMPs) for research grants
- Facilitate compliance with funder and journal data sharing policies
- Guidance on preparing data for online access, operating the Johns Hopkins Research Data Repository (formerly JHU Data Archive)
Data Services: What We do with Respect to Data Management and Sharing Plans

Review Plans

• Appropriateness of/identify a repository
• Ensure that you have answered all the necessary elements in your Plan
• Provide feedback on the clarity of your Plan

Manage the Johns Hopkins Research Data Repository

• Open data only (i.e., consent forms allow for public sharing; data is fully deidentified)
• Guidance on preparing data for online access
How does Data Services help JHU Researchers?

First time writing a DMSP?

- DMPTool Workshop (schedule)
- Self-paced online training (link)
- Write DMPs using DMPTool and send to us for feedback (dataservices@jhu.edu)

Guidance choosing a data repository for sharing data?

- Johns Hopkins Research Data Repository
- Ask us for suggestions
Johns Hopkins Research Data Repository

An open access research data repository for Johns Hopkins University

Formerly the JHU Data Archive, the Johns Hopkins Research Data Repository is administered by Data Management Specialists, who mediate data deposit, curation, and preservation, and oversee the minting of a unique persistent identifier (DOI) for each research data collection.
How does Data Services help JHU Researchers?

Providing de-identification advice for your human participant data

- Workshops: Protecting Human Subject Data Privacy (Introduction and Techniques)
- Self-paced online training (link)
- Contact us to schedule a consult

Guidance on documenting data

- Documenting Research Data modules (link)
How can Data Services help you?

Guides for various data management and sharing topics

• NIH Data Sharing LibGuide
• Data Management and Sharing (general LibGuide)
• Documenting Research Data
• Protecting Identifiers in Human Subjects

Still have questions? Contact Data Services via dataservices@jhu.edu
Workshops and Training
Workshops and Trainings

VISIT bit.ly/ds-learn

• **Open workshops**: live webinars, open to all JHU faculty, staff, postdocs and students (schedule)

  By request: to groups, departments or classes

• **Online, self-paced training**: available on our website

• Partnership with research integrity/compliance series (e.g. RCR, REWards)
Workshops and Trainings

VISIT bit.ly/ds-learn

DATA CLEANING, MANIPULATION, and VISUALIZATION

• Introduction to R/Python for Absolute Beginners
• Data Cleaning in R
• Manipulating and Joining Data in R with dplyr
• Introduction to Data Visualization in Python
• Creating Effective Data Visualizations

AND SO MUCH MORE ...

RESEARCH DATA MANAGEMENT and SHARING

• Best Practices for Research Data Management and Sharing
• De-Identifying Human Subjects Data for Sharing
• Writing Data Management Plans with DMPTool

GIS and MAPPING

• Introduction to ArcGIS: Using ArcGIS Pro
• Joining and Geocoding in ArcGIS Online
• Web Mapping: an Intro to ArcGIS Online
Data Bytes

A new lunch and learn series offered by Data Services

Data Bytes are short data-related talks, hosted by Data Services, and offered during lunch on Mondays. Come join us (virtually) and learn something new! Talks are lecture or demonstration based, so you can eat your lunch and learn something new!

bit.ly/data-bytes

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**data bytes**

Join JHU Data Services for Short "Byte"-sized Data-Related Talks

Bring your lunch, join in (virtually) and learn something new!

Feb 27th, 12-1pm:
**Introduction to the Unix Command Line**

Mar 13th, 12-1pm:
**Using ICPSR to Access Social Science Data**

Mar 27th, 12-1pm:
**Command Line Wizardry**

April 10th, 12-1pm:
**Introduction to Data Vis in Tableau**

LEARN MORE AND REGISTER: bit.ly/data-bytes

Spring 2023
Questions?
JHU Data Services Overview

Pete Lawson, Ph.D.
Data and Visualization Librarian
WE HELP FACULTY, RESEARCHERS AND STUDENTS

FIND DATA
USE DATA
VISUALIZE DATA
MANAGE DATA
SHARE DATA

GO TO: dataservices.library.jhu.edu
EMAIL: dataservices@jhu.edu
SHARE AT: archive.data.jhu.edu
How to engage Data Services:

