reading\_COVID\_nursing\_home20201022

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10/23/2020

Program that reads CMS nursing home data and performs weighted tables

mydata <- read.csv("/Users/haroldpollack/Downloads/COVID-19\_Nursing\_Home\_Dataset20201023.csv")  
#str(mydata)  
table(mydata$Week.Ending)

##   
## 05/24/2020 05/31/2020 06/07/2020 06/14/2020 06/21/2020 06/28/2020 07/05/2020   
## 15365 15365 15366 15366 15364 15363 15357   
## 07/12/2020 07/19/2020 07/26/2020 08/02/2020 08/09/2020 08/16/2020 08/23/2020   
## 15357 15357 15358 15355 15354 15355 15354   
## 08/30/2020 09/06/2020 09/13/2020 09/20/2020 09/27/2020 10/04/2020 10/11/2020   
## 15352 15351 15351 15351 15351 15351 15351

aggregate(mydata$Staff.Weekly.COVID.19.Deaths, by=list(Category=mydata$Week.Ending), na.rm=TRUE, FUN=sum)

## Category x  
## 1 05/24/2020 296  
## 2 05/31/2020 67  
## 3 06/07/2020 54  
## 4 06/14/2020 38  
## 5 06/21/2020 30  
## 6 06/28/2020 26  
## 7 07/05/2020 34  
## 8 07/12/2020 29  
## 9 07/19/2020 26  
## 10 07/26/2020 46  
## 11 08/02/2020 32  
## 12 08/09/2020 35  
## 13 08/16/2020 42  
## 14 08/23/2020 32  
## 15 08/30/2020 40  
## 16 09/06/2020 27  
## 17 09/13/2020 24  
## 18 09/20/2020 18  
## 19 09/27/2020 23  
## 20 10/04/2020 29  
## 21 10/11/2020 27

aggregate(mydata$Residents.Weekly.COVID.19.Deaths, by=list(Category=mydata$Week.Ending), na.rm=TRUE, FUN=sum)

## Category x  
## 1 05/24/2020 25210  
## 2 05/31/2020 3565  
## 3 06/07/2020 2790  
## 4 06/14/2020 2042  
## 5 06/21/2020 1720  
## 6 06/28/2020 1497  
## 7 07/05/2020 1496  
## 8 07/12/2020 1647  
## 9 07/19/2020 1806  
## 10 07/26/2020 2082  
## 11 08/02/2020 2021  
## 12 08/09/2020 2022  
## 13 08/16/2020 1811  
## 14 08/23/2020 1726  
## 15 08/30/2020 1519  
## 16 09/06/2020 1420  
## 17 09/13/2020 1254  
## 18 09/20/2020 1200  
## 19 09/27/2020 1173  
## 20 10/04/2020 1241  
## 21 10/11/2020 1249

#  
# Indicate latest week  
#  
max(mydata$Week.Ending)

## [1] "10/11/2020"

#  
# from https://data.cms.gov/api/views/s2uc-8wxp/rows.csv?accessType=DOWNLOAD, https://data.cms.gov/Special-Programs-Initiatives-COVID-19-Nursing-Home/COVID-19-Nursing-Home-Dataset/s2uc-8wxp/data  
#  
#summary(mydata)  
#head(mydata)  
myvars <- c("Residents.Weekly.COVID.19.Deaths","Federal.Provider.Number","Staff.Weekly.COVID.19.Deaths")  
newdata <- mydata[myvars]  
newdata<-arrange(newdata,Federal.Provider.Number)  
v\_sums <-newdata %>%  
 summarize\_if(is.numeric, sum, na.rm=TRUE)  
#summary(v\_sums)  
resident\_deaths<- v\_sums$Residents.Weekly.COVID.19.Deaths  
staff\_deaths<-v\_sums$Staff.Weekly.COVID.19.Deaths  
resident\_deaths

## [1] 60491

staff\_deaths

## [1] 975

wtd.table(mydata$Provider.State, mydata$One.Week.Supply.of.N95.Masks, weights=mydata$Total.Number.of.Occupied.Beds)

