CMS Monthly Enrollment Data Extraction - All Months

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Purpose

The purpose of this R code file is to wrangle raw monthly health plan enrollment data obtained from the Centers for Medicare & Medicaid Services (CMS) website, and extract only the relevant data for MAP and MA D-SNP plans in the New York area. The code then combines the separate monthly enrollment datasets into large time series datasets to analyze trends in health plan enrollments over time. The resulting datasets are available for the New York City (NYC), NYC metro area, and New York State (NYS) geographic regions. The code is designed to ensure minimal editing and ease of use when new months of data become available. This allows for efficient and consistent analysis of health plan enrollment trends over time. Overall, the aim of this code is to provide insights into the changing landscape of health plan enrollments in the New York area, which can inform decision-making for healthcare providers, policymakers, and other stakeholders.

Data

 $Monthly\ enrollment\ data\ at\ the\ contract/plan/state/county\ level\ was\ downloaded\ from\ CMS\ here:\ https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/Monthly-Enrollment-by-Contract-Plan-State-County$

The downloaded folders contain 2 files: an enrollment data file and a contract data file. Both files share the following common fields: contract_number (= contract_id) and plan_id. These two fields combined make up the H-number.

Overview

The function below called enrollment_data reads in these files and creates 2 output files: one for MAP plans and one for MA D-SNP plans for any given month. The output dataset is restricted to health plans (i.e. Hnumbers) of interest only. The function merges the contract data file and the enrollment data file together using the shared fields contract_number (= contract_id) and plan_id. Then, it pivots the datasets to wide format and calculates the following "total" variables:

- New York City Total: nyc_total = the sum across New York, Bronx, Kings, Queens, and Richmond counties
- New York City Metro Total: nyc_metro_total = the sum across NYC counties plus Nassau, Suffolk, Westchester, and Rockland counties
- New York State Total: nys_total = the sum across all counties in New York

Finally, the function saves the resulting datasets in the R environment and creates a CSV file for both the MAP plan dataset and the MA D-SNP plan dataset:

```
enrollment_data <- function(yyyy_mm) {</pre>
  path_enroll = str_c("data/raw_data/CPSC_Enrollment_", yyyy_mm, "/CPSC_Enrollment_Info_", yyyy_mm, ".c
  path_contract = str_c("data/raw_data/CPSC_Enrollment_", yyyy_mm, "/CPSC_Contract_Info_", yyyy_mm, ".c
  # read in the enrollment data file
  enroll <- read_csv(path_enroll) %>%
   filter(State == "NY") %>%
    janitor::clean_names()
  # read in the contract data file and restrict to map plans (h-numbers) of interest only
  contract_map <- read_csv(path_contract) %>%
  janitor::clean_names() %>%
  mutate(h_number = str_c(contract_id, '-', plan_id)) %>% # create h-number variable
  filter(h_number %in% c("H3359-034", "H5549-003", "H3347-007", "H2168-002", "H6988-004", "H5599-003",
  # read in the contract data file and restrict to madsnp plans (h-numbers) of interest only
  contract_madsnp = read_csv(path_contract) %>%
  janitor::clean_names() %>%
  mutate(h_number = str_c(contract_id, '-', plan_id)) %>% # create h-number variable
  filter(h_number %in% c("H3312-069", "H4922-003", "H6988-002", "H3347-002", "H3330-042", "H5991-010",
# join the enrollment and contract data files
  inner_join(enroll, contract_map, by = c("contract_number" = "contract_id", "plan_id" = "plan_id")) %>
  select(h_number, contract_number, plan_id, organization_marketing_name, plan_name, plan_type, county,
  mutate(enrollment = case when(enrollment == "*" ~ "0", enrollment != "*" ~ enrollment)) %>% # set cel
  mutate(enrollment = as.numeric(enrollment)) %>%
  pivot_wider(names_from = county, values_from = enrollment) %% # make data wide format for readabilit
  janitor::clean_names() %>%
  select(order(colnames(.))) %>%
  select(h_number, contract_number, plan_id, organization_marketing_name, plan_name, plan_type, everyth
  mutate(
   nyc_total = (sum = rowSums(dplyr::select(., new_york, bronx, kings, queens, richmond), na.rm = TRUE
   nyc_metro_total = (sum = rowSums(dplyr::select(., new_york, bronx, kings, queens, richmond, nassau,
   nys_total = (sum = rowSums(dplyr::select(., albany:westchester), na.rm = TRUE))) %>% # calculate ny
  select(organization_marketing_name, plan_name, h_number, contract_number, plan_id, plan_type, nyc_tot
madsnp =
  inner_join(enroll, contract_madsnp, by = c("contract_number" = "contract_id", "plan_id" = "plan_id"))
  select(h_number, contract_number, plan_id, organization_marketing_name, plan_name, plan_type, county,
  mutate(enrollment = case_when(enrollment == "*" ~ "0", enrollment != "*" ~ enrollment)) %%
  mutate(enrollment = as.numeric(enrollment)) %>%
  pivot_wider(names_from = county, values_from = enrollment) %>%
  janitor::clean names() %>%
  select(order(colnames(.))) %>%
  select(h_number, contract_number, plan_id, organization_marketing_name, plan_name, plan_type, everyth
   nyc_total = (sum = rowSums(dplyr::select(., new_york, bronx, kings, queens, richmond), na.rm = TRUE
   nyc_metro_total = (sum = rowSums(dplyr::select(., new_york, bronx, kings, queens, richmond, nassau,
   nys_total = (sum = rowSums(dplyr::select(., albany:yates), na.rm = TRUE))) %>%
  select(organization_marketing_name, plan_name, h_number, contract_number, plan_id, plan_type, nyc_tot
```

```
map_blank <- map %>% # replicate dataset to create a version with blank cells rather than NAs
  select(-organization_marketing_name, -contract_number, -plan_id, -plan_type) # select only necessary
map_blank <- sapply(map_blank, as.character)</pre>
map blank[is.na(map blank)] <- "" # replace NA with blank</pre>
madsnp_blank <- madsnp %>% # replicate dataset to create a version with blank cells rather than NAs
  select(-organization_marketing_name, -contract_number, -plan_id, -plan_type) # select only necessary
madsnp blank <- sapply(madsnp blank, as.character)</pre>
madsnp_blank[is.na(madsnp_blank)] <- "" # replace NA with blank</pre>
# name each resulting dataset based on the month and year of the input data files
df_name_map = str_c("map_", yyyy_mm)
df_name_madsnp = str_c("madsnp_", yyyy_mm)
assign(x = df_name_map, value = map, envir = globalenv()) # or map_blank
assign(x = df_name_madsnp, value = madsnp, envir = globalenv()) # or madsnp_blank
# save datasets as csv files
save_path_map = str_c("data/output_data/map/", df_name_map, ".csv")
save_path_madsnp = str_c("data/output_data/madsnp/", df_name_madsnp, ".csv")
write.csv(map_blank,save_path_map, row.names = TRUE)
write.csv(madsnp_blank, save_path_madsnp, row.names = TRUE)
}
```