- **Consultations**
  - We provide one-on-one or group consultations.
    - One-on-one meetings with researchers, students, or administrative staff
    - Consultations with research groups or labs
    - Data Management Plan (DMP) reviews

- **Instruction**
  - Regular webinars on topics including
    - Research data management and sharing
    - GIS and mapping
    - Introductory programming in R and Python
    - Data cleaning, manipulation, and visualization
    - Reproducible research
  - Course-integrated instruction

- **Research Data Sharing**
- **DOI Minting**
Areas of Expertise

• Data Archiving
• Data Management
• Data Visualization
• Discovering & Accessing Data
• Introductory Computational Computing in R & Python
• Accessing Geospatial Web Platforms & Desktop Software
• Using Geoprocessing Tools
• Accessing & Analyzing Historical Maps & Atlases
Data Access and Discovery
Data Access and Discovery

- Strategies for finding openly available data
- Access to data licensed to JHU
- Working with researchers to acquire data and provide access
  - JHU Libraries Data Grant
  - Restricted Data Room
  - Data and Statistics Guide
Looking for Data?

Apply to the JHU Libraries

Data Grant

The data grant supports data purchases for JHU faculty, students, and staff actively conducting research

Visit [bit.ly/jhu-data-grant](bit.ly/jhu-data-grant) for more information about the program, and how to apply
GIS and Maps
JHU DATA SERVICES
GIS and Mapping

DATA SERVICES SUPPORTS GIS AND MAPPING IN RESEARCH
Learn about the many GIS and mapping resources offered by JHU Data Services.

CONSULTATIONS Get help with accessing, finding, and visualizing geospatial data and maps, as well as technical help with Esri products.

WORKSHOPS Learn to use the suite of Esri supported applications: ArcGIS Pro, ArcGIS Online, StoryMaps, and more by attending our many GIS and mapping workshops.

SOFTWARE Access Esri software, including ArcGIS Pro, ArcGIS Online, ArcGIS StoryMaps, and many more applications.

Data Services provides consultations on using GIS software, as well as accessing, analyzing and visualizing geospatial data and maps in your teaching, coursework, and research.
Computational Research
And Programming
Computational Research and Programming

- Develop computational research skills for data cleaning, wrangling, visualizing, etc.
- Promote open science and reproducible research
- Open source focused (e.g. R, Python, OpenRefine)
- Planning other offerings based on user feedback
Computational Research And Programming

Introductory Programming
Introductory Programming

Coding Fundamentals

• Are you interested in learning how to code but don’t know where to start?. Learn about coding terminology and concepts, and to jump start your journey into coding.

Introduction to R for Absolute Beginners

• Covers some basic concepts of coding and involves several hands-on activities to learn basic R skills, such as installing R packages, importing and exploring data.

Introduction to Python for Absolute Beginners

• Provide users with the fundamentals necessary to get started using Python. This workshop is heavily hands-on and will have users feeling comfortable coding and confident enough to leap from beginner to intermediate and beyond in no time.
Computational Research And Programming
Reproducible Research
Computational Research And Programming

Data Visualization
Data Visualization

Design

- We can help you **design** a data visualization.
- We can provide **feedback** on a data visualization, and suggest improvements based on design best-practices.
Data Visualization

Creation

• We can assist with implementing a data visualization in software.

• We primarily support open-source programming languages R and Python.
## Creation

<table>
<thead>
<tr>
<th>R</th>
<th>Python</th>
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<tbody>
<tr>
<td>base R</td>
<td>matplotlib</td>
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<td>ggplot2</td>
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<td>shiny</td>
<td>altair</td>
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<td>plotly</td>
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Data Visualization

Learn

Designing Effective Data Visualizations
Tuesday, February 14, 2023 | 12-2pm
Virtual – Register Here

Introduction to Data Visualization in Python
Tuesday, February 21, 2023 | 1-4pm
Virtual – Register Here

Data Visualization in R with ggplot2
Tuesday, March 7, 2023 | 1-4pm
Virtual – Register Here
Data Management Services at JHU

• Assist with data management plans (DMPs) for research grants

• Facilitate compliance with funder and journal data sharing policies

• Guidance on preparing data for online access, operating the Johns Hopkins Research Data Repository (formerly JHU Data Archive)
Data Services: What We do with Respect to Data Management and Sharing Plans

Review Plans

- Appropriateness of/identify a repository
- Ensure that you have answered all the necessary elements in your Plan
- Provide feedback on the clarity of your Plan

Manage the Johns Hopkins Research Data Repository

- Open data only (i.e., consent forms allow for public sharing; data is fully deidentified)
- Guidance on preparing data for online access
How does Data Services help JHU Researchers?

