Assignment 3 in msb105

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Innholdsfortegnelse


```
library(tidyverse)
library(PxWebApiData)
library(flextable)
```

1 Kommuner i Bokna-regionen

```
knr <- as.character(c(
  1102, 1103, 1108, 1124, 1127, 1120, 1122, 1121, 1119,
  1144, 1130, 1106, 1146, 1149, 1216, 4612, 1145, 1133,
  1134, 1135, 1154, 1160, 1211, 4611, 1129, 1141, 1142
))

knavn <- c(
  "Sandnes (-2019)", "Stavanger", "Nye-Sandnes",
  "Sola", "Randaberg", "Klepp", "Gjesdal", "Time",
  "Hå", "Kvitsøy", "Strand", "Haugesund", "Tysvær",
  "Karmøy", "Sveio (-2019)", "Sveio", "Bokn",
  "Hjelmeland", "Suldal", "Sauda", "Vindafjord (-2006)",
  "Vindafjord", "Etne (-2019)", "Etne",
  "Forsand (-2019)", "Finnøy (-2020)", "Rennesøy (-2020)"
)
```

2 Hente data fra SSB

```
pend_02_24_ssb_boBF <- ApiData12(
  urlToData  = "03321",
```

```
  ArbstedKomm = list('*'),        # alle arbeidsstedkommuner
  Bokommuen   = knr,              # bare bosted i Bokna-regionen
  Tid         = as.character(2002:2024)
)
```

```
pend_02_24_boBF <- pend_02_24_ssb_boBF %>%
  mutate(
    akom_navn = arbeidsstedskommune,
    bkom_navn = bostedskommune,
    akom = paste0("k", ArbstedKomm),
    bkom = paste0("k", Bokommuen),

    # fikser gamle Etne/Sveio-koder
    akom = ifelse(akom == "k1211", "k4611", akom),
    akom = ifelse(akom == "k1216", "k4612", akom),
    bkom = ifelse(bkom == "k1211", "k4611", bkom),
    bkom = ifelse(bkom == "k1216", "k4612", bkom),

    akom_navn = ifelse(akom_navn == "Etne (-2019)",  "Etne",  akom_navn),
    akom_navn = ifelse(akom_navn == "Sveio (-2019)", "Sveio", akom_navn),
    bkom_navn = ifelse(bkom_navn == "Etne (-2019)",  "Etne",  bkom_navn),
    bkom_navn = ifelse(bkom_navn == "Sveio (-2019)", "Sveio", bkom_navn)
  ) %>%
  rename(
    aar      = Tid,
    pendlere = value
  ) %>%
  select(aar, akom, akom_navn, bkom, bkom_navn, pendlere) %>%
  as_tibble()
```

```
print(pend_02_24_boBF, n = 5)
```

```
# A tibble: 529,713 × 6
  aar   akom  akom_navn bkom  bkom_navn       pendlere
  <chr> <chr> <chr>     <chr> <chr>              <int>
1 2002  k3101 Halden    k1102 Sandnes (-2019)        0
2 2003  k3101 Halden    k1102 Sandnes (-2019)        0
3 2004  k3101 Halden    k1102 Sandnes (-2019)        0
4 2005  k3101 Halden    k1102 Sandnes (-2019)        0
5 2006  k3101 Halden    k1102 Sandnes (-2019)        0
# ℹ 529,708 more rows
```

```
pend_02_24_ssb_arbBF <- ApiData12(
  urlToData   = "03321",
  ArbstedKomm = knr,              # arbeidssted i Bokna-regionen
  Bokommuen   = list('*'),        # alle bostedkommuner
  Tid         = as.character(2002:2024)
)
```

```r
pend_02_24_arbBF <- pend_02_24_ssb_arbBF %>%
  mutate(
    akom_navn = arbeidsstedskommune,
    bkom_navn = bostedskommune,
    akom = paste0("k", ArbstedKomm),
    bkom = paste0("k", Bokommuen),

    # fikser gamle Etne/Sveio-koder
    akom = ifelse(akom == "k1211", "k4611", akom),
    akom = ifelse(akom == "k1216", "k4612", akom),
    bkom = ifelse(bkom == "k1211", "k4611", bkom),
    bkom = ifelse(bkom == "k1216", "k4612", bkom),

    akom_navn = ifelse(akom_navn == "Etne (-2019)",  "Etne",  akom_navn),
