|  |  |
| --- | --- |
| A740 Crabtree Hall, Department of Biostatistics and Health Data Science, School of Public Health, University of Pittsburgh, 130 De Soto Street, Pittsburgh, PA 15261.  +1-412-624-0336  *Email:* [*soumik@pitt.edu*](mailto:soumik@pitt.edu) | 2A118 Bldg. 30, Center for Healthcare Evaluation, Research, and Promotion, VA Pittsburgh Healthcare System, 4100 Allequippa St, Pittsburgh, PA 15240  +1-412-360-2214  *Email:* [*soumik.purkayastha@va.gov*](mailto:soumik.purkayastha@va.gov) |

<soumikp.github.io>

**Academic Interests**

* Causal discovery and inference
* Spatiotemporal analysis
* Infectious disease modeling

**Education and Training**

|  |  |  |  |
| --- | --- | --- | --- |
| **Years of attendance** | **University, city, state** | **Degree, Year Awarded** | **Field** |
| 2014-17 | St. Xavier’s College (Autonomous),  Kolkata, WB, INDIA | B.Sc. (Hons.), 2017 | Statistics |
| 2017-19 | Indian Statistical Institute,  Kolkata, WB, INDIA | M.Stat., 2019 | Statistics |
| 2019-21 | University of Michigan,  Ann Arbor, MI, USA | M.S., 2021 | Biostatistics |
| 2019-24 | University of Michigan,  Ann Arbor, MI, USA | Ph.D., 2024 | Biostatistics |

**Appointments and Positions**

**Academic**

|  |  |  |
| --- | --- | --- |
| **Years Position Held** | **Title** | **Department, School, Name and location of institution** |
| 2019-23 | Graduate Student Research Assistant | Department of Biostatistics, University of Michigan, Ann Arbor, MI, USA. |
| 2023-24 | Rackham Predoctoral Fellow | Rackham Graduate School, University of Michigan, Ann Arbor, MI, USA. |
| 2024- | Assistant Professor (tenure stream) | Department of Biostatistics and Health Data Science, University of Pittsburgh, Pittsburgh, PA, USA. |
| 2024- | Research Biostatistician | Center for Healthcare Evaluation, Research, and Promotion, VA Pittsburgh Healthcare System, US Department of Veteran Affairs, Pittsburgh, PA, USA. |

**Non-Academic**

|  |  |  |
| --- | --- | --- |
| **Years Position Held** | **Title** | **Name and location of company/organization** |
| 2018 | Data Science intern | Walmart Labs, Bengaluru, KA, INDIA |
| 2021 | AI/ML intern | Apple Inc., Cupertino, CA, USA |

**Membership in Professional and Scientific Societies**

|  |  |
| --- | --- |
| **Years Inclusive** | **Name of Society** |
| 2021- | International Biometrics Society, Eastern North American Region (ENAR) |
| 2021- | American Statistical Association (ASA) |
| 2021- | Institute of Mathematical Statistics (IMS) |
| 2022- | International Biometrics Society, Western North American Region (WNAR) |
| 2023- | International Indian Statistical Association (IISA) |
| 2024- | International Chinese Statistical Association (ICSA) |

**Honors**

|  |  |
| --- | --- |
| **Year of Award** | **Title of Award and Awarding Association** |
| 2017-19 | Merit-based scholarship for good academic performance,  Indian Statistical Institute, Kolkata, WB, INDIA. |
| 2019 | Sabyasachi Roy Memorial Gold Medal,  Indian Statistical Institute, Kolkata, WB, INDIA. |
| 2019 | Michigan Data Science Challenge Winner,  Michigan Institute of Data Science, University of Michigan, Ann Arbor, MI, USA. |
| 2020 | Richard G. Cornell Fellowship,  Department of Biostatistics, University of Michigan, Ann Arbor, MI, USA. |
| 2022-24 | Rackham Conference Travel Grant (awarded annually),  Rackham Graduate School, University of Michigan, Ann Arbor, MI, USA. |
| 2023 | Rising Star Award,  School of Public Health, University of Michigan, Ann Arbor, MI, USA. |
| 2023 | Best Paper Award and Best Presentation (Runner-up) Award,  Western North American Region of the International Biometrics Society. |
| 2023-24 | Rackham Predoctoral Fellowship,  Rackham Graduate School, University of Michigan, Ann Arbor, MI, USA. |

