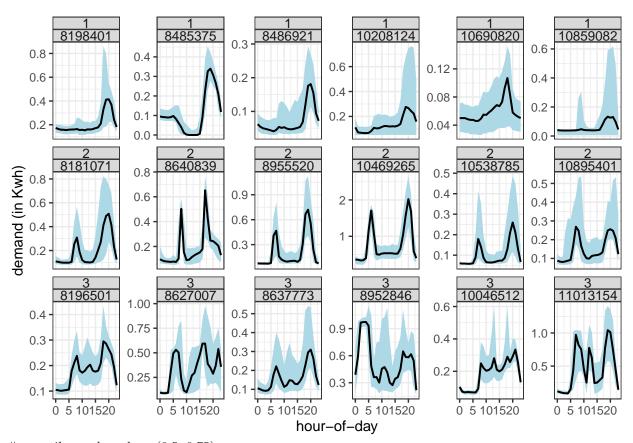
Hand picking similar behaving group of customers to check clustering results



quantile_prob_val = c(0.5, 0.75)

only hod

```
mutate(dist = dist_hod) %>%
     pivot_wider(-c(3, 4),
                   names_from = customer_to,
                 values_from = dist) %>%
  rename("customer_id" = "customer_from")
## # A tibble: 3 x 2
##
      group
      <int> <int>
## 1
                 10
           1
## 2
           2
                  6
## 3
                  2
           3
                                   1.00 8627007
                                                                   0.8 8640839
                                                                                        8955520
        8181071
                                                         8637773
                        8196501
    0.8
                                                    0.5
                   0.4
                                                                                   0.9
                                   0.75
                                                                    0.6
    0.6
                                                    0.4
                   0.3
                                                                                   0.6
                                                    0.3
                                                                    0.4
                                   0.50
    0.4
                    0.2
                                                    0.2
                                                                                   0.3
                                                                    0.2
                                   0.25
    0.2
                                                    0.1
                    0.1
        10046512
                                        10895401
                                                         11013154
                                                                        8198401
                        10538785
                                                                                        848537
demand (in Kwh) 0.4 0.2
                   0.5
                                    0.5
                                                                    0.8 -
                                                                                                      group
                                                                                   0.4
                   0.4
                                    0.4
                                                    1.0
                                                                                   0.3
                                                                    0.6
                   0.3
                                    0.3
                                                                                   0.2
                                                                    0.4
                                                                                                           2
                    0.2
                                                    0.5
                                     0.2
                                                                                   0.1
                    0.1
                                                                                                           3
                                    0.1
                                                                                       3
10469265
                        10208124
        8486921
                                                        10859082
                                        10690820
    0.3
                                                    0.6
                   0.6
                                   0.12
                                                                    0.9
                                                                                     2
    0.2
                                                    0.4
                   0.4
                                   0.08
                                                                    0.6
                                                    0.2
    0.1
                    0.2
                                                                    0.3
                                   0.04
                                                    0.0
        0 5 1 0 1 5 2 0
                       0 5 1 0 1 5 2 0
                                        0 5 101520
                                                        0 5 101520
                                                                        0 5 1 0 1 5 2 0
                                                                                       0 5 1 0 1 5 2 0
                                             hour-of-day
```

hod + dom

```
data_dist <- v3 %>%
  left_join(v2) %>%
  mutate(dist = dist_hod + dist_dom) %>%
     pivot_wider(-c(3, 4),
                    names_from = customer_to,
                  values_from = dist) %>%
  rename("customer_id" = "customer_from")
## # A tibble: 3 x 2
##
      group
##
      <int> <int>
## 1
           1
                  11
## 2
           2
                   6
## 3
           3
                   1
                                          8627007
                                                                           8640839
         8181071
                                                                      8.0
                                    1.00
    8.0
                                                       0.5
                    0.4
                                                                                       0.9
                                                                       0.6
                                    0.75
    0.6
                                                       0.4
                    0.3
                                                                                       0.6
                                                       0.3
                                                                      0.4
                                    0.50
    0.4
                                                       0.2
                                                                                       0.3
                                    0.25
                                                                       0.2
    0.2
                                                       0.1
                                          10538785
demand (in Kwh) 0.6 0.2 0.2
                        10469265
                                                           10895401
                                                                           11013154
        10046512
                                     0.5
                                                       0.5
                                                                                       8.0
                                                                                                         group
                                     0.4
                                                       0.4
                                                                       1.0
                                                                                      0.6
                                     0.3
                                                       0.3
                                                                                       0.4
                                                                                                              2
                                     0.2
                                                                      0.5
                                                       0.2
                                                                                                              3
                                                                                       0.2
                                                           2
10690820
                        848<del>6</del>921
                                          1020<u>8</u>124
                                                                            0859082
                    0.3
                                                                      0.6
    0.4
                                     0.6
                                                     0.12
                                                                                       0.9
    0.3
                    0.2
                                                                      0.4
                                     0.4
    0.2
                                                     0.08
                                                                                       0.6
                                                                       0.2
                    0.1
    0.1
                                     0.2
                                                                                       0.3
                                                     0.04
    0.0
                                                                      0.0
                                                           0 5101520
                                                                           0 5 1 0 1 5 2 0
        0 5101520
                        0 5 1 0 1 5 2 0
                                         0 5 1 0 1 5 2 0
                                                                                           0 5 1 0 1 5 2 0
                                               hour-of-day
```