## N Y  
## AK 123 1554 12351  
## AL 4010 107347 308382  
## AR 2570 35093 289789  
## AZ 1022 36597 174654  
## CA 843 168677 1658101  
## CO 1669 70703 235816  
## CT 3450 77505 295549  
## DC 683 576 39223  
## DE 476 16772 55042  
## FL 9293 178943 1132145  
## GA 4527 74980 514620  
## GU 0 0 194  
## HI 92 13042 58177  
## IA 3206 122347 317139  
## ID 642 12153 66517  
## IL 10449 128321 1072440  
## IN 5591 89337 621574  
## KS 2856 61180 270997  
## KY 2560 59327 377278  
## LA 2279 52483 410113  
## MA 1778 92181 541391  
## MD 2504 65635 348501  
## ME 820 40296 73617  
## MI 2306 126617 539072  
## MN 4800 78565 361812  
## MO 7720 76286 650759  
## MS 2858 43293 246173  
## MT 794 11375 62948  
## NC 3015 181265 506611  
## ND 147 7846 94026  
## NE 939 36389 175935  
## NH 55 48281 72557  
## NJ 3261 102543 602064  
## NM 495 43468 57001  
## NV 1177 15214 83071  
## NY 15478 122615 1697393  
## OH 10478 279353 1060077  
## OK 3309 52361 288694  
## OR 1884 7437 130357  
## PA 6123 184229 1183377  
## PR 0 253 1271  
## RI 692 18421 112945  
## SC 1244 67354 255470  
## SD 283 12662 98208  
## TN 784 117881 394009  
## TX 11461 127993 1515591  
## UT 463 4515 100427  
## VA 1644 82477 425523  
## VT 0 10992 35224  
## WA 1664 53027 225456  
## WI 1268 77609 335799  
## WV 13 59504 124948  
## WY 639 12015 33311

#ct<- crosstab(mydata$Provider.State, mydata$One.Week.Supply.of.N95.Masks, weight=mydata$Total.Number.of.Occupied.Beds, xlab = "state", ylab = "Mask supply")  
#ct  
maxweek<-max(mydata$Week.Ending)  
mydata\_last<- mydata %>% filter(Week.Ending == maxweek)  
#mydata\_last<-mydata[,mydata$Week.Ending<-maxweek]  
wtd.table(mydata\_last$Provider.State, mydata\_last$One.Week.Supply.of.N95.Masks, weights=mydata\_last$Total.Number.of.Occupied.Beds)

## N Y  
## AK 86 98 479  
## AL 171 2442 16983  
## AR 761 213 14121  
## AZ 609 1708 7882  
## CA 117 3966 83949  
## CO 429 2419 11877  
## CT 0 3784 14509  
## DC 301 0 1675  
## DE 194 804 2513  
## FL 1943 5612 54920  
## GA 691 3277 23622  
## GU 0 0 9  
## HI 92 487 2654  
## IA 1649 5077 13837  
## ID 163 453 3122  
## IL 3121 5243 48891  
## IN 3793 4620 25805  
## KS 854 1191 13546  
## KY 1183 3263 16318  
## LA 970 2003 18796  
## MA 796 3748 26226  
## MD 337 4281 15696  
## ME 0 1852 3590  
## MI 620 3438 27722  
## MN 1024 3627 16842  
## MO 1458 1865 30722  
## MS 451 1678 11443  
## MT 88 309 2962  
## NC 810 5844 25539  
## ND 147 195 4423  
## NE 298 1675 7920  
## NH 26 2392 3383  
## NJ 669 4055 29701  
## NM 227 2372 2166  
## NV 209 652 3797  
## NY 4300 1985 82643  
## OH 5539 12257 46163  
## OK 936 1958 13222  
## OR 341 362 5981  
## PA 1452 9072 55027  
## PR 0 0 66  
## RI 179 863 5291  
## SC 560 2138 12297  
## SD 136 594 4432  
## TN 282 4205 19359  
## TX 3238 406 73196  
## UT 237 125 4638  
## VA 498 2432 21181  
## VT 0 673 1529  
## WA 597 1958 10715  
## WI 653 4033 14704  
## WV 13 2928 5751  
## WY 36 446 1631

wtd.table(mydata\_last$Provider.State, mydata\_last$One.Week.Supply.of.Gowns, weights=mydata\_last$Total.Number.of.Occupied.Beds)

