

Big Match - Large Demo

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This rmarkdown is meant for running a larger demo of the `big_match` functionality.

Import Data

This sample cohort data was provided by Justin Lee at the Quantitative Sciences Unit. It contains ~900,000 observations of 112 variables.

```
dat <- read_sas("../sample_data/justincohort_june2017.sas7bdat")
```

```
# dimensions: ~900,000 x 112
dim(dat)
```

```
## [1] 893498    112
```

```
# filter and add treatment column
```

```
dat <- filter(dat, totalct > 1 & arteryCt < 3) %>%
  mutate(treat = ifelse(arteryCt > 1, 1, 0))
```

```
# dimensions: ~900,000 x 112
dim(dat)
```

```
## [1] 833657    113
```

Manual Stratify

```
m.strat <- manual_stratify(dat, treat = "treat",
                           covariates = c("Male", "race", "hosp_state"))
```

```
summary(m.strat)
```

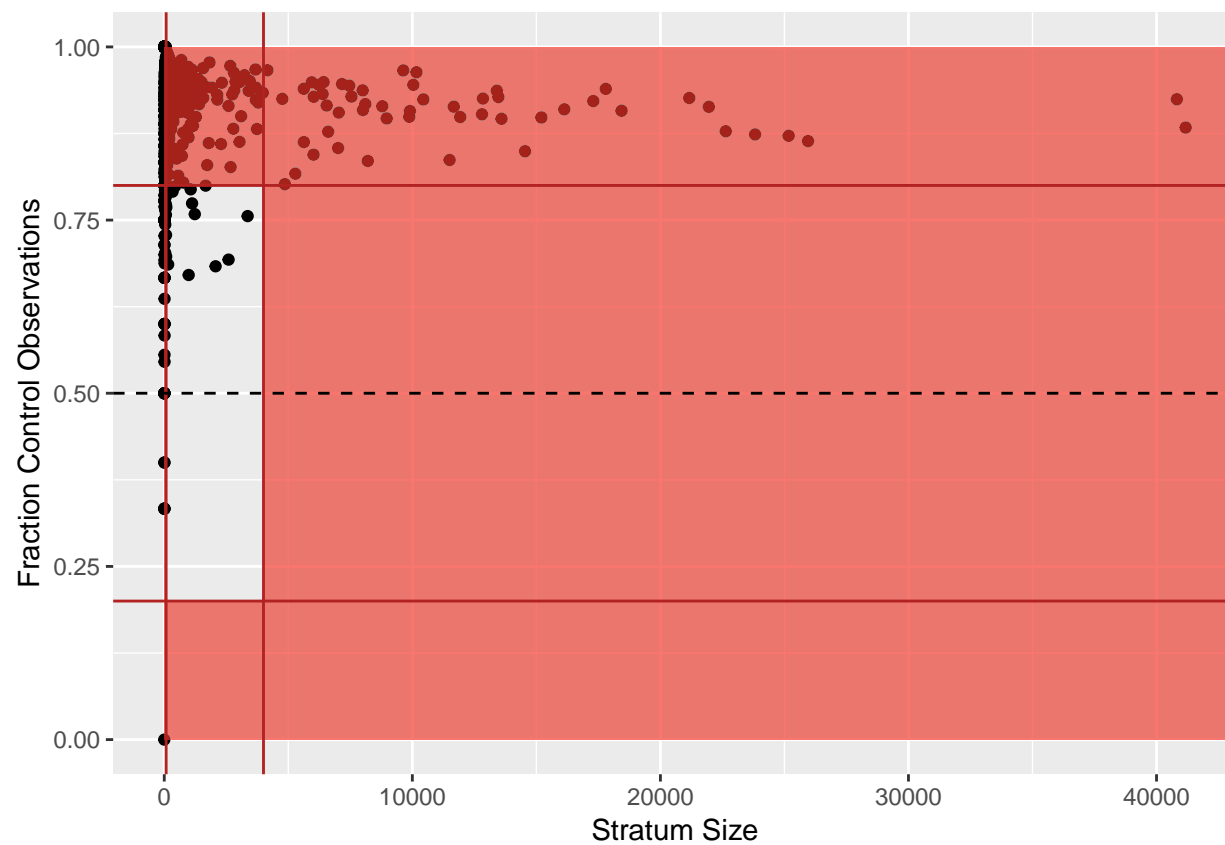
```
## $call
## manual_stratify(data = dat, treat = "treat", covariates = c("Male",
##   "race", "hosp_state"))
##
## $issue_table
## # A tibble: 704 x 6
##   Stratum Treat Control Total Control_Proporti~ Potential_Issues
##   <dbl> <dbl>   <dbl> <int>         <dbl> <chr>
## 1      1      0       3      3           1 Too few samples; Not eno~
## 2      2      0      13     13           1 Too few samples; Not eno~
## 3      3      0       6      6           1 Too few samples; Not eno~
## 4      4      1      19     20          0.95 Too few samples; Not eno~
## 5      5      0       5      5           1 Too few samples; Not eno~
## 6      6     64    1071   1135         0.944 Not enough treated sampl~
## 7      7      1      10     11          0.909 Too few samples; Not eno~
## 8      8      1      14     15          0.933 Too few samples; Not eno~
## 9      9      0       6      6           1 Too few samples; Not eno~
## 10     10      1      35     36          0.972 Too few samples; Not eno~
## # ... with 694 more rows
##
## $sum_before
##
##   Treat_Mean  Contol_Mean
##   treat      "0"         "1"
##   cohortdate "2005-05-16"  "2005-01-12"
##   Admsn_source NA         NA
##   adm_type    NA         NA
##   BENE_ID     NA         NA
##   Index_admsn_dt "2005-05-14"  "2005-01-10"
##   Index_dschrge_dt "2005-05-23"  "2005-01-19"
##   surgdate     "2005-05-16"  "2005-01-12"
##   PRVDR_NUM    NA         NA
##   HospCABGV01_1999 NA         NA
##   HospCABGV01_2000 NA         NA
##   HospCABGV01_2001 NA         NA
##   HospCABGV01_2002 NA         NA
##   HospCABGV01_2003 NA         NA
##   HospCABGV01_2004 NA         NA
##   HospCABGV01_2005 NA         NA
##   HospCABGV01_2006 NA         NA
##   HospCABGV01_2007 NA         NA
##   HospCABGV01_2008 NA         NA
##   HospCABGV01_2009 NA         NA
##   HospCABGV01_2010 NA         NA
##   HospCABG_total  "2930.559"    "2939.781"
##   HospCABG_mean   "249.2153"    "249.4890"
##   hospname        NA         NA
```

