Introduction to Wave V of Add Health Data

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Outline

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- Help with Add Health analyses
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Introduction

- National Longitudinal Study of Adolescent Health (Add Health) is a study that the Carolina Population Center at the University of North Carolina-Chapel Hill has conducted to follow a nationally representative sample of adolescents in grades 7-12 since1994
- These adolescents were first interviewed in 1994-1995 (Wave I) and followed up in 1996 (Wave II), 2001-2002 (Wave III), 2007-2008 (Wave IV) and finally 2016-2018 (Wave V). For the first four waves, we have most data and can request more if needed. For the last wave, we have data only from 2016, as data collection is still underway
- Add Health also has supplemental education data file. In fall 2001, the Population Research Center at that University of Texas-Austin collected data that supplement Add Health. These supplementary data focus on (1) educational achievement, (2) course taking patterns, (3) curricular exposure, and (4) educational contexts of Add Health respondents at Wave III

What Is Special about Add Health?

- Has a large sample that represent adolescents in grades 7 through 12 of the United States in 1994
- Collect comprehensive information on biological and psychological developments of adolescents and the social contexts, such as home, friends, intimate relationships, schools, and neighborhood
- With the Wave V of Add Health data, researchers can better understand how an individual's life change during later adulthood.
- When all five waves of data combined, researchers can look at how social, psychological, and biological factors influence an individual's life through adolescence, young adulthood, and later adulthood.

Survey Design

- Add Health used stratified two-stage sampling methods:
  - The sampling frame is stratified by region, urbanization, school size, school type, and race composition
  - 80 high schools and 52 middle schools were selected with an unequal probability at the first stage
  - 90,000 students were selected to fill out in-school Add Health questionnaire, and 27,000 of them fill out in-home questionnaire
- Add Health oversampled twins and siblings of twins; non-related adolescents residing together; disabled minority students; blacks from well-educated families; and minority students who are Chinese, Cubans, and Puerto Ricans
- Data were collected with Computer-Assisted Personal Interviewing (CAPI) and questionnaire

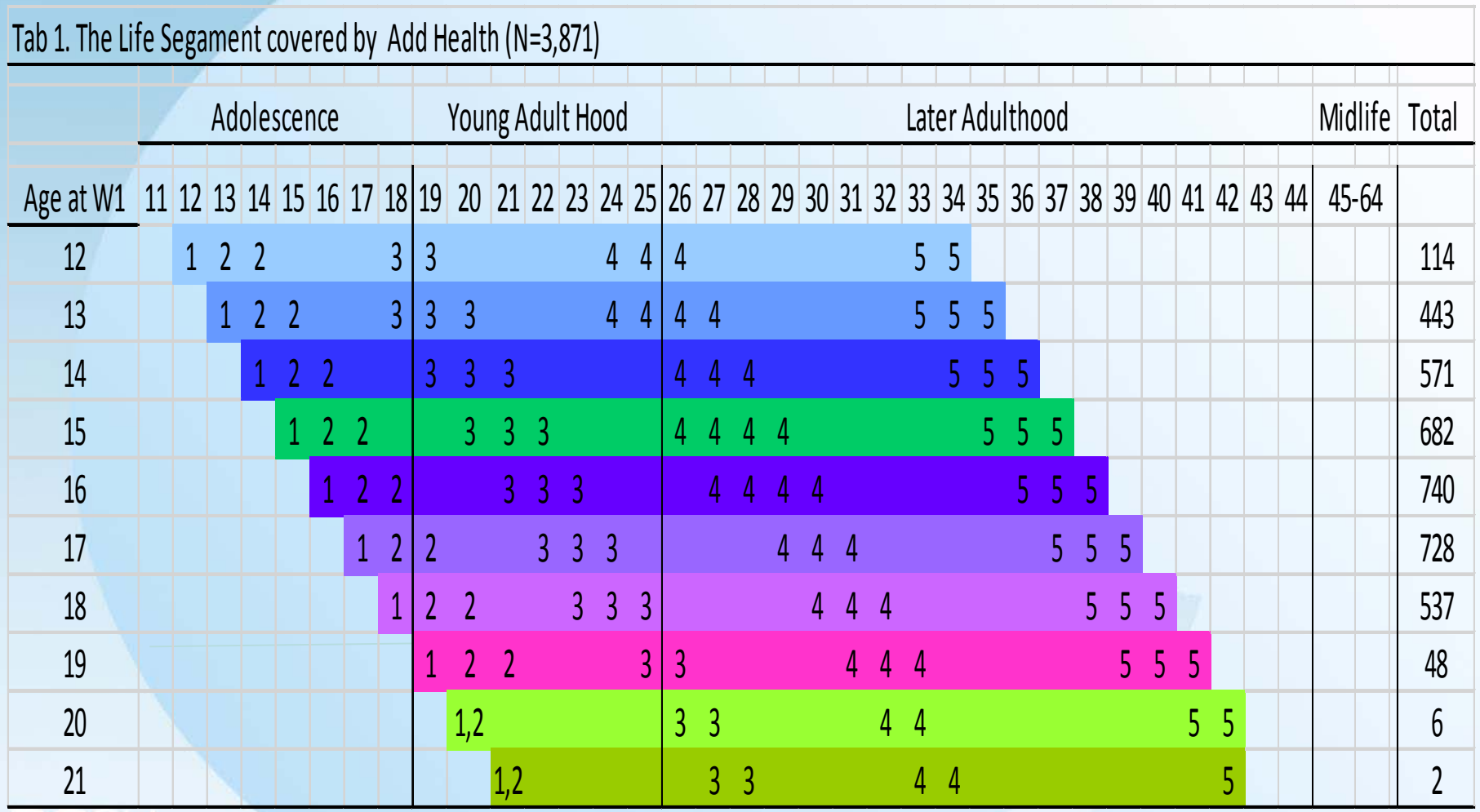
Survey Design (Cont.)

Supplemental Education Data:

- The sample consists of all respondents at Wave III of Add Health
- The study collected high school transcripts and other data from high schools that Add Health respondents last attended
- The data were collected from 130 Add Health high schools and 1,400 additional high schools
- Education data were collected for approximately 12,000 respondents, which is abut 80% of Add Health respondents at Wave III

Survey Design (Cont.)