    akom_navn = ifelse(akom_navn == "Sveio (-2019)", "Sveio", akom_navn),
    bkom_navn = ifelse(bkom_navn == "Etne (-2019)",  "Etne",  bkom_navn),
    bkom_navn = ifelse(bkom_navn == "Sveio (-2019)", "Sveio", bkom_navn)
  ) %>%
  rename(
    aar      = Tid,
    pendlere = value
  ) %>%
  select(aar, akom, akom_navn, bkom, bkom_navn, pendlere) %>%
  as_tibble()
```

```r
print(pend_02_24_arbBF, n = 5)
```

```
# A tibble: 529,713 × 6
  aar   akom  akom_navn       bkom  bkom_navn pendlere
  <chr> <chr> <chr>           <chr> <chr>        <int>
1 2002  k1102 Sandnes (-2019) k3101 Halden           0
2 2003  k1102 Sandnes (-2019) k3101 Halden           0
3 2004  k1102 Sandnes (-2019) k3101 Halden           0
4 2005  k1102 Sandnes (-2019) k3101 Halden           0
5 2006  k1102 Sandnes (-2019) k3101 Halden           0
# ℹ 529,708 more rows
```

3 Kommunesammenslåingene

```r
# Kommuner i Bokna-regionen som IKKE er med i nye Stavanger, Sandnes,
Vindafjord
knr_u_SSV <- paste0(
  "k",
  c(
    1124, 1127, 1120, 1122, 1121, 1119,
    1144, 1130, 1106, 1146, 1149, 1145,
    1133, 1134, 1135, 1102, 4611, 4612
  )
)
```

4 Bosted rundt boknafjorden

```
pend_02_24_boBF <- pend_02_24_boBF %>%
  mutate(
    # NY bostedskommune (bkom) etter sammenslåingene
    nye_bkom = case_when(
      bkom %in% c("k1102", "k1108", "k1129") ~ "k1108",  # Nye Sandnes
      bkom %in% c("k1103", "k1141", "k1142") ~ "k1103",  # Nye Stavanger
      bkom %in% c("k1154", "k1159", "k1160") ~ "k1160",  # Nye Vindafjord
      TRUE ~ bkom                                        # resten beholder
bkom
    ),
    nye_bkom_navn = case_when(
      bkom %in% c("k1102", "k1108", "k1129") ~ "Sandnes",
      bkom %in% c("k1103", "k1141", "k1142") ~ "Stavanger",
      bkom %in% c("k1154", "k1159", "k1160") ~ "Vindafjord",
      TRUE ~ bkom_navn
    ),

    # NY arbeidsstedskommune (akom) etter sammenslåingene + RAL
    nye_akom = case_when(
      akom %in% c("k1102", "k1108", "k1129") ~ "k1108",
      akom %in% c("k1103", "k1141", "k1142") ~ "k1103",
      akom %in% c("k1154", "k1159", "k1160") ~ "k1160",
      # de som fortsatt er i Bokna-regionen (utenom SSV) beholder akom
      akom %in% knr_u_SSV ~ akom,
      # alle andre (utenfor Bokna-regionen) blir RAL
      TRUE ~ "k9999"
    ),
    nye_akom_navn = case_when(
      akom %in% c("k1102", "k1108", "k1129") ~ "Sandnes",
      akom %in% c("k1103", "k1141", "k1142") ~ "Stavanger",
      akom %in% c("k1154", "k1159", "k1160") ~ "Vindafjord",
      akom %in% knr_u_SSV ~ akom_navn,
      TRUE ~ "RAL"
    )
  )
```

```
pend_02_24_boBF_agg <- pend_02_24_boBF %>%
  group_by(aar, nye_akom, nye_akom_navn, nye_bkom, nye_bkom_navn) %>%
  summarise(pendlere = sum(pendlere), .groups = "drop")
```

```
print(pend_02_24_boBF_agg, n = 5)
```

```
# A tibble: 9,660 × 6
  aar   nye_akom nye_akom_navn nye_bkom nye_bkom_navn pendlere
  <chr> <chr>    <chr>         <chr>    <chr>            <int>
1 2002  k1103    Stavanger     k1103    Stavanger        43142
2 2002  k1103    Stavanger     k1106    Haugesund          347
3 2002  k1103    Stavanger     k1108    Sandnes           8826
```

```
4 2002  k1103    Stavanger     k1119    Hå                637