## zipcode	NA	NA
## hosp_type	NA	NA
## urgency	"0.7812179"	"0.7172588"
## disStatus	NA	NA
## Destin	NA	NA
## hosp_state	NA	NA
## indexSurgyear	"2004.895"	"2004.558"
## deathdt	NA	NA
## CheckDeath	NA	NA
## covend	"2010-02-20"	"2010-03-18"
## dob	"1933-02-23"	"1933-12-26"
## COVSTART	"1995-11-18"	"1996-05-17"
## BENE_AGE_AT_END_REF_YR	"76.36114"	"75.60406"
## BENE_RACE_CD	NA	NA
## RTI_RACE_CD	NA	NA
## BENE_PTA_TRMNTN_CD	NA	NA
## BENE_PTB_TRMNTN_CD	NA	NA
## Male	"0.6790589"	"0.7290717"
## Sex	NA	NA
## race	NA	NA
## trmPartA	NA	NA
## TrmPartB	NA	NA
## bene_entlmt_rsn_orig	NA	NA
## bene_entlmt_rsn_curr	NA	NA
## BENE_ZIP_CD	NA	NA
## BENE_ESRD_IND	NA	NA
## BENE_MDCR_STATUS_CD	NA	NA
## BENE_HI_CVRAGE_TOT_MONS	NA	NA
## BENE_SMI_CVRAGE_TOT_MONS	NA	NA
## BENE_STATE_BUYIN_TOT_MONS	NA	NA
## BENE_HMO_CVRAGE_TOT_MONS	NA	NA
## dead	"0.2668215"	"0.2408784"
## dyear	NA	NA
## TimeTodeath_days	"1693.959"	"1847.903"
## timeTodeath_yrs	"4.637801"	"5.059297"
## ageAtdeath	NA	NA
## ageatSurgery	"72.22462"	"71.04712"
## vein_ind	" 1"	NA
## artery_ind	NA	" 1"
## RadialArtery_ind	NA	NA
## veinct	"2.469851"	"1.708752"
## arteryCt	"0.9986069"	"2.0000000"
## totalct	"3.468458"	"3.708752"
## CABGnpi1	NA	NA
## CABGmeanVol1	NA	NA
## CABGtotalVol1	NA	NA
## CABGmdname1	NA	NA
## CABGwebSpec1	NA	NA
## CABGspeccode1	NA	NA
## cabg_0thtotal1	NA	NA
## cabg_0thMean1	NA	NA
## AMI_7	"0.07465450"	"0.06983025"
## ALZH_7	"0.011032287"	"0.008417997"
## ALZH_DEMEN_7	"0.03911339"	"0.03134978"

```

## ATRIAL_FIB_7          "0.07074290" "0.06574115"
## CATARACT_7            "0.4988521" "0.4566290"
## CHRONICKIDNEY_7       "0.1408257" "0.1153404"
## COPD_7                "0.2069664" "0.1758440"
## CHF_7                 "0.2494214" "0.2223765"
## DIABETES_7            "0.4151271" "0.3851455"
## GLAUCOMA_7            "0.1479636" "0.1378557"
## HIP_FRACTURE_7        "0.009486733" "0.007256894"
## ISCHEMICHEART_7       "0.7015238" "0.7061652"
## DEPRESSION_7          "0.1500301" "0.1408973"
## OSTEOPOROSIS_7        "0.06922253" "0.05506405"
## RA_OA_7               "0.3539465" "0.3277213"
## STROKE_TIA_7          "0.1205188" "0.1042721"
## CANCER_BREAST_7       "0.01685264" "0.01416041"
## CANCER_COLORECTAL_7   "0.02140579" "0.01851455"
## CANCER_PROSTATE_7     "0.06685648" "0.06562756"
## CANCER_LUNG_7         "0.007307581" "0.005729791"
## CANCER_ENDOMETRIAL_7  "0.002868421" "0.002498896"
## ANEMIA_7              "0.3472698" "0.3073011"
## ASTHMA_7              "0.07162304" "0.06386067"
## HYPERL_7              "0.6875462" "0.6787909"
## HYPERP_7              "0.1984645" "0.1972108"
## HYPERT_7              "0.7756759" "0.7459077"
## HYPOTH_7              "0.10364093" "0.09109611"
## Ami_Index              "0.1492971" "0.1397993"
## cancerhistory_7       "0.1102221" "0.1024421"
## revasc_Date            NA          NA
## Stroke_date            NA          NA
## bYPASS361_date         NA          NA
## bYPASS361_1            NA          NA
## pci_date               NA          NA
## pci_1                  NA          NA
## ACUTEEmi_date          NA          NA
## ACUTEEmi_1             NA          NA
## revasc_Event           NA          NA
## stratum                "539.8588" "563.1397"
##
## attr(,"class")
## [1] "summary.strata"
plot(m.strat)