Tab 1. The Life Segament covered by Add Health (N=3,871)



Subject Areas

- Add Health covers many interesting subject areas
- Some of the areas have been covered at each wave, whereas others are covered at only certain wave or waves
- The excel file summarizes the subject areas covered by the in-home interview at each wave of Add Health

Data Files

- CFDR stores a copy of public data in the public folder (R:\CFDR\Public\Data\AddHealth). In addition, public data can be downloaded from ICPSR website (http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/21600)

- CFDR stores a copy of restricted data on the secured server (R:\AddHealth). Only people who have obtained the permission from the Carolina Population Center at the University of North Carolina-Chapel Hill can access the data

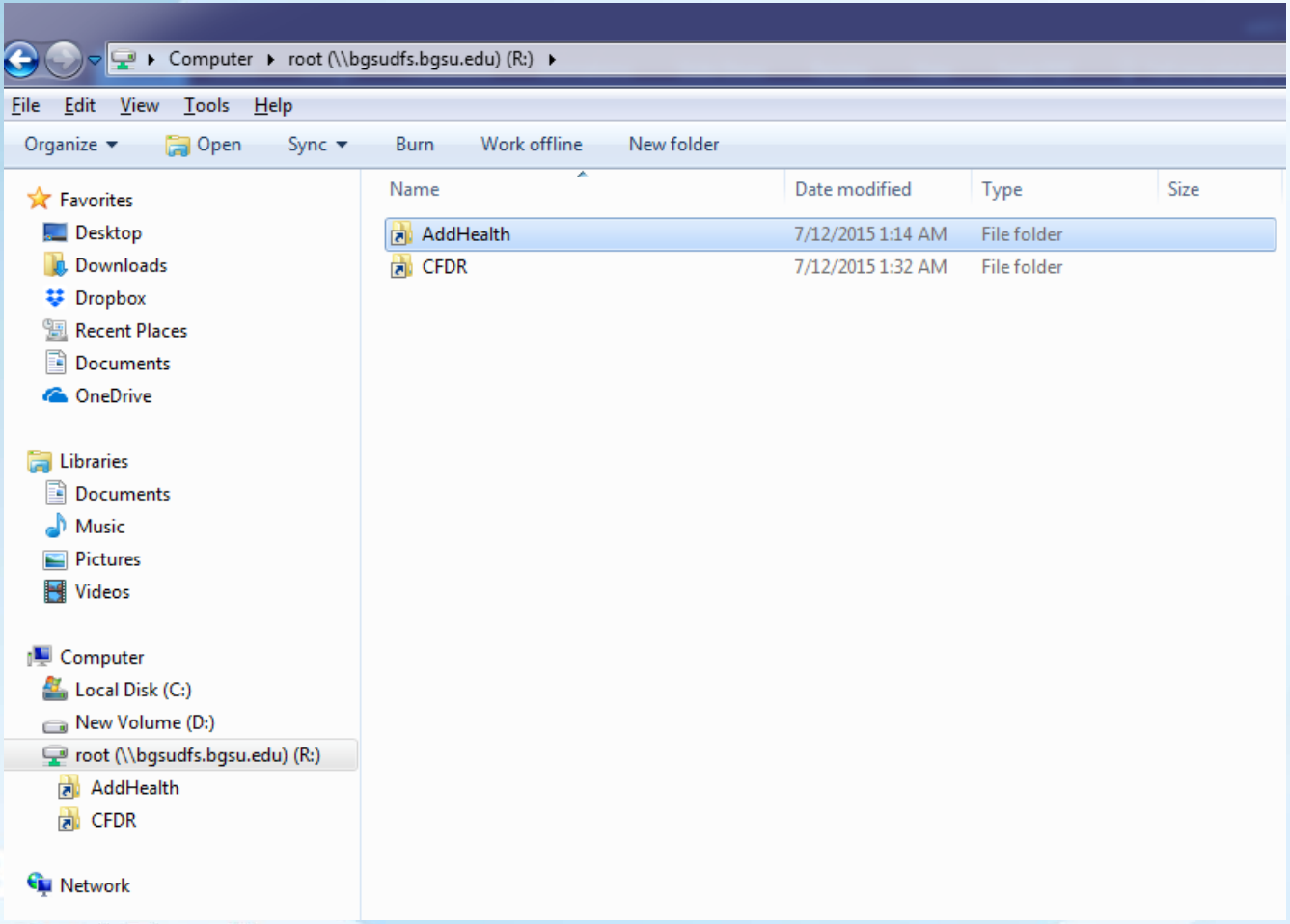
- The difference between the public data and the restricted data is that public data contain about only one third of observations, whereas the restricted data have all of observations

Data Files (Cont.)

- Supplemental Education Data
  - All education data are restricted data
  - CFDR stores a copy of restricted data on the secured server (R:\AddHealth). Only people who have obtained the permission from the Carolina Population Center at the University of North Carolina-Chapel Hill can access the data
- CFDR has constructed some SAS data sets from the restricted Add Health data, including the in-home interview data, weighted data, and family structure measures from Wave I through IV. These constructed data are stored in the folder "R:\AddHealth\ADD Health\Add Health study\CFDR SAS data."
- If you need to use restricted Add Health data, please contact Dr. Kara Joyner (kjoyner@bgsu.edu)

File Locations

The folder directory: R:\



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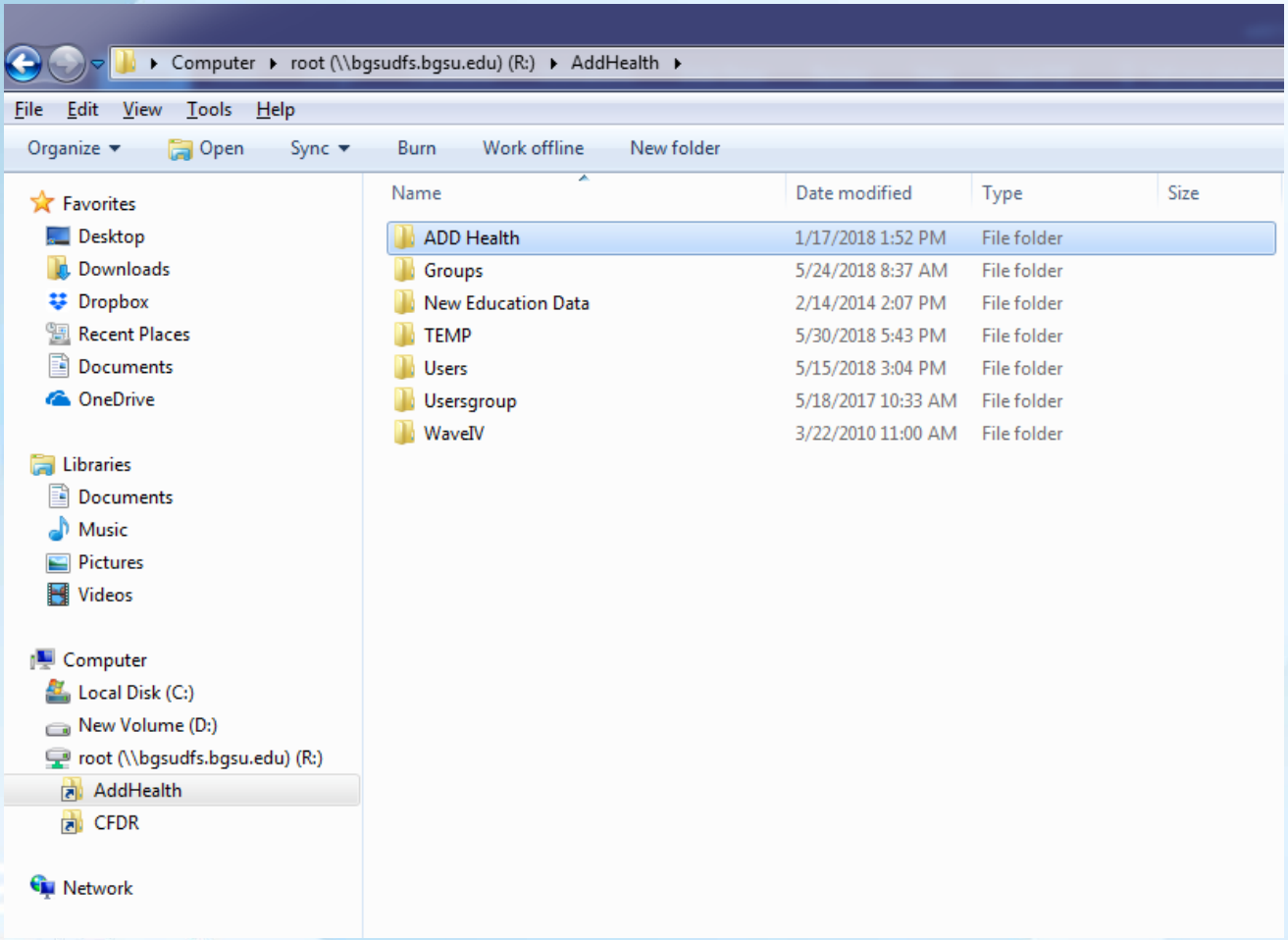
File Location (Cont.)

