Derive data

Deriving clean dataset dsL from NLSY97 extract.

### Data Retrieval

Using [NLS Investigator](https://www.nlsinfo.org/investigator/pages/login.jsp) a list of variables was downloaded from [NLS](http://www.bls.gov/nls/) datasets. All the downloaded materials were unzipped into the folder [/Data/Extracts/NLSY97\_Religiosity\_20042014](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/tree/master/Data/Extracts/NLSY97_Religiosity_20042014), located in the GitHub Repository. (The naming convention is "Study\_Focus\_DDMMYYYofDownload")

#### The downloaded zip.forlder included:

NLSY97\_Religiosity\_20042014.cdb - **codebook** containing item descriptions  
NLSY97\_Religiosity\_20042014.csv - **data** in comma delimited format  
NLSY97\_Religiosity\_20042014.NLSY97 - **tagset**, the list of variables in the downloaded dataset  
NLSY97\_Religiosity\_20042014.dtc - STATA **dictionary** file of selected variables, contains data as well

We import the raw data of NLSY97 from .**csv** file and make initial clean up.

The STATA **dictionary** file printed below lists the selected variables : unique NLSY97 reference numbers (RNUM) are paired wtih their descriptive labels (VARIABLE TITLE).

#### Selected variables

RNUM VARIABLE\_TITLE  
1 R0323900 # DAYS/WK TYP FAM RELIGIOUS 1997  
2 R2165200 # DAYS/WK TYP FAM RELIGIOUS 1998  
3 R3483100 # DAYS/WK TYP FAM RELIGIOUS 1999  
4 R4881300 # DAYS/WK TYP FAM RELIGIOUS 2000  
5 S2977900 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2003  
6 S4676700 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2004  
7 S6308900 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2005  
8 S8329800 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2006  
9 T0737600 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2007  
10 T2779700 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2008  
11 T4494400 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2009  
12 T6141400 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2010  
13 T7635300 CURRENTLY HAVE ACCESS TO INTERNET? (SAQ) 2011  
14 R1193900 CV\_AGE(MONTHS)\_INT\_DATE 1997  
15 R2553400 CV\_AGE(MONTHS)\_INT\_DATE 1998  
16 R3876200 CV\_AGE(MONTHS)\_INT\_DATE 1999  
17 R5453600 CV\_AGE(MONTHS)\_INT\_DATE 2000  
18 R7215900 CV\_AGE(MONTHS)\_INT\_DATE 2001  
19 S1531300 CV\_AGE(MONTHS)\_INT\_DATE 2002  
20 S2000900 CV\_AGE(MONTHS)\_INT\_DATE 2003  
21 S3801000 CV\_AGE(MONTHS)\_INT\_DATE 2004  
22 S5400900 CV\_AGE(MONTHS)\_INT\_DATE 2005  
23 S7501100 CV\_AGE(MONTHS)\_INT\_DATE 2006  
24 T0008400 CV\_AGE(MONTHS)\_INT\_DATE 2007  
