New Findings from Wave V

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Wave V Overall Goals

- Re-interview Add Health cohort members as they move through their 30s to collect social, environmental, behavioral, and biological data with which to track the emergence of chronic disease
- Build on the life course history of respondents by adding and refining early-life measures of their birth and childhood
- Bring these data together with existing longitudinal data to create a 40-year life course record to test hypotheses about developmental origins of health and disease
Key Design Changes to Wave V

• National Longitudinal Study of Adolescent to Adult Health
  • Shifted from in-person interview to mixed mode interview using web, mail, phone and in-person
  • Questionnaire length reduce from 90 to 50 mins
  • Shifted from intensive 1-year data collection period to continuous interviewing over 3 years
  • Biological data collected in separate home visit by biological data subcontractor (venous blood draw)
  • Sample non-respondents
Wave V Interview 2016–2018

- Wave I respondents aged 33–43 years
- Collect the following data:
  - Survey data
  - Biological data
  - Geographic locations
  - State of birth to obtain birth records
  - Identify all deaths for death surveillance
- Conduct fieldwork continuously on 3 nationally-representative samples (Samples 1, 2 and 3) during 2016–2018
Wave V Sampling Structure

All samples are nationally representative

Sample 1

Sample 2

Sample 2A (web & mail survey)

Sample 2B (in-home interview)

Sample 3

2016

2017

2018
Wave V Data Collection Results

- Overall sample size of 12,300 (effective response rate of 72%)
- 66% biomarker consent rate
- Biomarker sample size 5,381

<table>
<thead>
<tr>
<th>Survey Mode</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web</td>
<td>77.5</td>
</tr>
<tr>
<td>Paper</td>
<td>3.3</td>
</tr>
<tr>
<td>In-person</td>
<td>17.1</td>
</tr>
<tr>
<td>Phone</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
Wave V: Biological data

- Repeat measures of biomarkers:
  - Anthropometrics (height, weight, waist)
  - Cardiovascular (blood pressure, pulse)
  - Whole blood assays of:
    - Inflammation and immune function (CRP)
    - Metabolic (lipids, HbA1c, glucose)

- New biomarkers of renal function:
  - Creatinine
  - Cystatin C

- Medications inventory

- Venous blood for ancillary studies
  - Gene expression data
  - Methylation (epigenetic) data
Wave V Data Release

- Full Wave V survey data (N=12,300)
  - Mixed-mode survey data
  - All data and samples combined with sampling weights
- Wave V biomarker data (N=5,381)
  - Includes biomarker weights
- Contextual data released
  - Longitudinal measures from Census, RUCA, Climate Atlas, FBI crime reports (tract, county, state)
  - County-level health and mobility data
  - ACA Medicaid Expansion data (state)
- Public use data (N=4,196) available at ICPSR
Genomic Data

- **GWAS**
  - saliva collected at Wave IV (2008)
  - N~10,000 (additional 1550 coming)
  - Data available on dbGaP (Accession#: phs001367.v1.p1)

- **Gene expression**
  - PAXgene samples collected at Wave V (2016-18)
  - N~4,500

- **Methylation**
  - Venous blood Wave V (2016-18)
  - N~4,500

- **Microbiome**
  - Currently in the field
Illustrative Wave V Findings
Descriptive Data (Weighted Percentages)

- 50.3% male, 49.6% female (sex assigned at birth)
- Mean age: 38 (range 33 – 43)
- Completed education:
  - HS or less: 22.0%
  - Some college: 41.4%
  - College or more: 36.6%
- Marital status
  - Never married: 27.5%
  - Married: 55.9%
  - Widowed/divorced/separated: 16.5%
Add Health: a pioneer in the measurement of race/ethnicity

• Unique among national surveys:
  – Repeated race measures across waves
  – Variety of different measurement modes and perspectives (self reports, interviewer observations, ancestry from genomic data)

• History of innovation
  – Multiple race option beginning in 1994-95
  – “Best race” follow-up to restore mutually exclusive (race and/or Hispanic origin) classification
  – Wave V used combined question that asked about race and Hispanic origin
Wave V (web)

1. What is your race or ethnic origin? Mark one or more boxes.
   - White
   - Black, African American
   - Hispanic
   - Asian
   - Pacific Islander
   - American Indian or Alaska Native
   - Some other race or origin - Enter other race or origin
## Race/Ethnicity Measures across Waves

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Wave I</th>
<th>Wave III</th>
<th>Wave V</th>
<th>Wave I</th>
<th>Wave III</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>70.3%</td>
<td>74.0%</td>
<td>67.6%</td>
<td>65.9%*</td>
<td>66.1%*</td>
</tr>
<tr>
<td>Black</td>
<td>14.5%</td>
<td>15.1%</td>
<td>14.1%</td>
<td>14.3%</td>
<td>14.6%*</td>
</tr>
<tr>
<td>Am. Indian or AK Native</td>
<td>1.0%</td>
<td>2.1%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Asian</td>
<td>3.6%</td>
<td>4.1%</td>
<td>3.2%</td>
<td>3.5%</td>
<td>3.8%*</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td></td>
<td></td>
<td>0.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiracial</td>
<td>4.1%</td>
<td>3.7%</td>
<td>3.3%</td>
<td>3.5%</td>
<td>3.4%</td>
</tr>
<tr>
<td>&quot;Some Other Race&quot;</td>
<td>6.3%</td>
<td>---</td>
<td>0.2%</td>
<td>0.8%*</td>
<td>---</td>
</tr>
<tr>
<td>Any Hispanic (1)</td>
<td></td>
<td>---</td>
<td>10.5%</td>
<td>11.6%*</td>
<td>11.5%*</td>
</tr>
<tr>
<td>Hispanic only (2)</td>
<td></td>
<td>---</td>
<td>7.6%</td>
<td>5.6%*</td>
<td>0.9%*</td>
</tr>
<tr>
<td>Hispanic + (other) race (3)</td>
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<td>---</td>
<td>3.0%</td>
<td>6.0%*</td>
<td>10.6%*</td>
</tr>
<tr>
<td>N/A (4)</td>
<td>0.1%</td>
<td>1.0%</td>
<td>0.3%</td>
<td>0.0%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Percent</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Weighted N (Sample N)</td>
<td>17,324,050 (10,220)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* Differs from Wave V at p<0.05
Predicted Growth Curve of CES-D by Levels of Family Cohesion Across Ages 12-40

Chen, Ping and Kathleen Mullan Harris. 2019. “Association of positive family relationships with mental health trajectories from adolescence to midlife.” JAMA Pediatrics 173(12):e193336
Obesity from adolescence into adulthood

The graph shows the percentage of female and male individuals who are obese from adolescence to adulthood. The percentage increases as one progresses from adolescence to adulthood, with a steeper increase for females compared to males.
Predicted probability of CRP > 3 mg/L by BMI category and sex at Wave V (N= 4349)

Unconditional growth curve of BMI by obesity status in adolescence, ages 12-42 (N=9483 females; 9133 males)
Predicted percent with diabetes in early midlife (WV) by timing of obesity onset (N=4541)
Epigenetic age acceleration (GrimAA) by education and race/ethnicity (N=4468)
Epigenetic age acceleration and disease risk (N=4468)

Harris et al. 2022 “Epigenetic age acceleration is associated with disease risks in early midlife adults in Add Health. Annual meetings of the Population Association of America.
Thank you!

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