IMPACT Mental Health

IMPACT-MH DCC

Annual Consortium Meeting

Day One

12 pm-3:30 pm ET

October 29, 2025

Welcome | Reminders

- Meeting recorded, not live-streamed
- Speakers share screen
- Materials will be available at impact-mh.org after the event
- Short break after Research Partner presentations
- Timekeeper - 1 minute

The IMPACT-MH DCC is funded by NIMH (1U24MH136069-01, 5U24MH136069-02, 3U24MH136069-02S1)

Agenda

This meeting is being recorded.

DAY ONE: Oct 29, 12pm-3:30pm ET

- Welcome
- IMPACT-MH DCC Y1, Year Ahead
- Research Partner Presentations

Break

- BP CNNI Special Edition
- Guest Speaker: Quentin Huys

The IMPACT-MH DCC is funded by NIMH (1U24MH136069-01, 5U24MH136069-02, 3U24MH136069-02S1)

IMPACT-MH DCC: YEAR 1 and Looking Ahead

Data Submission - Hua Xu
Yale
Data Coordination Center

Data Analytics - Yong Chen
UPenn
Data Coordination Center

12:00-12:10

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PROFILE:

- **U24 Awardee:**

2024-2029 Data Coordination Center (DCC)

- **13 Research Partners:**

2024-2029: 8 U01 Awardees
2025-2029: 5 UF1 Awardees

- **NIH/NIMH Partners**

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IMPACT-MH DCC 3 Cores

Project Coordination & Data Management

This core will ensure seamless coordination and communication among IMPACT-MH projects, and it will also establish a robust data management system. The system will efficiently collect, store, harmonize, and manipulate multi-modal data from multiple projects. Moreover, it will ensure compliance with data submission requirements for NDA.

Yale | Dr. Hua Xu

Data Standards

This core will define common data models by leveraging the RDoC framework and existing ontologies and other data standards such as CDEs (Common Data Elements). It will establish a consensus process and data harmonization methods, and support awardees to implement such standards among IMPACT-MH projects

Mayo | Dr. Cui Tao

Data Analytics

This core will focus on conducting rigorous analyses on the aggregated data from the IMPACT-MH projects, developing methods to address potential biases associated with the datasets, algorithms, and applications, and evaluating phenotype models.

UPenn | Dr. Yong Chen

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IMPACT Mental Health

Instruments for Data Harmonization: Year One

Taskforces:

- SDoH/Demos
- Medications
- Drugs of Abuse
- Clinical Characteristics
- Null Answers
- Audio/Visual Data
- EHR data
- EMA data

Deliverables:

- **Guidelines**
- **Instructions**
- **REDCap forms**
- **Tools:**
  - NDA Validator
  - wizaRdry
  - Submission Portal
  - Network Portal

Access:

- Website
- Workshops
- Seminars
- Help Desks
- Slack
- Monthly 1:1
- 1:1 Tutorials
- Monthly Bulletin

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IMPACT-MH Data Types: Year One

Data Type / Research partner	Disorder	Clinical/ Phenotypic	Psychometric testing	Neurosignal recordings	OMICS	Wearables and other devices	Audio recording	Video recording
Yale IMPACT-Y	Transdiagnostic population	✓	✓				✓	✓
OHSU	Dysregulatory Psychopathology	✓	✓					
UMich COMPASS	Transdiagnostic population		✓		✓	✓		
Stanford ACE-D	Depression	✓	✓	✓		✓		
UPitt PPSN	Transdiagnostic population	✓		✓		✓		
Mount Sinai PREDiCTOR	Transdiagnostic population		✓			✓	✓	✓
MGH JASPer	Transdiagnostic population	✓	✓					
UWash HALO	Transdiagnostic population		✓				✓	

