

Overview of Add Health Study and Design



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Add Health

The National Longitudinal Study of Adolescent to Adult Health

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 2015-2018.

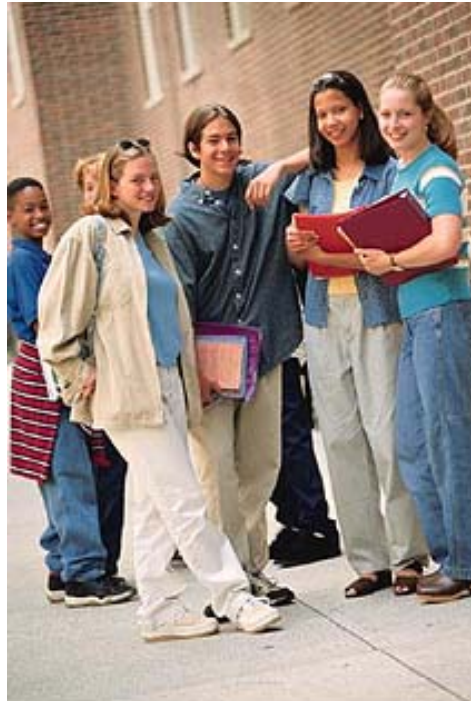


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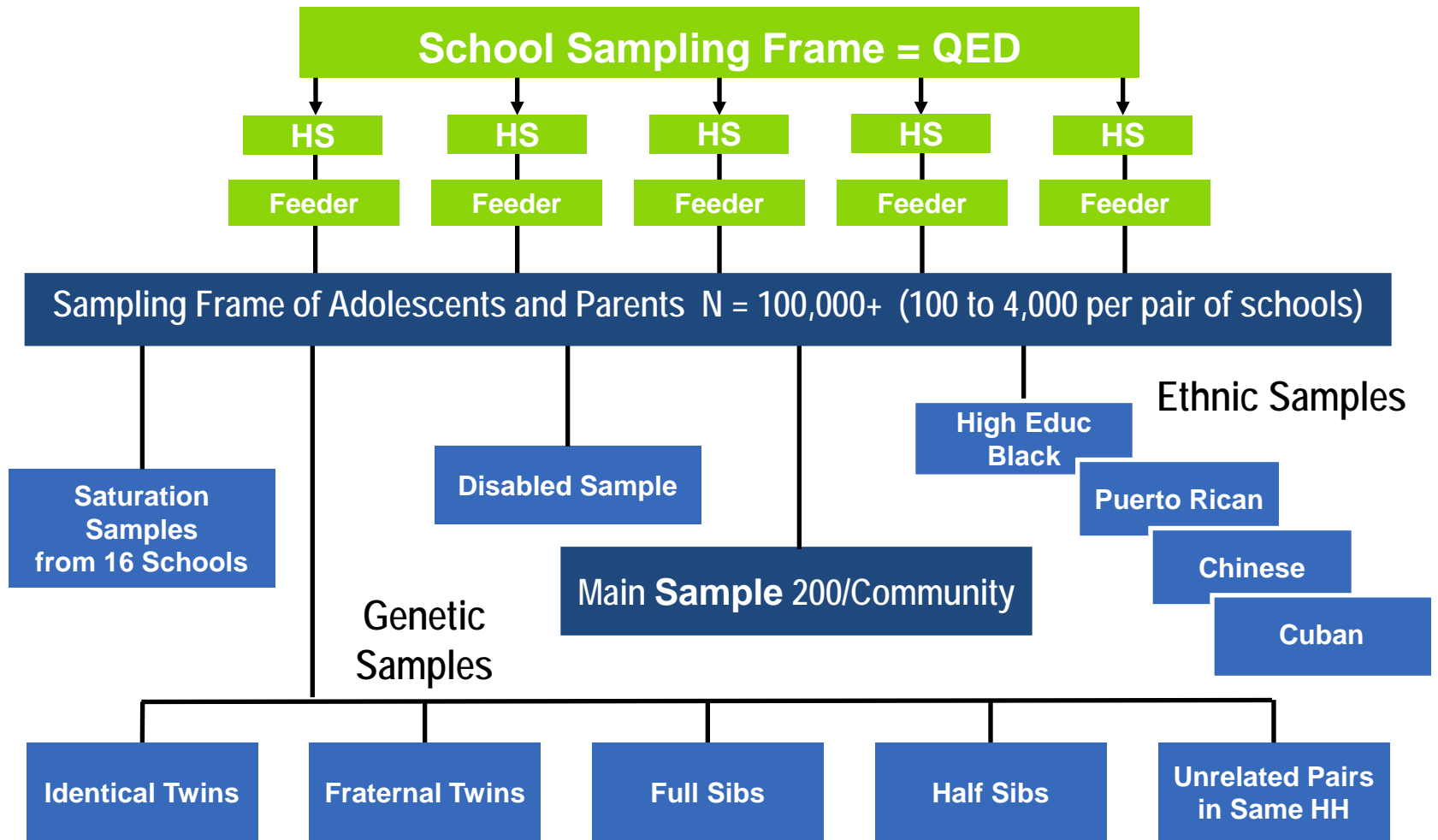
Key Features of Add Health