5 2002  k1103    Stavanger     k1120    Klepp            1187
# ℹ 9,655 more rows
```

```
dim(pend_02_24_boBF_agg)
```

```
[1] 9660    6
```

```
pend_02_24_boBF_agg %>%
  filter(nye_akom_navn == "Stavanger") %>%
  arrange(aar, nye_bkom_navn) %>%
  print(n = 22)
```

```
# A tibble: 460 × 6
   aar   nye_akom nye_akom_navn nye_bkom nye_bkom_navn pendlere
   <chr> <chr>    <chr>         <chr>    <chr>            <int>
 1 2002  k1103    Stavanger     k1145    Bokn                16
 2 2002  k1103    Stavanger     k4611    Etne                39
 3 2002  k1103    Stavanger     k1122    Gjesdal            908
 4 2002  k1103    Stavanger     k1106    Haugesund          347
 5 2002  k1103    Stavanger     k1133    Hjelmeland         102
 6 2002  k1103    Stavanger     k1119    Hå                 637
 7 2002  k1103    Stavanger     k1149    Karmøy             416
 8 2002  k1103    Stavanger     k1120    Klepp             1187
 9 2002  k1103    Stavanger     k1144    Kvitsøy             63
10 2002  k1103    Stavanger     k1127    Randaberg         2249
11 2002  k1103    Stavanger     k1108    Sandnes           8826
12 2002  k1103    Stavanger     k1135    Sauda               65
13 2002  k1103    Stavanger     k1124    Sola              3774
14 2002  k1103    Stavanger     k1103    Stavanger        43142
15 2002  k1103    Stavanger     k1130    Strand             957
16 2002  k1103    Stavanger     k1134    Suldal              97
17 2002  k1103    Stavanger     k4612    Sveio               41
18 2002  k1103    Stavanger     k1121    Time              1049
19 2002  k1103    Stavanger     k1146    Tysvær             109
20 2002  k1103    Stavanger     k1160    Vindafjord          73
21 2003  k1103    Stavanger     k1145    Bokn                11
22 2003  k1103    Stavanger     k4611    Etne                33
# ℹ 438 more rows
```

```
pend_02_24_boBF_agg %>%
  filter(
    nye_akom_navn == "Stavanger",
    nye_bkom_navn == "Stavanger"
  ) %>%
  arrange(aar) %>%
  print(n = 23)
```

```
# A tibble: 23 × 6
   aar   nye_akom nye_akom_navn nye_bkom nye_bkom_navn pendlere
   <chr> <chr>    <chr>         <chr>    <chr>            <int>
 1 2002  k1103    Stavanger     k1103    Stavanger        43142
 2 2003  k1103    Stavanger     k1103    Stavanger        43186
 3 2004  k1103    Stavanger     k1103    Stavanger        43472
 4 2005  k1103    Stavanger     k1103    Stavanger        43962
 5 2006  k1103    Stavanger     k1103    Stavanger        46632
 6 2007  k1103    Stavanger     k1103    Stavanger        49082
 7 2008  k1103    Stavanger     k1103    Stavanger        49561
 8 2009  k1103    Stavanger     k1103    Stavanger        49421
 9 2010  k1103    Stavanger     k1103    Stavanger        50038
10 2011  k1103    Stavanger     k1103    Stavanger        51547
11 2012  k1103    Stavanger     k1103    Stavanger        52519
12 2013  k1103    Stavanger     k1103    Stavanger        52890
13 2014  k1103    Stavanger     k1103    Stavanger        52328
14 2015  k1103    Stavanger     k1103    Stavanger        49833
15 2016  k1103    Stavanger     k1103    Stavanger        48772
16 2017  k1103    Stavanger     k1103    Stavanger        48796