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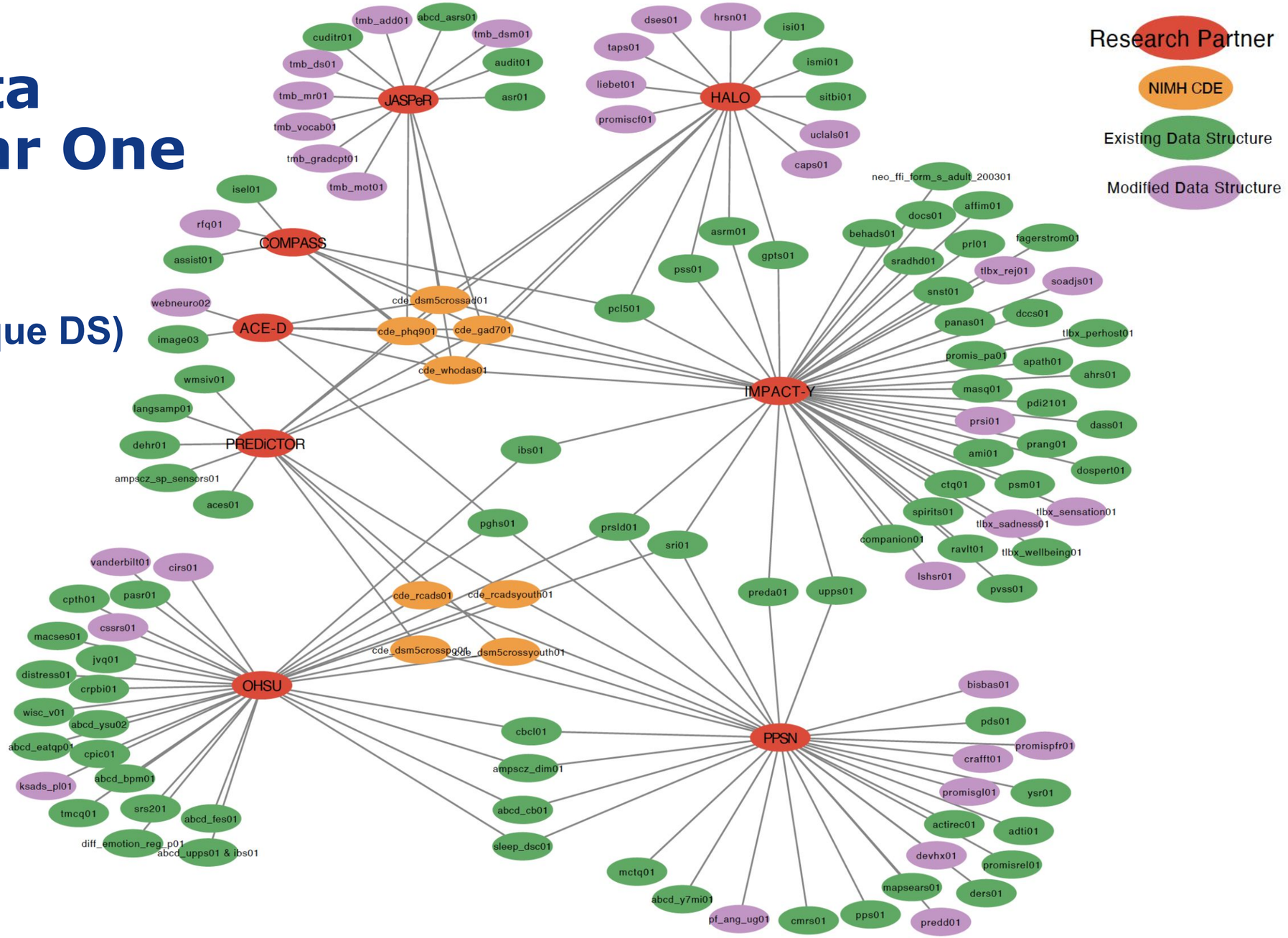
IMPACT Mental Health

IMPACT-MH Data Structures - Year One

Total Planned DS - **234 (unique DS)**

- NIMH CDEs - **8**
- Project-specific DS - **226**
  - Existing - 82
  - Modified - 37
  - New - 55



