THE STATE UNIVERSITY OF NEW JERSEY

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### Update on the New Jersey Population Health Cohort Study

Brown Bag Seminar Institute for Health, Health Care Policy and Aging Research November 3, 2022



NEW JERSEY POPULATION HEALTH COHORT STUDY

More Than Health

# Outline

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### Acknowledgements

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We are grateful to external advisors and colleagues from across Rutgers who have given generously of their time to advise the Cohort Study team about study design and implementation

We thank RTI colleagues Katherine Morton and Stephanie Zimmer who contributed to the study sampling and weighting design.

### **Cohort Study Leadership**



Joel Cantor, ScD Principal Investigator Public Policy



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### **Our Team**



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### **Goal and Aims**

#### **Overall Goal**

 Produce practical, actionable information for improving population health, well-being, and health equity

#### Aims

- Discover the ways that stressors over the life course at the personal, interpersonal, societal levels contribute to health and well-being
- Identify factors that buffer or amplify how stressors influence health and wellbeing
- Generate actionable information with specific focus on multigenerational families, immigrant groups, people of color, and lowincome families

### **Conceptual Framework** Ecosocial Model Of Stressors and Health



Adapted from: Krieger, N. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International journal of epidemiology, 30(4), 668-677.* Krieger, N. (2008). *Proximal, distal, and the politics of causation: what's level got to do with it?*. *American journal of public health, 98(2), 221-230.* 

## **Conceptual Framework**

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- Case and Deaton\* describe "deaths of despair", leading to extensive public and scholarly discourse
  - "Despair" is not well characterized or well understood
- Adapt Krieger's Ecosocial Model to guide how we ...
  - Understand consequences of stressors at multiple levels for population health, well-being, and health inequity outcomes
  - Understand buffers and amplifiers that may moderate the impact of stressors on outcomes
  - Inform actions in the public and private spheres to address stressors, despair, and their consequences for health and well-being
- More about measures in a minute...

\*Case A, & Deaton A (2021). Deaths of Despair and the Future of Capitalism. Princeton University Press.

# **Study Sample**

### Overview

New Jersey household population (n≈10,000) aged 14 and older

- Probability sample (n≈6,000)
  - Four-stage, area-probability sample
- Immigrant samples (n≈4,000)
  - Recruited via respondent driven sampling
  - Indian, Chinese, Korean, Filipino, Dominican, Mexican, Nigerian, Jamaican, Haitian, Refugee/Asylee

## **Probability Sample**

#### **Objectives**

- Represent New Jersey overall and large regions of the state
- Over-sample immigrants, multi-generational families
- Ensure adequate samples of racial/ethnic minority and low-income groups
- Efficient in-person data collection

#### **Developed collaboration with RTI International**

- Sample design
- Address based sample (ABS)
- Calculation of sample weights

# **Probability Sample**

#### Four-stage design

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- Stage 1: Primary Sampling Units (PSU)
  - 30 PSUs drawn from 73 Public Use Microdata Areas (PUMS)
  - Oversample high-immigrant areas
  - Fielded in three replicates (8, 10, 12 PSUs, respectively)
- Stage 2: Secondary Sampling Units (SSU)
  - SSUs built from 6,320 NJ Census Block Groups, some combined
  - 690 SSUs selected, 23 per PSU
  - Oversample high-immigrant areas
- Stage 3: Housing Units (HU)
  - Address based sample (ABS)
  - 138,000 HUs, 200 housing units per SSU
  - Model-based oversample of multigenerational households
    - Trained on prior RTI studies
    - 74% correctly predicted

## **Probability Sample**

#### Four-stage design

- Stage 4: Within Household (HH) Selection
  - Enumerate families, family members age 14+
  - Randomly select one family in multi-family HHs
  - Within family, select one person per generation
    - Teen (14-17)
    - Young adults (18-39)
    - Middle aged (50-59)
    - Older (60+)
  - Eligible immigrant groups
    - Respondent-driven sample "seeds"
    - Select all other family members

# **Data Sources**

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#### • In-depth interviews

- Telephone, Zoom or in person
- Height, weight, waist, hip in person
- Cognitive testing in person (age 50+)
- Activity and movement
- Biological markers
  - Saliva (DNA)
  - Blood draw in a sub-group (inflammatory markers)
  - Both will also be banked

#### Secondary data linkages

- Individual-level
- Area/neighborhood-level

# **Actigraphy & Movement**

- Two-week data collection from consenting participants
- Actigraph CentrePoint actigraphy watches
  - Raw tri-axial accelerometer data + Actigraph activity counts
  - Physical activity (i.e., MVPA, Bouts, Steps, Wear Time)
  - Sleep (i.e., Total sleep time, Awakenings, Wake After Sleep Onset, Sleep Efficiency)
- Study cell phone

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- GPS at 15 second intervals (latitude, longitude, altitude, speed, bearing, timestamp)
- Daily sleep and movement questionnaire



# **Biomarker Study**

- Salivary DNA collected from all consenting participants
  - Genotype ~800,000 single nucleotide polymorphisms (SNPs)
- Fasting plasma collected for subgroup for biomarker analysis
  - Inflammatory cytokines and their soluble receptors
  - Alzheimer's biomarker (p-Tau<sub>181</sub>)



# **Data Linkages**

#### **Respondent-Level**

Individual consent Multiple DUAs 2017-forward

#### **Area-Level**

Geocoded location Details under development

Respondent-Level Data	Source
Medicare & Medicaid Claims	CMS/ResDAC
Commercial Insurance Claims	Horizon BCBS, others TBD
All-payer NJ hospital discharge data (inpatient, ED)	iPHD
Ambulatory care electronic health records	RWJBH, others TBD
Social services enrollment and benefits (SNAP, TANF, General Assistance, Emergency Assistance)	NJ Dept. Human Services
Registry data (COVID-19, Cancer)	iPHD, DOH/CINJ
Vital records	NDI, iPHD