17 2018  k1103    Stavanger     k1103    Stavanger        49616
18 2019  k1103    Stavanger     k1103    Stavanger        50318
19 2020  k1103    Stavanger     k1103    Stavanger        49390
20 2021  k1103    Stavanger     k1103    Stavanger        50713
21 2022  k1103    Stavanger     k1103    Stavanger        51860
22 2023  k1103    Stavanger     k1103    Stavanger        53630
23 2024  k1103    Stavanger     k1103    Stavanger        53588
```

```
pend_02_24_boBF_agg |>
  distinct(nye_akom) |>
  pull(nye_akom) |>
  print(width = 70)
```

```
 [1] "k1103" "k1106" "k1108" "k1119" "k1120" "k1121" "k1122" "k1124"
 [9] "k1127" "k1130" "k1133" "k1134" "k1135" "k1144" "k1145" "k1146"
[17] "k1149" "k1160" "k4611" "k4612" "k9999"
```

5 Arbeidssted Bokna-Regionen

```
pend_02_24_arbBF <- pend_02_24_arbBF %>%
  mutate(
    # BOSTED (bkom): Bokna-kommuner + resten av landet = RAL
    nye_bkom = case_when(
      bkom %in% c("k1102", "k1108", "k1129") ~ "k1108",  # Nye Sandnes
      bkom %in% c("k1103", "k1141", "k1142") ~ "k1103",  # Nye Stavanger
      bkom %in% c("k1154", "k1159", "k1160") ~ "k1160",  # Nye Vindafjord
      bkom %in% knr_u_SSV ~ bkom,                        # øvrige Bokna
      TRUE ~ "k9999"                                     # resten av landet
    ),
    nye_bkom_navn = case_when(
```

```
      bkom %in% c("k1102", "k1108", "k1129") ~ "Sandnes",
      bkom %in% c("k1103", "k1141", "k1142") ~ "Stavanger",
      bkom %in% c("k1154", "k1159", "k1160") ~ "Vindafjord",
      bkom %in% knr_u_SSV ~ bkom_navn,
      TRUE ~ "RAL"
    ),

    # ARBEIDSSTED (akom): her er allerede bare Bokna-kommuner + RAL
    nye_akom = case_when(
      akom %in% c("k1102", "k1108", "k1129") ~ "k1108",
      akom %in% c("k1103", "k1141", "k1142") ~ "k1103",
      akom %in% c("k1154", "k1159", "k1160") ~ "k1160",
      akom %in% knr_u_SSV ~ akom,
      TRUE ~ "k9999"
    ),
    nye_akom_navn = case_when(
      akom %in% c("k1102", "k1108", "k1129") ~ "Sandnes",
      akom %in% c("k1103", "k1141", "k1142") ~ "Stavanger",
      akom %in% c("k1154", "k1159", "k1160") ~ "Vindafjord",
      akom %in% knr_u_SSV ~ akom_navn,
      TRUE ~ "RAL"
    )
  )
```

```
pend_02_24_arbBF_agg <- pend_02_24_arbBF %>%
  group_by(aar, nye_akom, nye_akom_navn, nye_bkom, nye_bkom_navn) %>%
  summarise(pendlere = sum(pendlere), .groups = "drop")

dim(pend_02_24_arbBF_agg)
```

```
[1] 9660    6
```

```
pend_02_24_arbBF_agg %>%
  filter(nye_akom_navn == "Stavanger",
         nye_bkom_navn == "Stavanger") %>%
  arrange(aar) %>%
  print(n = 23)
```

```
# A tibble: 23 × 6
   aar   nye_akom nye_akom_navn nye_bkom nye_bkom_navn pendlere
   <chr> <chr>    <chr>         <chr>    <chr>            <int>
 1 2002  k1103    Stavanger     k1103    Stavanger        43142
 2 2003  k1103    Stavanger     k1103    Stavanger        43186
 3 2004  k1103    Stavanger     k1103    Stavanger        43472
 4 2005  k1103    Stavanger     k1103    Stavanger        43962
 5 2006  k1103    Stavanger     k1103    Stavanger        46632
 6 2007  k1103    Stavanger     k1103    Stavanger        49082
 7 2008  k1103    Stavanger     k1103    Stavanger        49561