The enrollment_data function above is applied to all months of data from 2021 - present:

```
enrollment_data(yyyy_mm = "2023_02") # note: must add new row above here for new months
enrollment_data(yyyy_mm = "2023_01")
enrollment_data(yyyy_mm = "2022_12")
enrollment_data(yyyy_mm = "2022_11")
enrollment_data(yyyy_mm = "2022_10")
enrollment_data(yyyy_mm = "2022_09")
enrollment_data(yyyy_mm = "2022_08")
enrollment_data(yyyy_mm = "2022_07")
enrollment_data(yyyy_mm = "2022_06")
enrollment_data(yyyy_mm = "2022_05")
enrollment_data(yyyy_mm = "2022_04")
enrollment_data(yyyy_mm = "2022_03")
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enrollment_data(yyyy_mm = "2021_01")
```

The functions and code blocks below create time series datasets for MAP and MA D-SNP plans by Region (NYC, NYC Metro Area, NYS) and adjusts the column names:

```
# NYC MAP
# initialize nyc_map as an empty dataframe
nyc map <- data.frame()</pre>
# iterate over each month and year
for (year in 2021:2023) { # note: adjust if beyond 2023
  for (month in 1:12) {
    # create the name of the dataframe to be merged
    map_name <- paste0("map_", year, "_", sprintf("%02d", month))</pre>
    # check if object exists
    if (exists(map_name)) {
      # merge the current dataframe with nyc_metro_map
      if (nrow(nyc_map) == 0) {
        \# if nyc\_metro\_map is empty, just add the current dataframe to it
        nyc_map <- get(map_name)[ , c("h_number", "nyc_total")]</pre>
      } else {
        # if nyc metro map is not empty, merge the current dataframe with it
        merge_cols <- c("h_number")</pre>
        nyc_map <- merge(nyc_map,</pre>
                          get(map_name)[ , c("h_number", "nyc_total")],
                          by = merge_cols,
                          all = TRUE)
        # clean up suffixes in column names
        colnames(nyc_map) <- gsub("_x$", "", colnames(nyc_map))</pre>
        colnames(nyc_map) <- gsub("_y$", "", colnames(nyc_map))
      }
    } else {
      # object does not exist, so skip this iteration
      next
    }
  }
}
# NYC Metro MAP
```

```
# initialize nyc_metro_map as an empty dataframe
nyc_metro_map <- data.frame()

# iterate over each month and year
for (year in 2021:2023) { # note: adjust if beyond 2023
    for (month in 1:12) {
        # create the name of the dataframe to be merged
        map_name <- paste0("map_", year, "_", sprintf("%02d", month))

# check if object exists
    if (exists(map_name)) {
        # merge the current dataframe with nyc_metro_metro_map
        if (nrow(nyc_metro_map) == 0) {
            # if nyc_metro_metro_map is empty, just add the current dataframe to it
            nyc_metro_map <- get(map_name)[ , c("h_number", "nyc_metro_total")]
        } else {</pre>
```

```
# if nyc_metro_metro_map is not empty, merge the current dataframe with it
        merge_cols <- c("h_number")</pre>
        nyc metro map <- merge(nyc metro map,</pre>
                          get(map_name)[ , c("h_number", "nyc_metro_total")],
                          by = merge cols,
                          all = TRUE)
        # clean up suffixes in column names
        colnames(nyc_metro_map) <- gsub("_x$", "", colnames(nyc_metro_map))</pre>
        colnames(nyc_metro_map) <- gsub("_y$", "", colnames(nyc_metro_map))</pre>
      }
    } else {
      # object does not exist, so skip this iteration
      next
    }
 }
}
# NYS MAP
# initialize nys_map as an empty dataframe
nys_map <- data.frame()</pre>
# iterate over each month and year
for (year in 2021:2023) { # note: adjust if beyond 2023
 for (month in 1:12) {
    # create the name of the dataframe to be merged
    map_name <- paste0("map_", year, "_", sprintf("%02d", month))</pre>
    # Check if object exists
    if (exists(map name)) {
      # merge the current dataframe with nys_metro_map
      if (nrow(nys_map) == 0) {
        \# if nys\_metro\_map is empty, just add the current dataframe to it
        nys_map <- get(map_name)[ , c("h_number", "nys_total")]</pre>
      } else {
        # if nys metro map is not empty, merge the current dataframe with it
        merge cols <- c("h number")</pre>
        nys_map <- merge(nys_map,</pre>
                          get(map_name)[ , c("h_number", "nys_total")],
                          by = merge_cols,
                          all = TRUE)
        # clean up suffixes in column names
        colnames(nys_map) <- gsub("_x$", "", colnames(nys_map))</pre>
        colnames(nys_map) <- gsub("_y$", "", colnames(nys_map))</pre>
      }
    } else {
      # object does not exist, so skip this iteration
      next
```

```
# NYC MA D-SNP
# initialize nyc_madsnp as an empty dataframe
```