**Professional Activities**

**Teaching**

**Other Teaching (lectures, tutorials, and continuing education courses)**

|  |  |  |
| --- | --- | --- |
| **Date(s)** | **Type of Teaching** | **Title** |
| 2024 Fall | Guest lecture | Fundamentals of Public Health, BS in Public Health Degree Program, School of Public Health, University of Pittsburgh |
| 2024 Fall | Guest lecture | BIOST 2145 Health Data Science, MS in Biostatistics Degree Program, School of Public Health, University of Pittsburgh |

**Service on Comprehensive or Qualifying Committees**

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| --- | --- | --- |
| **Dates Served** | **Student Population** | **Type of Exam** |
| 2024-25 | 16 M.S. students | MS in Biostatistics Comprehensive Exam committee |

**Mentoring of Early and Mid-Career Faculty**

|  |  |  |
| --- | --- | --- |
| **Dates** | **Name of Faculty** | **Position of Faculty Member** |
| 2025- | Joshua Gordon | Consult & Liaison Psychiatrist, Center for Healthcare Evaluation, Research, and Promotion, VA Pittsburgh Healthcare System |

**Research and Training**

**Grants and Contracts Received**

**Co-Investigator**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years Inclusive** | **Grant and/or Contract Number and Title** | **Source** | **Award Amount** | **%Effort** |
| 2024-25 | *Developing User-Centered Reporting Strategies to Promote Equity in the Veterans Health Administration*  P.I.: Leslie Hausmann, Center for Healthcare Evaluation, Research, and Promotion, VA Pittsburgh Healthcare System | VA Office of Health Equity | $1,843,583 | 20% effort |
| 2025 | *Health-related Social Needs and Suicidality Among Sexual Minority Veterans*  P.I. Joshua Gordon, Center for Healthcare Evaluation, Research, and Promotion, VA Pittsburgh Healthcare System | VA Competitive Career Development Fund (VISN 4) | $47,217 | 15% effort |

**Statistician**

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| --- | --- | --- | --- | --- |
| **Years Inclusive** | **Grant and/or Contract Number and Title** | **Source** | **Award Amount** | **%Effort** |
| 2025 | *Center for Healthcare Evaluation, Research, and Promotion*  P.I.: Michael Fine and Peter Groeneveld, Center for Healthcare Evaluation, Research, and Promotion, VA Pittsburgh Healthcare System | VA Health Systems Research | $5,305,000 | 15% effort |

**Grants and Contracts Pending**

**Co-Investigator**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years Inclusive** | **Grant and/or Contract Number and Title** | **Source** | **Award Amount** | **%Effort** |
| **Submitted:** 2025 May | *Persistence and Transmission Dynamics of H5N1 in Poultry and the Environment: Data-Driven Approaches to Improve Avian Influenza Response Strategies*  P.I.: Santhamani Ramasamy, Suresh Kuchipudi, Department of Infectious Diseases and Microbiology, University of Pittsburgh | DA Animal and Plant Health Inspection Service | $2,000,000 | 10% effort |
| **Awarded:** 2025 – 29 | *Characterizing the Quality and Equity of Evidence-based Prescribing for Hospitalized Veterans*  P.I.: Timothy Anderson and Utibe Essien,  Center for Healthcare Evaluation, Research, and Promotion, VA Pittsburgh Healthcare System | VA Health Systems Research | $800,000 | 10% effort |

**Invited Presentations Related to Research**

|  |  |  |
| --- | --- | --- |
| **Date** | **Title of Presentation** | **Venue** |
| Jun 2025  **(Upcoming)** | Examining Directional Association between Depression and Anxiety | International Indian Statistical Association Conference, *Lincoln, USA* |
| Aug 2025  **(Upcoming)** | Examining Directional Association between Depression and Anxiety | Joint Statistical Meeting, American Statistical Association, *Nashville, USA* |
| Dec 2025  **(Upcoming)** | A Mechanistic Framework for Collider Detection in Observational Data | International Joint Conference on Computational and Financial Econometrics (CFE) and Computational and Methodological Statistics, *London, UK* |
| Dec 2025  **(Upcoming)** | A Mechanistic Framework for Collider Detection in Observational Data | Joint Meetings of 2025 Taipei International Statistical Symposium and 13th ICSA International Conference, *Taipei, TAIWAN* |

**Publications**

h-index: 10 ([Google scholar](https://scholar.google.com/citations?user=D7z8d5sAAAAJ&hl=en)) as of May 2025.

+: co-first author.