- Replicate 1 questionnaire and examination data
  - Limited modifications possible for replicates 2 and 3
- Actigraphy and GPS

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- Biomarker measures in development
- Secondary data linkages in development

#### Caveats

- A work in progress
- Some items are collected through multiple modalities
- Some items may fall under multiple categories (stressors, buffers/amplifiers, outcomes)

#### Health and Well-Being

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- Well-Being General well-being, life-satisfaction and meaning, QoL
- Mental health Perceived stress, Ioneliness, depressive and anxiety symptoms, optimism, rumination, suicide screener
- Physical health Self-assessed health, pain, medical conditions, BMI & hip/waist measures, physical performance
- **Cognition** General cognition, memory, executive function, attention, language, visuospatial
- Physical disability Mobility, self-care, getting along, life activities, participation
- Morbidity and mortality

#### <u>Stressors</u>

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- Personal & interpersonal stressors
  - "Objective" stressors ACEs, criminal justice history, elder mistreatment, intimate partner violence, bullying, grandparent burden and caregiving, reasons for immigration, COVID-19, unemployment and wage history, etc.
  - Perceived discrimination
- Socio-political and societal stressors
  - Contemporary stressors Social media, climate, economic inequality, political turmoil, race relations, immigration, gun violence
  - Social determinants of health Housing insecurity & quality, food insecurity, utility insecurity, financial/material hardship
  - Environmental, neighborhood Pollution, traffic, safety, etc.

### **Buffers, Amplifiers, and Other Variables**

• Biomarkers

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- **Psychological traits** Personality, optimism, rumination, existential struggle, meaning
- **Relationships & networks** family relationships, social support from family and friends, civic engagement, caregiving
- Health & related behaviors Health risk attitudes, substance (alcohol, nicotine, opioid, cannabis) dependence screeners, religious practice, civic engagement, volunteerism, following news, physical activity, sleep
- Healthcare access & use Usual place of care; barriers to physical, mental, Rx, dental care; vaccination; preventive screenings; healthcare utilization (NJ, US, international), diagnostic history, care seeking attitudes

Assessed in biomarkers Assessed using actigraphy and GPS Assessed using secondary, linked data

#### Buffers, Amplifiers, and Other Variables (continued)

**Socio-demographics & immigration** – Race/ethnicity, sex, age, SOGIE, language proficiency, nativity, citizenship, refugee/asylee status, reasons for immigration

**SES** – Education, employment, employment/wage history, income, assets, health insurance coverage, own/rent home

Assessed using secondary, linked data

# **Engagement Plan**

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### Community outreach

- Shifting from IFH-wide to study-specific strategy
- Establishing Cohort Study Community Advisory Board to advise on:
  - General and RDS sample-specific outreach and recruitment
  - Analysis and dissemination priorities
  - Communication strategy

### Scientific advisory groups

- RU Internal (formerly "executive committee")
- External national experts
- State policy advisory group
- Outreach to NIH officials & other key national audiences

## **Sustainability Plan**

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- RWJF/RBHS funding commitment ends with baseline data collection
- Engage successful NIH-funded faculty to develop, lead, and collaborate on proposal submissions
  - Identify target NIH FOAs (NIA, NIMH, NIMHD, etc.) and other sources
  - Recruit/build project teams
  - Possibly add selected interview items in replicate 2 or 3
  - Conduct preliminary studies using replicate 1 data
  - Submit first round of highly competitive applications mid-late 2023
- Expand roster of PIs developing competitive proposals
  - Competitive call for pilot subawards in 2024
- Continue outreach to New Jersey stakeholders and possible funders
  - Position ourselves to partner with NJ agencies on state-directed federal proposals (e.g., CDC, SAMHSA)
  - Engage legislators interested in Cohort topics (e.g., immigrant health) and findings
  - Engage with other state-level stakeholders

## **Milestones & Timeline**

#### Design phase (2020-21)

- Consulted with internal and external advisors and stakeholders
- Conducted preliminary studies (e.g., sampling, actigraphy, Census data analysis)
- Established initial study goals and design
- Developed and tested data collection platform
- Developed interview training, began hiring and training staff
- Received initial IRB approval

#### Jan-July 2022

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- Engaged new leadership team
- Reviewed and revised study conceptual model and research design
- Continued community outreach and engagement
- Finalized replicate 1 survey instrument
- Continued additional staff recruitment and training
- Selected replicate 1 probability sample

## **Milestones & Timeline**

#### Aug-Dec 2022

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- Commenced replicate 1 recruitment & data collection (August)
- Begin RDS recruitment
- Conduct biomarker pilot study
- Restructure community, internal, and external advisory groups
- Draft Community Advisory Board (CAB) charter and engage CAB chair & members
- Continue community and scientific engagement activities

#### 2023

- Complete replicate 1 data collection
- Conduct data quality checks and preliminary analyses
- Prepare and submit initial NIH and other grant proposals
- Produce weighted dataset and commence analysis of replicate 1 data
- Continue community and scientific engagement activities
- Commence community-oriented dissemination
- Replicate 2 instrument additions/revisions
- Launch replicate 3 data collection

## **Milestones & Timeline**

#### 2024...

- Continue community and scientific engagement activities
- Complete data collection
- Possibly conduct competitive pilot grant process
- Continue development and submission of competitive funding proposals





# **Thank You**

### **Questions?**