}

```
nyc_madsnp <- data.frame()</pre>
# iterate over each month and year
for (year in 2021:2023) { # note: adjust if beyond 2023
  for (month in 1:12) {
    # create the name of the dataframe to be merged
    madsnp_name <- paste0("madsnp_", year, "_", sprintf("%02d", month))</pre>
    # check if object exists
    if (exists(madsnp name)) {
      # merge the current dataframe with nyc_metro_madsnp
      if (nrow(nyc_madsnp) == 0) {
        \# if nyc\_metro\_madsnp is empty, just add the current dataframe to it
        nyc_madsnp <- get(madsnp_name)[ , c("h_number", "nyc_total")]</pre>
      } else {
        # if nyc_metro_madsnp is not empty, merge the current dataframe with it
        merge_cols <- c("h_number")</pre>
        nyc_madsnp <- merge(nyc_madsnp,</pre>
                          get(madsnp_name)[ , c("h_number", "nyc_total")],
                          by = merge_cols,
                          all = TRUE)
        # clean up suffixes in column names
        colnames(nyc_madsnp) <- gsub("_x$", "", colnames(nyc_madsnp))</pre>
        colnames(nyc_madsnp) <- gsub("_y$", "", colnames(nyc_madsnp))</pre>
    } else {
      # object does not exist, so skip this iteration
      next
 }
# NYC Metro MA D-SNP
# initialize nyc_metro_madsnp as an empty dataframe
```

```
nyc_metro_madsnp <- data.frame()</pre>
# iterate over each month and year
for (year in 2021:2023) { # note: adjust if beyond 2023
 for (month in 1:12) {
    # create the name of the dataframe to be merged
    madsnp_name <- paste0("madsnp_", year, "_", sprintf("%02d", month))</pre>
    # check if object exists
    if (exists(madsnp_name)) {
      # merge the current dataframe with nyc_metro_metro_madsnp
      if (nrow(nyc_metro_madsnp) == 0) {
        # if nyc_metro_metro_madsnp is empty, just add the current dataframe to it
        nyc_metro_madsnp <- get(madsnp_name)[ , c("h_number", "nyc_metro_total")]</pre>
      } else {
        # if nyc_metro_metro_madsnp is not empty, merge the current dataframe with it
        merge cols <- c("h number")</pre>
        nyc_metro_madsnp <- merge(nyc_metro_madsnp,</pre>
                          get(madsnp_name)[ , c("h_number", "nyc_metro_total")],
```

```
# NYS MA D-SNP
# initialize nys_madsnp as an empty dataframe
nys_madsnp <- data.frame()</pre>
# iterate over each month and year
for (year in 2021:2023) { # note: adjust if beyond 2023
  for (month in 1:12) {
    # create the name of the dataframe to be merged
    madsnp_name <- paste0("madsnp_", year, "_", sprintf("%02d", month))</pre>
    # check if object exists
    if (exists(madsnp_name)) {
      # merge the current dataframe with nys_metro_madsnp
      if (nrow(nys_madsnp) == 0) {
        # if nys_metro_madsnp is empty, just add the current dataframe to it
        nys_madsnp <- get(madsnp_name)[ , c("h_number", "nys_total")]</pre>
      } else {
        # if nys_metro_madsnp is not empty, merge the current dataframe with it
        merge_cols <- c("h_number")</pre>
        nys_madsnp <- merge(nys_madsnp,</pre>
                          get(madsnp_name)[ , c("h_number", "nys_total")],
                          by = merge cols,