- 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.

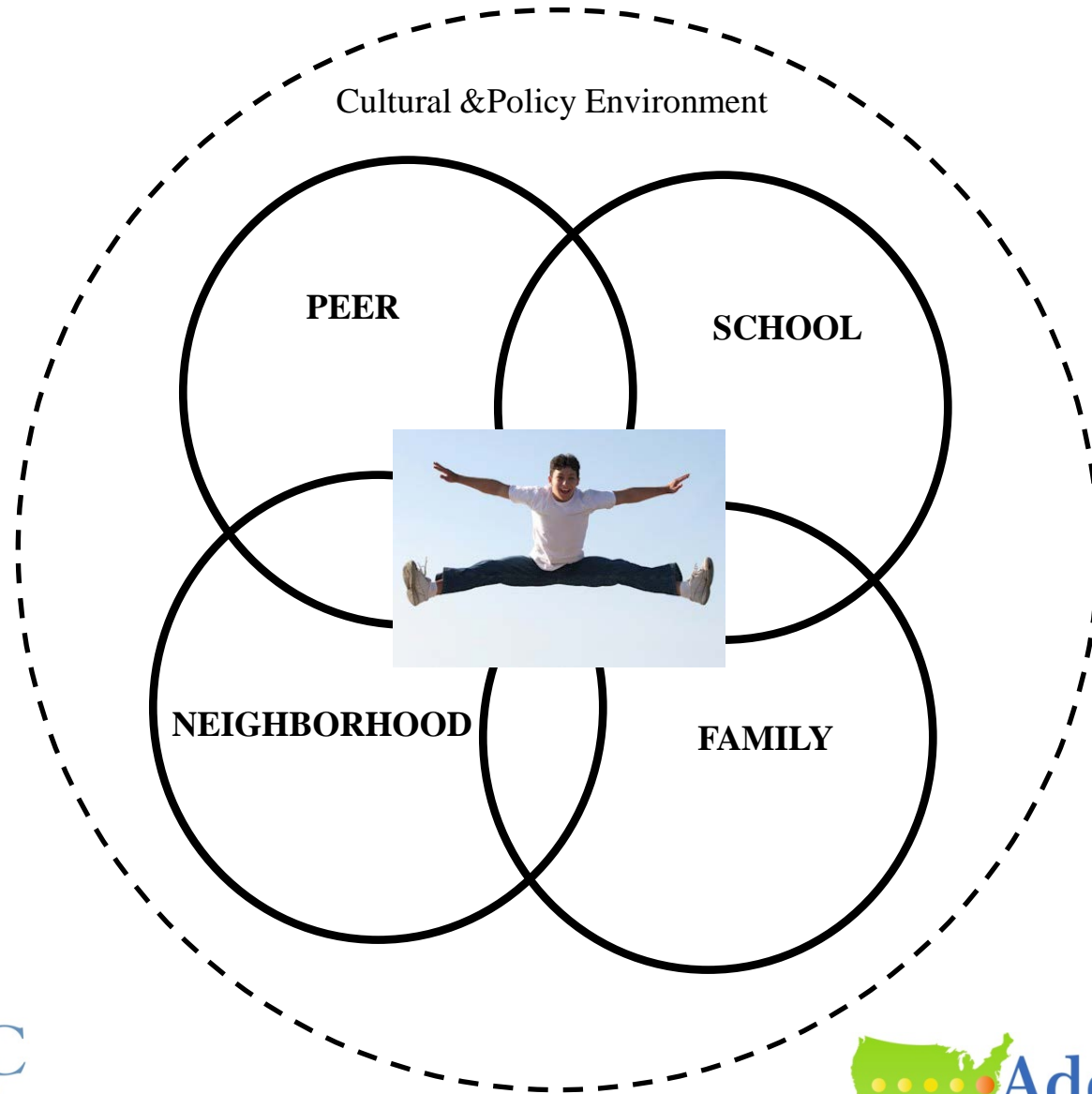


Initial Goal:
Putting the
Individual Into
Context