The folder directory: R:\AddHealth



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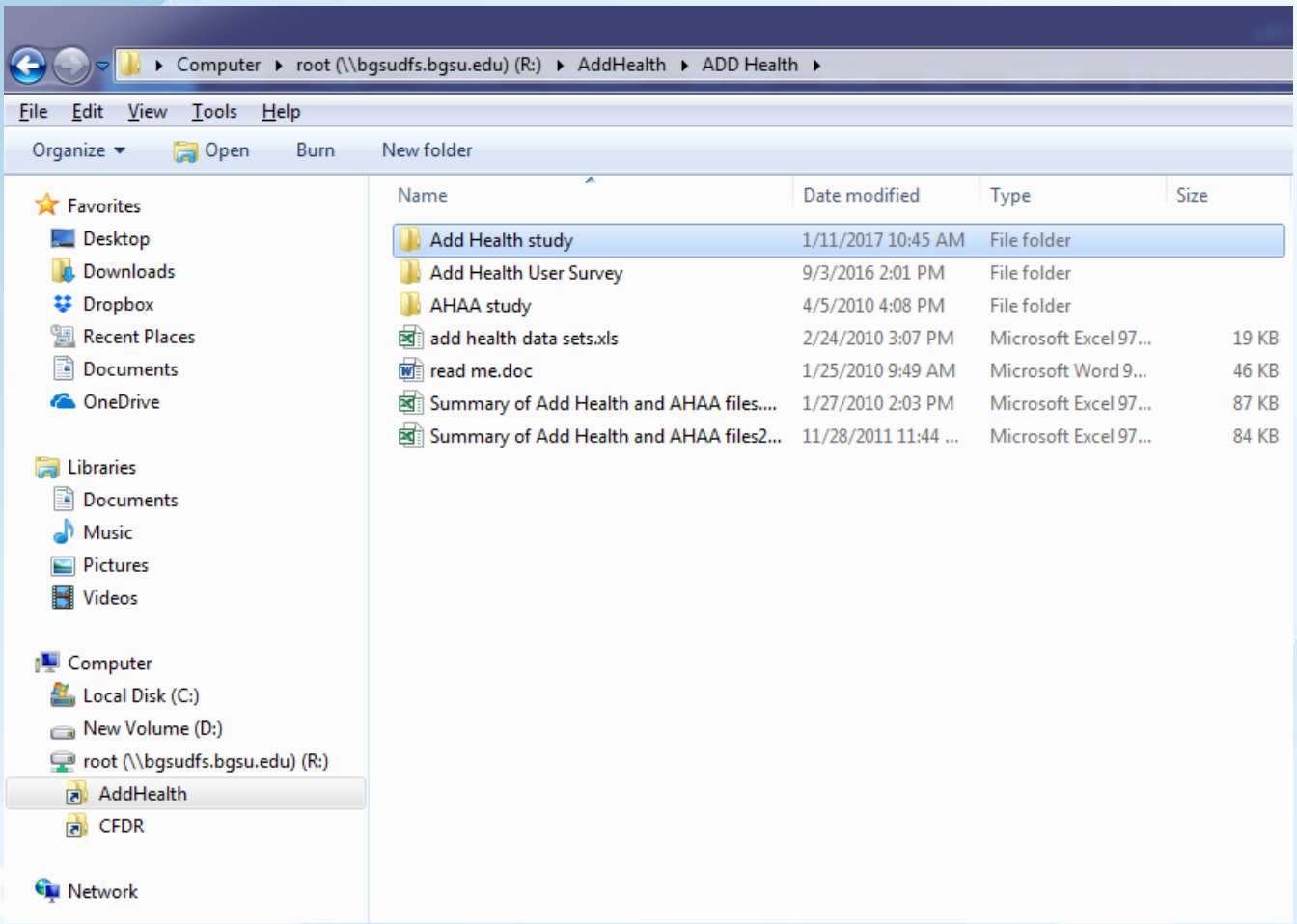
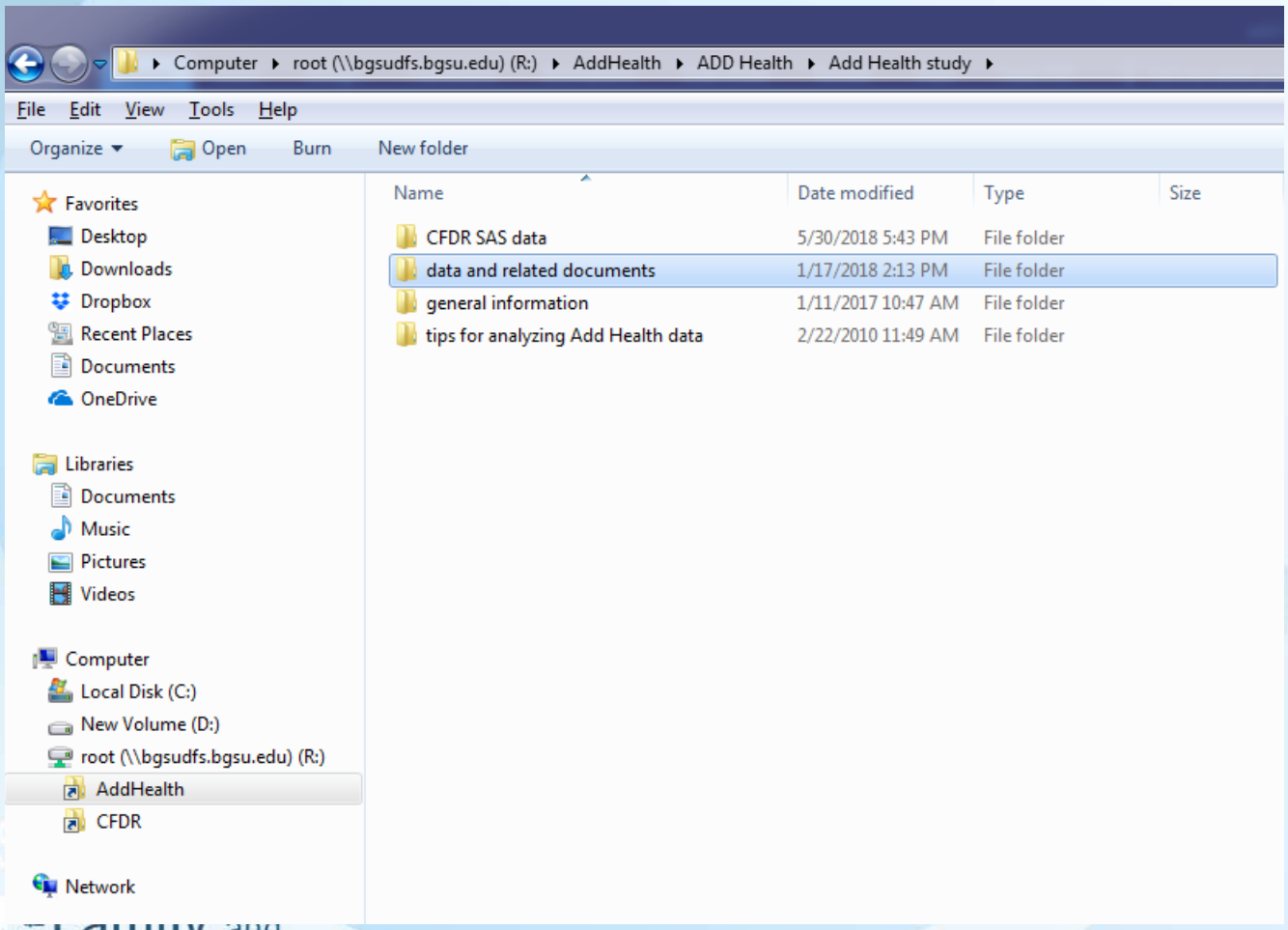
File Location (Cont.)