                          all = TRUE)
        # Clean up suffixes in column names
        colnames(nys_madsnp) <- gsub("_x$", "", colnames(nys_madsnp))</pre>
        colnames(nys_madsnp) <- gsub("_y$", "", colnames(nys_madsnp))</pre>
      }
    } else {
      # object does not exist, so skip this iteration
      next
    }
 }
}
```

```
# Add column names to all MAP and MA D-SNP dataframes
    # create column names vector
col_name_vector_forward = c("h_number", "2021_01", "2021_02", "2021_03", "2021_04", "2021_05", "2021_06"
# applying colnames
    # map datasets
```

```
colnames(nyc_map) = col_name_vector_forward
colnames(nyc_metro_map) = col_name_vector_forward
colnames(nys_map) = col_name_vector_forward
    # madsnp datasets
colnames(nyc_madsnp) = col_name_vector_forward
colnames(nyc_metro_madsnp) = col_name_vector_forward
colnames(nys madsnp) = col name vector forward
# Add `plan name` column to the datasets by merging a month dataset with the time series dataset using
  # restrict month dataset to only the columns of interest (plan_name, h_number)
map_plan_names <- map_2023_02 %>% # note: may need to adjust to more recent month/year dataset if new p
  select(plan_name, h_number)
madsnp_plan_names <- madsnp_2023_02 %>% # note: may need to adjust to more recent month/year dataset if
  select(plan_name, h_number)
  # join the datasets and move plan_name to the front
    # map datasets
nyc_map <- inner_join(nyc_map, map_plan_names, by = "h_number") %>%
  select(plan name, everything())
nyc_metro_map <- inner_join(nyc_metro_map, map_plan_names, by = "h_number") %>%
  select(plan_name, everything())
nys_map <- inner_join(nys_map, map_plan_names, by = "h_number") %>%
  select(plan name, everything())
    # madsnp datasets
nyc_madsnp <- inner_join(nyc_madsnp, madsnp_plan_names, by = "h_number") %>%
  select(plan_name, everything())
nyc_madsnp[is.na(nyc_madsnp)] <- 0 # replace NA with Os</pre>
nyc_metro_madsnp <- inner_join(nyc_metro_madsnp, madsnp_plan_names, by = "h_number") %>%
  select(plan_name, everything())
nyc_metro_madsnp[is.na(nyc_metro_madsnp)] <- 0 # replace NA with Os</pre>
nys_madsnp <- inner_join(nys_madsnp, madsnp_plan_names, by = "h_number") %>%
  select(plan name, everything())
nys_madsnp[is.na(nys_madsnp)] <- 0 # replace NA with Os</pre>
```

Preview final time series datasets:

NYC MAP Enrollment

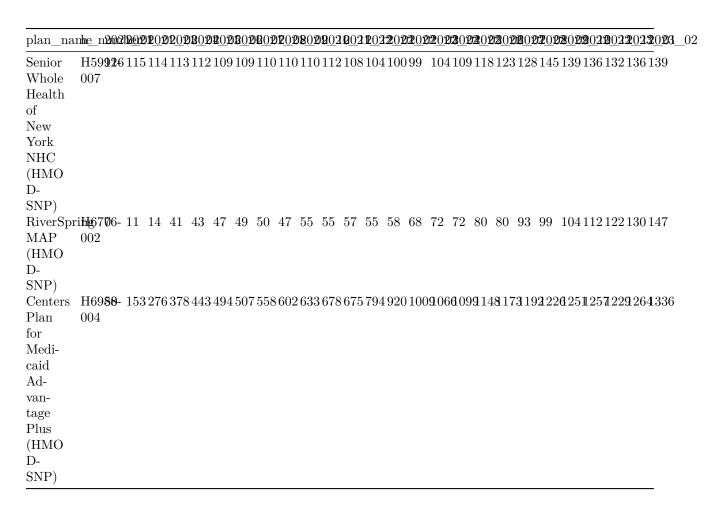
New 010 York Advantage Plus (HMO D-SNP) VNS $H55\mathbf{290286283281281281285286728728978828428427927827527828027922822812822784882903 \\$ Health 003 Total (HMO Ď-SNP) $Well care\ H55\mathbf{99}\text{-}\ 18\ 16\ 16\ 31\ 65\ 74\ 77\ 103\ 118\ 139\ 152\ 157\ 160\ 164\ 171\ 186\ 273\ 325\ 349\ 393\ 415\ 419\ 409\ 396\ 428$ Fidelis 003 Dual Plus (HMO D-SNP) Fidelis 008 Dual Plus (HMO D-SNP) Senior $H59 \textbf{92}6 \ 115 \ 114 \ 113 \ 112 \ 109 \ 109 \ 110 \ 110 \ 110 \ 112 \ 108 \ 104 \ 100 \ 99 \quad 104 \ 109 \ 118 \ 123 \ 128 \ 145 \ 139 \ 136 \ 132 \ 136 \ 139$ Whole 007 Health of New York NHC (HMO D-SNP) RiverSpriH6776-11 14 41 43 47 49 50 47 55 55 57 55 58 68 72 72 80 80 93 99 104112122130147 MAP002 (HMO D-SNP)

