National Longitudinal Study of Adolescent to Adult Health

• On-going program project that began in 1994.
• Developed in response to a congressional mandate to fund a study of adolescent health.
• Funded by the National Institute of Child Health and Human Development (NICHD) with co-funding from 23 other federal agencies and foundations.
• Fifth follow-up wave 2016-2018.
Key Features of Add Health

• Nationally representative study that explores the causes of health and health-related behaviors of adolescents and their outcomes in young adulthood.
• Multi-survey, multi-wave inter-disciplinary design.
• Direct measurement of the social contexts of adolescent life and their effects on health and health behavior.
• Unprecedented racial and ethnic diversity and genetically informed sibling samples.
Initial Goal:
Putting the Individual Into Context
Sampling Structure

**School Sampling Frame = QED**

- HS Feeder
- HS Feeder
- HS Feeder
- HS Feeder
- HS Feeder

**Sampling Frame of Adolescents and Parents**

- N = 100,000+ (100 to 4,000 per pair of schools)

**Genetic Samples**

- Saturation Samples from 16 Schools
- Disabled Sample
- Main Sample 200/Community

**Ethnic Samples**

- High Educ Black
- Puerto Rican
- Chinese
- Cuban

**Identical Twins**

**Fraternal Twins**

**Full Sibs**

**Half Sibs**

**Unrelated Pairs in Same HH**
Add Health Contextual model
The Social Structure of “Countryside” School District

Unique Features of Study Design

• Ethnic oversamples produce
  – unprecedented diversity in race and ethnicity in a representative population of adolescents
  – large numbers of youth in immigrant families
• Embedded genetic sample enables researchers to sort out genetic from environmental effects and explore gene-environment interactions.
## Race and Ethnic Diversity in Add Health

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>1,767</td>
<td>8.5</td>
</tr>
<tr>
<td>Cuba</td>
<td>508</td>
<td>2.5</td>
</tr>
<tr>
<td>Central-South America</td>
<td>647</td>
<td>3.1</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>570</td>
<td>2.8</td>
</tr>
<tr>
<td>China</td>
<td>341</td>
<td>1.7</td>
</tr>
<tr>
<td>Philippines</td>
<td>643</td>
<td>3.1</td>
</tr>
<tr>
<td>Other Asia</td>
<td>601</td>
<td>2.9</td>
</tr>
<tr>
<td>Black (Africa/Afro-Caribbean)</td>
<td>4,601</td>
<td>22.2</td>
</tr>
<tr>
<td>Non-Hispanic White (Eur/Canada)</td>
<td>10,760</td>
<td>52.0</td>
</tr>
<tr>
<td>Native American (non-Hispanic)</td>
<td>248</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total N</strong></td>
<td>20,686</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Missing on race/ethnicity=59
Diversity in Add Health: Immigrant Status

<table>
<thead>
<tr>
<th>Immigrant Status</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st generation</td>
<td>1,707</td>
<td>8.34</td>
</tr>
<tr>
<td>2nd generation</td>
<td>2,987</td>
<td>14.59</td>
</tr>
<tr>
<td>3rd generation +</td>
<td>15,774</td>
<td>77.07</td>
</tr>
<tr>
<td>Total N</td>
<td>20,468</td>
<td>100.0</td>
</tr>
</tbody>
</table>
### Diversity of Family Forms at Wave I

<table>
<thead>
<tr>
<th>Family Structure</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 biological parents</td>
<td>10,339</td>
<td>53.3</td>
</tr>
<tr>
<td>2 adoptive parents</td>
<td>403</td>
<td>0.7</td>
</tr>
<tr>
<td>Bio Mom/Step Dad</td>
<td>2,756</td>
<td>13.6</td>
</tr>
<tr>
<td>Bio Dad/Step Mom</td>
<td>591</td>
<td>2.6</td>
</tr>
<tr>
<td>Single Mom</td>
<td>4,520</td>
<td>20.4</td>
</tr>
<tr>
<td>Single Dad</td>
<td>637</td>
<td>3.1</td>
</tr>
<tr>
<td>Surrogate parent(s)</td>
<td>1,499</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20,745</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
## Questionnaire Content Across Waves