25 T2011000 CV\_AGE(MONTHS)\_INT\_DATE 2008  
26 T3601400 CV\_AGE(MONTHS)\_INT\_DATE 2009  
27 T5201300 CV\_AGE(MONTHS)\_INT\_DATE 2010  
28 T6651200 CV\_AGE(MONTHS)\_INT\_DATE 2011  
29 R1194100 CV\_AGE\_INT\_DATE 1997  
30 R2553500 CV\_AGE\_INT\_DATE 1998  
31 R3876300 CV\_AGE\_INT\_DATE 1999  
32 R5453700 CV\_AGE\_INT\_DATE 2000  
33 R7216000 CV\_AGE\_INT\_DATE 2001  
34 S1531400 CV\_AGE\_INT\_DATE 2002  
35 S2001000 CV\_AGE\_INT\_DATE 2003  
36 S3801100 CV\_AGE\_INT\_DATE 2004  
37 S5401000 CV\_AGE\_INT\_DATE 2005  
38 S7501200 CV\_AGE\_INT\_DATE 2006  
39 T0008500 CV\_AGE\_INT\_DATE 2007  
40 T2011100 CV\_AGE\_INT\_DATE 2008  
41 T3601500 CV\_AGE\_INT\_DATE 2009  
42 T5201400 CV\_AGE\_INT\_DATE 2010  
43 T6651300 CV\_AGE\_INT\_DATE 2011  
44 R1235800 CV\_SAMPLE\_TYPE 1997  
45 S0919700 GOD NOTHING TO DO HAPPENS TO R 2002  
46 S6317100 GOD NOTHING TO DO HAPPENS TO R 2005  
47 T2782200 GOD NOTHING TO DO HAPPENS TO R 2008  
48 T7637800 GOD NOTHING TO DO HAPPENS TO R 2011  
49 R4893900 HOW OFT R BEEN HAPPY PERSON 2000  
50 S0921100 HOW OFT R BEEN HAPPY PERSON 2002  
51 S4682200 HOW OFT R BEEN HAPPY PERSON 2004  
52 S8332600 HOW OFT R BEEN HAPPY PERSON 2006  
53 T2782900 HOW OFT R BEEN HAPPY PERSON 2008  
54 T6144000 HOW OFT R BEEN HAPPY PERSON 2010  
55 R4893600 HOW OFT R BEEN NERVOUS PERSON 2000  
56 S0920800 HOW OFT R BEEN NERVOUS PERSON 2002  
57 S4681900 HOW OFT R BEEN NERVOUS PERSON 2004  
58 S8332300 HOW OFT R BEEN NERVOUS PERSON 2006  
59 T2782600 HOW OFT R BEEN NERVOUS PERSON 2008  
60 T6143700 HOW OFT R BEEN NERVOUS PERSON 2010  
61 R4893700 HOW OFT R CALM/PEACEFUL PAST MO 2000  
62 S0920900 HOW OFT R CALM/PEACEFUL PAST MO 2002  
63 S4682000 HOW OFT R CALM/PEACEFUL PAST MO 2004  
64 S8332400 HOW OFT R CALM/PEACEFUL PAST MO 2006  
65 T2782700 HOW OFT R CALM/PEACEFUL PAST MO 2008  
66 T6143800 HOW OFT R CALM/PEACEFUL PAST MO 2010  
67 R4894000 HOW OFT R DEPRESSED LAST MONTH 2000  
68 S0921200 HOW OFT R DEPRESSED LAST MONTH 2002  
69 S4682300 HOW OFT R DEPRESSED LAST MONTH 2004  
70 S8332700 HOW OFT R DEPRESSED LAST MONTH 2006  
71 T2783000 HOW OFT R DEPRESSED LAST MONTH 2008  
72 T6144100 HOW OFT R DEPRESSED LAST MONTH 2010  
73 R4893800 HOW OFT R FELT DOWN OR BLUE 2000  
74 S0921000 HOW OFT R FELT DOWN OR BLUE 2002  
75 S4682100 HOW OFT R FELT DOWN OR BLUE 2004  
76 S8332500 HOW OFT R FELT DOWN OR BLUE 2006  
77 T2782800 HOW OFT R FELT DOWN OR BLUE 2008  
78 T6143900 HOW OFT R FELT DOWN OR BLUE 2010  
79 R0552400 HOW OFTEN PR CHURCH LAST YR? 1997  
80 R4893400 HOW OFTEN R ATTEND WORSHIP SERV 2000  
