

Creating the Reltrad Variable in the General Social Survey Using R

David Eagle, PhD

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Haven't you always wanted an easy to access R script to create the famous *reltrad* religious categorization in the General Social Survey? Well, today is your lucky day.

The measure of religious affiliation described in (Steensland et al. 2000), otherwise known as *reltrad*, remains the most popular way to categorize people religiously in the United States. Early development of the measure was done by Corwin Smidt, Bud Kellstedt and James Guth during their annual seminars on measuring religion offered at Calvin College. The *reltrad* crowd continues to think their measure is pretty good (Woodberry et al. 2012). A *reltrad* for African Americans has been developed - this is required reading for those who use *reltrad* in their research (Shelton and Cobb 2017).

Up until now, the code to create the *reltrad* variable from the General Social Survey has only been available in PDF. Stata code for *reltrad* is available from Lifeway Research. Lifeway also published R code.

Here, I am providing an additional R translation of the code that is more reproducible and up on Github for the community to use easily. I apply this to the 1972-2016 GSS combined data file. Note that I do incorporate the corrections suggested by (Stetzer and Burge 2016).

This code takes a GSS datafile and then recodes religious affiliation into the *reltrad* scheme created by Steensland et al. It breaks the US population into Conservative Protestant, Mainline Protestant, Black Protestant, Jewish, Other, and Non-Affiliated.

I've written this code in vanilla R, but resorted to the *car* package for easier recoding. The code is pretty well commented, but tweet at me or email me if you have questions. It's also bad code that I wrote a long while ago. I'd do this differently with dplyr.

First, here's how to get the NORC data down:

```
#Not run
#Get the GSS data, import into a temp file and unzip
#read in the GSS data
#Convert to R data format
#Save
library(dplyr)
temp <- tempfile()
download.file("http://gss.norc.umd.edu/documents/stata/GSS_stata.zip",temp)
unzip(temp, files="GSS7216_R4.DTA",exdir = "OrigData")
unlink(temp);rm(temp)
gss = haven::read_dta("OrigData/GSS7216_R4.DTA")
save(gss, file = file)
#Load the data
load(file)
#
#Get the variables we want, this is a huge dataset.
gss = gss %>% select(relig, other, race, denom, year, attend, id, wtss)
save(gss, file=file)
```

Now, here is the full code to create *reltrad* in R. The original R source code for the *reltrad* recoding can be accessed from GitHub here. Feel free to fork this code and add your own file path.

```

library(car)
#library(tidyverse)
library(descr) #Get the rocking CrossTable Function! Weighted! crosstab
#This is where the R dataset will live:
urldata = url("https://github.com/thebigbird/academic/raw/master/static/files/gss7216.data")
#
load(urldata)
#recode into 5 major categories of religious affiliation
# 1) Protestant [Ask DENOM] 1371 47.8
# 2) Catholic
# 3) Jewish
# 4) None
# 5) Other (specify)
# 6) Buddhism
# 7) Hinduism
# 8) Other Eastern religion
# 9) Muslim/Islam
# 10) Orthodox Christian
# 11) Christian
# 12) Native American
# 13) Inter-/non-denominational
# 98) Don't know
# 99) No answer
gss$xaaffil = car::recode(gss$relig, "1=1;2=4;3=5;4=9;5:10=6;11=1;12=6;13=1")
gss$xaaffil = as.factor(gss$xaaffil)
levels(gss$xaaffil) = c("prot", "cath", "jew", "other", "nonaf")

# The following code breaks down religious groups by evangelicals, black
# Protestants, mainline, liberal and conservative nontraditional,
# and Protestant nondenomination/no denomination.

#####Black Protestants
#Create a racial indicator
gss$black = ifelse(gss$race == "black", 1, 0)
gss$white = ifelse(gss$race == "white", 1, 0)
#Take the "other" Protestant denominations and pull out the
#historical Black denominations, e.g. COGIC
gss$xbp = gss$other
gss$xbp = ifelse(gss$xbp %in% c(7, 14, 15, 21, 37, 38, 56, 78, 79, 85, 86, 87, 88, 98, 103, 104, 128, 137), 1, 0)
#National baptists and AME, AMEZ
gss$xbp = ifelse(gss$denom %in% c(12, 13, 20, 21), 1, gss$xbp)
#Blacks in certain denoms get recoded as Black Protestant
#Other baptist, amer. baptist, south. bap, other Methodists
gss$xbp[gss$black == 1] = ifelse(gss$denom[gss$black == 1] %in%
                                c(10, 11, 18, 23, 13, 14), 1, gss$xbp[gss$black == 1])

#Black missionary baptists
gss$xbp[gss$black == 1] = ifelse(gss$other[gss$black == 1] %in%
                                c(93), 1, gss$xbp[gss$black == 1])

#Evangelical Protestants#
#Recode the evangelicals in the other variable
gss$xev=gss$other
evother=c(2, 3, 5, 6, 9, 10, 12, 13, 16, 18, 20, 22, 24, 26, 27, 28, 31, 32, 34, 35, 36, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 129, 130, 131, 132, 133, 134, 135, 136, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000)