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IMPACT Mental Health

IMPACT-MH Data Submission: July 2025

DS submitted - **45 (unique DS)**

NIMH CDEs - **4**

Project-specific DS - **41**

Participants per DS - **19 to 2004**

U01 site	Project Name	# Required NIMH CDEs	# Project-specific DS	# Participants per DS
MSSM	PREDiCTOR	4	2	34
MGH	JASPer	3	0	2004
OHSU	-	--		
UPitt	PPSN	--		
Stanford	ACE-D	4	1	19
UWash	HALO	4	5	184
UMich	COMPASS	2	1	324
Yale	IMPACT-Y	4	34	Vary

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IMPACT Mental Health

IMPACT-MH DCC: Data Analytics and the Year Ahead

2025 DAWG Presentations

- **Guillermo Cecchi, PhD** - PREDiCTOR (Phenotypes REimagined to Define Clinical Treatment and Outcome Research)
- **Josh Kenney, MS** - wizaRdry
- **Karina Pereira-Lima, PhD, MS** – Target Trial Emulation of Sleep and Physical Activity Interventions for Depression Prevention
- **Jennifer Cleary, PhD** - Developing an individualized treatment rule for depressive symptoms
- **Yong Chen, PhD** - Empowering Your Study via Federated Learning Using PDA

12:05-12:10

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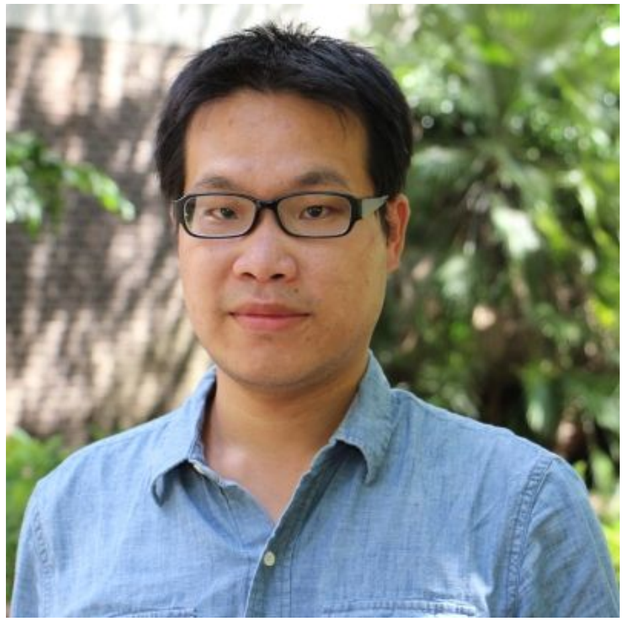
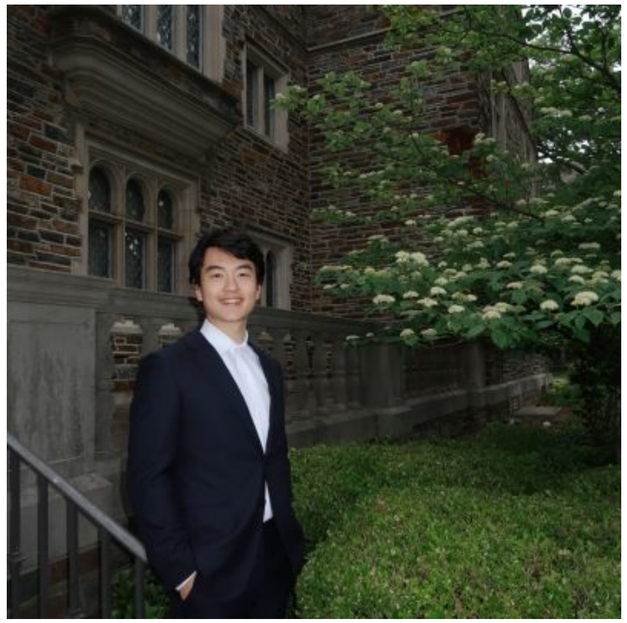
IMPACT-MH DCC: Data Analytics and the Year Ahead