81 R6520100 HOW OFTEN R ATTEND WORSHIP SERV 2001  
82 S0919300 HOW OFTEN R ATTEND WORSHIP SERV 2002  
83 S2987800 HOW OFTEN R ATTEND WORSHIP SERV 2003  
84 S4681700 HOW OFTEN R ATTEND WORSHIP SERV 2004  
85 S6316700 HOW OFTEN R ATTEND WORSHIP SERV 2005  
86 S8331500 HOW OFTEN R ATTEND WORSHIP SERV 2006  
87 T0739400 HOW OFTEN R ATTEND WORSHIP SERV 2007  
88 T2781700 HOW OFTEN R ATTEND WORSHIP SERV 2008  
89 T4495000 HOW OFTEN R ATTEND WORSHIP SERV 2009  
90 T6143400 HOW OFTEN R ATTEND WORSHIP SERV 2010  
91 T7637300 HOW OFTEN R ATTEND WORSHIP SERV 2011  
92 S1225400 HRS/WK R USES A COMPUTER 2002  
93 T1049900 HRS/WK R USES A COMPUTER 2007  
94 T3145100 HRS/WK R USES A COMPUTER 2008  
95 T4565400 HRS/WK R USES A COMPUTER 2009  
96 T6209600 HRS/WK R USES A COMPUTER 2010  
97 T7707000 HRS/WK R USES A COMPUTER 2011  
98 S1225500 HRS/WK R WATCHES TELEVISION 2002  
99 T1050000 HRS/WK R WATCHES TELEVISION 2007  
100 T3145200 HRS/WK R WATCHES TELEVISION 2008  
101 T4565500 HRS/WK R WATCHES TELEVISION 2009  
102 T6209700 HRS/WK R WATCHES TELEVISION 2010  
103 T7707100 HRS/WK R WATCHES TELEVISION 2011  
104 T2782400 IMPORT OF RELIGIOUS FAITH IN DAILY LIFE 2008  
105 T7638000 IMPORT OF RELIGIOUS FAITH IN DAILY LIFE 2011  
106 R0536401 KEY!BDATE M/Y (SYMBOL) 1997  
107 R0536402 KEY!BDATE M/Y (SYMBOL) 1997  
108 R1482600 KEY!RACE\_ETHNICITY (SYMBOL) 1997  
109 R0536300 KEY!SEX (SYMBOL) 1997  
110 R0000100 PUBID - YTH ID CODE 1997  
111 T2111500 R A BORN-AGAIN EVANGELICAL CHRISTIAN? 2008  
112 T6759400 R A BORN-AGAIN EVANGELICAL CHRISTIAN? 2011  
113 S0919600 R ASKS GOD HELP MAKE DECISIONS 2002  
114 S6317000 R ASKS GOD HELP MAKE DECISIONS 2005  
115 T2782100 R ASKS GOD HELP MAKE DECISIONS 2008  
116 T7637700 R ASKS GOD HELP MAKE DECISIONS 2011  
117 S0919500 R BELIEVE RELIG TEACHINGS OBEYED 2002  
118 S6316900 R BELIEVE RELIG TEACHINGS OBEYED 2005  
119 T2782000 R BELIEVE RELIG TEACHINGS OBEYED 2008  
120 T7637600 R BELIEVE RELIG TEACHINGS OBEYED 2011  
121 S5532800 R CURR REL PREF 2005  
122 T2111400 R CURR REL PREF 2008  
123 T6759300 R CURR REL PREF 2011  
124 S0919400 R NOT NEED RELIGION TO HAVE VALUES 2002  
125 S6316800 R NOT NEED RELIGION TO HAVE VALUES 2005  
126 T2781900 R NOT NEED RELIGION TO HAVE VALUES 2008  
127 T7637500 R NOT NEED RELIGION TO HAVE VALUES 2011  
128 S0919800 R PRAYS MORE THAN ONCE A DAY 2002  
129 S6317200 R PRAYS MORE THAN ONCE A DAY 2005  
130 T2782300 R PRAYS MORE THAN ONCE A DAY 2008  
131 T7637900 R PRAYS MORE THAN ONCE A DAY 2011  
132 R0552300 WHAT IS PR CURR RELIG PREF? 1997  
133 R0552200 WHAT RELIG PR RAISED IN? 1997