The folder directory:R:\AddHealth\ADD Health



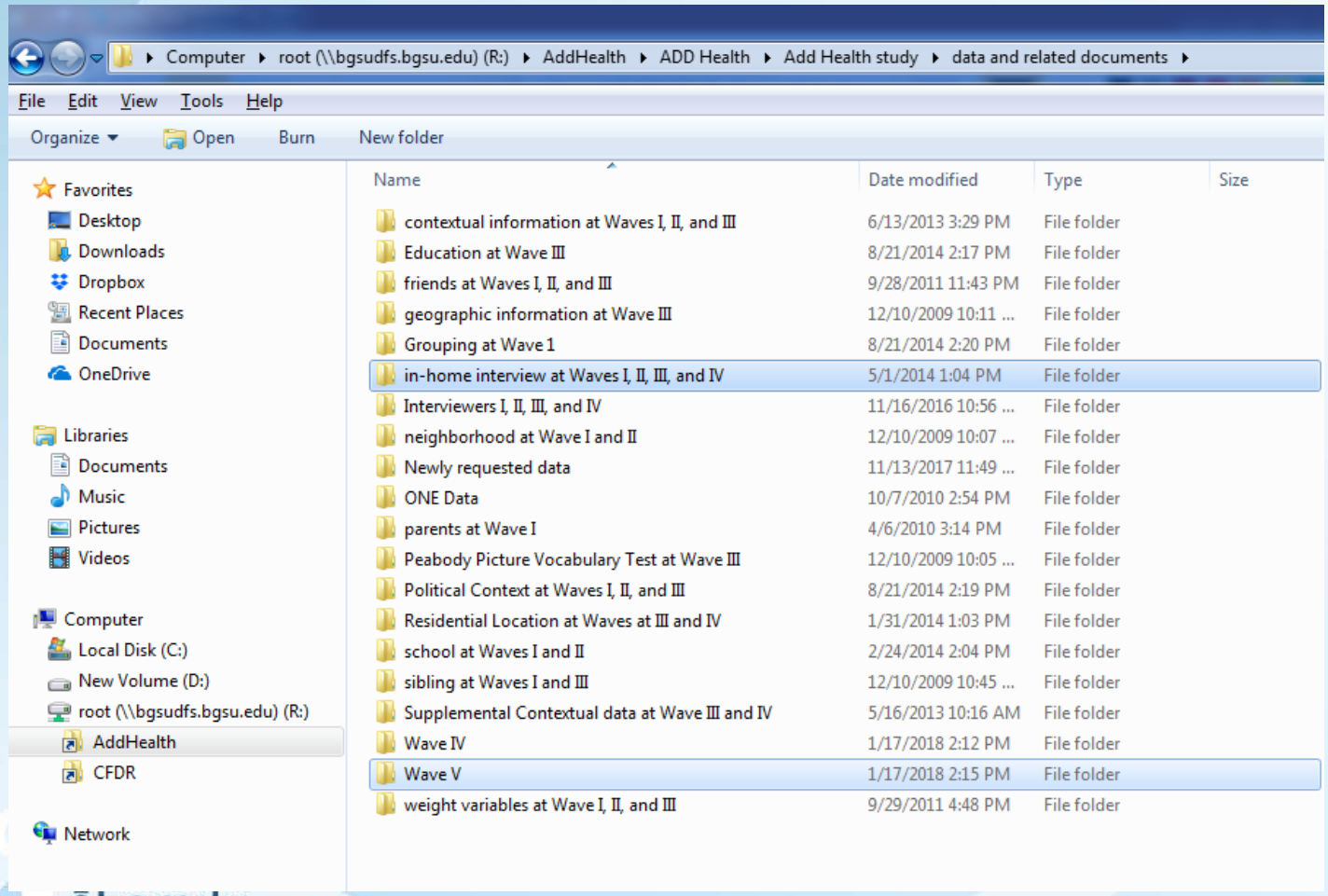
File Location (Cont.)

