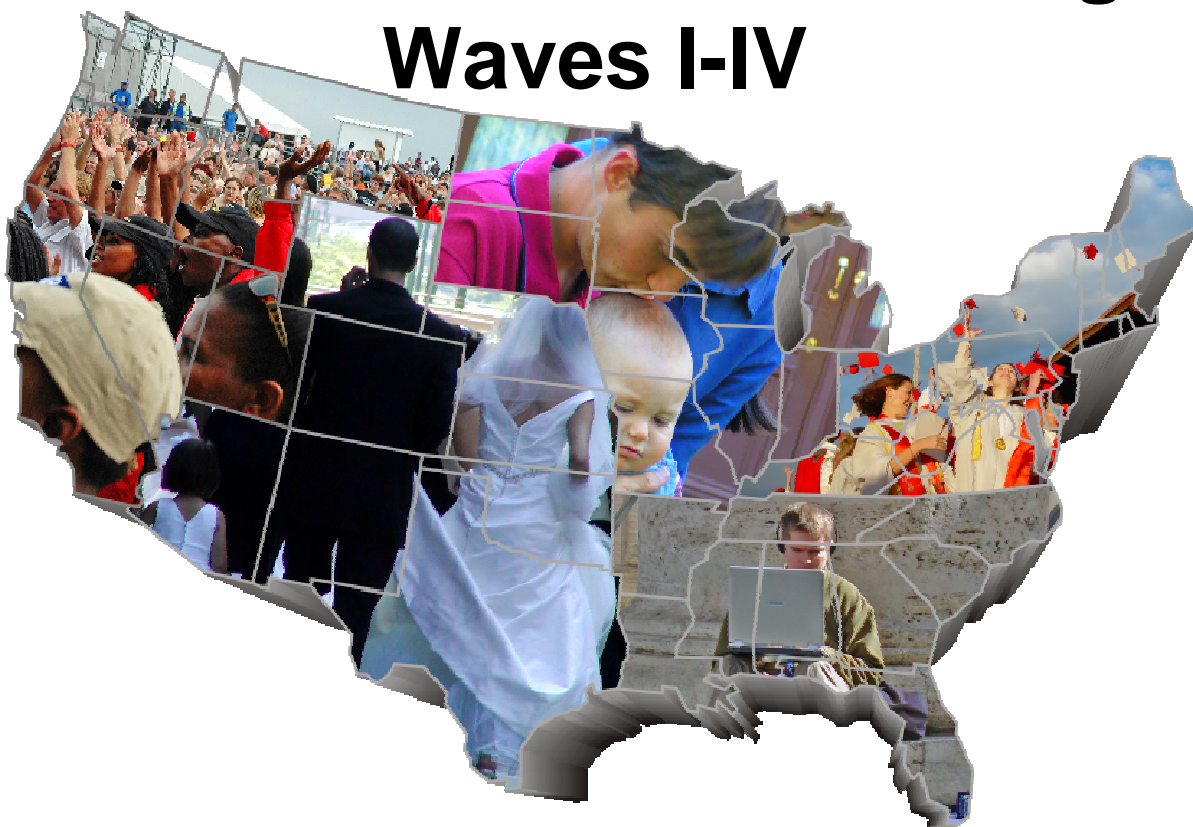