## N Y  
## AK 86 0 577  
## AL 171 2024 17401  
## AR 761 222 14112  
## AZ 609 1416 8174  
## CA 117 2873 85042  
## CO 429 1351 12945  
## CT 0 3031 15262  
## DC 301 0 1675  
## DE 194 582 2735  
## FL 1943 3419 57113  
## GA 691 1371 25528  
## GU 0 0 9  
## HI 92 124 3017  
## IA 1649 3862 15052  
## ID 163 185 3390  
## IL 3121 3370 50764  
## IN 3793 2202 28223  
## KS 854 1004 13733  
## KY 1183 2232 17349  
## LA 970 258 20541  
## MA 796 2768 27206  
## MD 337 4833 15144  
## ME 0 1088 4354  
## MI 620 2762 28398  
## MN 1024 3727 16742  
## MO 1458 1498 31089  
## MS 451 1085 12036  
## MT 88 242 3029  
## NC 810 2005 29378  
## ND 147 133 4485  
## NE 298 812 8783  
## NH 26 2373 3402  
## NJ 669 3475 30281  
## NM 227 2107 2431  
## NV 209 330 4119  
## NY 4300 1022 83606  
## OH 5539 6255 52165  
## OK 936 889 14291  
## OR 341 285 6058  
## PA 1452 8174 55925  
## PR 0 0 66  
## RI 179 747 5407  
## SC 560 1143 13292  
## SD 136 205 4821  
## TN 282 3225 20339  
## TX 3238 437 73165  
## UT 237 0 4763  
## VA 498 1741 21872  
## VT 0 637 1565  
## WA 597 1401 11272  
## WI 653 3131 15606  
## WV 13 2813 5866  
## WY 36 118 1959

wtd.table(mydata\_last$Provider.State, mydata\_last$Shortage.of.Nursing.Staff, weights=mydata\_last$Total.Number.of.Occupied.Beds)

## N Y  
## AK 0 539 124  
## AL 171 14189 5236  
## AR 331 13087 1677  
## AZ 261 8298 1640  
## CA 54 87122 856  
## CO 127 12247 2351  
## CT 0 17435 858  
## DC 0 1565 411  
## DE 143 3050 318  
## FL 1474 53148 7853  
## GA 446 18513 8631  
## GU 0 9 0  
## HI 56 2694 483  
## IA 756 13787 6020  
## ID 163 2892 683  
## IL 1081 47135 9039  
## IN 3345 25211 5662  
## KS 440 10913 4238  
## KY 975 16349 3440  
## LA 615 15655 5499  
## MA 520 28377 1873  
## MD 337 18063 1914  
## ME 0 4531 911  
## MI 545 23387 7848  
## MN 543 14527 6423  
## MO 682 25053 8310  
## MS 0 11009 2563  
## MT 32 2114 1213  
## NC 565 24716 6912  
## ND 147 3092 1526  
## NE 223 6982 2688  
## NH 26 4334 1441  
## NJ 559 32781 1085  
## NM 69 3705 991  
## NV 85 3868 705  
## NY 2349 80060 6519  
## OH 4227 44235 15497  
## OK 674 11727 3715  
## OR 275 6084 325  
## PA 862 55112 9577  
## PR 0 66 0  
## RI 100 4746 1487  
## SC 166 11656 3173  
## SD 99 3975 1088  
## TN 112 18002 5732  
## TX 1364 71854 3622  
## UT 174 4491 335  
## VA 268 20904 2939  
## VT 0 2020 182  
## WA 349 9077 3844  
## WI 293 14269 4828  
## WV 13 8205 474  
## WY 36 1657 420

wtd.table(mydata\_last$Provider.State, mydata\_last$Shortage.of.Clinical.Staff, weights=mydata\_last$Total.Number.of.Occupied.Beds)