```



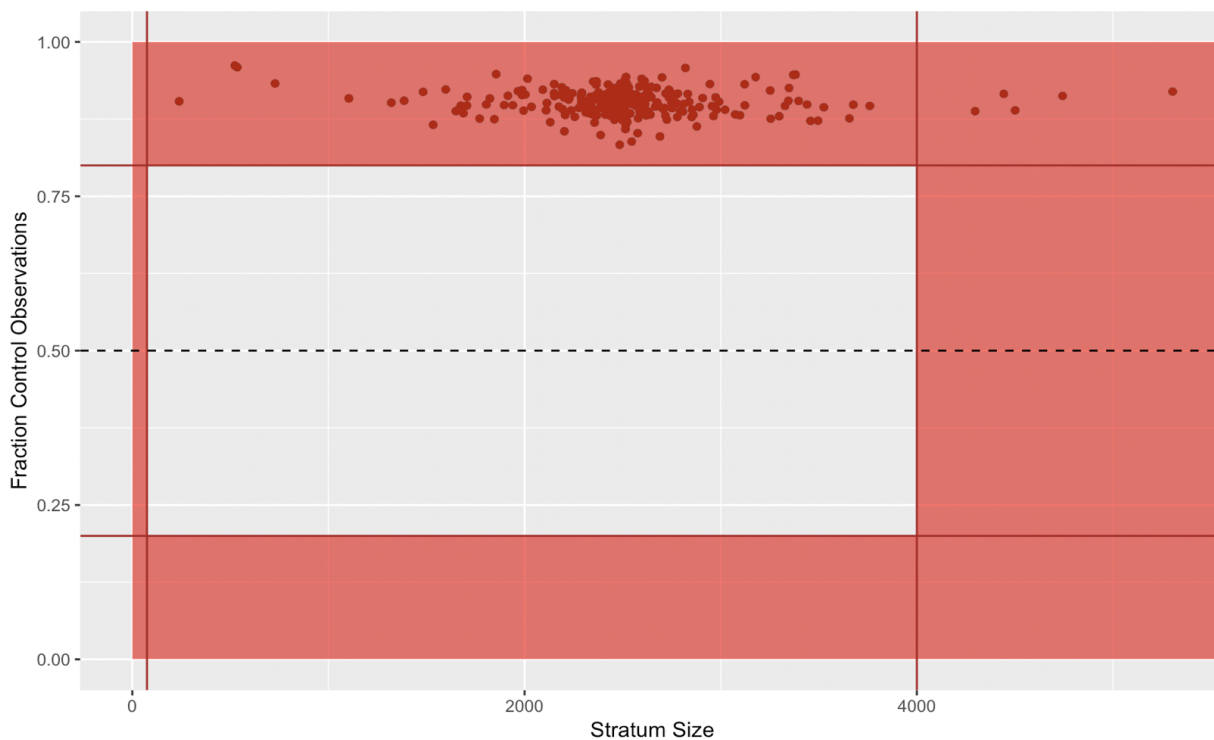


Figure 1: Auto Stratify plot.

Auto Stratify by Prognostic Score

```
a.strat <- auto_stratify(data = dat, treat = "treat",
  outcome = "dead",
  covariates = c("totalct", "hosp_state", "AMI_7", "COPD_7",
    "ISCHEMICHEART_7", "STROKE_TIA_7", "ATRIAL_FIB_7",
    "CHRONICKIDNEY_7", "DIABETES_7", "ALZH_DEMEN_7",
    "Male", "race"))

plot(a.strat)
```