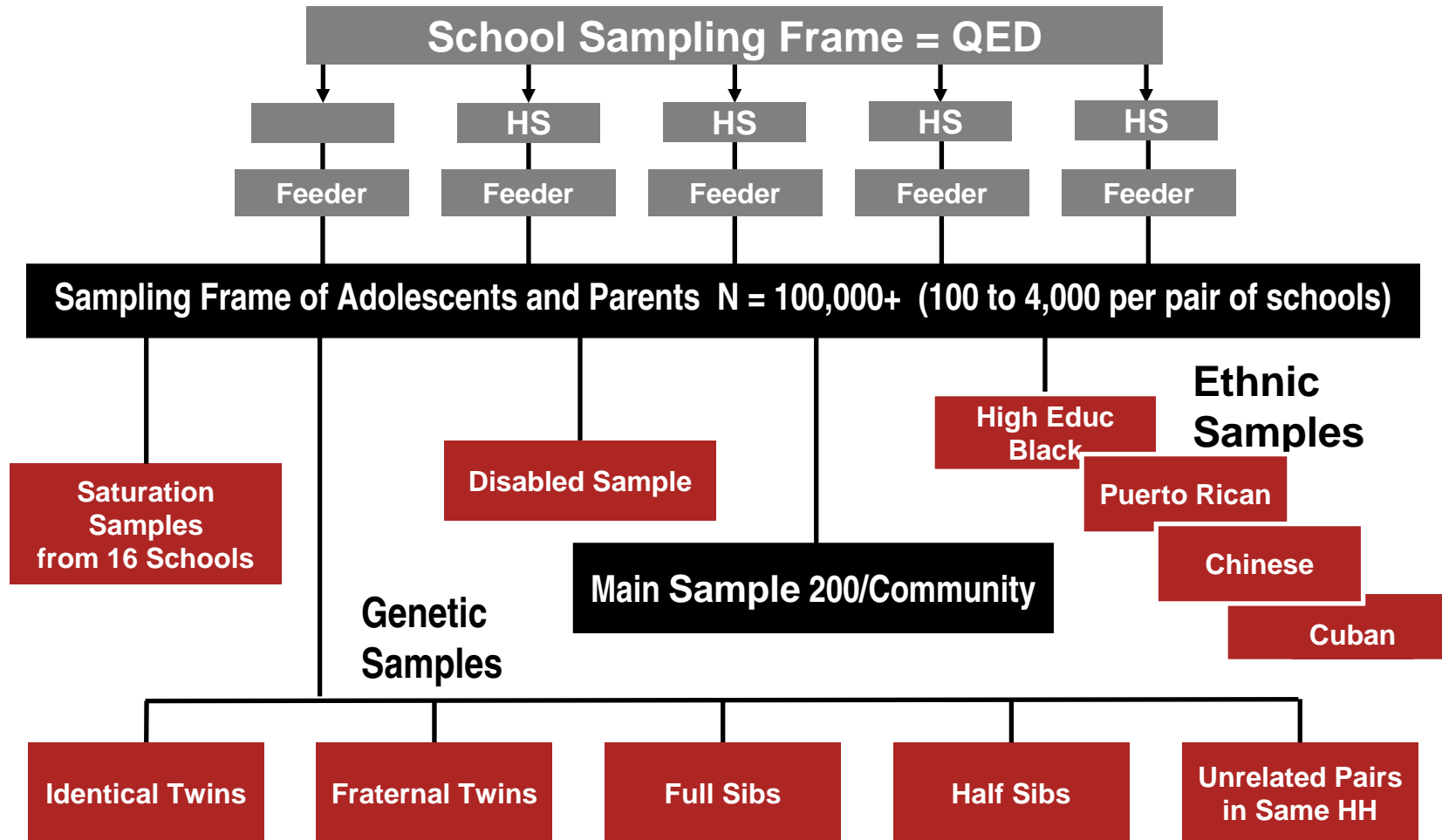