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NYC Metro MAP Enrollment

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NYS MAP Enrollment

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NYC MA D-SNP Enrollment

 ${\rm Hamaspik} H00\mathbf{94}\text{-}0 \quad 0 \quad 18 \quad 36 \quad 33 \quad 54 \quad 50 \quad 42 \quad 43 \quad 41 \quad 88 \quad 104 \quad 101 \quad 98 \quad 98 \quad 97 \quad 97 \quad 96 \quad 85 \quad 91 \quad 137 \quad 149 \quad 167 \quad 162 \quad 167 \quad$ Medi-001 care Select (HMO D-SNP) Dual 060 Complete Choice (PPO D-SNP) $MetroPlu \pm 104 \\ \textbf{73607} 90800815325 \\ \textbf{83785} 9860 \\ \textbf{971873} \\ \textbf{578892} \\ \textbf{970471} \\ \textbf{972675} \\ \textbf{882894} \\ \textbf{9090} \\ \textbf{9113233} \\ \textbf{26533} \\ \textbf{94392923} \\ \textbf{18873} \\ \textbf{98892} \\ \textbf{9870471} \\ \textbf{972675} \\ \textbf{982894} \\ \textbf{9090} \\ \textbf{9113233} \\ \textbf{26533} \\ \textbf{94392923} \\ \textbf{18873} \\ \textbf{98892} \\ \textbf{9870471} \\ \textbf{987048} \\ \textbf{98892} \\ \textbf{9870471} \\ \textbf{987048} \\ \textbf{987048}$ Ad-001 vantage Plan (HMO D-SNP) Medi-003 Blue Health-Plus Dual Connect (HMO D-SNP) Medicare Health Advantage (HMO D-SNP)

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NYC Metro MA D-SNP Enrollment

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NYS MA D-SNP Enrollment

 ${\rm Hamaspik} H00\mathbf{64}\textbf{-}0 \\ 68 \\ 106156185187206215229227231380475486524557560568582569579648708724736}$ Medi-001 care Select (HMO D-SNP) Dual 060 Complete Choice (PPO D-SNP) $MetroPlu \pm 104 \\ \textbf{73607} 90800815325 \\ \textbf{83785} 9860 \\ \textbf{971873} \\ \textbf{578892} \\ \textbf{970471} \\ \textbf{972675} \\ \textbf{882894} \\ \textbf{9090} \\ \textbf{9113233} \\ \textbf{26533} \\ \textbf{94392923} \\ \textbf{18873} \\ \textbf{98892} \\ \textbf{9870471} \\ \textbf{972675} \\ \textbf{982894} \\ \textbf{9090} \\ \textbf{9113233} \\ \textbf{26533} \\ \textbf{94392923} \\ \textbf{18873} \\ \textbf{98892} \\ \textbf{9870471} \\ \textbf{987048} \\ \textbf{98892} \\ \textbf{9870471} \\ \textbf{987048} \\ \textbf{987048}$ Ad-001 vantage Plan (HMO D-SNP) +1173294533224782317844515064497046733442295360252723362924524502229850698430255257649Empire Medi-003 Blue Health-Plus Dual Connect (HMO D-SNP) Medicare Health Advantage (HMO D-SNP)