The folder directory: R:\AddHealth\ADD Health\Add Health study



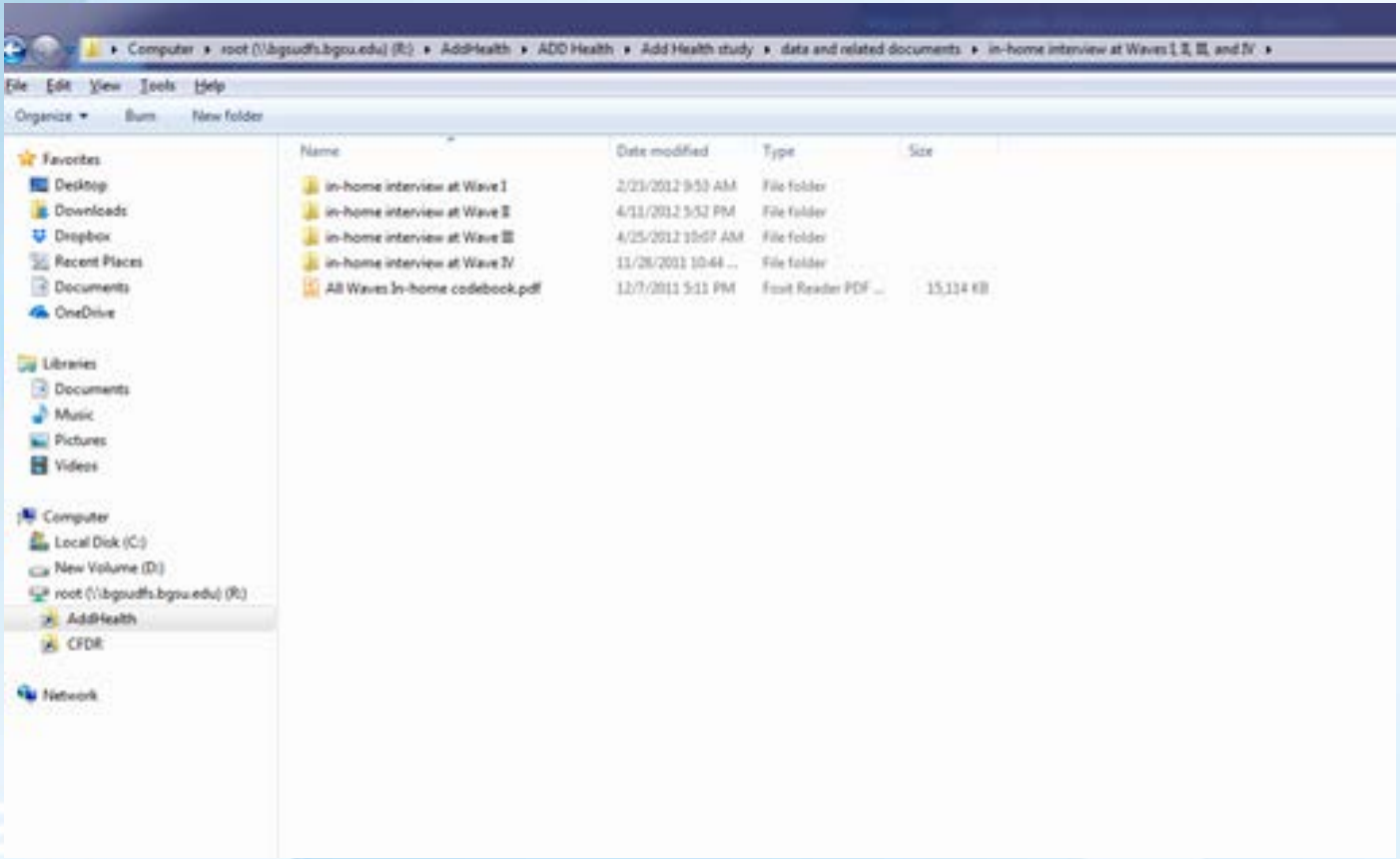
File Location (Cont.)

Main Add Health Data Folders: “R:\AddHealth\ADD Health\Add Health study\data and related documents”



File Location (Cont.)

The location of first four waves of In-home interview data: “R:\AddHealth\ADD Health\Add Health study\data and related documents\in-home interview at Waves I, II, III, and IV”



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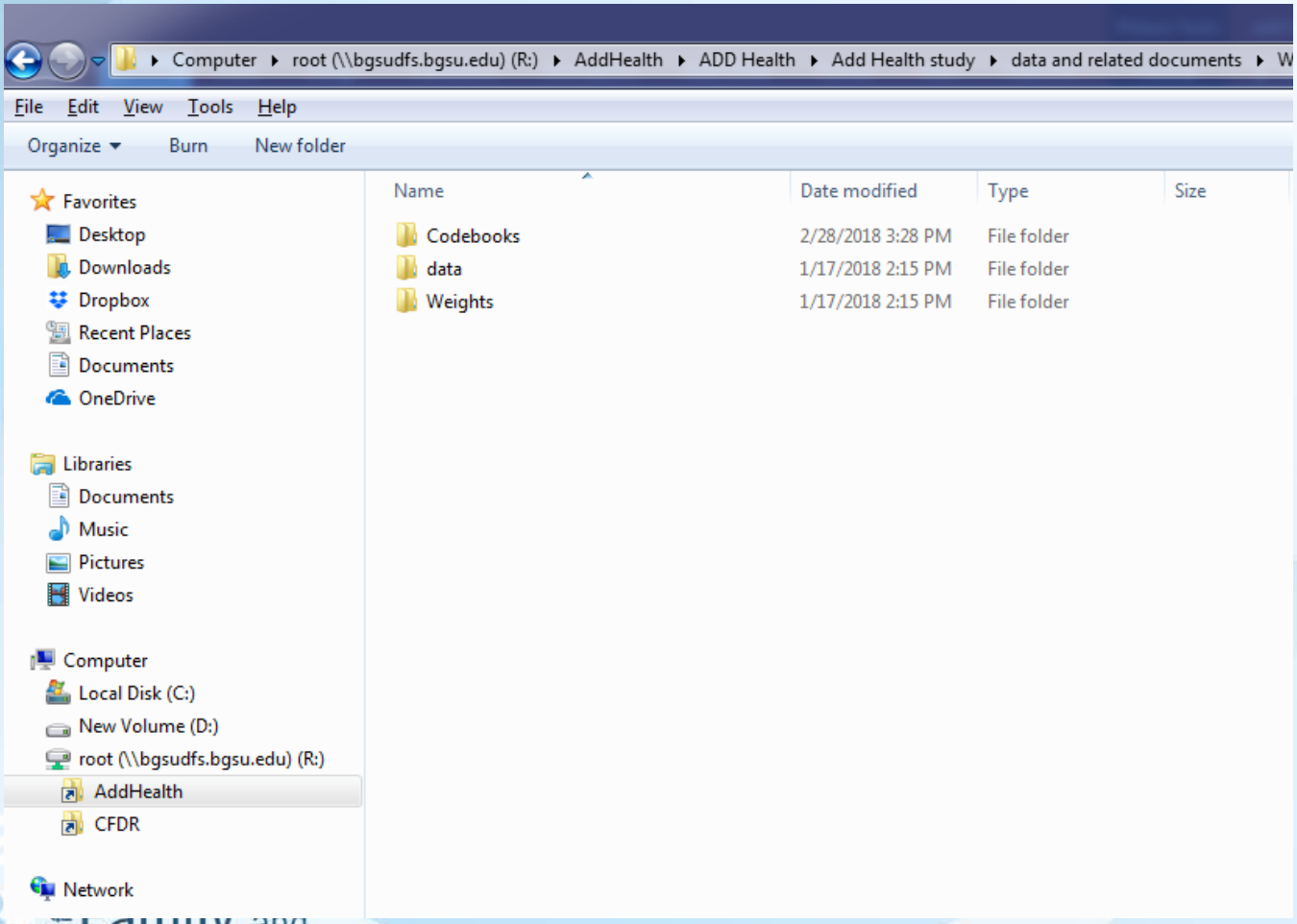
File Location (Cont.)