<table>
<thead>
<tr>
<th>Waves I, II</th>
<th>Wave III</th>
<th>Wave IV</th>
<th>Wave V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic</td>
<td>Demographic</td>
<td>Demographic</td>
<td>Demographic</td>
</tr>
<tr>
<td>Family, siblings, friends</td>
<td>Family, siblings, friends</td>
<td>Family, siblings, friends</td>
<td>Family, siblings, friends</td>
</tr>
<tr>
<td>Education, work</td>
<td>Education, work, <strong>military</strong></td>
<td>Education, work, <strong>military (records)</strong></td>
<td>Education, work, military</td>
</tr>
<tr>
<td>Physical and mental health</td>
<td>Physical and mental health</td>
<td>Physical and mental health</td>
<td>Physical and mental health</td>
</tr>
<tr>
<td>Daily activities and sleep</td>
<td>Daily activities and sleep</td>
<td>Daily activities and sleep</td>
<td>Daily activities and sleep</td>
</tr>
<tr>
<td>Relationships</td>
<td>Relationships</td>
<td>Relationships</td>
<td>Relationships</td>
</tr>
<tr>
<td>Sexual, &amp; fertility histories</td>
<td>Sexual, &amp; fertility histories</td>
<td>Sexual, &amp; fertility histories</td>
<td>Sexual, &amp; fertility histories</td>
</tr>
<tr>
<td>Substance use</td>
<td>Substance use</td>
<td>Substance use</td>
<td>Substance use</td>
</tr>
<tr>
<td>Involvmt w/criminal justice sys</td>
<td>Involvmt w/criminal justice sys</td>
<td>Involvmt w/criminal justice sys</td>
<td>Involvmt w/criminal justice sys</td>
</tr>
<tr>
<td>Attitudes, religion</td>
<td>Attitudes, religion</td>
<td>Work attitudes and chars, relig</td>
<td>Work attitudes and chars, relig</td>
</tr>
<tr>
<td>Economics, expectations</td>
<td>Economics, expectations</td>
<td>Economics, expectations</td>
<td>Economics, expectations</td>
</tr>
<tr>
<td>Psychological, personality</td>
<td>Psychological, personality</td>
<td>Big 5 Personality, stressors</td>
<td>Big 5 Personality, stressors</td>
</tr>
<tr>
<td><strong>Children and parenting</strong></td>
<td><strong>Children and parenting</strong></td>
<td>Children and parenting</td>
<td>Children and parenting</td>
</tr>
<tr>
<td>Civic participation</td>
<td>Civic participation</td>
<td>Civic participation</td>
<td>Civic participation</td>
</tr>
<tr>
<td>Gambling</td>
<td>Gambling</td>
<td>Cognitive function</td>
<td>Cognitive function</td>
</tr>
<tr>
<td>Mentoring</td>
<td>Mentoring</td>
<td>Psychosocial factors</td>
<td>Psychosocial factors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Retrospective childhood health &amp; SES</strong></td>
</tr>
</tbody>
</table>

---

**Substance use and abuse**

**Work attitudes and chars, relig**

**Children and parenting**

**Civic participation**

**Cognitive function**

**Psychosocial factors**

**Retrospective childhood health & SES**
Physical and Social Contextual Data

- Census
- CDC (STD prevalence)
- FBI crime statistics
- National Center for Health Statistics
- National Council of Churches

- Questionnaire-based social context data
  - In-School Network Data
  - Adolescent Romantic Pair Data
  - In-School Friendship Nominations
  - In-Home Friendship Nominations
  - Family Context (Parent Interview, sibling information)
  - Wave III Married, cohabiting, and dating couples (“couple context”)
Physical and Social Contextual Data

• Ancillary studies
  – ONEdata - Obesity & Neighborhood Environment Database
    • Waves I, III, and IV
    • E.g., parks, street connectivity, sidewalks, presence of fast food restaurants
  – The Adolescent Health and Academic Achievement Study
    • Analysis of respondents’ high school transcripts
    • detailed measures of academic progress and high school curriculum
## Biological Data Across Waves