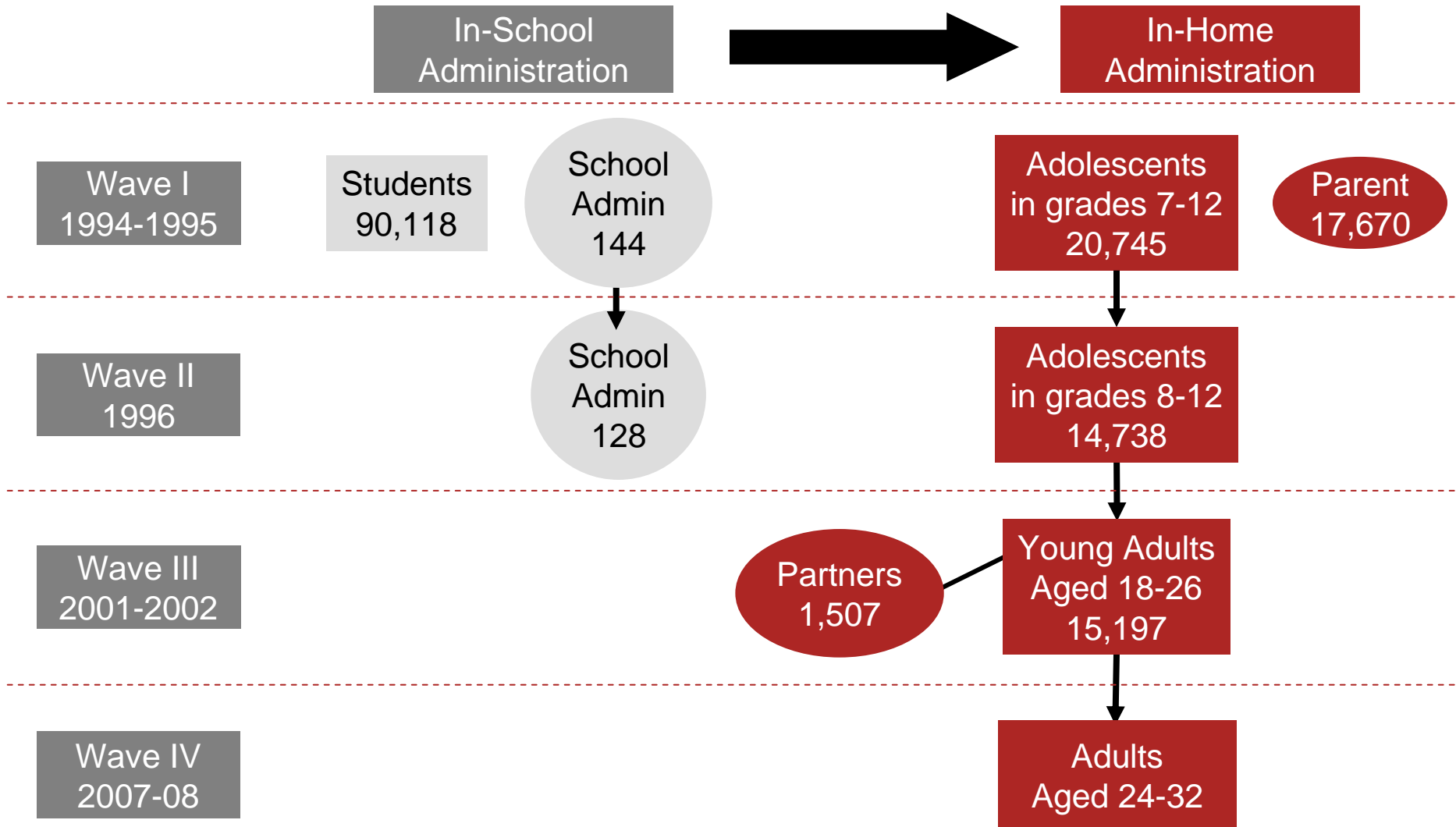
Add Health Research Design Waves I-IV



Sampling Structure



Longitudinal Design



Wave I Sample Design



- 80 high schools were selected from a sample frame of 26,666.
- Prior to sampling, schools were sorted by:
 - size
 - school type
 - census region
 - level of urbanization
 - percent white

Replacement Schools



- Of the 80 selected high schools, 52 were eligible and agreed to participate.
- The remaining 28 schools were replaced by similar high schools. They were found by sorting the frame by eight variables:
 - school size
 - school type
 - level of urbanization
 - percent white
 - grade span
 - percent black
 - census region
 - census division

Replacement Schools



- Schools were sorted in a random order within each category.
- The replacement school was the school that followed the initial sample school on the sorted file.
- As a result, the replacement school matched the selection it was replacing with respect to the eight characteristics.

Replacement Schools



- If the first replacement school was ineligible or failed to cooperate, it was replaced by the next school on the list.
- Within some categories, there were not enough potential replacements, or the list of replacements was exhausted. In these cases, similar categories were combined and the file resorted.

Feeder Schools



- Participating high schools were asked to identify junior high or middle schools that were expected to provide at least 5 students to the entering class of the high school.
- A single feeder school was selected for each high school.

Feeder Schools



- The feeder's probability of selection was proportional to the percentage of the high school's entering class that came from that feeder.
- Four schools had no eligible feeder, as students came from a very large number of junior high or middle schools.
- Twenty high schools were their own feeder schools, as they had grade ranges that included 7th or 8th grades.