## N Y  
## AK 0 584 79  
## AL 171 18925 500  
## AR 331 14510 254  
## AZ 261 9775 163  
## CA 54 87574 404  
## CO 127 14262 336  
## CT 0 17790 503  
## DC 0 1959 17  
## DE 143 3368 0  
## FL 1474 59074 1927  
## GA 446 26461 683  
## GU 0 9 0  
## HI 56 3032 145  
## IA 756 19259 548  
## ID 163 3474 101  
## IL 1081 54418 1756  
## IN 3345 30341 532  
## KS 440 14434 717  
## KY 975 19227 562  
## LA 615 20650 504  
## MA 520 29542 708  
## MD 337 19853 124  
## ME 0 5390 52  
## MI 545 30510 725  
## MN 543 20060 890  
## MO 682 31917 1446  
## MS 0 12985 587  
## MT 32 3147 180  
## NC 565 31324 304  
## ND 147 4483 135  
## NE 223 9395 275  
## NH 26 5588 187  
## NJ 559 32817 1049  
## NM 69 4504 192  
## NV 85 4496 77  
## NY 2349 85255 1324  
## OH 4227 56929 2803  
## OK 674 15133 309  
## OR 275 6329 80  
## PA 862 63081 1608  
## PR 0 66 0  
## RI 100 5996 237  
## SC 166 14537 292  
## SD 99 4924 139  
## TN 112 23499 235  
## TX 1364 74064 1412  
## UT 174 4523 303  
## VA 268 23059 784  
## VT 0 2202 0  
## WA 349 12259 662  
## WI 293 18083 1014  
## WV 13 8646 33  
## WY 36 2077 0

wtd.table(mydata\_last$Provider.State, mydata\_last$Shortage.of.Aides, weights=mydata\_last$Total.Number.of.Occupied.Beds)

## N Y  
## AK 0 442 221  
## AL 171 14382 5043  
## AR 331 12291 2473  
## AZ 261 8410 1528  
## CA 54 86541 1437  
## CO 127 12065 2533  
## CT 0 17297 996  
## DC 0 1216 760  
## DE 143 2834 534  
## FL 1474 52862 8139  
## GA 446 17652 9492  
## GU 0 9 0  
## HI 56 2331 846  
## IA 756 12770 7037  
## ID 163 2830 745  
## IL 1081 45733 10441  
## IN 3345 24629 6244  
## KS 440 9862 5289  
## KY 975 15692 4097  
## LA 615 15121 6033  
## MA 520 27296 2954  
## MD 337 18039 1938  
## ME 0 4123 1319  
## MI 545 21426 9809  
## MN 543 12774 8176  
## MO 682 24533 8830  
## MS 0 10373 3199  
## MT 32 2084 1243  
## NC 565 23244 8384  
## ND 147 3186 1432  
## NE 223 6591 3079  
## NH 26 4226 1549  
## NJ 559 32596 1270  
## NM 69 3897 799  
## NV 85 3711 862  
## NY 2349 79481 7098  
## OH 4227 41510 18222  
## OK 674 11573 3869  
## OR 275 5280 1129  
## PA 862 53776 10913  
## PR 0 66 0  
## RI 100 4623 1610  
## SC 166 11142 3687  
## SD 99 2983 2080  
## TN 112 17339 6395  
## TX 1364 70297 5179  
## UT 174 4208 618  
## VA 268 20122 3721  
## VT 0 2020 182  
## WA 349 8415 4506  
## WI 293 13239 5858  
## WV 13 7942 737  
## WY 36 1541 536

custom\_glimpse <- function(df) {  
 data.frame(  
 col\_name = colnames(df),  
 col\_index = 1:ncol(df),  
 col\_class = sapply(df, class),  
 row.names = NULL  
 )  
}  
custom\_glimpse(mydata)