**Refereed Articles – Published or In Press**

1. Ray, D., Salvatore, M., Bhattacharyya, R., Wang, L., Du, J., Mohammed, S., **Purkayastha, S.**, Halder, A., Rix, A., Barker, D., Kleinsasser, M., Zhou, Y., Bose, D., Song, P., Banerjee, M., Baladandayuthapani, V., Ghosh, P., & Mukherjee, B. (2020). [*Predictions, Role of Interventions, and Effects of a Historic National Lockdown in India’s Response to the COVID-19 Pandemic: Data Science Call to Arms*](https://hdsr.mitpress.mit.edu/pub/r1qq01kw/release/8)*.* Harvard Data Science Review, (Special Issue 1).
2. Giri, S., **Purkayastha, S.**, Hazra, S., Chanda, A., Das, I. and Das, S., (2020). [*Prediction of monthly Hilsa (Tenualosa ilisha) catch in the Northern Bay of Bengal using Bayesian structural time series model.*](https://www.sciencedirect.com/science/article/abs/pii/S2352485520305843) Regional Studies in Marine Science, 39, p.101456.
3. Zhou, Y., Wang, L., Zhang, L., Shi, L., Yang, K., He, J., Bangyao, Z., Overton, W., **Purkayastha, S.**, & Song, P. (2020). [*A Spatiotemporal Epidemiological Prediction Model to Inform County-Level COVID-19 Risk in the United States*](https://hdsr.mitpress.mit.edu/pub/qqg19a0r/release/3)*.* Harvard Data Science Review, (Special Issue 1).
4. **Purkayastha, S.**, Salvatore, M. and Mukherjee, B., (2020). [*Are women leaders significantly better at controlling the contagion during the COVID-19 pandemic?*](https://pubmed.ncbi.nlm.nih.gov/32875269/) Journal of Health and Social Sciences, 5(2), p.231.
5. Tang, L., Zhou, Y., Wang, L., **Purkayastha, S.**, Zhang, L., He, J., Wang, F. and Song, P.X.K., (2020). [*A review of multi‐compartment infectious disease models.*](https://pmc.ncbi.nlm.nih.gov/articles/PMC7436714/)International Statistical Review, 88(2), pp.462-513.
6. **Purkayastha, S.** and Song, P., (2021). [*Discussion on “The timing and effectiveness of implementing mild interventions of COVID-19 in large industrial regions via a synthetic control method” by Tian et al.*](https://link.intlpress.com/JDetail/1806634410353078274) Statistics and Its Interface, 14(1), pp.21-22.
7. Salvatore, M., Basu, D., Ray, D., Kleinsasser, M., **Purkayastha, S.**, Bhattacharyya, R. and Mukherjee, B., (2020). [*Comprehensive public health evaluation of lockdown as a non-pharmaceutical intervention on COVID-19 spread in India: national trends masking state-level variations*](https://pubmed.ncbi.nlm.nih.gov/33303462/)*.* BMJ open, 10(12), p.e041778.
8. **Purkayastha, S.**, Bhattacharyya, R., Bhaduri, R., Kundu, R., Gu, X., Salvatore, M., Ray, D., Mishra, S. and Mukherjee, B., 2021. [*A comparison of five epidemiological models for transmission of SARS-CoV-2 in India.*](https://pubmed.ncbi.nlm.nih.gov/34098885/) BMC Infectious Diseases, 21, pp.1-23.
9. **Purkayastha, S.,** Kundu, R., Bhaduri, R., Barker, D., Kleinsasser, M., Ray, D. and Mukherjee, B., (2021). [*Estimating the wave 1 and wave 2 infection fatality rates from SARS-CoV-2 in India.*](https://pubmed.ncbi.nlm.nih.gov/34238344/) BMC Research Notes, 14, pp.1-7.
10. Zimmermann, L., Bhattacharya, S., **Purkayastha, S.**, Kundu, R., Bhaduri, R., Ghosh, P. and Mukherjee, B., (2021). [*SARS-CoV-2 infection fatality rates in India: systematic review, meta-analysis and model-based estimation*](https://journals.sagepub.com/doi/10.1177/23210222211054324)*.* Studies in Microeconomics, 9(2), pp.137-179.
11. Bhaduri, R.+, Kundu, R.+, **Purkayastha, S.**, Kleinsasser, M., Beesley, L.J., Mukherjee, B. and Datta, J., (2022). [*Extending the susceptible‐exposed‐infected‐removed (SEIR) model to handle the false negative rate and symptom‐based administration of COVID‐19 diagnostic tests: SEIR‐fansy*](https://pubmed.ncbi.nlm.nih.gov/35224743/)*.* Statistics in Medicine, 41(13), pp.2317-2337.
12. Salvatore, M.+, **Purkayastha, S.+**, Ganapathi, L., Bhattacharyya, R., Kundu, R., Zimmermann, L., Ray, D., Hazra, A., Kleinsasser, M., Solomon, S. and Subbaraman, R., (2022[). *Lessons from SARS-CoV-2 in India: A data-driven framework for pandemic resilience*](https://www.science.org/doi/10.1126/sciadv.abp8621)*.* Science Advances, 8(24), p.eabp8621.
13. **Purkayastha, S.** and Song, P.X.K., (2024). [*fastMI: A fast and consistent copula-based nonparametric estimator of mutual information.*](https://www.sciencedirect.com/science/article/abs/pii/S0047259X23001161)Journal of Multivariate Analysis, 201, p.105270.