The location of In-home interview data at Wave V: “R:\AddHealth\ADD Health\Add Health study\data and related documents\Wave V”



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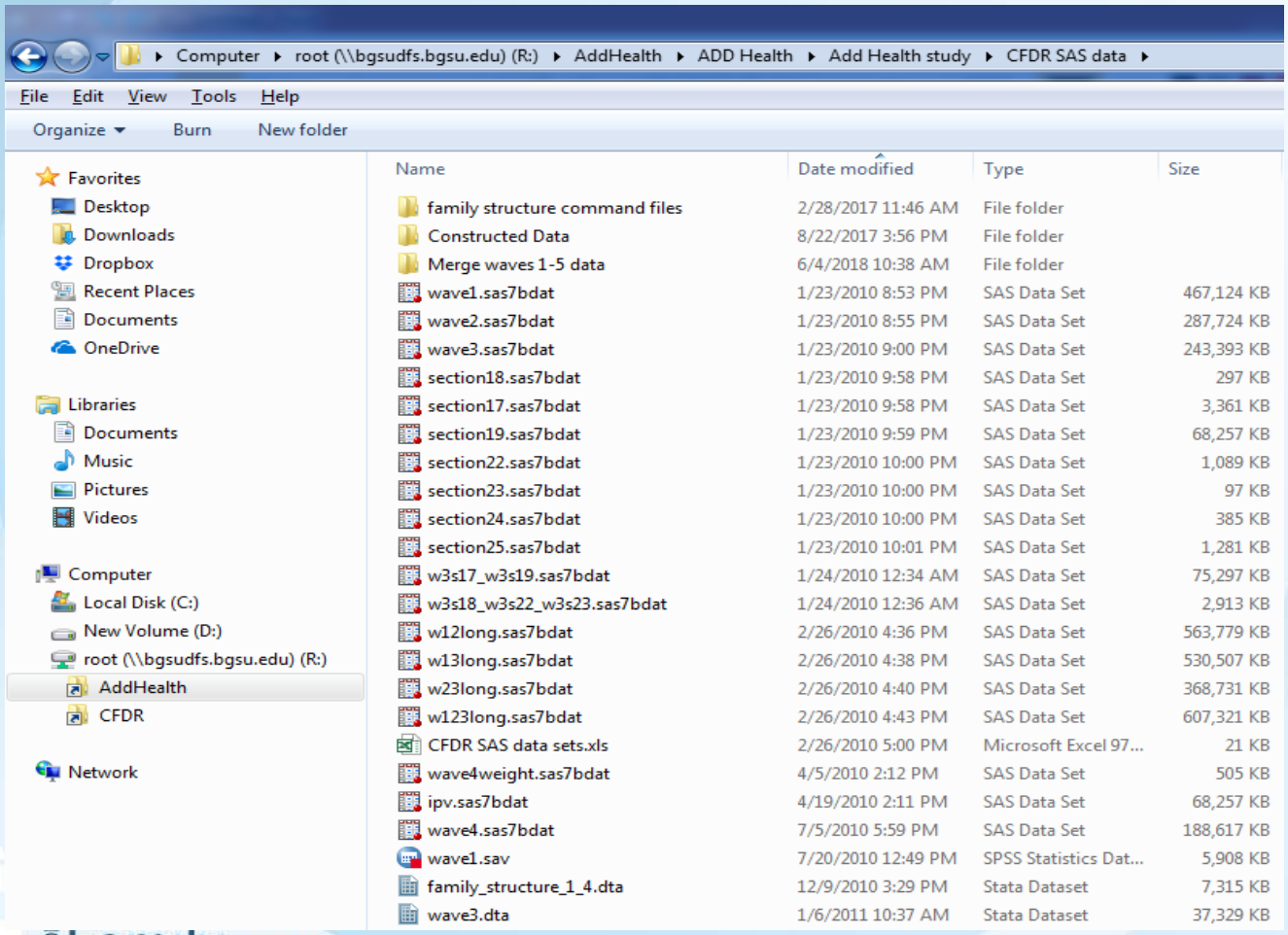
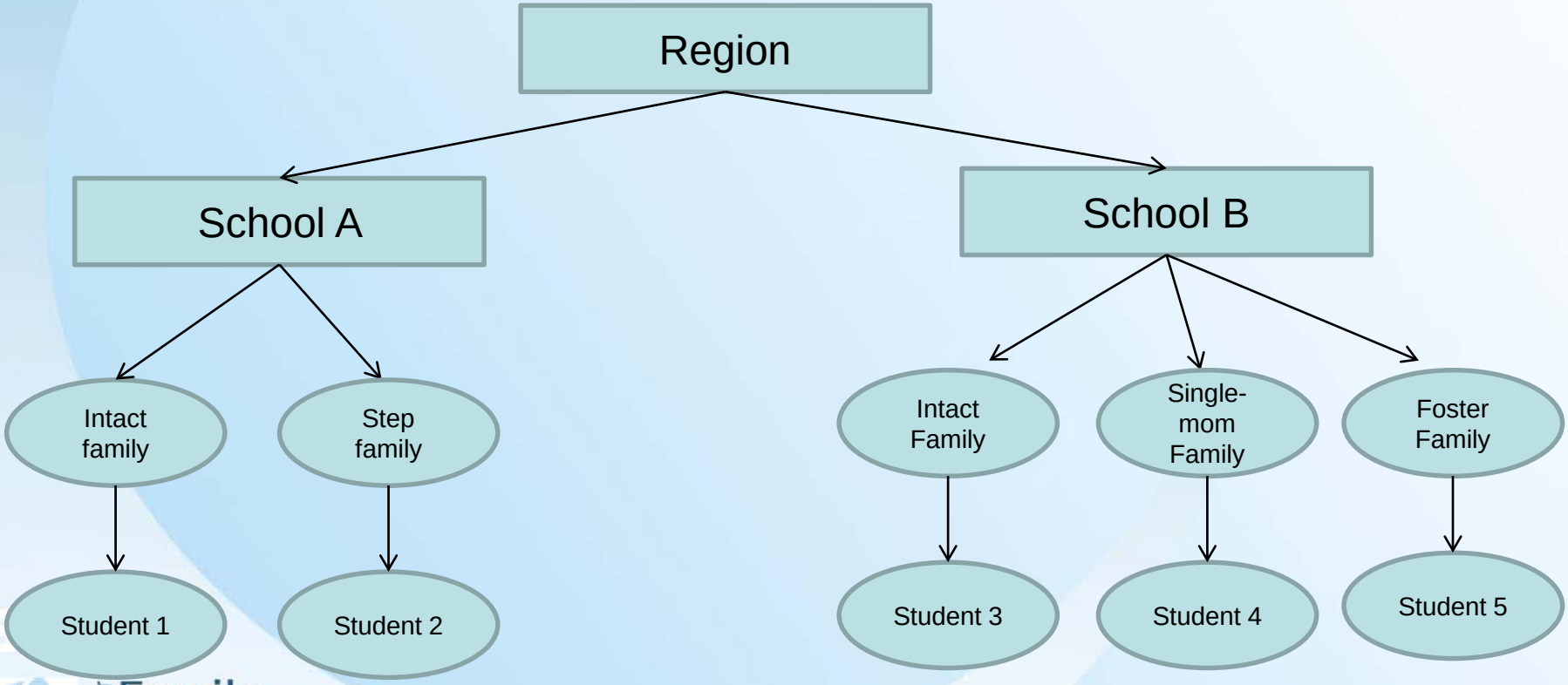
File Location (Cont.)