Monthly DAWG HelpDesk (Coming Soon)

Frequency to increase as needed



Huilin Tang, PhD



Haoyuan (Luke) Wang

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IMPACT-MH DCC: Data Analytics and the Year Ahead

Scenarios	Clinical Modeling & Risk Prediction	Causal Inference & Comparative Effectiveness Research	Phenotyping & Subtype Discovery
	Forecast patient outcomes, powered by shared models, not shared data.	Discover real-world treatment effects across systems with privacy	Understand disease heterogeneity without centralized access to data.
Toolbox	✓ Binary outcomes: ODAL ✓ Time-to-event: ODAC, ODACH, ODACoR, ODACoRH ✓ Count/categorical: ODAP, ODACAT ✓ zero-inflated outcomes: ODAH	✓ Target trial emulation with binary/survival outcomes ✓ Self-Controlled Case Series design for vaccine safety outcomes ✓ Test-negative design for vaccines efficacy outcomes	✓ Heterogeneous latent class models ✓ One-shot EM clustering ✓ Federated latent transfer learning ✓ Subphenotyping under hospital-specific patterns
Example Applications	❖ COVID-19 length of stay prediction ❖ Acute myocardial infarction risk prediction ❖ Kidney graft failure prediction ❖ Competing risk survival modeling ❖ Identifying risk of severe hypoglycemia ❖ Early prediction of treatment resistance	❖ COVID-19 vaccine effectiveness in pediatric populations ❖ Effectiveness of GLP-1 vs traditional therapies ❖ Alzheimer's drug repurposing ❖ Racial disparities in COVID-19 mortality across hospitals	❖ Long COVID subphenotyping ❖ Federated mixture modeling ❖ Zero-inflated modeling for sparse outcomes of ED visits ❖ Subphenotyping metabolic syndrome ❖ Detecting multimorbidity clusters

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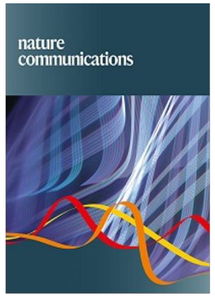
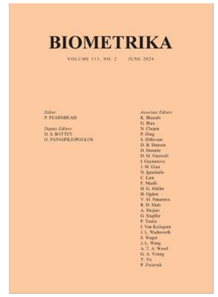
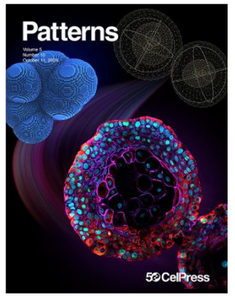
IMPACT-MH DCC: Data Analytics and the Year Ahead

- **13,000+** downloads
- **30+** national and international studies
- **30** method papers
- **30+** clinical papers
- **20+** ongoing studies
- **50+** data partners
- Number of adults patients covered: **200+ million**
- Number of pediatric patients covered: **> 10 million in the US (10% of the US pediatric population)**

PDA
Privacy-preserving Distributed Algorithms







Journal:
Biometrika (1)
JMLR (2)
Nature communications (4)
Cell Patterns (1)
Scientific reports (3)
NPJ digital medicine (1)
Journal of the American Medical Informatics Association (9)
Journal of Biomedical informatics (4)
The Annals of Applied Statistics (1)
ACM Transactions on Intelligent Systems and Technology (TIST) (1)
Conference:
PACIFIC SYMPOSIUM ON BIOCOMPUTING (2)
AMIA Annual Symposium Proceedings (2)

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IMPACT-MH DCC: Data Analytics and the Year Ahead