```

```

      84, 90, 91, 92, 94, 97, 100, 101, 102, 106, 107, 108, 109, 110, 111, 112, 115, 116, 117, 118,
gss$xev=ifelse(gss$xev %in% evother,1,0)
#Cons Lutherans, cons presbyterians
gss$xev=ifelse(gss$denom %in% c(32,33,34,42), 1, gss$xev)
#White baptists, white other methodists
gss$xev[gss$black==0]=ifelse(gss$denom[gss$black==0] %in%
                             c(10,18,15,23,14),1,gss$xev[gss$black==0])

#Missionary baptist
gss$xev[gss$black==0]=ifelse(as.numeric(gss$other[gss$black==0]) %in%
                             c(93),1,gss$xev[gss$black==0])

#Lifeway correction to reltrad
gss$xtn = gss$relig
gss$denom2 = gss$denom
#70 = No denomination or non-denominations
gss$denom2 = recode(gss$denom2, "70=1; else=0")
gss$xtn = recode(gss$xtn, "11=1; else=0")
gss$xtn[gss$denom2 == 1] = 2
gss$xtn = recode(gss$xtn, "1=1; 2=0")
#Only weekly or +weekly attenders
gss$xtn[gss$attend < 4|gss$attend==3|gss$attend==0|is.na(gss$attend)] <- 0
gss$xev[gss$xtn ==1] <- 1

gss$inter <- gss$relig
#Interdenominational
gss$inter <- recode(gss$inter, "13=1; else=0")
gss$inter[gss$attend < 4|gss$attend==3|gss$attend==0|is.na(gss$attend)] <- 0
gss$xev[gss$inter ==1] <- 1

# Mainline Protestants
#The other category
gss$xml = NA
gss$xml = gss$other
mpother=c(1,8,19,23,25,40, 44, 46, 48, 49, 50, 54, 70, 71, 72, 73, 81, 89, 96, 99, 105, 119, 148)
gss$xml=ifelse(gss$xml %in% mpother,1,0)
#The denom category
gss$xml = ifelse(gss$denom %in%
                 c(30, 50, 35, 31, 38, 40, 48, 43, 22, 41),1,gss$xml)
#Mainline baptist denom and methodists - if the R is white, they get coded mainline
gss$xml[gss$black==0] = ifelse(gss$denom[gss$denom[gss$black==0]] %in%
                              c(11, 28),1,gss$xml[gss$black==0])

#Catholics
gss$xcath = gss$other
#Polish National Church and Catholic
gss$xcath = ifelse(gss$denom %in% c(123, 28),1,0)
#People who say that they are other get coded zero
gss$xcath=ifelse(gss$affil=="cath", 1, gss$xcath)

#Jews
gss$xjew=0
gss$xjew=ifelse(gss$affil=="jew",1,0)

```

```

#Adherents of other religions.
gss$xother = gss$other
gss$xother = ifelse(gss$xother %in%
                    c(11, 17, 29, 30, 33, 58, 59, 60, 61, 62, 64, 74, 75, 80, 82,
                      95, 113, 114, 130, 136, 141, 145),1,0)
#Adds others from main religious recoding
gss$xother=ifelse(gss$xafile=="other" & gss$xev==0,1,0)

#Unaffiliateds/Nonaffiliateds
gss$xnonaff=0
gss$xnonaff[gss$xafile=="nonaf"]=1

#The recodes non-denoms based on their attendance
#Non active Don't Know Protestants coded to nonaffil
gss$xprotdk = ifelse(gss$denom == 70,1,0)
gss$xprotdk[gss$xprotdk == 1 & gss$attend >= 4] = 0
#Active Don't Know Protestants coded to evangelicals
gss$xnonaff[gss$xprotdk]=1
gss$xev[gss$xprotdk == 1 & gss$attend >= 4] = 1

#All these folks get coded evangelical
gss$reltrad = factor(NA, levels=c("Conservative Protestant",
                                   "Mainline Protestant",
                                   "Black Protestant",
                                   "Roman Catholic",
                                   "Other",
                                   "None"))
gss$reltrad[gss$xev==1]="Conservative Protestant"
gss$reltrad[gss$xml==1]="Mainline Protestant"
gss$reltrad[gss$xbp==1]="Black Protestant"
gss$reltrad[gss$xcath==1]="Roman Catholic"
gss$reltrad[gss$xother==1]="Other"
gss$reltrad[gss$xnonaff==1]="None"
save(gss,file="gss7216_reltrad.data")
gss$year = as.factor(gss$year)
#End of my poorly written R code! Sorry - I'll clean it up some day!