After renaming the variables, we arrange data in wide format (variable/occasions as columns), arriving at the basis dataset dsSource, which contains

ncol(dsSource)

[1] 133

variables and

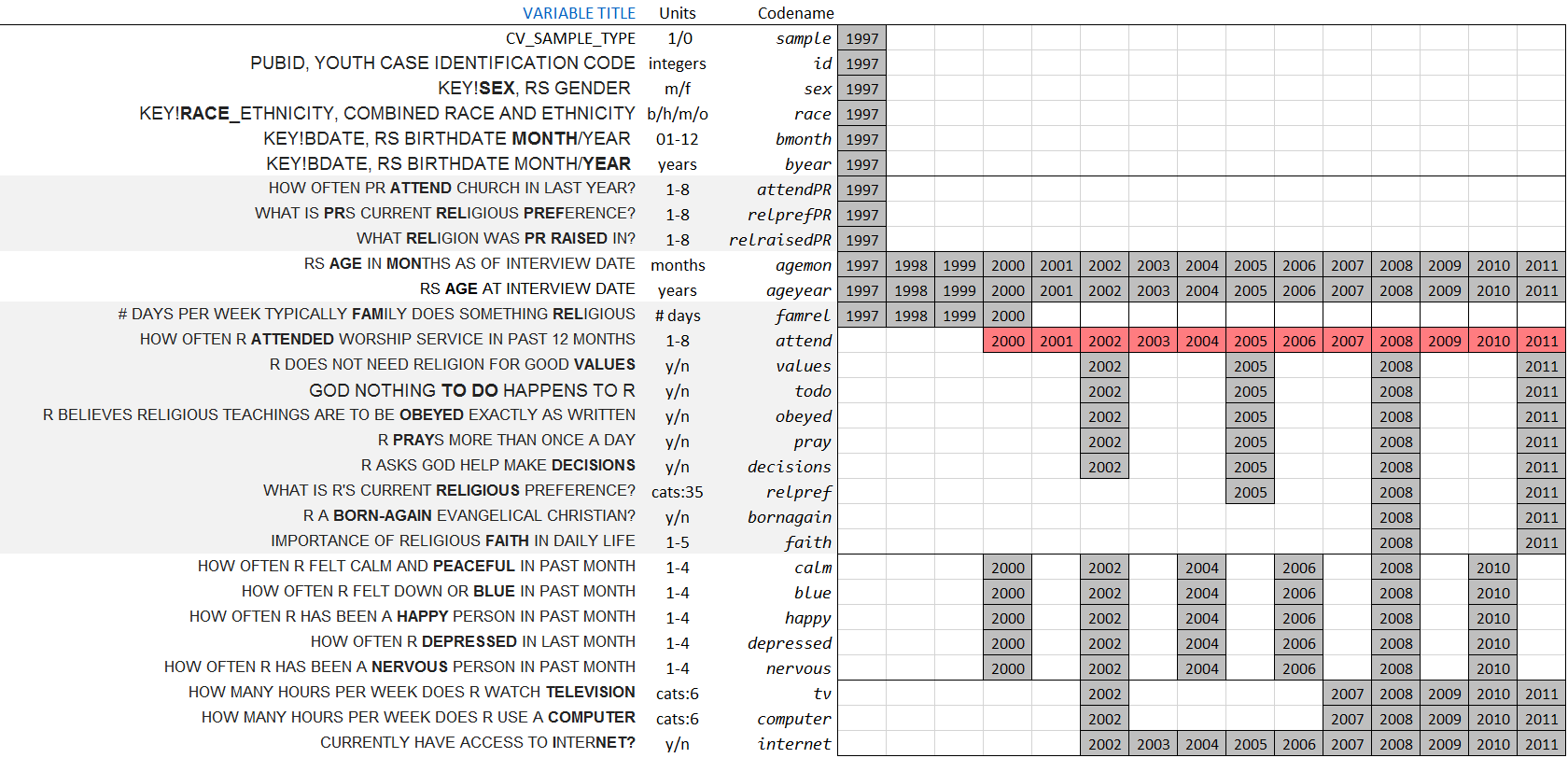
nrow(dsSource)

[1] 8984

respondents.

Dictionary file is imported into Excel file "ItemMapping\_20042014.xlsx", where variables are renamed and organized with respect to occasssions of their measurement. Renaming and additional data grooming is done by @knitr TweakData chunk in the sourced .R file. The result is variable-by-occasion databox slice.

### Databox

 [Interactive version](http://statcanvas.net/thesis/databox/)

Variables on vertical dimension and occasions on horizontal intersect over grey-filled boxes displaying the year of the wave for which data are available. Variable **attend** is marked by red to indicate that it is the primary quantification of religiosity in the statistical models used in this study.

The variable dimension of the databox slice is represented by three identifiers adjacent to the left of the grid.

* **Variable Title** - verbatim identifier from NLSY97
* **Unit** - describes the scales used to measure variables
* **Codename** - the (new) name of the variable, as it is used in R code

### Selected variables

The light grey background highlights the variables related to religion and spirituality. The first section of items (**attendPR**, **relprefPR**, **relraisedPR**) gives data on the religiosity of [parents](http://www.bls.gov/nls/quex/r1/y97rd1pquex.htm) of the respondents, whose households were sampled into NLSY97. Another grey section lists the items related to the religiosity of the youth, which give data on their religious behaviors (**relpref**, **attend**, **pray**, **decisions**) and attitudes (**values**, **todo**, **obeyed**, **bornagain**, **faith**).

Context variables and covariates are on white background. The top section gives basic demographics: the month (**bmonth**) and year (**byear**) of birth, sex (**sex**), race (**race**), as well as the indicator whether the individual is a member of the cross-sectional sampling or a special oversample of minorities (**sample**). Two age variables are located between the religiosity sections: age at the time of the interview in months (**agemon**) and years (**ageyear**). At the bottom are self-reports on emotional wellbeing (**calm**, **blue**, **happy**, **depressed**, **nervous**) and media activities (**internet**, **computer**, **tv**) of respondents.