Lead site/Center

Site 1 Site 2 Site 3

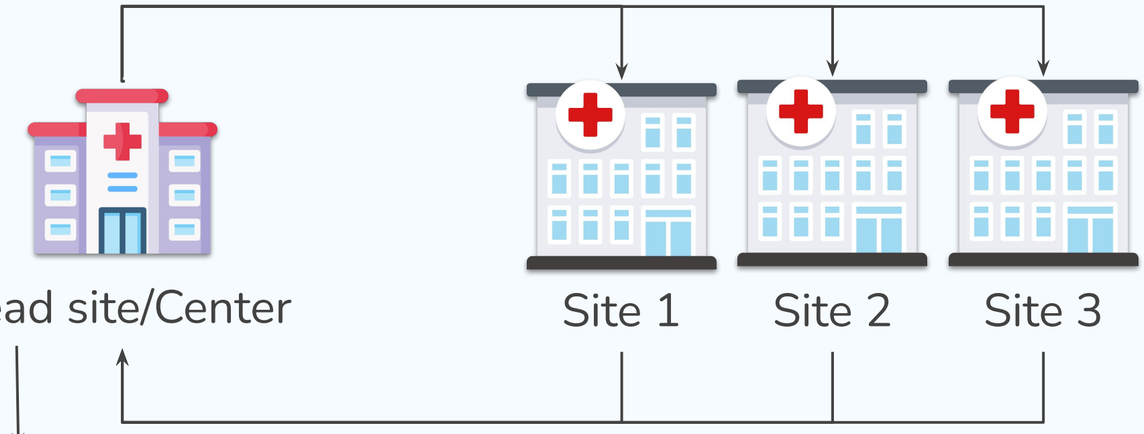
Step 1: All the sites communicate and develop a study protocol

Example: Federated logistic regression

$$Outcome = \beta_0 + \beta_1 \times Age + \beta_2 \times S$$

Suppose we are interested in the **Age Effect**

Step 2: Lead site sends local initial estimate to other sites



Lead site/Center Site 1 Site 2 Site 3

Step 3: Other site send summary statistics to lead site

Step 4: Calculate final result

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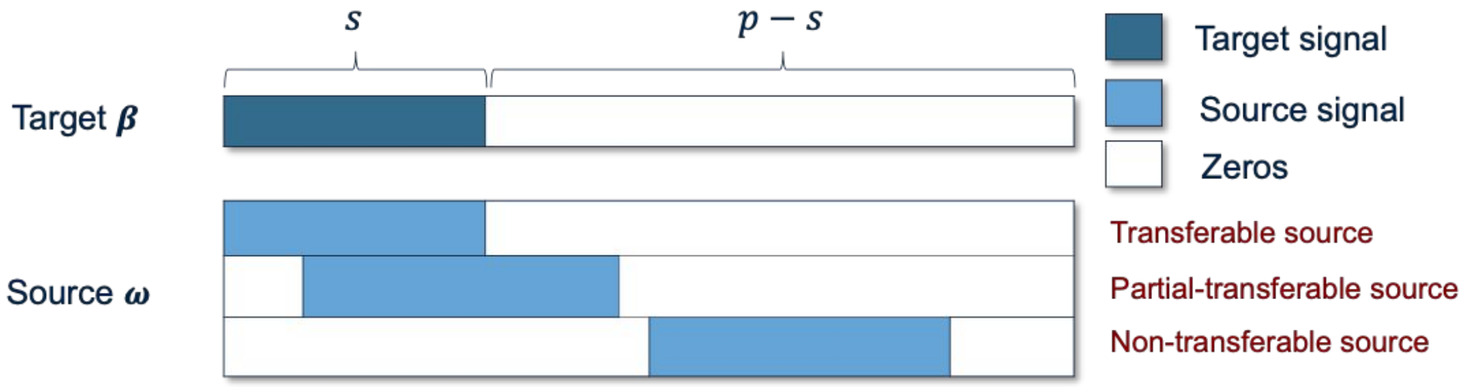
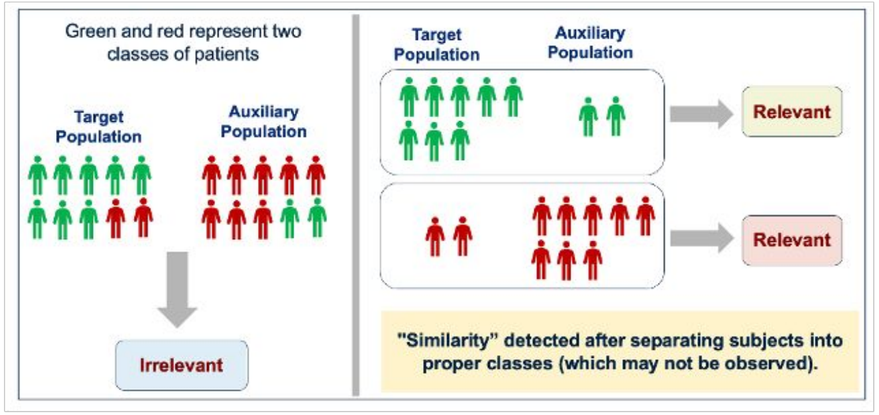
IMPACT-MH DCC: Data Analytics and the Year Ahead