Sampling Structure



Add Health Contextual model



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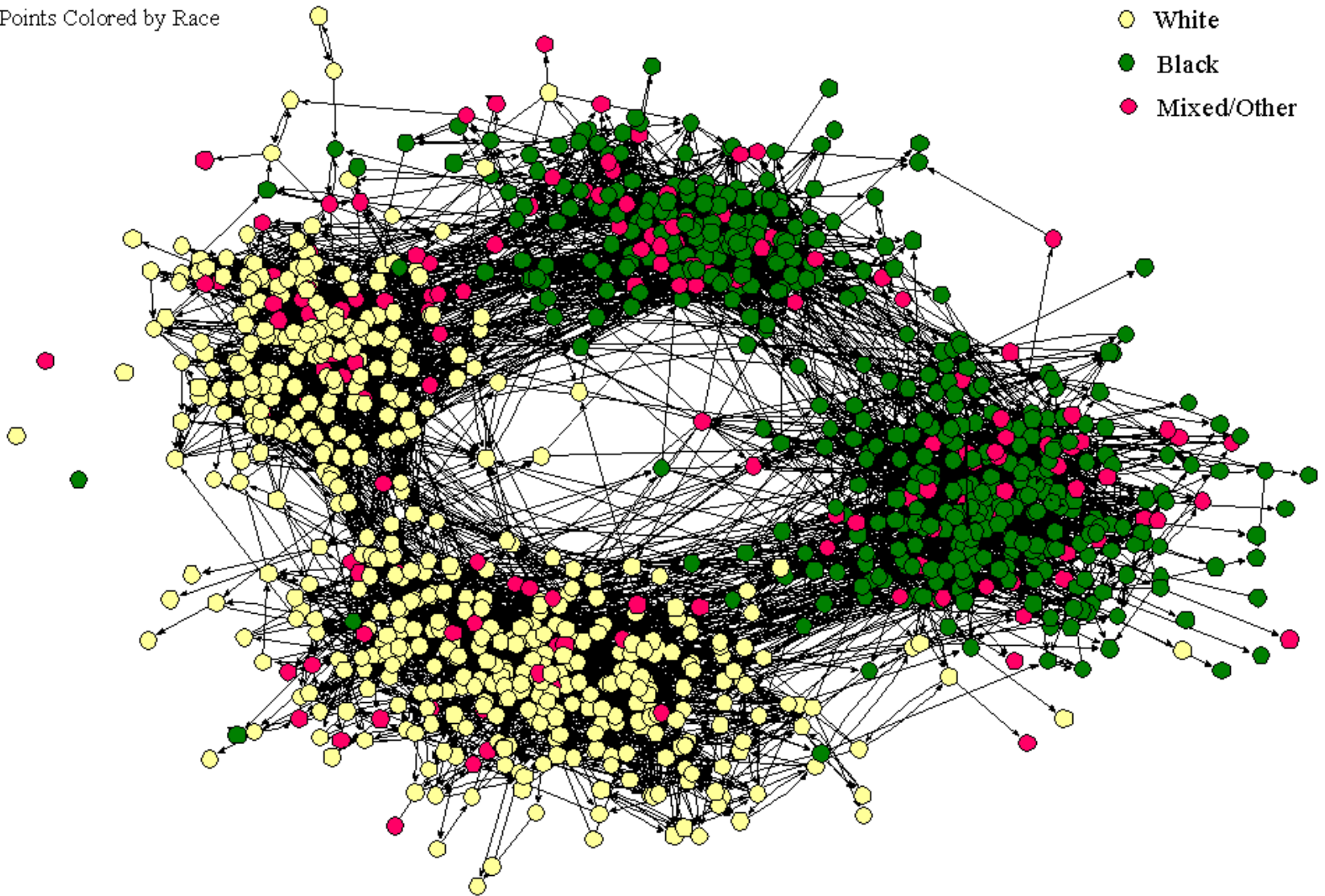


