Reducing Bias in AI/ML Research

Standardization, Harmonization, and Interoperability for Multi-omic Data and EHR for Marginalized Community Subsets

JAMES BURROUGHS  
CHIEF EXECUTIVE OFFICER  
North Carolina Health Equity Project, Inc.  
https://www.nchealtheq.org

© 2021, NCHEP or its affiliates. For External Distribution.
Introductory Disclaimers and Disclosure Statements

Use of tradenames and/or commercial sources is for identification only and does not imply endorsement by North Carolina Health Equity Project, Inc. (“NCHEP”).

Citation of external sources does not constitute an endorsement of any kind by NCHEP, and none should be inferred.

The presenter has no known conflicts of interest or required disclosures pertinent to this presentation.

This material may be reproduced with proper citation of the presenter and NCHEP.
NCHEP AI/ML SDOH Research Portfolio and Works in Progress
High Level, Primary Challenges for AI/ML-based Research in Health Sciences for Marginalized (racial and ethnic minority and SGM) Cohorts

• Ethnocultural and historical barriers to participation and inclusion in studies result in limited representation for appropriate training data

• Current evidence-based physiologic metrics with “canonical” or clinically “normal” reference value ranges have not historically been representative of the diversity and resulting physiologic and phenotypic variability among US populations (disaggregated by cohort or strata), with few studies looking retrospectively across cohorts to assess the normality of these data or provide more inclusive reference ranges

• Consensus-based standardization and harmonization interim guidance differ across industry, government, and regional constituencies

• Historically suboptimal utilization of Z Codes provided in ICD-10-CM among HCPs across EHR impedes progress for standardization and harmonization

• Barriers to meeting infrastructural requirements for data sharing prevent many MSIs from inclusion in robust data-sharing among non-MSI peers
Fundamental Ontological, Ethnocultural, and Ethical Considerations for Use of Race and Ethnicity Data in AI/ML-based Research

1. Race as a social construct
2. Race as individual and community self-identification and belonging
3. Race as a social determinant of health
Technical and Practical Challenges to Advancing Transparency of AI/ML-enabled Medical Devices

• Mutability of self-identification along racial and ethnic strata may confound longitudinal studies, important for upstream AI/ML-based research which supports development of AI/ML-enabled medical devices

• Access to technology and infrastructure resources present tremendous barriers to researchers outside of larger academic institutions, with disparities across MSI vs. non-MSI entities

• Variability in the scope and enforceability of interim guidance for standardization, harmonization, and interoperability of upstream AI/ML-based research

• Suboptimal diversity and inclusive representation in leadership, among both industry and governmental constituencies may promulgate existing inequities, and intensify the consequences thereof through AI/ML-based research
Acknowledgements and Contact Information

Special thanks to:
- CDC
- CDRH, FDA
- HealthIT.gov
- OMH, DHHS
- NIH

Contact:
North Carolina Health Equity Project, Inc.
PO Box 36164
Greensboro, NC 27416
info@nchealtheq.org
+1 336-283-5094