Duan, Ning and Chen (2022) Heterogeneity-aware and communication-efficient distributed inference. **Biometrika**
Tong et al., (2024) Federated Causal Inference under distribution shift. **JMLR**
Liu et al., (2024+) Distributed Inference for heterogeneous finite mixture models. **JMLR** (invited revision)
Wang, Zhu and Chen (2024+) Distributed Resampling for heterogeneous data. **Biometrika** (invited revision)
Zhang, Liu et al. (2024+) Bias reduction in distributed inference. **Biometrika** (invited revision)
Hu et al., (2024+) Federated variable selection. **JRSS-B** (invited revision)
Wang, Liu, et al. (2024+) One-shot distributed EM. **JASA-T&M** (invited revision)

Liu et al., (2024+) Targeted learning with probabilistic matching. **JASA-T&M** (under review)
Hu et al., (2024+) Targeted learning with informative feature sharing. **JRSS-B** (under review)





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Research Partner Presentations

12:10-2:30pm

1	12:10-12:30 PM	Chris Pittenger (IMPACT-Y)
2	12:30-12:50 PM	Moriah Thomason (REACH @ NYU)
3	12:50-1:10 PM	Lara Foland-Ross (ACE-D @ Stanford)
4	1:10-1:30 PM	Jessica Turner (OSU, ARTEMIS)
5	1:30-1:50 PM	Amy Bonhert (UMich, COMPASS)
6	1:50-2:10 PM	Jonathan Posner & Matt Engelhard (Duke-PMA)
7	2:10-2:30 PM	Cheryl Corcoran (Mount Sinai, PREDiCTOR)

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IMPACT-Y

Christopher Pittenger

Yale

Clinical and behavioral fingerprints of psychopathology

12:10-12:30

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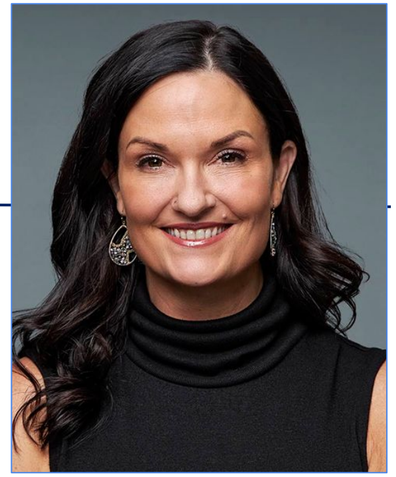
REACH