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The Social Structure of “Countryside” School District

Points Colored by Race

- White
- Black
- Mixed/Other



Source: Moody, 2001, *American Journal of Sociology* 107: 679-716

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

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

Missing on race/ethnicity=59



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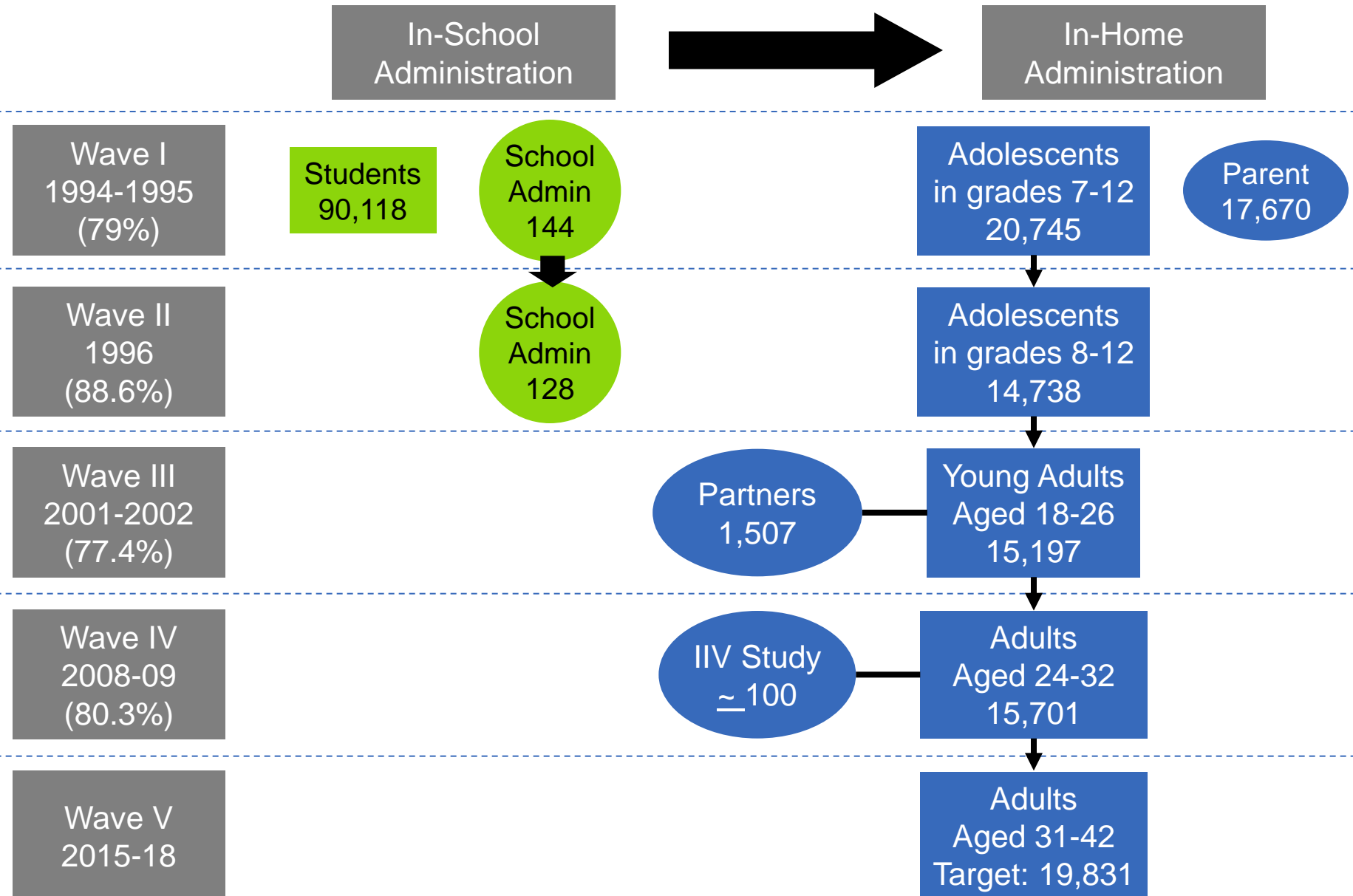