```

```
 8 2009  k1103    Stavanger     k1103    Stavanger        49421
 9 2010  k1103    Stavanger     k1103    Stavanger        50038
10 2011  k1103    Stavanger     k1103    Stavanger        51547
11 2012  k1103    Stavanger     k1103    Stavanger        52519
12 2013  k1103    Stavanger     k1103    Stavanger        52890
13 2014  k1103    Stavanger     k1103    Stavanger        52328
14 2015  k1103    Stavanger     k1103    Stavanger        49833
15 2016  k1103    Stavanger     k1103    Stavanger        48772
16 2017  k1103    Stavanger     k1103    Stavanger        48796
17 2018  k1103    Stavanger     k1103    Stavanger        49616
18 2019  k1103    Stavanger     k1103    Stavanger        50318
19 2020  k1103    Stavanger     k1103    Stavanger        49390
20 2021  k1103    Stavanger     k1103    Stavanger        50713
21 2022  k1103    Stavanger     k1103    Stavanger        51860
22 2023  k1103    Stavanger     k1103    Stavanger        53630
23 2024  k1103    Stavanger     k1103    Stavanger        53588
```

```
pend_02_24_boBF_agg <- pend_02_24_boBF_agg %>%
  rename(
    akom      = nye_akom,
    akom_navn = nye_akom_navn,
    bkom      = nye_bkom,
    bkom_navn = nye_bkom_navn
  )

pend_02_24_arbBF_agg <- pend_02_24_arbBF_agg %>%
  rename(
    akom      = nye_akom,
    akom_navn = nye_akom_navn,
    bkom      = nye_bkom,
    bkom_navn = nye_bkom_navn
  )
```

```
names(pend_02_24_boBF_agg)
```

```
[1] "aar"       "akom"      "akom_navn" "bkom"      "bkom_navn" "pendlere"
```

```
names(pend_02_24_arbBF_agg)
```

```
[1] "aar"       "akom"      "akom_navn" "bkom"      "bkom_navn" "pendlere"
```

```
boBF_arb_RAL <- pend_02_24_boBF_agg %>%
  filter(akom == "k9999")
```

```
dim(boBF_arb_RAL)
```

```
[1] 460   6
```

```
pend_02_24 <- bind_rows(
  pend_02_24_arbBF_agg,
  boBF_arb_RAL
)
```

```
names(pend_02_24)
```

```
[1] "aar"       "akom"      "akom_navn" "bkom"      "bkom_navn" "pendlere"
```

```
dim(pend_02_24)
```

```
[1] 10120     6
```

```
print(pend_02_24, n = 5)
```

```
# A tibble: 10,120 × 6
  aar   akom  akom_navn bkom  bkom_navn pendlere
  <chr> <chr> <chr>     <chr> <chr>        <int>
1 2002  k1103 Stavanger k1103 Stavanger    43142
2 2002  k1103 Stavanger k1106 Haugesund      347
3 2002  k1103 Stavanger k1108 Sandnes       8826
4 2002  k1103 Stavanger k1119 Hå             637
5 2002  k1103 Stavanger k1120 Klepp         1187
# ℹ 10,115 more rows
```

```
rm(
  boBF_arb_RAL,
  pend_02_24_arbBF,
  pend_02_24_boBF,
  pend_02_24_ssb_arbBF,
  pend_02_24_ssb_boBF
)
```

6 Totalt antall arbeidstakere i hele landet per år

```
# Fylkesnummer vi skal hente (uten Svalbard og kontinentalsokkelen)
fnr <- c(
  "30", "01", "02", "06", "03", "34", "04", "05", "38",
  "07", "08", "42", "09", "10", "11", "46", "12", "14",
  "15", "50", "16", "17", "18", "54", "19", "20", "31",
  "32", "33", "39", "40", "55", "56"
)
```

```
tot_arb_HL_raw <- ApiData12(
  urlToData    = "11616",
  Region       = fnr,
  Kjonn        = c("1", "2"),   # menn + kvinner
  Alder        = "15-74",
  ContentsCode = "Sysselsatte personer bosatt i regionen",
  Tid          = as.character(2002:2024)
)
```

```