Medi-003 care Health Advantage FLEX (HMO D-SNP) Aetna Medicare Assure Plan (HMO D-SNP) $Emblem H \underline{\textbf{H}} \underline{\textbf{3}} \underline{\textbf{3}} \underline{\textbf{0}} \underline{\textbf{0}} \underline{\textbf{2}} \underline{\textbf{3}} \underline{\textbf{3}} \underline{\textbf{3}} \underline{\textbf{4}} \underline{\textbf{4}} \underline{\textbf{7}} \underline{\textbf{4}} \underline{\textbf{2}} \underline{\textbf{7}} \underline{\textbf{2}} \underline{\textbf{3}} \underline{\textbf{0}} \underline{\textbf{3}} \underline{\textbf{4}} \underline{\textbf{2}} \underline{\textbf{8}} \underline{\textbf{5}} \underline{\textbf{2}} \underline{\textbf{5}} \underline{\textbf{2}} \underline{\textbf{5}} \underline{\textbf{2}} \underline{\textbf{3}} \underline{\textbf{2}} \underline{\textbf{3}} \underline{\textbf{2}} \underline{\textbf{3}} \underline{\textbf{2}} \underline{\textbf{2}} \underline{\textbf{2}} \underline{\textbf{2}} \underline{\textbf{2}} \underline{\textbf{3}} \underline{\textbf{2}} \underline{\textbf{3}} \underline{\textbf{2}} \underline{\textbf$ VIP 042 Dual (HMO D-For 002 Medicaid Beneficiaries (HMO D-SNP) HealthfirsH3359952662147036286246244261572281221502327248660873289901664727943957876247938319171 Life 021 Improvement Plan (HMO D-SNP) Dual Complete Plan 1 (HMO-POS D-SNP)

Dual 015 Complete Plan 2 (HMO-POS D-SNP) Gold Plus SNP-DEH3533-034 (HMO D-SNP) $Age Well \ H49 \textbf{22}4 \ 124 \ 117 \ 118 \ 113 \ 109 \ 106 \ 105 \ 100 \ 109 \ 96 \ 91 \ 90 \ 94 \ 91 \ 91 \ 88 \ 81 \ 88 \ 85 \ 77 \ 65 \ 63 \ 62 \ 56$ 003 New York Feel-Well (HMO D-SNP) VNS Health 011Easy-Care Plus (HMO D-Fidelis 001 Dual Access (HMO D-SNP) SNP-026 DEH5970-026 (PPO D-SNP)

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Save datasets as CSV files:

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# map datasets
write.csv(nyc_map, "data/output_data/map/nyc_map.csv", row.names = TRUE)
write.csv(nyc_metro_map, "data/output_data/map/nyc_metro_map.csv", row.names = TRUE)
write.csv(nys_map, "data/output_data/map/nys_map.csv", row.names = TRUE)