**Refereed Articles – Submitted/Preprint**

1. **Purkayastha, S.** and Song, P. X. K., (2025), *A Mechanistic Framework for Collider Detection in Observational Data.* [ARXIV.2502.10317](https://arxiv.org/abs/2502.10317)
2. **Purkayastha, S.** and Song, P. X. K.*,* (2025), *Quantification and cross-fitting inference of asymmetric relations under generative exposure mapping models.* [ARXIV.2311.04696](https://arxiv.org/abs/2311.04696)
3. Zhang, L., **Purkayastha, S**., Kirsner, R., Spino, C. and Song, P. X. K., (2025) *Determinants of Enrolment in 284 Clinical Trials for Healing Diabetic Foot Ulcers: A Systematic Review.* [PREPRINT UPON REQUEST](mailto:soumik@pitt.edu)
4. Kadura, S., **Purkayastha, S.**, Benditt, J., Anand, A., Collins, B., De Quadros, M., Hobson, M., Biswas, M.J., Ho, L., Spino, C., and Raghu, G., (2025) *Yoga Effect on Quality-of-Life Study Among Patients with Idiopathic Pulmonary Fibrosis (YES-IPF).* [MEDRXIV 2025.05.20.25327762](https://www.medrxiv.org/content/10.1101/2025.05.20.25327762v1).
5. Lamba, S., Frank, D., McCoy, J.L., Russell, L.E., **Purkayastha. S.**, Gordon, J.H., Leder, S.M., Procario, G.T., Moy, E.M., Hausmann, L.R.M., (2025), *Health-Related Social Needs among LGB+ Veterans: A National Survey of Primary Care Patients.* [PREPRINT UPON REQUEST](mailto:soumik@pitt.edu)
6. **Purkayastha, S.**, Kadura, S., Spino, C., and Raghu, G., (2025) *Patient-Reported Outcomes Correlate with Clinical Outcomes in Patients with Idiopathic Pulmonary Fibrosis.* [MEDRXIV 2025.05.27.25328368](https://doi.org/10.1101/2025.05.27.25328368).

**Published Abstracts**

1. Lamba, S., Frank, D., McCoy, J.L., Russell, L.E., Purkayastha. S., Gordon, J.H., Leder, S.M., Procario, G.T., Moy, E.M., Hausmann, L.R.M., (2025). “[*The Prevalence of Social Needs Among LGB+ Veterans: A National Survey of VHA Primary Care Patients*](https://academyhealth.confex.com/academyhealth/2025arm/meetingapp.cgi/Paper/71716).” 2025 Academy Health Annual Research Meeting, Minneapolis, USA.

**Submitted Abstracts**

1. Bessette, L. G., Essien, U. R., Parr, A., Mor, M. K., Purkayastha, S., Gellad, W. F., Hausmann, L. R. M., Fine, M., Anderson, T. S., (2025). “*Underutilization of guideline-directed medical therapy following heart failure hospitalizations among U.S. Veterans, 2022 to 2023*.” 2025 American Heart Association Scientific Sessions, New Orleans, USA.