names(tot_arb_HL_raw)
```

```
 [1] "region"             "kjønn"              "alder"
 [4] "statistikkvariabel" "år"                 "Region"
 [7] "Kjonn"              "Alder"              "ContentsCode"
[10] "Tid"                "value"
```

```
head(tot_arb_HL_raw) |>
  print(width = 70)
```

```
   region   kjønn    alder                    statistikkvariabel
1 Østfold Kvinner 15-74 år Sysselsatte personer bosatt i regionen
2 Østfold Kvinner 15-74 år Sysselsatte personer bosatt i regionen
3 Østfold Kvinner 15-74 år Sysselsatte personer bosatt i regionen
4 Østfold Kvinner 15-74 år Sysselsatte personer bosatt i regionen
5 Østfold Kvinner 15-74 år Sysselsatte personer bosatt i regionen
6 Østfold Kvinner 15-74 år Sysselsatte personer bosatt i regionen
    år Region Kjonn Alder ContentsCode  Tid value
1 2002     31     2 15-74       Bosatt 2002     0
2 2003     31     2 15-74       Bosatt 2003     0
3 2004     31     2 15-74       Bosatt 2004     0
4 2005     31     2 15-74       Bosatt 2005     0
5 2006     31     2 15-74       Bosatt 2006     0
6 2007     31     2 15-74       Bosatt 2007     0
```

```
tot_arb_HL <- tot_arb_HL_raw %>%
  group_by(Tid) %>%
  summarise(arbtak_HL = sum(value), .groups = "drop") %>%
  rename(aar = Tid)
```

```
dim(tot_arb_HL)
```

```
[1] 23  2
```

```
print(tot_arb_HL, n = 10)
```

```
# A tibble: 23 × 2
   aar   arbtak_HL
   <chr>     <int>
 1 2002    2267000
 2 2003    2260000
 3 2004    2274000
 4 2005    2308000
 5 2006    2389000
 6 2007    2484000
 7 2008    2525000
 8 2009    2497000
 9 2010    2517000
10 2011    2562000
# ℹ 13 more rows
```

```
BF <- c(knr_u_SSV, "k1103", "k1108", "k1160")
```

```
bBFjHL <- pend_02_24 %>%
  filter(bkom %in% BF) %>%          # bor i BF
  group_by(aar) %>%
  summarise(bBFjHL = sum(pendlere))
```

```
dim(bBFjHL)
```

```
[1] 23  2
```

```
print(bBFjHL, n = 5)
```

```
# A tibble: 23 × 2
  aar   bBFjHL
  <chr>  <int>
1 2002  184466
2 2003  184828
3 2004  187796
4 2005  193779
5 2006  204477
# ℹ 18 more rows
```

```
bRALjBF <- pend_02_24 %>%
  filter(
    akom %in% BF,        # jobber i BF
    !bkom %in% BF        # bor utenfor BF (RAL)
  ) %>%
  group_by(aar) %>%
  summarise(bRALjBF = sum(pendlere))
```

```r
dim(bRALjBF)
```

```
[1] 23  2
```

```r
print(bRALjBF, n = 5)
```

```
# A tibble: 23 × 2
  aar   bRALjBF
  <chr>   <int>
1 2002    10516
2 2003     9332
3 2004     9438
4 2005     9636
5 2006    12295
# ℹ 18 more rows
```

```r
tot_arb_HL <- left_join(tot_arb_HL, bBFjHL,  by = join_by(aar))
tot_arb_HL <- left_join(tot_arb_HL, bRALjBF, by = join_by(aar))

tot_arb_HL <- tot_arb_HL %>%
  mutate(
    bRALjRAL = arbtak_HL - bBFjHL - bRALjBF
  )
```

```r
dim(tot_arb_HL)
```

```
[1] 23  5
```

```r
print(tot_arb_HL, n = 10)
```

```
# A tibble: 23 × 5
   aar   arbtak_HL bBFjHL bRALjBF bRALjRAL
   <chr>     <int>  <int>   <int>    <int>
 1 2002    2267000 184466   10516  2072018
 2 2003    2260000 184828    9332  2065840
 3 2004    2274000 187796    9438  2076766
 4 2005    2308000 193779    9636  2104585
 5 2006    2389000 204477   12295  2172228
 6 2007    2484000 215370   13660  2254970
 7 2008    2525000 221464   13926  2289610