$quantile_prob_val = seq(0.1, 0.9, 0.1)$

only hod

```
v3 <- suppressWarnings(
  scaled_dist_gran(data_pick, "day_month",
                      response = "general_supply_kwh",
                      quantile_prob_val = quantile_prob_val)) %>% rename("dist_dom" = "dist")
data dist <- v3 %>%
  left_join(v2) %>%
  mutate(dist = dist hod) %>%
    pivot_wider(-c(3, 4),
                   names_from = customer_to,
                values_from = dist) %>%
  rename("customer_id" = "customer_from")
## # A tibble: 3 x 2
##
      group
                 n
##
      <int> <int>
## 1
          1
                15
## 2
          2
                  1
## 3
          3
                 2
         8181071
                                       8198401
                        8196501
                                                                     8627007
                                                 0.3
                                                                1.00
     8.0
                                  8.0
                                                                                0.5
                   0.4
                                                                0.75
     0.6
                                                                                0.4
                                  0.6
                                                 0.2
                    0.3
                                                                                0.3
                                                                0.50
     0.4
                                  0.4
                    0.2
                                                 0.1
                                                                                0.2
                                                                0.25
     0.2
                                  0.2
                                                                                0.1
         8640839
                        8952846
                                       8955520
                                                     10208124
                                                                      0469265
                                                                                   10538785
     0.8
                                                                                0.5
demand (in Kwh)
                                                                                                 group
                                                                                0.4
                                  0.9
     0.6
                                                 0.6
                    0.9
                                                                   2
                                                                                                     1
                                                                                0.3
                                  0.6
     0.4
                                                 0.4
                    0.6
                                                                                                      2
                                                                                0.2
                                  0.3
     0.2
                                                 0.2
                    0.3
                                                                                                     3
                                                                     10046512
                                                                                    11013154
                        10859082
                                                     8485375
         10690820
                                      10895401
                                                                 0.6
                    0.6
                                  0.5
                                                 0.4
    0.12
                                  0.4
                                                                                1.0
                                                 0.3
                    0.4
                                                                 0.4
                                  0.3
                                                 0.2
    0.08
                    0.2
                                                                                0.5
                                  0.2
                                                                 0.2
                                                 0.1
    0.04
                                  0.1
                                                 0.0
                       0 5 1 0 1 5 2 0
         0 5 1 0 1 5 2 0
                                      0 5 1 0 1 5 2 0
                                                     0 5 1 0 1 5 2 0
                                                                     0 5 1 0 1 5 2 0
                                            hour-of-day
```