# madsnp datasets
write.csv(nyc_madsnp, "data/output_data/madsnp/nyc_madsnp.csv", row.names = TRUE)
write.csv(nyc_metro_madsnp, "data/output_data/madsnp/nyc_metro_madsnp.csv", row.names = TRUE)
write.csv(nys_madsnp, "data/output_data/madsnp/nys_madsnp.csv", row.names = TRUE)
```

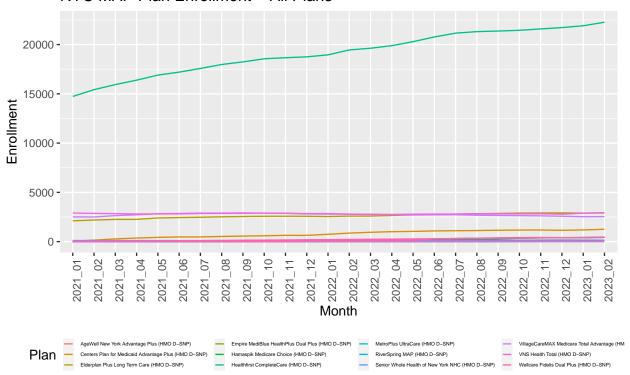
Plots

NYC Enrollment Data

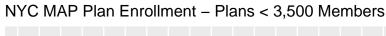
MAP Plans

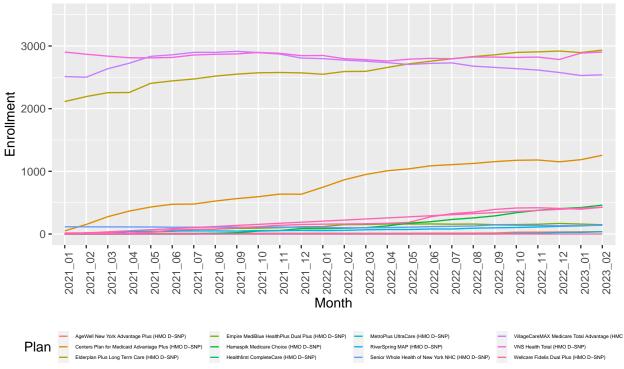
All Plans:

NYC MAP Plan Enrollment - All Plans



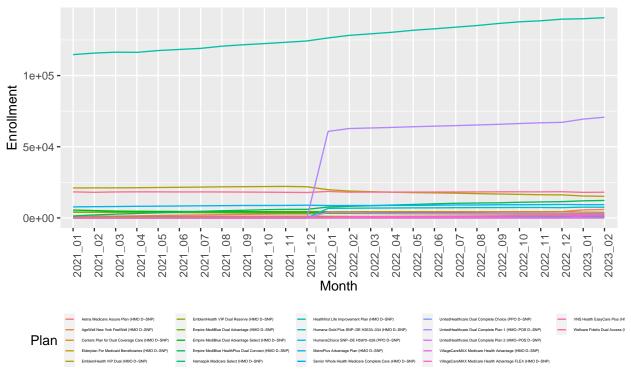
Plans < 3,500 Members (HealthFirst Removed)





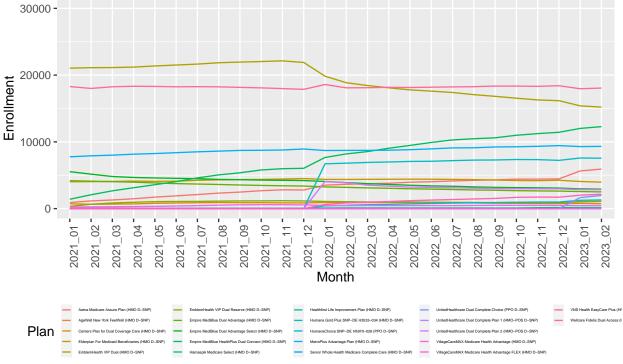
MA D-SNP Plans





Plans < 30,000 Members (HealthFirst and United Plan Removed)

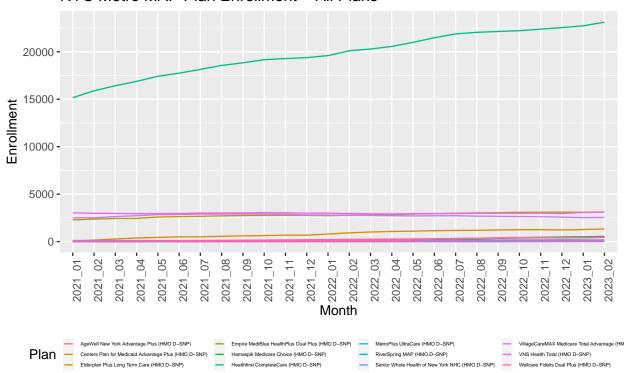




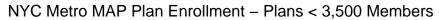
NYC Metro Enrollment Data

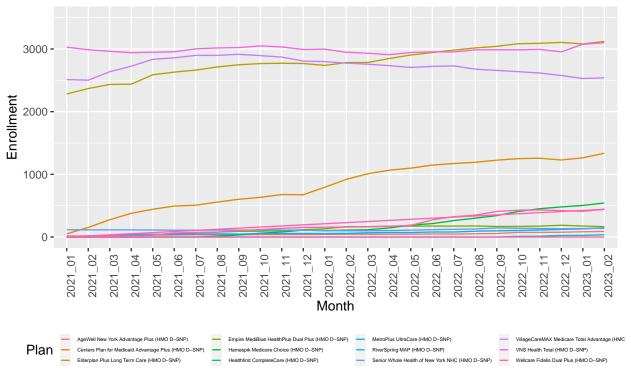
MAP Plans





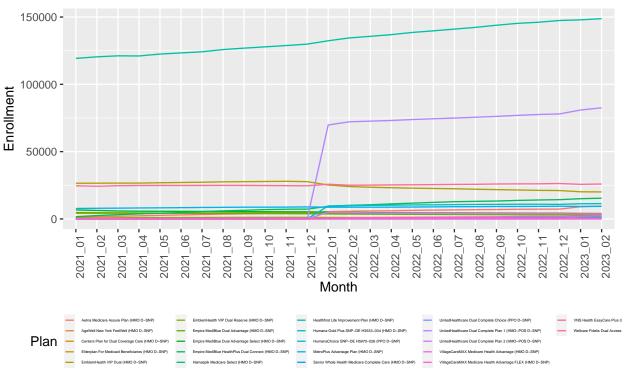
Plans < 3,500 Members (HealthFirst Removed)



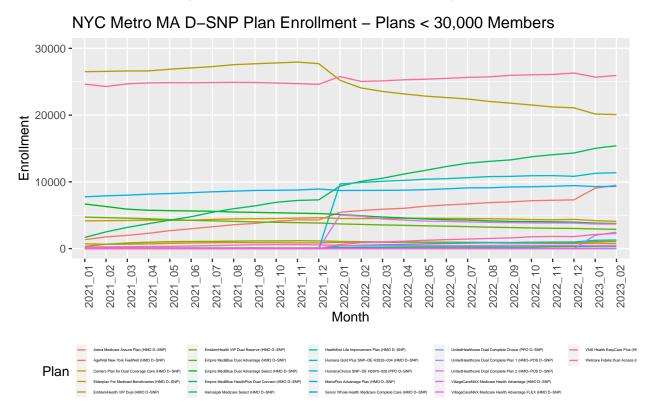


MA D-SNP Plans





Plans < 30,000 Members (HealthFirst and United Plan Removed)

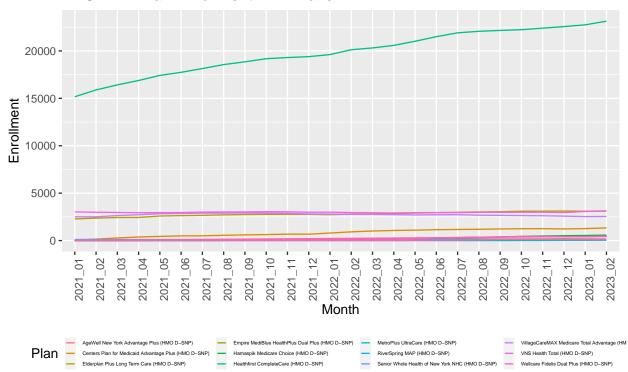


NYS Enrollment Data

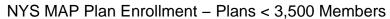
MAP Plans

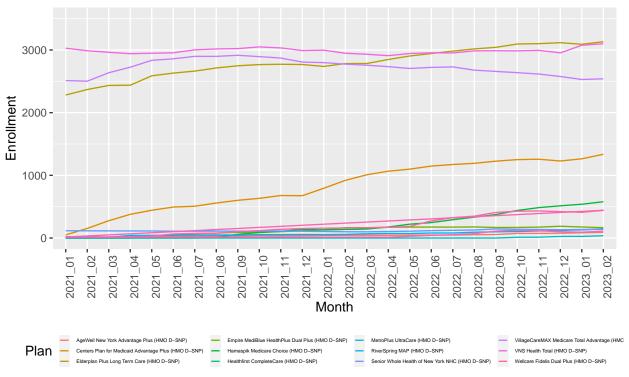
All Plans:

NYS MAP Plan Enrollment - All Plans



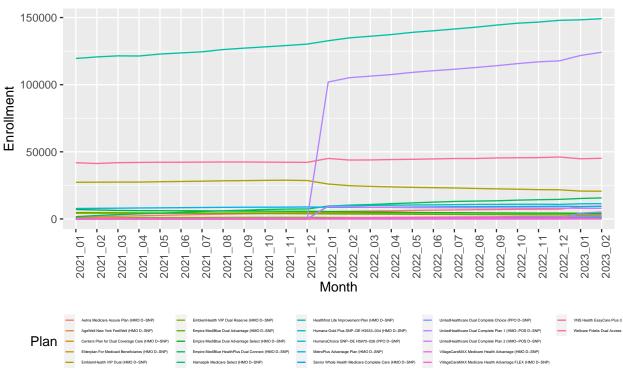
Plans < 3,500 Members (HealthFirst Removed)