CFDR puts our constructed data and variables in a specific folder:
R:\AddHealth\ADD Health\Add Health study\CFDR SAS data



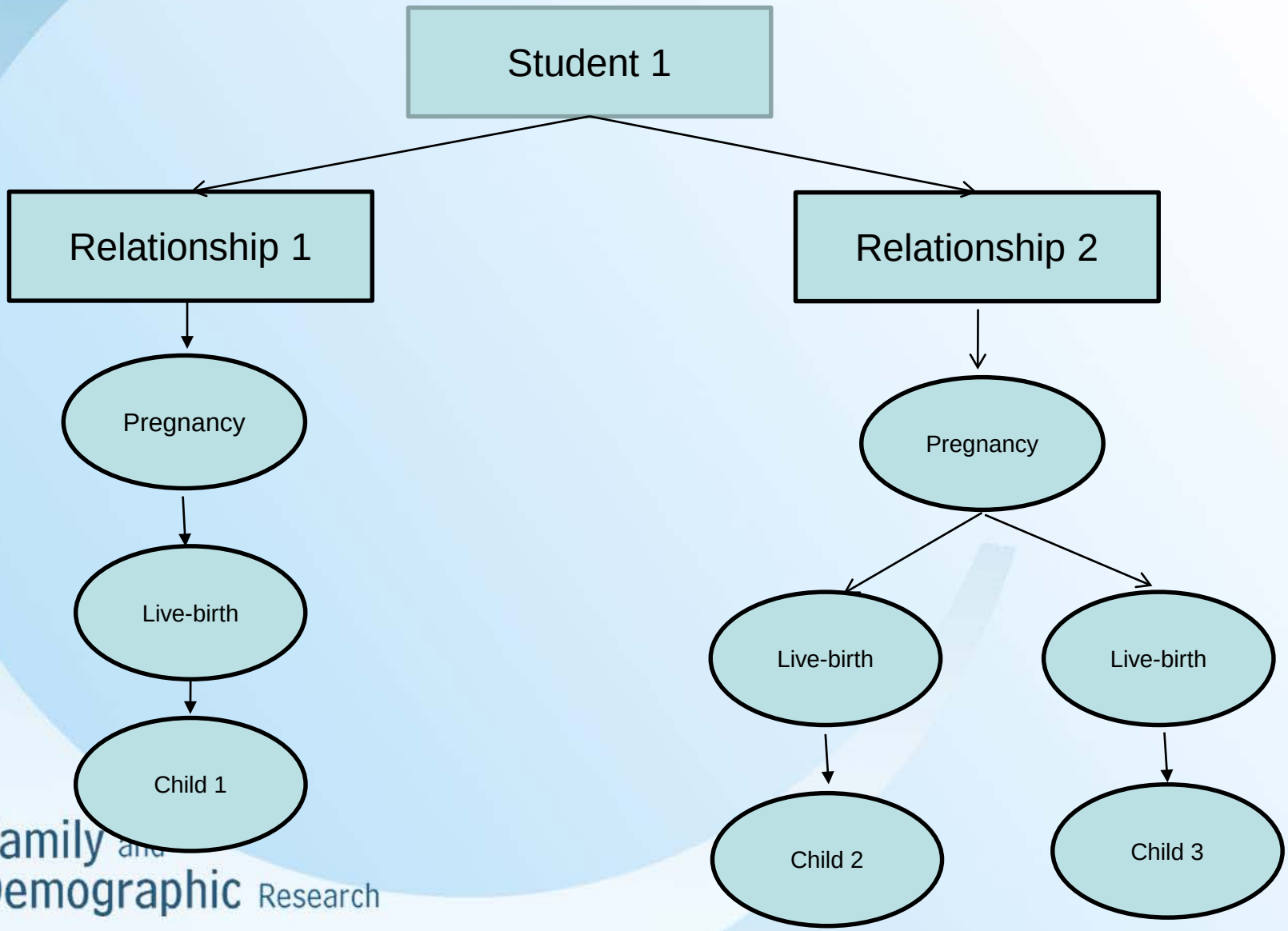
Unit of Analysis

- Add Health collects information on individual adolescents, their social environment (e.g., neighborhood, school, family) and various aspects of social relations and experiences (e.g., intimate relationship, pregnancy, live births, and parent-children relationship).
- An example of the nested structure of neighborhood, school, family, and individual adolescents as follows:



Unit of Analysis (Cont.)

- An example of the nested structure of Individual, relationship, pregnancy, live births, and parent-children relationship as follows:



Analytic Tips

- How to find the variables you need?
- How to read Add Health data?
- How to merge data?
- How to weight Add Health data?
- How to change the unit of analysis?

How to Find the Variables You Need?

- Use codebooks to locate the variables of interest
- Add Health provides codebooks that list all of the names and wordings of the variables at each wave. Thus, if you are interested in the in-home interview data, you should start finding your variables by reading through the following codebooks:
  - WAVE1NDX.PDF
  - WAVE2NDX.PDF
  - wave3ndx.pdf
  - wave4ndx.pdf
  - wave5ndx.pdf
  - Each subject area usually has its own codebook, and you can only find value labels in each codebook

How to Read Add Health Data?

- The public data of Add Health may be in SAS, Stata, or SPSS format. You can use Stat/transfer to change the data from one format to another
- The restricted data of Add Health are initially in SAS export format. The following codes provide instructions on how to use SAS and Stata to read in the SAS export file

How to Read Add Health Data? (Cont.)

SAS code:

```
LIBNAME wave1 xport "T:\ADD Health\Add Health study\data and related
documents\in-home interview at Waves I, II, and III\in-home interview
at Wave I\data\allwave1.exp";

LIBNAME out "T:\Temp";

DATA out.wave1;
SET wave1.allwave1;
RUN;

PROC CONTENTS DATA = out.wave1;
RUN;
```

Stata code:

```
fdause "T:\ADD Health\Add Health study\data and related
documents\in-home interview at Waves I, II, and III\in-home
interview at Wave I\data\allwave1.exp“

describe
```

How to Merge Data?

- When do data need to be merged?
  - If you want to combine data from different waves of Add Health
  - If you want to combine data with different unit of measurements
  - If you want to use both Add Health data and Education data
- SAS and Stata sample commands to merge Waves I and II data are shown in the following slides:

How to Merge Data? (Cont.)