Diversity in Add Health: Immigrant Status

Immigrant Status	N	%
1st generation	1707	8.34
2 nd generation	2987	14.59
3 rd generation +	15,774	77.07
Total N	20,468	

Diversity of Family Forms at Wave I

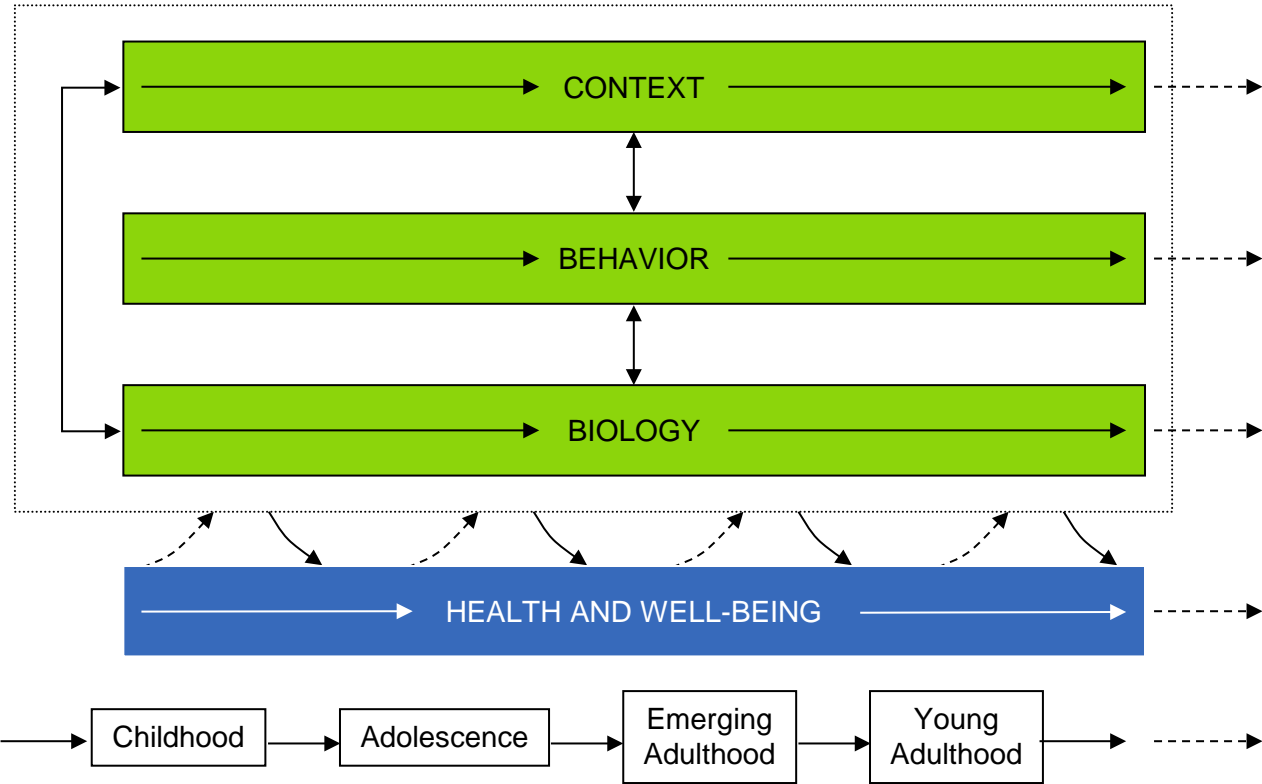
- Two biological parents
- Two adoptive parents
- Bio Mom, Step Dad
- Bio Dad, Step Mom
- Two step/foster parents
- Single Mom
- Single Dad
- Surrogate parent(s)



Scientific Goals in Wave IV

- Bring together social and behavioral data with biological data relevant to the current and future health concerns of Add Health cohort at ages 24-32;
- Expand collection of biological data to understand genetics and pre-disease pathways, with a focus on obesity, stress, and health risk behavior;
- Broaden our trans-disciplinary reach into biomedical sciences to map health and developmental trajectories across the life course.