## col\_name  
## 1 Week.Ending  
## 2 Federal.Provider.Number  
## 3 Provider.Name  
## 4 Provider.Address  
## 5 Provider.City  
## 6 Provider.State  
## 7 Provider.Zip.Code  
## 8 Submitted.Data  
## 9 Passed.Quality.Assurance.Check  
## 10 Residents.Weekly.Admissions.COVID.19  
## 11 Residents.Total.Admissions.COVID.19  
## 12 Residents.Weekly.Confirmed.COVID.19  
## 13 Residents.Total.Confirmed.COVID.19  
## 14 Residents.Weekly.Suspected.COVID.19  
## 15 Residents.Total.Suspected.COVID.19  
## 16 Residents.Weekly.All.Deaths  
## 17 Residents.Total.All.Deaths  
## 18 Residents.Weekly.COVID.19.Deaths  
## 19 Residents.Total.COVID.19.Deaths  
## 20 Number.of.All.Beds  
## 21 Total.Number.of.Occupied.Beds  
## 22 Resident.Access.to.Testing.in.Facility  
## 23 Laboratory.Type.Is.State.Health.Dept  
## 24 Laboratory.Type.Is.Private.Lab  
## 25 Laboratory.Type.Is.Other  
## 26 Able.to.Test.or.Obtain.Resources.to.Test.All.Current.Residents.Within.Next.7.Days  
## 27 Reason.for.Not.Testing.Residents...Lack.of.PPE.for.Personnel  
## 28 Reason.for.Not.Testing.Residents...Lack.of.Supplies  
## 29 Reason.for.Not.Testing.Residents....Lack.of.Access.to.Laboratory  
## 30 Reason.for.Not.Testing.Residents...Lack.of.Access.to.Trained.Personnel  
## 31 Reason.for.Not.Testing.Residents....Uncertainty.About.Reimbursement  
## 32 Reason.for.Not.Testing.Residents....Other  
## 33 During.Past.Two.Weeks.Average.Time.to.Receive.Resident.Test.Results  
## 34 Has.Facility.Performed.Resident.Tests.Since.Last.Report  
## 35 Tested.Residents.with.New.Signs.or.Symptoms  
## 36 Tested.Asymptomatic.Residents.in.a.Unit.or.Section.After.a.New.Case  
## 37 Tested.Asymptomatic.Residents.Facility.Wide.After.a.New.Case  
## 38 Tested.Asymptomatic.Residents.Without.Known.Exposure.as.Surveillance  
## 39 Tested.Another.Subgroup.of.Residents  
## 40 Able.to.Test.or.Obtain.Resources.to.Test.All.Staff.and.or.Personnel.Within.Next.7.Days  
## 41 Reason.for.Not.Testing.Staff.and.or.Personnel...Lack.of.PPE.for.Personnel  
## 42 Reason.for.Not.Testing.Staff.and.or.Personnel...Lack.of.Supplies  
## 43 Reason.for.Not.Testing.Staff.and.or.Personnel...Lack.of.Access.to.Laboratory  
## 44 Reason.for.Not.Testing.Staff.and.or.Personnel....Lack.of.Access.to.Trained.Personnel  
## 45 Reason.for.Not.Testing.Staff.and.or.Personnel...Uncertainty.About.Reimbursement  
## 46 Reason.for.Not.Testing.Staff.and.or.Personnel...Other  
## 47 During.Past.Two.Weeks.Average.Time.to.Receive.Staff.and.or.Personnel.Test.Results  
## 48 Has.Facility.Performed.Staff.and.or.Personnel.Tests.Since.Last.Report  
## 49 Tested.Staff.and.or.Personnel.with.New.Signs.or.Symptoms  
## 50 Tested.Asymptomatic.Staff.and.or.Personnel.in.a.Unit.or.Section.After.a.New.Case  
## 51 Tested.Asymptomatic.Staff.and.or.Personnel.Facility.Wide.After.a.New.Case  
## 52 Tested.Asymptomatic.Staff.and.or.Personnel.Without.Known.Exposure.as.Surveillance  
## 53 Tested.Another.Subgroup.of.Staff.and.or.Personnel  
## 54 In.House.Point.of.Care.Test.Machine  
## 55 COVID.19.Point.of.Care.Tests.Performed.on.Residents.Since.Last.Report  
## 56 COVID.19.Point.of.Care.Tests.Performed.on.Staff.and.or.Personnel.Since.Last.Report  
## 57 Enough.Supplies.to.Test.All.Staff.and.or.Personnel.Using.Point.of.Care.Test.Machine  
## 58 Staff.Weekly.Confirmed.COVID.19  
## 59 Staff.Total.Confirmed.COVID.19  
## 60 Staff.Weekly.Suspected.COVID.19  
## 61 Staff.Total.Suspected.COVID.19  
## 62 Staff.Weekly.COVID.19.Deaths  