- SAS code:

```
Libname in "R:\AddHealth";
************************;
PROC SORT DATA=in.wave1;
BY aid;
RUN;
************************;
PROC SORT DATA=in.wave2;
BY aid;
RUN;
************************;
DATA  in.wave12;
MERGE in.wave1 (IN=in_wave1) in.wave2 (IN=in_wave2);
BY aid;
RUN;
```

How to Merge Data? (Cont.)

- Stata code:

```
use "R:\AddHealth\wave1.dta"
sort aid
save "R:\AddHealth\wave1_2.dta", replace
********************************
use "R:\AddHealth\wave2.dta"
sort aid
save "R:\AddHealth\wave2_2.dta", replace
********************************
use "R:\AddHealth\wave1_2.dta", clear
sort aid
merge aid using "R:\AddHealth\wave2_2.dta
tab1 _merge
rename _merge wave12
label variable wave12 "indicator for merging waves 1 and 2"
sort aid
save "R:\AddHealth\wave12.dta", replace
```

How to Weight Add Health Data?

- Add Health data were collected with a complex survey design. Therefore, each respondent does not have the same probability of being selected into the sample and thus needs to be reweighted
- Clustering of students from the same regions and schools
- The analysis of Add Health data always needs to be weighted in order to adjust for the effects of its complex survey design
- SAS and Stata differ in their abilities of performing statistical analyses, while controlling for the effects of the complex survey design

How to Weight Add Health Data? (Cont.)

Table 3. Select Stata and SAS procedures for Analyzing Survey Data

Analysis	Stata command	SAS command
Estimate means for survey data	svy: mean	Proc Surveymeans
Estimate proportions for survey data	svy: tab	Proc Surveyfreq
Linear regression for survey data	svy: regress	Proc Surveyreg
Logistic regression for survey data, reporting odds ratios	svy: logistic	Proc Surveylogistic
Cox proportional hazards model for survey data	svy: stcox	Proc Surveyphreg
Ordered logistic regression for survey data	svy: ologit	
Ordered probit regression for survey data	svy: oprobit	
Multinomial (polytomous) logistic regression for survey data	svy: mlogit	
Multinomial probit regression for survey data	svy: mprobit	
Parametric survival models for survey data	svy: streg	
Generalized linear models for survey data	svy: glm	
Generalized negative binomial regression for survey data	svy: gnbreg	
Poisson regression for survey data	svy: poisson	
Zero-inflated negative binomial regression for survey data	svy: zinb	
Zero-inflated Poisson regression for survey data	svy: zip	

How to Weight Add Health Data? (Cont.)

If you use the full sample in the analysis, you can use either SAS or Stata for the analysis.

SAS code:

```
Libname in "R:\AddHealth\TEMP";

proc surveylogistic data= in.logit3;
cluster psuscid3;
weight gswgt3;
strata region3;
model h3ed3 = bio_sex3 calcage3;
run;
```

Stata code:

```
use "R:\AddHealth\TEMP\logit3.dta", clear
svyset psuscid3 [pweight =gswgt3], strata(region3)
svy: logit h3ed3 bio_sex3 calcage3
```

How to Weight Add Health Data? (Cont.)

If you use only part of the sample in the analysis, you should use Stata for the analysis because SAS has the sub-population options for the Proc Surveymeans command only.

Stata code:

```
use “R:\AddHealth\TEMP\logit3.dta”, clear
svyset psuscid3 [pweight =gswgt3], strata(region3)
svy, subpop(marker): logit h3ed3 bio_sex3 calcage3
```

How to Change the Unit of Analysis?

- Changing the unit of analysis means changing the unit of observations in the data set. Because of the nested structure of Add Health data, you can change the unit of observations from one level to another
- When the unit of analysis changes, the number of valid observation changes, too

Table 2. The number of Units at Different Levels of Analysis for Section 25 of the Wave III of Add Health

Unit of Analysis	Number of Analysis Units
CHILD	4,181
BIRTH	4,181
PREGNANCY	4,055
RELATION	3,293
RESPONDENT	2,960

- SAS and Stata examples of changing unit from birth to pregnancy

How to Change the Unit of Analysis? (Cont.)

- SAS code:

```
PROC SORT DATA = out.sect25 OUT=out.preg;
BY aid rrelno rpregno;
RUN;

PROC FREQ DATA = out.preg;
TABLES birthno;
RUN;

PROC TRANSPOSE DATA =out.preg
OUT=out.f_preg PREFIX =birth;
BY aid rrelno rpregno;
ID birthno;
VAR c_age;
RUN;

PROC CONTENTS DATA = out.sect25;
RUN;

PROC CONTENTS DATA = out.f_preg;
RUN;
```

How to Change the Unit of Analysis? (Cont.)

- Stata code:

```
use t:\temp\sect25.dta, clear

des  aid rrelno rpregno

sum rrelno rpregno

tostring  rrelno, generate(srrelno)
tostring  rpregno,generate(srpregno)

gen said_rp3 =  aid + srrelno + srpregno
replace said_rp3 =  aid + "0" + srrelno + srpregno if rrelno >=1 & rrelno <=9

label variable said_rp3 "string id for pregnancy record"

sort said_rp3

des

tab1 birthno

reshape wide c_age, i(said_rp3) j(birthno)

des

rename c_age1 birth1
rename c_age2 birth2

save "t:\temp\pregnancy.dta", replace
```

Studies Using Add Health Data

- There have been more than 4,000 publications using Add Health. You can locate them through Add Health or ICPSR web site:
  - Add Health Web site
    - http://www.cpc.unc.edu/projects/addhealth/pubs
  - ICPSR website:
    - After you find Add Health data, click on the "View related literature"

Help with Add Health Analyses

- **CFDR Add Health Working Group**

  This group provides a forum for Add Health users at BGSU to present their findings and obtain feedback from its members. This group is organized and supervised by an experienced Add Health user, Dr. Kara Joyner. If you are interested in joining the working group, please contact her at kjoyner@bgsu.edu

- **Official Add Health listserve**

  Listserve is a place where Add Health users ask and answer questions about analyzing Add Health data. To subscribe the official Add Health listserv, send e-mail to: listserv@unc.edu and in the body of the message put: subscribe addhealth2 <firstname lastname>

- **Add Health Users Conference**

  Carolina Population Center at University of North Carolina has hosted 9 Add Health Users Conferences on how to construct and analyze Add Health data. Add Health website (http://www.cpc.unc.edu/projects/addhealth/news) provides information on the upcoming Add Health User Conference

- **CFDR Programming Help**

  If you have programming problems, contact Hsueh-Sheng Wu at whu@bgsu.edu

Conclusions

- Add Health is an excellent data set for studying how adolescents make transitions into adulthood
- The construction of Add Health can be difficult because it may involve using data collected from different measurement units and at different waves
- The analysis of Add Health data always needs to be weighted in order to adjust for the effects of its complex survey design
- Given the excellence of the data set, many interesting studies can be done using Add Health