To review original questionnaire cards of NLSY97 as well as descriptive statistics for the selected variables see the [Interactive version](http://statcanvas.net/thesis/databox/)

### dsL - initial dataset

This databox slice corresponds to the dataset dsL

which transposes the former, distributing variables on the horizontal axis. Variable **year** keeps track of measurement round and separated two kinds of variables: those, which values do not change with time and those that were measured at multiple occasions. This distinction will be of convenience in later discussion of statistical models. The dataset in figure 3.3 is referred to as dsL throughout this work and the accompanying R code . It defines the scope of NLSY97 data used in the current study and has a direct correspondence to the databox slice from figure 3.2. While other variables of interest might be added in course or reproduction of this research, it is useful to think of such dataset as a midway point between raw data and model-specific datasets

### Factor labels

Section **Labeling Factors** in the [Metrics](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Models/Descriptives/Metrics.md) report explains how script [LabelingFactorLevels](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Scripts/Data/LabelingFactorLevels.R) sourced in here augements the dataset dsL with a copy of initial variables, labeled and saved as factors.

source(file.path(pathDir,"Scripts/Data/LabelingFactorLevels.R"))

By adding or removing an "F" to the end of the variable, one can select the variable either in the raw metric (**attend**) or as a labeled factor (**attendF**):

ds<- dsL[dsL$id==1,c("id","year","attend","attendF")]  
str(ds)

'data.frame': 15 obs. of 4 variables:  
 $ id : int 1 1 1 1 1 1 1 1 1 1 ...  
 $ year : int 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 ...  
 $ attend : num NA NA NA 1 6 2 1 1 1 1 ...  
 $ attendF: Ord.factor w/ 8 levels "Never"<"Once or Twice"<..: NA NA NA 1 6 2 1 1 1 1 ...

print(ds)

id year attend attendF  
1 1 1997 NA <NA>  
2 1 1998 NA <NA>  
3 1 1999 NA <NA>  
4 1 2000 1 Never  
5 1 2001 6 About once/week  
6 1 2002 2 Once or Twice  
7 1 2003 1 Never  
8 1 2004 1 Never  
9 1 2005 1 Never  
10 1 2006 1 Never  
11 1 2007 1 Never  
12 1 2008 1 Never  
13 1 2009 1 Never  
14 1 2010 1 Never  
15 1 2011 1 Never

### Saving clean dataset

Finally, we output the created clean dataset dsL as a .cvs file. Also, it is saved in an .rds format, native to R, which preserves factor levels, not saved in .csv. This report is computationally intensive, so it is typically omitted from the reproduction cycle. Instead, from now on, the initial point of departure for data projects will be the import of **dsL.rds** file produced by this report.

pathdsLcvs <- file.path(getwd(),"Data/Derived/dsL.csv")  
write.csv(dsL,pathdsLcvs, row.names=FALSE)  
  
pathdsLrds <- file.path(pathDir,"Data/Derived/dsL.rds")  
saveRDS(object=dsL, file=pathdsLrds, compress="xz")

## Working with NLS Investigator

To explore the variables in the native context of NLS, go to [NLS Investigator](https://www.nlsinfo.org/investigator/pages/login.jsp) (you will have to register a free account to keep track of your progress), select "NLYS97 1997-2011" in the first dropdown box and then click "Choose File" under "Upload Tagset." Select the file **NLSY97\_Religiosity\_20042014.NLSY97** from the folder **/Data/Extract/NLSY97\_Religiosity\_20042014**. All the variables from this extract will be loaded into NLS Web Investigator.

Alternatively, one can locate the particular item of interest by copying and pasting its "Variable Title" it into "Word in Title" search line of the [NLS Investigator](https://www.nlsinfo.org/investigator/pages/login.jsp), as indicated in the graphic below.

## Read more

Reports in ./Models/Descriptives:

* [Metrics](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Models/Descriptives/Metrics.md) - how values of items are labeled (**Continue**)
* [Descriptives](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Models/Descriptives/Descriptives.md) - basic stats of various items
* [Attendance](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Models/Descriptives/Attendance.md) - focus on church attendence over time
* [Databox](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Models/Descriptives/Databox.Rmd)

See also

* [Deriving Data from NLYS97 extract](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Data/Derive_dsL_from_Extract.md)
* [Data Manipulation Guide](https://github.com/andkov/Longitudinal_Models_of_Religiosity_NLSY97/blob/master/Vignettes/dplyr/Data_Manipulation_Guide.md)