## 63 Staff.Total.COVID.19.Deaths  
## 64 Shortage.of.Nursing.Staff  
## 65 Shortage.of.Clinical.Staff  
## 66 Shortage.of.Aides  
## 67 Shortage.of.Other.Staff  
## 68 Any.Current.Supply.of.N95.Masks  
## 69 One.Week.Supply.of.N95.Masks  
## 70 Any.Current.Supply.of.Surgical.Masks  
## 71 One.Week.Supply.of.Surgical.Masks  
## 72 Any.Current.Supply.of.Eye.Protection  
## 73 One.Week.Supply.of.Eye.Protection  
## 74 Any.Current.Supply.of.Gowns  
## 75 One.Week.Supply.of.Gowns  
## 76 Any.Current.Supply.of.Gloves  
## 77 One.Week.Supply.of.Gloves  
## 78 Any.Current.Supply.of.Hand.Sanitizer  
## 79 One.Week.Supply.of.Hand.Sanitizer  
## 80 Ventilator.Dependent.Unit  
## 81 Number.of.Ventilators.in.Facility  
## 82 Number.of.Ventilators.in.Use.for.COVID.19  
## 83 Any.Current.Supply.of.Ventilator.Supplies  
## 84 One.Week.Supply.of.Ventilator.Supplies  
## 85 Total.Resident.Confirmed.COVID.19.Cases.Per.1.000.Residents  
## 86 Total.Resident.COVID.19.Deaths.Per.1.000.Residents  
## 87 Total.Residents.COVID.19.Deaths.as.a.Percentage.of.Confirmed.COVID.19.Cases  
## 88 County  
## 89 Three.or.More.Confirmed.COVID.19.Cases.This.Week  
## 90 Initial.Confirmed.COVID.19.Case.This.Week  
## 91 Geolocation  
## col\_index col\_class  
## 1 1 character  
## 2 2 character  
## 3 3 character  
## 4 4 character  
## 5 5 character  
## 6 6 character  
## 7 7 integer  
## 8 8 character  
## 9 9 character  
## 10 10 integer  
## 11 11 integer  
## 12 12 integer  
## 13 13 integer  
## 14 14 integer  
## 15 15 integer  
## 16 16 integer  
## 17 17 integer  
## 18 18 integer  
## 19 19 integer  
## 20 20 integer  
## 21 21 integer  
## 22 22 character  
## 23 23 character  
## 24 24 character  
## 25 25 character  
## 26 26 character  
## 27 27 character  
## 28 28 character  
## 29 29 character  
## 30 30 character  
## 31 31 character  
## 32 32 character  
## 33 33 character  
## 34 34 character  
## 35 35 character  
## 36 36 character  
## 37 37 character  
## 38 38 character  
## 39 39 character  
## 40 40 character  
## 41 41 character  
## 42 42 character  
## 43 43 character  
## 44 44 character  
## 45 45 character  
## 46 46 character  
## 47 47 character  
## 48 48 character  
## 49 49 character  
## 50 50 character  
## 51 51 character  
## 52 52 character  
## 53 53 character  
## 54 54 character  
## 55 55 integer  
## 56 56 integer  
## 57 57 character  
## 58 58 integer  
## 59 59 integer  
## 60 60 integer  
## 61 61 integer  
## 62 62 integer  
## 63 63 integer  
## 64 64 character  
## 65 65 character  
## 66 66 character  
## 67 67 character  
## 68 68 character  
## 69 69 character  
## 70 70 character  
## 71 71 character  
## 72 72 character  
## 73 73 character  
## 74 74 character  
## 75 75 character  
## 76 76 character  
## 77 77 character  
## 78 78 character  
## 79 79 character  
## 80 80 character  
## 81 81 integer  
## 82 82 integer  
## 83 83 character  
## 84 84 character  
## 85 85 numeric  
## 86 86 numeric  
## 87 87 numeric  
## 88 88 character  
## 89 89 character  
## 90 90 character  
## 91 91 character

quick glimse at the downloaded variables.

#  
# function from https://stackoverflow.com/questions/56466715/explore-data-frame-and-provide-numbered-list-of-variables-in-r  
#  
  
custom\_glimpse <- function(df) {  
 data.frame(  
 col\_name = colnames(df),  
 col\_index = 1:ncol(df),  
 col\_class = sapply(df, class),  
 row.names = NULL  
 )  
}  
#custom\_glimpse(mydata)