<table>
<thead>
<tr>
<th></th>
<th>Adolescence</th>
<th>Transition to Adulthood</th>
<th>Young Adulthood</th>
<th>Adulthood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embedded genetic sample of ~3,000 pairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height, weight</td>
<td>Height, weight</td>
<td>Height, weight, waist</td>
<td>Height, weight, waist</td>
<td></td>
</tr>
<tr>
<td>STI tests (urine)</td>
<td>Metabolic</td>
<td>Metabolic</td>
<td>Metabolic</td>
<td></td>
</tr>
<tr>
<td>HIV test (saliva)</td>
<td>Immune function</td>
<td>Immune function</td>
<td>Immune function</td>
<td></td>
</tr>
<tr>
<td>Genetic (buccal cell DNA)</td>
<td>Inflammation</td>
<td>Inflammation</td>
<td>Inflammation</td>
<td></td>
</tr>
<tr>
<td>Genetic (buccal cell DNA)</td>
<td>Cardiovascular</td>
<td>Cardiovascular</td>
<td>Cardiovascular</td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td>Medications</td>
<td>Medications</td>
<td>Renal</td>
<td></td>
</tr>
</tbody>
</table>
# Social and Biological Longitudinal Data in Add Health

<table>
<thead>
<tr>
<th>Adolescence</th>
<th>Adulthood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave I-II</td>
<td>Wave III</td>
</tr>
<tr>
<td>(12-20)</td>
<td>(18-26)</td>
</tr>
</tbody>
</table>

## Social environmental data:
- school
- family
- romantic rel
- neighborhood
- community
- peer

## Biological data:
- Biological resemblance to siblings in household on 3,000 pairs
- height
- weight
- BMI
- STI test results
- HIV test results
- DNA
- ht, wt, waist, BMI
- BP, pulse
- immune
- inflammation
- diabetes
- DNA
- GWAS

- work
- family
- romantic rel
- neighborhood
- community
- ht, wt, waist, BMI
- BP, pulse
- immune
- inflammation
- diabetes
- kidney disease
Wave IV Biospecimen Participation

- 96% of respondents consented to provide saliva for DNA
- 94% consented to provide blood spots
- For each specimen, 81% of those consenting to collection also consented to archiving
- Approx 12,200 DNA samples available for further testing
- GWAS data will be deposited into dbGaP in 2016.
Wave V Overall Goals

• Re-interview Add Health cohort members 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:
  – Retrospective questions about birth and early childhood in Wave V survey
  – Birth records of respondents born in a subset of states

• 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.
Wave V Interview 2016-2018

- Wave I respondents who will be moving through their 4th decade of life (32-42 years)
- Collect the following data:
  - survey data reflecting longitudinal and new information
  - longitudinal and new biological data and specimens
  - geographic locations for longitudinal spatial data
  - consent to obtain birth records of Add Health respondents born in a subset of six states
- Main study fieldwork began June 6, 2016
Wave V Data Collection

- Mixed mode survey design:
  - Web/mail with in-person and phone non-response follow up

- Collect biological measures and specimens using Examination Management Services, Inc. (EMSI) for in-home examination
  - Venous blood draw

- Continuous interviewing 2016-2018
Mixed Mode Wave V Survey

- Web survey: two 25 minute modules (~50 mins total)
- Paper survey with same visual presentation of modules
- Obtain consent for biomarker collection by EMSI who will schedule a follow up in-home exam
- Nonresponse follow-up
  - Sample nonrespondents and administer web survey in-person (CASI) on laptop
  - Abbreviated telephone questionnaire for contact information and request consent for biomarkers.
Wave V: Biological data

• Repeat measures of biomarkers:
  – anthropometrics
  – blood pressure
  – Whole blood assays of:
    • Inflammation
    • Lipids
    • Glucose
    • Glycosylated hemoglobin
• New biomarkers of kidney disease:
  • Creatinine
  • Cystatin C
• Medications inventory
Wave V Data Collection

• Conduct fieldwork on 3 nationally-representative samples sequentially during 2016-2018:
  – *Sample 1*: June 2016
  – *Sample 2a*: January 2017
  – *Sample 2b*: June 2017
    • subsample of 1,000 respondents interviewed in-person by interviewer to replicate Wave IV interview context to estimate mode effects
  – *Sample 3*: January 2018
# Sample 1 Experimental Treatments