**Presentations**

1. Eastern North American Region (ENAR) of the International Biometric Society Spring Meeting (March 2023). *“An information-theoretic framework for causal discovery in epigenetic data”.* Nashville, USA.
2. Western North American Region (WNAR) of the International Biometric Society Spring Meeting (June 2023). *“Asymmetric predictability in causal discovery: an information theoretic approach”.* Anchorage, USA.
3. Joint Statistical Meetings (August 2023). *“Asymmetric predictability in causal discovery: an information theoretic approach”.* Toronto, CANADA.
4. Eastern North American Region (ENAR) of the International Biometric Society Spring Meeting (March 2025). “*Examining Directional Association between Depression and Anxiety”.* New Orleans, USA.
5. International Indian Statistical Association Conference (June 2025). “*Examining Directional Association between Depression and Anxiety”.* Lincoln, USA.
6. **Upcoming:** Joint Statistical Meetings (August 2025). *“Examining Directional Association between Depression and Anxiety”.* Nashville, USA.
7. **Upcoming:** 8th International Conference on Econometrics and Statistics: EcoSta (August 2025). *“Examining Directional Association between Depression and Anxiety”.* Tokyo, JAPAN.
8. **Upcoming:** 19th International Joint Conference on Computational and Financial Econometrics (CFE) and Computational and Methodological Statistics: CMStatistics (December 2025). *“A Mechanistic Framework for Collider Detection in Observational Data”.* London, UK.
9. **Upcoming:** Joint Meetings of 2025 Taipei International Statistical Symposium and 13th ICSA International Conference (December 2025), “*A Mechanistic Framework for Collider Detection in Observational Data*”. Taipei, TAIWAN.

**Non-Print Media (Software, electronic)**

1. Bhaduri R.+, Kundu R.+, **Purkayastha S.**, Beesley L., Mukherjee B., Kleinsasser, M. (2021). *SEIRfansy: Extended Susceptible-Exposed-Infected-Recovery Model* [[link](https://cran.r-project.org/package=SEIRfansy)]
2. **Purkayastha, S.** and Song, P.X.K., 2024. *fastMI: A fast and consistent copula-based nonparametric estimator of mutual information.* [[link](https://github.com/soumikp/fastMI)]
3. **Purkayastha, S.** and Song, P.X.K., 2024. *comet: Collider-mediator testing using information theory* [[link](https://github.com/soumikp/comet)]

**Technical and Government Reports**

1. **Purkayastha, S.** and Basu, A. (2020) *On minimum Bregman divergence inference.* [ARXIV. 2008.06987](https://arxiv.org/abs/2008.06987)

**Other Publications/Press Coverage**

1. Basu, D., Salvatore, M., Kleinsasser, M., **Purkayastha, S.,** Bhattacharya, R., and Mukherjee, B., [We’re Focusing on National Data on COVID-19 When We Should Be Looking at State- Level Trends](https://thewire.in/health/covid-19-india-national-data-state). The Wire, 2020.
2. Mukherjee, B., Purkayastha, S., Salvatore, M., & Mishra, S. [Underreporting does hurt the COVID fight.](Mukherjee,%20B.,%20Purkayastha,%20S.,%20Salvatore,%20M.,%20&%20Mishra,%20S.%20Underreporting%20does%20hurt%20the%20COVID%20fight.%20The%20Hindu,%202021.) The Hindu, 2021.
3. Laguipo, A., [A study of the COVID fatality rates in India during waves 1 and 2.](https://www.news-medical.net/news/20210603/A-study-of-the-COVID-fatality-rates-in-India-during-waves-1-and-2.aspx) News-Medical.Net, 2021.
4. Bastian, H., [Women Versus Men Leaders in the Pandemic: An Update and Dig Into the Latest Data.](https://absolutelymaybe.plos.org/2022/06/28/women-versus-men-leaders-in-the-pandemic-an-update-and-dig-into-the-latest-data/) PLOS Blogs, 2022

**Service**

**Service to School and University**

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| --- | --- | --- |
| **Years** | **Activity** | **Position** |
| 2024-25 | Graduate Research and Development Seminar Organizer | Department of Biostatistics and Health Data Science, University of Pittsburgh |
| Mar 2025 | Research Day Poster Competition Judge | Department of Biostatistics and Health Data Science, University of Pittsburgh |
| Apr 2025 | Dean’s Day Poster Competition Judge | School of Public Health, University of Pittsburgh |

**Manuscript and other Documentation/Publication Review**

Annals of Applied Statistics, Biometrics, Communications in Statistics (Case Studies and Data Analysis), Journal of the Royal Statistical Society, Series A (Statistics in Society), New England Journal of Statistics in Data Science, PLOS One, Scientific Reports, Statistics in Medicine, Statistical Science.

**Governmental Organizations**

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| --- | --- | --- |
| **Date** | **Organization/Agency** | **Position and/or Type of Service** |
| Jan 2025 | Specialist Biostatistician Grant Reviewer | Congressionally Directed Medical Research Program (CDMRP) Discovery Award, US Department of Defense |

**Non-Governmental and Community-Based Organizations**

|  |  |  |
| --- | --- | --- |
| **Date** | **Organization/Agency** | **Position and/or Type of Service** |
| Apr 2025 | Pittsburgh Regional Science and Engineering Fair Poster Competition Judge | American Statistical Association (Pittsburgh Chapter) |