Moriah Thomason
NYU Langone

Behavioral Phenoscreening: Remote Assessment of Child Mental Health

12:30-12:50

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ACE-D

Lara Foland-Ross

Stanford

Accelerating Cognition-guided signatures to Enhance translation in Depression

12:50-1:10pm

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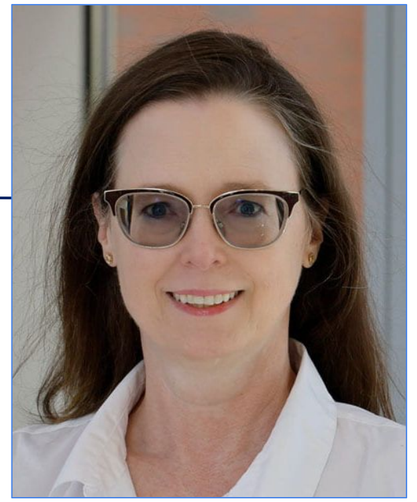
ARTEMIS



Jessica Turner
Ohio State University

Analyses to Reveal Trajectories and Early Markers of Imminent Shifts in Suicidal States

1:10-1:30pm

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COMPASS

Srijan Sen

University of Michigan

A comprehensive mobile precision approach for scalable solutions in mental health treatment

1:30-1:50pm

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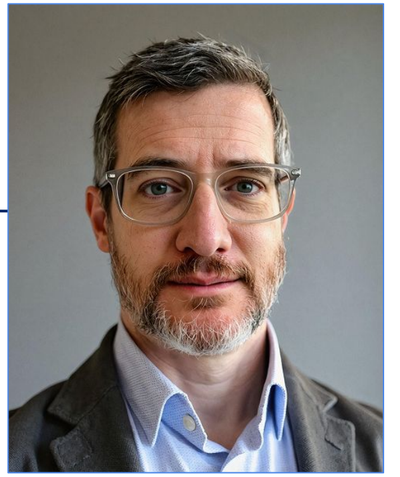
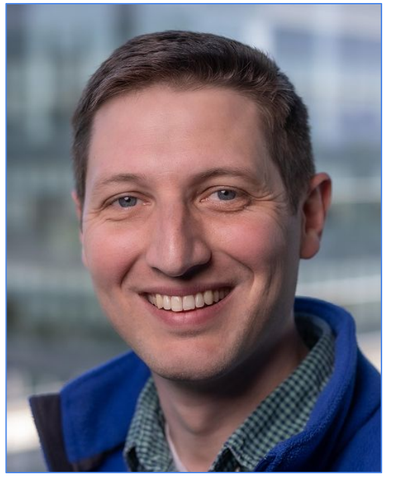
Duke-PMA





Jonathan Posner & Matt Engelhard
Duke

Duke Predictive Model of Adolescent Mental Health

1:50-2:10pm

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PREDiCTOR

Cheryl Corcoran
Mount Sinai

Phenotypes REimagined to Define Clinical Treatment and Outcome Research

2:10-2:30pm

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Take 5.....

Break...

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Take 10.....

Break...

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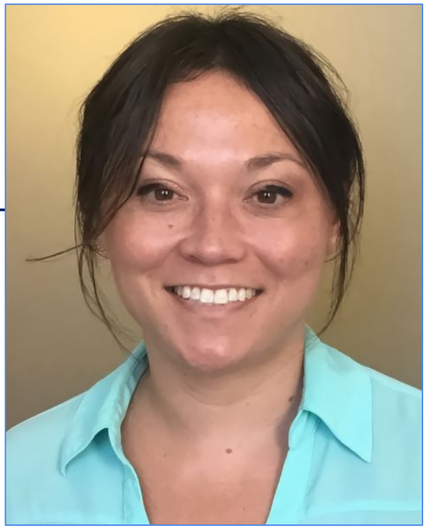
BP CNNI Special Edition



Sarah Yip
IMPACT-Y
Yale

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Guest Speaker

Quentin Huys

University College London

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See you tomorrow!

12pm - 3:30pm ET

- Research Partner presentations
- DCC software tools updates
- Breakout sessions:
  - AV data
  - EMA data
  - EHR data
- Next steps

Thank you!

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IMPACT
Mental Health

Thank you

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