 8 2009    2497000 220540   13485  2262975
 9 2010    2517000 224026   13927  2279047
10 2011    2562000 230410   15444  2316146
# ℹ 13 more rows
```

```
total <- tot_arb_HL %>%
  select(aar, pendlere = arbtak_HL) %>%
  mutate(
    akom      = "k0000",
    akom_navn = "TotaltBo",
    bkom      = "k0000",
    bkom_navn = "TotaltArb",
    .before   = pendlere
  )
```

```
dim(total)
```

```
[1] 23  6
```

```
print(total, n = 5)
```

```
# A tibble: 23 × 6
  aar   akom  akom_navn bkom  bkom_navn pendlere
  <chr> <chr> <chr>     <chr> <chr>        <int>
1 2002  k0000 TotaltBo  k0000 TotaltArb  2267000
2 2003  k0000 TotaltBo  k0000 TotaltArb  2260000
3 2004  k0000 TotaltBo  k0000 TotaltArb  2274000
4 2005  k0000 TotaltBo  k0000 TotaltArb  2308000
5 2006  k0000 TotaltBo  k0000 TotaltArb  2389000
# ℹ 18 more rows
```

```
p_bRALjRAL <- tot_arb_HL %>%
  select(aar, pendlere = bRALjRAL) %>%
  mutate(
    akom      = "k9999",
    akom_navn = "RAL",
    bkom      = "k9999",
    bkom_navn = "RAL",
    .before   = pendlere
  )
```

```
dim(p_bRALjRAL)
```

```
[1] 23  6
```

```
print(p_bRALjRAL, n = 5)
```

```
# A tibble: 23 × 6
  aar   akom  akom_navn bkom  bkom_navn pendlere
```

```
  <chr> <chr> <chr>     <chr> <chr>        <int>
1 2002  k9999 RAL       k9999 RAL        2072018
2 2003  k9999 RAL       k9999 RAL        2065840
3 2004  k9999 RAL       k9999 RAL        2076766
4 2005  k9999 RAL       k9999 RAL        2104585
5 2006  k9999 RAL       k9999 RAL        2172228
# ℹ 18 more rows
```

```
pend_02_24 <- bind_rows(pend_02_24, p_bRALjRAL)
```

```
pendlematrise_2010 <- pend_02_24 %>%
  ungroup() %>%
  filter(aar == "2010") %>%
  select(bkom, akom, pendlere) %>%
  group_by(bkom, akom) %>%
  summarise(pendlere = sum(pendlere),
            .groups = "drop") %>%
  tidyr::pivot_wider(
    names_from  = akom,
    values_from = pendlere,
    values_fill = 0
  )
```

```
pendlematrise_2010 |>
  print(width = 140, n = 25)
```

```
# A tibble: 21 × 22
   bkom  k1103 k1106 k1108 k1119 k1120 k1121 k1122 k1124 k1127 k1130
   <chr> <int> <int> <int> <int> <int> <int> <int> <int> <int> <int>
 1 k1103 50038   119  7707   126   411   283   165  5846  1463   100
 2 k1106   352 12034   111     5     2     3     0    65    12     4
 3 k1108 10577    42 17650   303   962   569   492  2920   209   158
 4 k1119   677     6   696  5446   566  1021    58   323    16     4
 5 k1120  1499     6  1711   374  3464  1144    82   759    36    10
 6 k1121  1357     9  1316   587  1095  3724   134   458    18     4
 7 k1122   990     3  1478    94   211   176  2252   347    23    10
 8 k1124  4454    20  1860    37   200    92    31  4866   173    12
 9 k1127  2366    14   431     7    24     8     9   489  1626     8
10 k1130   963    14   344     8    12     8     3   117    16  3839
# ℹ 11 more rows
# ℹ 11 more variables: k1133 <int>, k1134 <int>, k1135 <int>,
#   k1144 <int>, k1145 <int>, k1146 <int>, k1149 <int>, k1160 <int>,
#   k4611 <int>, k4612 <int>, k9999 <int>
```

```
pendlematrise_2010 %>%
  as_flextable(max_row = 30, show_coltype = FALSE) |>
  delete_part("footer") |>
  autofit()
```

Tabell 1: Pendlematrise for Bokna-regionen 2010.