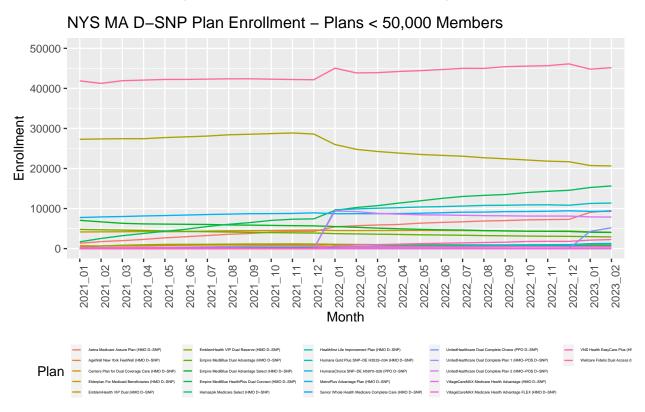


MA D-SNP Plans





Plans < 50,000 Members (HealthFirst and United Plan Removed)



Notes

Instructions for adding new months of data: 1. Download the zipped file folder for the new month from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/Monthly-Enrollment-by-Contract-Plan-State-County 2. Unzip the folder and save it in the data > raw_data folder within the overarching folder holding this R project (cms_enrollment_data) 3. Add a new line of code to the top of the apply enrollment data function code block to apply the function to the new month of data using the following template (fill in the bold characters): enrollment_data(yyyy_mm = "yyyy_mm")

4. Add code for a new columns name to the end (before ")") of the col_name_vector_forward object string within the adjust column names for datasets code block using the following template (fill in the bold characters): , "yyyy_mm" 5. Update the year/month of the most recent month of data in each of the plot dataset code blocks (nyc map plot dataset, nyc madsnp plot dataset, nyc metro map plot dataset, nyc metro madsnp plot dataset) to include the new data in the enrollment trend plots using the following template (fill in the bold characters): "yyyy mm"

Note: This Rmd file can be searched for "note:" to locate the lines within the code that may require adjustment of account for new monthly data.