Participating High Schools



Region		Grade Span	
Northeast	17	K-12	7
South	27	7-12	10
Midwest	19	9-12	49
West	17	10-12	7
		Other	7
School Type		Metropolitan Status	
Public	71	Urban	24
Catholic	3	Suburban	42
Other Private	6	Rural	14

Parental Consent



- Parental consent was required to list student names in a directory and to allow students to participate in the study.
- Unless otherwise directed by the school, passive consent forms were used (it was assumed that a parent granted permission unless the form was returned with a signature that indicated otherwise).
- Some schools required active consent forms (the form had to be returned with a signature indicating that permission was granted).

Security System



- To protect the identities of participants, a rigorous security system prevents anyone from being able to link a respondent's answers to a name or other identity.
- Identification numbers used to collect data are never used for data distribution.
- At the same time, the security system allows researchers to link questionnaires across all components of the study

In-school Components



- 145 middle, junior high, and high schools participated.
- 90,118 students completed a 45-minute questionnaire.
- Each participating school was asked to complete a School Administrator questionnaire.

In-school Questionnaire



Gathered general descriptive information about the student:

- student's and parent's background
- his or her friends
- school life
- school work and school activities
- general health status and health-related behaviors

School Administrator Questionnaire



Gathered information about the educational setting and environment of the school.

- Content areas included:
 - general characteristics of the school and student body
 - curriculum, school services, and programs

In-home Components



- Each school provided a roster of all students enrolled.
- From the rosters and the pool of participants in the in-school survey, adolescents in grades 7 to 12 were sampled to participate in the in-home interview.
- Adolescents were interviewed at two points in time, first at Wave I and then a year later, at Wave II.

In-home Interview



- Written informed consent was obtained from the parent or legal guardian and the adolescent.
- A Computer-Assisted Personal Interview (CAPI)/Audio Computer-Assisted Self Interview (ACASI) was administered to the adolescent.
- Sections with more sensitive questions were asked in the self-administered portion of the interview.

Parent Interview



- A parent or guardian was interviewed during Wave I of the study.
- This interview provided further information about the family composition and the adolescent's health history.
- The questionnaire asked demographic and health-related information about the parent or guardian and general questions about the adolescent respondent.

In-home Sample



- a core sample of adolescents derived from rosters supplied by the selected schools and from in-school participation
- a sample for a study of relationship patterns where all respondents were selected from two schools
- a genetic sample composed of siblings and twins
- a sample of unrelated adolescents who reside in the same household

In-home Sample



- an oversample of black adolescents with college-educated parents
- an oversample of Cuban and Puerto Rican adolescents
- an oversample of Chinese adolescents
- an oversample of physically disabled adolescents (Wave I only)

Sample Selection: Core and PAIRS Samples



- The core sample consisted of roughly equal-sized samples drawn from 12 student-level strata.
- Strata were formed by cross-classifying students by their sex and grade.
- Overall sample-size targets were set for each stratum by dividing the total size of the core sample by the number of strata.

Sample Selection: Core and PAIRS Samples



- School-level targets were also set for each stratum by dividing the overall stratum target by the number of schools with at least one student in the stratum.
- The main frame for selecting the core sample was the set of rosters developed at the sample high schools and their linked feeders.
- At the two (purposively selected) PAIRS schools, all of the students were selected for data collection.

Sample Selection: Non-Genetic Supplements



Eligibility was determined by race/ethnicity and by disability status:

- **High education blacks** – included black students, either of whose parents was a college graduate
- **Cubans** – included students who were from Cuba or whose parents were from Cuba

Sample Selection: Non-Genetic Supplements



- **Puerto Ricans** – included students of Puerto Rican descent
- **Chinese** – included students of Chinese descent
- **Disabled** – included students who had difficulty using their limbs for the year prior to the survey, and, as a result, used a cane, wheelchair, orthopedic shoes, artificial limb, or some other mechanical aid (Wave I only)

Sample Selection: Genetic Supplements



- **Twins** – any student who identified himself as a twin (in the in-school questionnaire); previously unreported twins discovered during the in-home interview were added to the sample at that time.
- **Other siblings of twins** – the non-twin siblings of those in the twin sample; to be eligible they had to be enrolled in grades 7 to 12 at the time of sample selection.

Sample Selection: Genetic Supplements



- **Other full siblings** – full siblings where neither member was a twin and both were enrolled in grades 7 to 12.
- **Half-siblings** – pairs of half-siblings of which both members were enrolled in grades 7 to 12.
- **Non-related** – adolescents living in the same household who did not share the same biological mother or father and were enrolled in grades 7 to 12.