```

The following table looks at how the religious composition of the US has changed over time. This uses the very useful wrapper `crosstab()` for the `CrossTable()` function in the package `descr`. It allows you to make weighted crosstabs easily and prettily. In subsequent posts, I will have some fun with `ggplot` to visual these data.

```

## @knitr ReltradTable
print(
  crosstab(gss$year,gss$reltrad,
            weight = gss$wtss, prop.c = T, prop.r = T, prop.t = F,
            total.c = F, plot = F))

```

```

##      Cell Contents
## |-----|
## |              Count |
## |          Row Percent |
## |      Column Percent |
## |-----|
##

```

```

## =====
##          gss$reltrad
## gss$year  Cnsrvtv P   Mnlm Prts   Blck Prts   Rmn Cthlc   Other   None
## -----
## 1972          325          427          11          645          27          84
##          21.4%          28.1%          0.7%          42.5%          1.8%          5.5%
##          2.5%          2.6%          1.1%          3.6%          1.6%          1.2%
## -----
## 1973          317          368          17          586          30          96
##          22.4%          26.0%          1.2%          41.4%          2.1%          6.8%
##          2.5%          2.3%          1.7%          3.3%          1.8%          1.3%
## -----
## 1974          322          392           7          566           8         101
##          23.1%          28.1%          0.5%          40.5%          0.6%          7.2%
##          2.5%          2.4%          0.7%          3.2%          0.5%          1.4%
## -----
## 1975          309          427          14          538          14         113
##          21.8%          30.2%          1.0%          38.0%          1.0%          8.0%
##          2.4%          2.6%          1.4%          3.0%          0.8%          1.6%
## -----
## 1976          303          415          11          552          15         114
##          21.5%          29.4%          0.8%          39.1%          1.1%          8.1%
##          2.3%          2.6%          1.1%          3.1%          0.9%          1.6%
## -----
## 1977          324          419          10          566          18          93
##          22.7%          29.3%          0.7%          39.6%          1.3%          6.5%
##          2.5%          2.6%          1.0%          3.2%          1.1%          1.3%
## -----
## 1978          318          414          10          574          17         119
##          21.9%          28.5%          0.7%          39.5%          1.2%          8.2%
##          2.5%          2.5%          1.0%          3.2%          1.0%          1.6%
## -----
## 1980          307          398           9          532          30         105
##          22.2%          28.8%          0.7%          38.5%          2.2%          7.6%
##          2.4%          2.4%          0.9%          3.0%          1.8%          1.5%
## -----
## 1982          478          465          32          609          21         132
##          27.5%          26.8%          1.8%          35.1%          1.2%          7.6%
##          3.7%          2.9%          3.2%          3.4%          1.2%          1.8%
## -----
## 1983          303          463          10          586          26         117
##          20.1%          30.8%          0.7%          38.9%          1.7%          7.8%
##          2.3%          2.8%          1.0%          3.3%          1.5%          1.6%
## -----
## 1984          321          486          34          393          20         107
##          23.6%          35.7%          2.5%          28.9%          1.5%          7.9%
##          2.5%          3.0%          3.4%          2.2%          1.2%          1.5%
## -----
## 1985          364          479          30          433          25         109
##          25.3%          33.3%          2.1%          30.1%          1.7%          7.6%
##          2.8%          2.9%          3.0%          2.4%          1.5%          1.5%
## -----
## 1986          337          471          29          398          31          98
##          24.7%          34.5%          2.1%          29.2%          2.3%          7.2%