Integrative Life Course Theoretical Framework



Questionnaire Content Across Waves

Waves I, II

Demographic
Family, siblings, friends
Education, work
Physical and mental health
Daily activities and sleep
Relationships
Sexual, & fertility histories
Substance use
Delinquency and violence
Attitudes, religion
Economics, expectations
Psychological, personality

Wave III

Demographic
Family, siblings, friends
Education, work, **military**
Physical and mental health
Daily activities and sleep
Relationships
Sexual, & fertility histories
Substance use
Involmnt w/criminal justice sys
Attitudes, religion
Economics, expectations
Psychological, personality
Children and parenting
Civic participation
Gambling
Mentoring

Wave IV

Demographic
Family, siblings, friends
Educ, work, **military (records)**
Physical and mental health
Daily activities and sleep
Relationships
Sexual, & fertility histories
Substance use and abuse
Involmnt w/criminal justice sys
Work attitudes and chars, relig
Economics, expectations
Big 5 Personality, stressors
Children and parenting
Civic participation
Cognitive function
Psychosocial factors

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

Adolescence	Transition to Adulthood	Young Adulthood	Adulthood
Wave I-II (Ages 12-20)	Wave III (Ages 18-26)	Wave IV (Ages 24-32)	Wave V (Ages 31-42)
Embedded genetic sample of ~3,000 pairs			
Physical development 			
Height, weight	Height, weight	Height, weight, waist	Height, weight, waist
	STI tests (urine)	Metabolic	Metabolic
	HIV test (saliva)	Immune function	Immune function
	Genetic (buccal cell DNA)	Inflammation	Inflammation
		Cardiovascular	Cardiovascular
		Genetic (buccal cell DNA)	Genetic (whole blood)
		Medications	Medications
			Renal

Social and Biological Longitudinal Data in Add Health

Adolescence  Adulthood

Wave I-II
(12-20)

Wave III
(18-26)

Wave IV
(24-32)

Wave V
(31-42)

Social environmental data:

school

college

college

work

family

family

family

family

romantic rel

romantic rel

romantic rel

romantic rel

neighborhood

neighborhood

neighborhood

neighborhood

community

community

community

community

peer

peer

Biological data:

Biological resemblance to siblings in household on 3,000 pairs

height

height

ht, wt, waist, BMI

ht, wt, waist, BMI

weight

weight, BMI

BP, pulse

BP, pulse

BMI

STI test results

immune

immune

HIV test results

inflammation

inflammation

DNA

diabetes

diabetes

DNA

kidney disease

GWAS

Add Health Wave IV

- Map health and developmental trajectories over the life course
- Understanding interplay between environment, behavior, and biology
- Origins of health problems and markers of future disease in early adulthood
- Origins of health disparities and what factors cause disparities to persist or decline

Design Features of Wave IV

- 90 minute computer-based survey instrument
- 30 minute biomarker collection
 - Anthropometrics
 - Blood pressure
 - Blood spots
 - Saliva
- IIV (Intra-Individual Variation) Study

Domains of Biological Measures

- Anthropometric: height, weight, BMI, waist & arm circumference
- Cardiovascular: blood pressure, pulse
- Metabolic processes: lipids, glucose, glycosylated hemoglobin
- Immune function: Epstein-Barr Virus
- Inflammatory processes: C-Reactive Protein
- Genetic: various candidate loci in dopamine and serotonin pathways

Wave IV Locate and Interview Rates

- Data collection in 2008, ending February 2009
- Located 92% of sample members
- Interviewed 80% of eligible cases
- Wave IV sample size approximately 15,701
- Wave IV interview data released October , 2009

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
- Currently conducting GWAS genotyping on archived samples
 - Deposited into dbGaP by 2015.

Add Health Accomplishments

- Data made available to more than 10,000 investigators for analyses.
- Almost 650 grants awarded to analyze data.
- 2,000+ peer-reviewed publications (over 1,300 since 2006)
- 20 books, 100 reports, and 80 book chapters based on Add Health data
- 500 master's theses and doctoral dissertations

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*



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*Wave 4 co-funders