<table>
<thead>
<tr>
<th>Factor A: Survey Protocol</th>
<th>Factor B: Propensity/Incentive</th>
<th>Model-directed Incentive Plan</th>
<th>Standard Incentive Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Survey</td>
<td>Low Response Propensity/High Incentive</td>
<td>$35/$30</td>
<td>$25/$20</td>
</tr>
<tr>
<td></td>
<td>High Response Propensity/Low Incentive</td>
<td>$30/$25</td>
<td></td>
</tr>
<tr>
<td>Singular Survey</td>
<td>$65</td>
<td>$45</td>
<td>$55</td>
</tr>
</tbody>
</table>
Wave V Data Release

• Two data releases:
  – Sample 1 data in late 2017;
  – Full Wave V sample data in 2019 after data cleaning, checking and merging.
Add Health Data Dissemination

• Data dissemination structure & security
• Restricted-use data contracts
• Data discovery tools and resources
• CPC Data Portal
Four tier data dissemination according to disclosure risks

- Public-use data
- Restricted-use data
- High-security restricted data – Romantic Pairs
- Secure data facility for analyzing high school transcript data and for using geocodes to link contextual data
- dbGaP submission for GWAS data - 2016
Data Security

• User requirements to protect from deductive disclosure:
  – Pledge of confidentiality
  – Monitoring of data use
  – Store data securely
  – Deletion of temporary data analysis files every six months.
  – Security of printed information
  – Password protected screen saver, set to activate after 3 minutes of idle time.
  – Access data only from approved locations.
Public-Use Data can be downloaded from the following places:

- Odum Institute Dataverse
- ICPSR
- Association of Religion Data Archives
Restricted-Use Data Contract

- Complete contract application – pdf
- Include IRB approval or waiver letter
- Include data processing payment (by check only)
- Make sure to download Attachment A – security plan form and include in application
Don’t forget….

• Your contract expires every 3 years!
• Email us if you think your contract might be expired or to find out what your expiration date is.

• Annual reports are due every year!
• Let us know if you make changes to research staff or data storage locations.
Please visit our Contracts Homepage!
• New interactive tool, developed in 2015 by the Add Health Team

• Developed in response to feedback that pdf codebooks were difficult to navigate and information on data collected across waves was nearly impossible to find

• Browse by topic or search by variable name, keyword, or phrase to discover the rich volume of data collected by Add Health
The Add Health Codebook Explorer tool allows you to see how variables are related to each other, either topically or across time. This tool helps you identify which variables you may want to use in your analysis.

Topics

- Contextual Data
- Crime/Delinquency & Victimization
- Demographic Characteristics
- Education
- Family
- Friends & Social Network
- Medication & Substance Use and Abuse
- Meta Data
- Physical Health
- Psychological Well-being & Cognition
- Reproductive Health
- Risk Behavior
- Romantic Relationships
- SES, Labor Market & Occupation
### Add Health Codebook Explorer (ACE)

The Add Health Codebook Explorer tool allows you to see how variables are related to each other, either topically or across time. This tool helps you identify which variables you may want to use in your analysis.

#### Search Results (14)

<table>
<thead>
<tr>
<th>Question</th>
<th>Instrument(s)</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on what you have noticed or what others have told you, are there times when you snore or you stop breathing during your sleep?</td>
<td>Wave IV In-Home Interview</td>
<td>Sleep</td>
</tr>
<tr>
<td>Do you usually get enough sleep?</td>
<td>Wave I In-Home Interview; Wave II In-Home Interview</td>
<td>Sleep</td>
</tr>
<tr>
<td>During the first few hours of not drinking, do you experience withdrawal symptoms such as the shakes, feeling anxious, trouble getting to sleep or staying asleep, nausea, vomiting, or rapid heart beats?</td>
<td>Wave IV In-Home Interview</td>
<td>Alcohol; Sleep; Stress/Anxiety; Substance Use/Abuse</td>
</tr>
<tr>
<td>During the first few hours of not using marijuana, do you experience withdrawal symptoms such as craving marijuana, feeling depressed, anxious, restless or irritable, having trouble concentrating, feeling tired or weak, having trouble sleeping, or a change in appetite?</td>
<td>Wave IV In-Home Interview</td>
<td>Depression; Illicit Drug Use; Marijuana; Nutrition; Sleep; Stress/Anxiety; Substance Use/Abuse</td>
</tr>
<tr>
<td>During the first few hours of not using [favorite drug], do you experience one or more withdrawal symptoms such as craving [favorite drug], feeling depressed, anxious, restless or irritable, having trouble concentrating, feeling tired or weak, having trouble sleeping, or a change in appetite?</td>
<td>Wave IV In-Home Interview</td>
<td>Depression; Illicit Drug Use; Nutrition; Sleep; Stress/Anxiety; Substance Use/Abuse</td>
</tr>
<tr>
<td>Have you ever been homeless for a week or longer—that is, you slept in a place where people weren’t meant to sleep, or slept in a homeless shelter, or didn’t have a regular residence in which to sleep?</td>
<td>Wave III In-Home Interview</td>
<td>Residence/Location</td>
</tr>
<tr>
<td>How many hours of sleep do you usually get?</td>
<td>Wave I In-Home Interview; Wave II In-Home Interview</td>
<td>Sleep</td>
</tr>
</tbody>
</table>
CPC Data Portal