hod + dom

```
#data_pick <- data_pick %>% filter(!(customer_id %in% c(8485375, 8952846)))
library(gracsr)
v2 <- suppressWarnings(
    scaled_dist_gran(data_pick, "hour_day",</pre>
```

```
response = "general_supply_kwh",
                      quantile_prob_val = quantile_prob_val)) %>% rename("dist_hod" = "dist")
v3 <- suppressWarnings(
  scaled_dist_gran(data_pick, "day_month",
                      response = "general_supply_kwh",
                      quantile_prob_val = quantile_prob_val)) %>% rename("dist_dom" = "dist")
data_dist <- v3 %>%
  left_join(v2) %>%
  mutate(dist = dist_hod + dist_dom) %>%
    pivot_wider(-c(3, 4),
                  names_from = customer_to,
                values_from = dist) %>%
  rename("customer_id" = "customer_from")
## # A tibble: 3 x 2
##
      group
      <int> <int>
##
## 1
          1
                16
## 2
          2
                 1
## 3
          3
                 1
                       8196501
                                      8198401
                                                    8486921
         8181071
                                                                    8627007
                                                                                   86377
                                                0.3
                                                               1.00
     0.8
                                  8.0
                                                                               0.5
                   0.4
                                                               0.75
     0.6
                                                                               0.4
                                  0.6
                                                0.2
                   0.3
                                                                               0.3
                                                               0.50
     0.4
                                  0.4
                   0.2
                                                0.1
                                                                               0.2
                                                               0.25
     0.2
                                  0.2
                                                                               0.1
                                      10046512
                                                                                  105387
         8640839
                                                    10208124
                       8955520
                                                                    10469265
     8.0
                                                                               0.5
demand (in Kwh)
                                  0.6
                                                                                                group
                   0.9
                                                                               0.4
     0.6
                                                0.6
                                                                  2
                                                                                                    1
                                  0.4
                                                                               0.3
     0.4
                   0.6
                                                0.4
                                                                                                     2
                                                                               0.2
                                  0.2
                    0.3
     0.2
                                                0.2
                                                                                                    3
                                                                    2
8485375
         10690820
                       10859082
                                      10895401
                                                    11013154
                   0.6
                                  0.5
                                                                0.4
    0.12
                                                                               0.9
                                  0.4
                                                1.0
                                                                0.3
                   0.4
                                  0.3
                                                                0.2
    0.08
                                                                               0.6
                    0.2
                                                0.5
                                  0.2
                                                                0.1
                                                                               0.3
    0.04
                                  0.1
                                                                0.0
                   0.0
                       0 5 1 0 1 5 2 0
                                                                    0 5101520
        0 5 1 0 1 5 2 0
                                      0 5 1 0 1 5 2 0
                                                    0 5 1 0 1 5 2 0
                                                                                  0 5 1 0 1 5 2 0
                                           hour-of-day
```

remove the outlier and run again

```
quantile_prob_val = c(0.5, 0.75)
data_pick <- data_pick %>% filter(!(customer_id %in% 8952846))
```

```
library(gracsr)
v2 <- suppressWarnings(
  scaled_dist_gran(data_pick, "hour_day",
                     response = "general_supply_kwh",
                     quantile_prob_val = quantile_prob_val)) %>% rename("dist_hod" = "dist")
v3 <- suppressWarnings(
  scaled_dist_gran(data_pick, "day_month",
                     response = "general_supply_kwh",
                     quantile_prob_val = quantile_prob_val)) %>% rename("dist_dom" = "dist")
data_dist <- v3 %>%
  left_join(v2) %>%
  mutate(dist = dist_hod + dist_dom) %>%
    pivot_wider(-c(3, 4),
                 names_from = customer_to,
               values_from = dist) %>%
  rename("customer_id" = "customer_from")
## # A tibble: 3 x 2
##
     group
     <int> <int>
##
## 1
          1
## 2
          2
                 4
## 3
          3
                 6
                                                                            0.5 10538785
                                 0.8 8640839
        8181071
                      8637773
                                                    8955520
                                                                  10469265
   8.0
                 0.5
                                                                            0.4
                                                0.9
                                 0.6
                                                                2
   0.6
                 0.4
                                                                            0.3
                                                0.6
                 0.3
                                 0.4
   0.4
                                                                            0.2
                  0.2
                                                0.3
                                 0.2
   0.2
       1
10895401
                                                                                3
8198401
                      8196501
                                                    10046512
                                                                  11013154
demand (in Kwh)
                                1.00
                                                0.6
   0.5
                                                                            0.8
                                                                                             group
                 0.4 -
                                0.75
   0.4
                                                              1.0
                                                                            0.6
                                                                                                  1
                                                0.4
                 0.3
   0.3
                                0.50
                                                                                                  2
                                                                            0.4
                                                              0.5
   0.2
                  0.2
                                                0.2
                                0.25
                                                                            0.2
                                                                                                 3
                                                                                0 5 1 0 1 5 2 0
                                     3
10208124
                                                    3
10690820
                                                                  3
10859082
       3
8485375
                     3
8486921
                 0.3
                                                              0.6
   0.4
                                 0.6
                                               0.12 -
   0.3
                 0.2
                                                              0.4
                                 0.4
   0.2
                                               0.08
                                                              0.2
   0.1
                                 0.2
                                               0.04
   0.0
                                                              0.0
       0 5101520
                                    0 5 101520
                                                    0 5101520
                     0 5101520
                                                                  0 5101520
                                         hour-of-day
```