```

##		2.6%	2.9%	2.9%	2.2%	1.8%	1.4%
##	-----						
##	1987	498	551	98	396	40	121
##		29.2%	32.3%	5.8%	23.2%	2.3%	7.1%
##		3.9%	3.4%	9.8%	2.2%	2.4%	1.7%
##	-----						
##	1988	340	445	27	399	42	118
##		24.8%	32.5%	2.0%	29.1%	3.1%	8.6%
##		2.6%	2.7%	2.7%	2.2%	2.5%	1.6%
##	-----						
##	1989	342	480	34	403	34	120
##		24.2%	34.0%	2.4%	28.5%	2.4%	8.5%
##		2.6%	3.0%	3.4%	2.3%	2.0%	1.7%
##	-----						
##	1990	258	469	34	343	42	109
##		20.6%	37.4%	2.7%	27.3%	3.3%	8.7%
##		2.0%	2.9%	3.4%	1.9%	2.5%	1.5%
##	-----						
##	1991	322	524	42	398	29	102
##		22.7%	37.0%	3.0%	28.1%	2.0%	7.2%
##		2.5%	3.2%	4.2%	2.2%	1.7%	1.4%
##	-----						
##	1993	376	498	35	374	42	146
##		25.6%	33.9%	2.4%	25.4%	2.9%	9.9%
##		2.9%	3.1%	3.5%	2.1%	2.5%	2.0%
##	-----						
##	1994	714	840	39	791	115	274
##		25.7%	30.3%	1.4%	28.5%	4.1%	9.9%
##		5.5%	5.2%	3.9%	4.4%	6.8%	3.8%
##	-----						
##	1996	685	778	45	708	143	339
##		25.4%	28.8%	1.7%	26.2%	5.3%	12.6%
##		5.3%	4.8%	4.5%	4.0%	8.5%	4.7%
##	-----						
##	1998	662	674	52	735	70	396
##		25.6%	26.0%	2.0%	28.4%	2.7%	15.3%
##		5.1%	4.1%	5.2%	4.1%	4.2%	5.5%
##	-----						
##	2000	620	673	66	709	96	398
##		24.2%	26.3%	2.6%	27.7%	3.7%	15.5%
##		4.8%	4.1%	6.6%	4.0%	5.7%	5.5%
##	-----						
##	2002	554	703	56	707	91	379
##		22.2%	28.2%	2.2%	28.4%	3.7%	15.2%
##		4.3%	4.3%	5.6%	4.0%	5.4%	5.2%
##	-----						
##	2004	537	655	39	721	113	394
##		21.8%	26.6%	1.6%	29.3%	4.6%	16.0%
##		4.2%	4.0%	3.9%	4.0%	6.7%	5.5%
##	-----						
##	2006	793	1018	82	1247	128	711
##		19.9%	25.6%	2.1%	31.3%	3.2%	17.9%
##		6.1%	6.3%	8.2%	7.0%	7.6%	9.8%
##	-----						

## 2008	342	469	23	535	62	338
##	19.3%	26.5%	1.3%	30.2%	3.5%	19.1%
##	2.6%	2.9%	2.3%	3.0%	3.7%	4.7%
##	-----					
## 2010	378	414	23	538	70	365
##	21.1%	23.2%	1.3%	30.1%	3.9%	20.4%
##	2.9%	2.5%	2.3%	3.0%	4.2%	5.1%
##	-----					
## 2012	381	414	14	496	82	388
##	21.5%	23.3%	0.8%	27.9%	4.6%	21.9%
##	2.9%	2.5%	1.4%	2.8%	4.9%	5.4%
##	-----					
## 2014	352	506	33	657	97	520
##	16.3%	23.4%	1.5%	30.3%	4.5%	24.0%
##	2.7%	3.1%	3.3%	3.7%	5.8%	7.2%
##	-----					
## 2016	438	533	29	689	107	618
##	18.1%	22.1%	1.2%	28.5%	4.4%	25.6%
##	3.4%	3.3%	2.9%	3.9%	6.4%	8.6%
##	=====					

References

- Shelton, Jason E., and Ryon J. Cobb. 2017. "Black Reltrad: Measuring Religious Diversity and Commonality Among African Americans." *Journal for the Scientific Study of Religion* 56 (4): 737–64. <https://doi.org/10/gfgw25>.
- Steensland, B., L. D. Robinson, W. B. Wilcox, J. Z. Park, M. D. Regnerus, and R. D. Woodberry. 2000. "The Measure of American Religion: Toward Improving the State of the Art." *Social Forces* 79 (1): 291–318. <https://doi.org/10/db9hrh>.
- Stetzer, Ed, and Ryan P. Burge. 2016. "Reltrad Coding Problems and a New Repository." *Politics and Religion* 9 (01): 187–90. <https://doi.org/10/gfkc5x>.
- Woodberry, R. D., J. Z. Park, L. A. Kellstedt, M. D. Regnerus, and B. Steensland. 2012. "The Measure of American Religious Traditions: Theoretical and Measurement Considerations." *Social Forces* 91 (1): 65–73. <https://doi.org/10.1093/sf/sos121>.