- Restricted-Use data contract application process is moving to online application in the next year.

- Expedite and standardize contract application and renewal process for restricted-use Add Health data

- This system will also be the backbone for implementing restricted-use data file FTP transfers as the new mode of dissemination in the next year.
CPC Data Portal

Wave I Data

The public-use dataset for Wave I contains information collected in 1994–95 from Add Health's nationally representative sample of adolescents. This dataset consists of one-half of the core sample, and one-half of the oversample of African-American adolescents with a parent who has a college degree, chosen at random. The total number of Wave I respondents in this dataset is **6,304**.

The Wave I public-use dataset includes information from each of the following sources (as available):

- Wave I In-Home Data File, includes Wave I In-School Questionnaire Data, Wave I Parent Questionnaire Data and Add Health Picture Vocabulary Test Scores
- Contextual data
- In-school network data
- Weights

Topics

- Demographic Characteristics
- Contextual Data
- Family
- Education
- SES, Labor Market & Occupation
- Physical Health
- Psychological Well-being & Cognition
- Friends & Social Network
- Medication & Substance Use and Abuse
- Reproductive Health
- Crime/Delinquency/Victimization
- Romantic Relationships
- Risk Behavior

Wave II Data

Download Data

Add Health

The National Longitudinal Study of Adolescent to Adult Health
# CPC Data Portal

## Core Files
**Requirements:**
- Add Health Data Processing Fee
- Add Health IRB approval letter
- Add Health Security Plan

**Add Bundle**

## Friendship Files
**Requirements:**
- Justification description for Add Health

## Sibling Files
**Requirements:**
- Justification description for Add Health

## Contextual Data Files
**Requirements:**
- Justification description for Add Health

## Wave I Supplemental Files
**Requirements:**
- Justification description for Add Health

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[UNC Carolina Population Center](http://www.popcenter.org)

[Add Health](http://www.addhealth.org)
Add Health Co-Funders

- National Institute of Child Health and Human Development
- National Cancer Institute*
- National Center for Health Statistics, Centers for Disease Control and Prevention, DHHS
- National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, DHHS*
- National Center for Minority Health and Health Disparities*
- National Institute of Allergy and Infectious Diseases*
- National Institute of Deafness and Other Communication Disorders*
- National Institute of General Medical Sciences
- National Institute of Mental Health
- National Institute of Nursing Research*
- National Institute on Aging*
- National Institute on Alcohol Abuse and Alcoholism*
- National Institute on Drug Abuse*
- National Science Foundation*
- Office of AIDS Research, NIH*
- Office of the Assistant Secretary for Planning and Evaluation, DHHS*
- Office of Behavioral and Social Sciences Research, NIH*
- Office of the Director, NIH
- Office of Minority Health, Centers for Disease Control and Prevention, DHHS
- Office of Minority Health, Office of Public Health and Science, DHHS
- Office of Population Affairs, DHHS*
- Office of Research on Women's Health, NIH*

*Wave IV co-funders
Wave V co-funders
Questions or Feedback?

Contact Information:

sorgia@email.unc.edu

Contract Inquires:

addhealth_contracts@unc.edu