Wave I In-home Adolescent Participants



Overall	20,745	Twins	1,534
Core	12,105	Full-siblings	2,500
Disabled	957	Half-siblings	848
High ed blacks	1,547	Non-related	1,314
Cuban	538	Pairs	2,553
Puerto Rican	633		
Chinese	406		

Wave II Sample Selection



- The Wave II sample was drawn primarily from the pool of participants in Wave I.
- The majority of 12th-grade respondents were removed from the Wave II sample, as they exceeded the grade eligibility requirement.

Wave II Sample Selection



- Twelfth-graders who were part of a genetic pair were retained.
- Wave I disabled sample was not re-interviewed at Wave II.
- The Wave II sample contains a small number of adolescents who did not participate in the first wave.
- No parent interview was conducted during the second wave.

Wave III In-home Components



- **Wave III respondents** **15,197**
 - Includes 15,170 original Wave I respondents and 27 Wave II special genetic respondents
 - 14,979 were interviewed during the main study and 218 were interviewed during the pretest
- **Romantic partners** **1,507**
 - Partners of Add Health respondents, new in Wave III

Wave III Interview



- Interviewer administered in-home interview (CAPI) with sections containing sensitive questions asked in the self-administered portion.
- Respondents who agreed to provide a urine and/or saliva sample were asked to read and sign an additional consent form.
- Respondents received an additional incentive for these samples.

Wave III Biomarkers



- Urine was analyzed for the presence of three sexually-transmitted diseases (STDs), chlamydia, gonorrhea, and trichomoniasis.
- Saliva was collected and analyzed for DNA from all full sibs and twins interviewed at Wave III.
- Additional saliva was analyzed for the presence of HIV antibodies.

Wave III Binge Drinking



- All respondents with Wave I and II data who were in the 7th or 8th grade at Wave I were pre-identified to answer questions about attitudes toward binge drinking.

Composition

- 700 attending two or four year college: 350 males, 350 females, never married.
- 700 not attending college: 350 males, 350 females, never married.

Wave III Couples



- 1500 from pre-selected group of 10,000
- final quota to include 1/3 married, 1/3 cohabiting, 1/3 dating
- heterosexual couples only
- 18 years or older
- current relationship
- relationship had lasted three months or more

Additional Wave III Components



- measured and self-reported height and weight
- latitude and longitude of current residence
- questions about contact with school friends
- information on relationships with siblings

Wave III Sample Selection



- The Wave III sample was drawn primarily from the pool of participants in Wave I.
- Respondents were required to be 18 years of age or older.
- Partners had to be 18 years old or older, opposite sex, in a current relationship that had lasted for at least three months.

Wave III Consent



- Respondent was asked to read and sign an informed consent form.
- Parental consent was not needed as respondents were 18 to 26 years old.
- All respondents who agreed to participate in the interview received an incentive payment.