First time writing a DMSP?
- DMPTool Workshop ([schedule](#))
- Self-paced online training ([link](#))
- Write DMPs using DMPTool and send to us for feedback ([dataservices@jhu.edu](mailto:dataservices@jhu.edu))

Guidance choosing a data repository for sharing data?
- Johns Hopkins Research Data Repository
- Ask us for suggestions
Johns Hopkins Research Data Repository

An open access research data repository for Johns Hopkins University

Formerly the JHU Data Archive, the Johns Hopkins Research Data Repository is administered by Data Management Specialists, who mediate data deposit, curation, and preservation, and oversee the minting of a unique persistent identifier (DOI) for each research data collection.

How does Data Services help JHU Researchers?

Providing de-identification advice for your human participant data

- Workshops: Protecting Human Subject Data Privacy (Introduction and Techniques)
- Self-paced online training ([link](#))
- Contact us to schedule a consult

Guidance on documenting data

- Documenting Research Data modules ([link](#))
How can Data Services help you?

Guides for various data management and sharing topics

- NIH Data Sharing LibGuide
- Data Management and Sharing (general LibGuide)
- Documenting Research Data
- Protecting Identifiers in Human Subjects

Still have questions? Contact Data Services via dataservices@jhu.edu
Workshops and Training
Workshops and Trainings

VISIT bit.ly/ds-learn

- **Open workshops**: live webinars, open to all JHU faculty, staff, postdocs and students ([schedule])
  - **By request**: to groups, departments or classes
- **Online, self-paced training**: available on our website
- Partnership with research integrity/compliance series (e.g. RCR, REWards)
Workshops and Trainings

VISIT bit.ly/ds-learn

DATA CLEANING, MANIPULATION, and VISUALIZATION
- Introduction to R/Python for Absolute Beginners
- Data Cleaning in R
- Manipulating and Joining Data in R with dplyr
- Introduction to Data Visualization in Python
- Creating Effective Data Visualizations

AND SO MUCH MORE ...

RESEARCH DATA MANAGEMENT and SHARING
- Best Practices for Research Data Management and Sharing
- De-Identifying Human Subjects Data for Sharing
- Writing Data Management Plans with DMPTool

GIS and MAPPING
- Introduction to ArcGIS: Using ArcGIS Pro
- Joining and Geocoding in ArcGIS Online
- Web Mapping: an Intro to ArcGIS Online
Data Bytes

A new lunch and learn series offered by Data Services

Data Bytes are short data-related talks, hosted by Data Services, and offered during lunch on Mondays. Come join us (virtually) and learn something new! Talks are lecture or demonstration based, so you can eat your lunch and learn something new!

bit.ly/data-bytes
Join JHU Data Services for Short "Byte"-sized Data-Related Talks

Bring your lunch, join in (virtually) and learn something new!

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- Website: dataservices.library.jhu.edu
- Email: dataservices@jhu.edu
Next DMIG Webinar:

— **Host:** Tony Keyes  
— **Title:** Research Support and Ethics  
— **Date / Time:** Thursday, May 11th - 11-12  
• Research Coordinator Support Service - RCSS (Tony Keyes)  
• Clinicaltrials.gov (Oswald Tetteh)  
• Research Ethics Consultation Service (Alan Regenberg)

**Register For this meeting here:**
- [https://jhjhm.zoom.us/meeting/register/tJYscu-rrT8sGdLVpDDQRUWV1SUKWYImrZr0](https://jhjhm.zoom.us/meeting/register/tJYscu-rrT8sGdLVpDDQRUWV1SUKWYImrZr0)
Join the DMIG Microsoft Teams

• Join the ICTR Data Managers Interest Group Microsoft Teams group:
  Join DMIG MSTeams Here