Wave IV Sample Selection



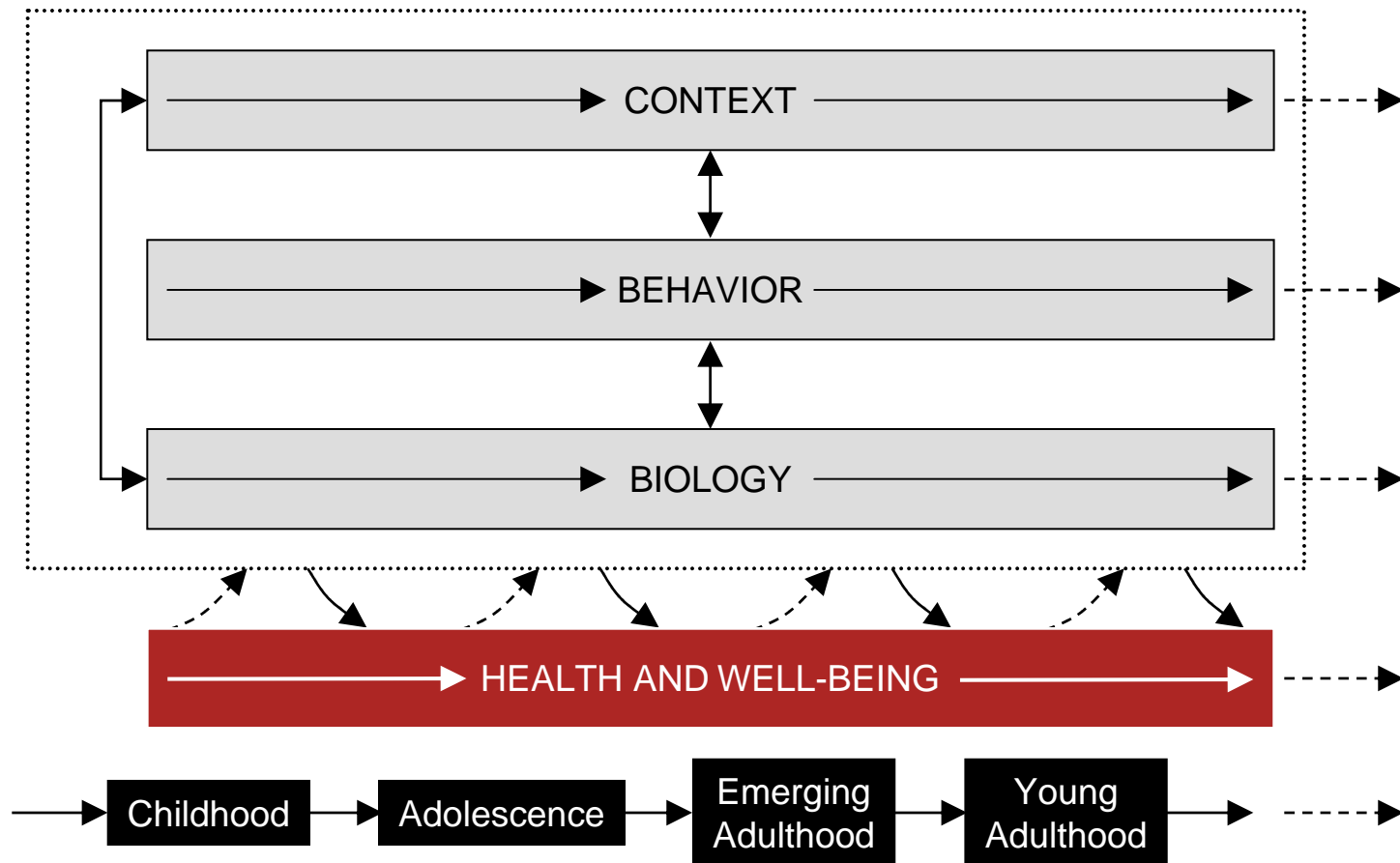
- Follow all Wave I respondents.
- Data collection 2007-08 when cohort members are 24-32 and completing transition to adulthood.
- 85% response rate is budgeted.
- N=17,000

Wave IV Builds on Add Health Strengths



- Bring together rich 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, stress, and predisease pathways.
- Focus on obesity, stress, and health risk behavior.
- Trans-disciplinary program of research in Wave IV: “Social, Behavioral, and Biological Linkages.”

Integrative Life Course Theoretical Framework



Data to be Collected at Wave IV



- Social/economic status, behaviors, and experiences
- Psychological status and experiences
- Reported health status and health behavior
- Environmental contexts
- Biomarkers including blood pressure, waist circumference, lipids profile, and other metabolic, inflammatory, and immune function measures as well as repeated measures of height and weight
- DNA from saliva samples

Domains of Wave IV Biological Measures



- Anthropometric: height, weight, BMI, waist circumference
- Cardiovascular: blood pressure, pulse
- Metabolic processes: lipids, glucose, glycosylated hemoglobin
- Immune function: EBV
- Inflammatory processes: CRP
- Genetic: 10 candidate loci

Wave IV Biomarker Collection Sequence



- Anthropometric (height, weight, waist)
- Blood pressure
- Finger prick for blood spots on filter paper
- Saliva collected for DNA

Wave IV Intra-Individual Variation (IIV) Study



- Estimate reliability of biomarker measures by collecting repeat measures on 100 respondents
- Interview IIV respondents twice, 1-2 weeks apart
 - Visit 1: full interview + biomarkers
 - Visit 2: abbreviated interview + biomarkers
- Process the biomarkers (labs and technicians masked)
- Use reliability estimates to:
 - Help monitor/assure/control biomarker data quality
 - Correct for measurement error