bkom	k1103	k1106	k1108	k1119	k1120	k1121	k1122	k1124	k1127	k1130	k1133	k1134	k1135	k1144	k1145	k1146	k1149	k1160	k4611	k4612	k9999
k1103	50,038	119	7,707	126	411	283	165	5,846	1,463	100	92	40	7	46	7	33	51	23	8	0	5,137
k1106	352	12,034	111	5	2	3	0	65	12	4	4	30	8	10	23	874	1,884	220	23	130	1,666
k1108	10,577	42	17,650	303	962	569	492	2,920	209	158	23	17	3	16	1	6	21	8	0	2	2,197
k1119	677	6	696	5,446	566	1,021	58	323	16	4	2	2	0	1	0	0	2	2	1	0	520
k1120	1,499	6	1,711	374	3,464	1,144	82	759	36	10	3	3	1	2	0	2	10	7	0	0	486
k1121	1,357	9	1,316	587	1,095	3,724	134	458	18	4	4	0	0	1	0	1	2	2	2	0	459
k1122	990	3	1,478	94	211	176	2,252	347	23	10	0	2	0	0	0	1	3	0	0	0	337
k1124	4,454	20	1,860	37	200	92	31	4,866	173	12	4	11	1	14	1	3	9	6	0	0	815
k1127	2,366	14	431	7	24	8	9	489	1,626	8	5	2	0	9	0	0	2	3	0	0	297
k1130	963	14	344	8	12	8	3	117	16	3,839	129	10	1	1	1	3	4	4	0	0	497
k1133	106	6	32	2	0	1	0	14	1	73	1,205	28	0	0	0	2	1	1	0	0	62
k1134	103	19	32	2	4	3	1	16	0	1	24	1,660	80	1	0	3	16	15	0	0	120
k1135	68	36	24	0	2	0	2	19	1	4	5	50	2,005	0	1	2	13	10	4	2	167
k1144	72	0	15	1	1	0	0	7	9	0	1	0	0	132	0	1	0	0	0	0	15
k1145	21	53	4	0	0	0	0	6	0	0	0	1	0	7	200	50	8	18	0	1	49
k1146	118	1,566	23	1	0	4	1	31	4	2	5	19	3	3	27	2,324	427	225	9	32	395
k1149	500	5,049	110	11	7	5	6	95	19	1	13	23	7	38	18	504	11,444	202	14	32	1,657
k1160	80	316	20	3	0	0	2	19	1	2	7	27	15	3	1	141	72	3,241	120	9	326
k4611	27	70	12	1	1	1	0	6	1	0	0	1	3	2	1	18	20	338	1,356	2	202
k4612	49	816	10	0	1	0	0	11	2	2	0	8	0	1	7	121	140	41	8	1,074	310
k9999	6,814	1,035	1,885	364	162	243	124	1,882	130	69	54	166	46	17	3	142	463	177	78	73	2,279,047

```r
totalt_arb <- pend_02_24 |>
  group_by(aar, akom, akom_navn) |>
  summarise(pendlere = sum(pendlere), .groups = 'drop') |>
  mutate(
    bkom = "k0000",
    bkom_navn = "TotaltArb"
  )
```

```r
totalt_bo <- pend_02_24 |>
  group_by(aar, bkom, bkom_navn) |>
  summarise(pendlere = sum(pendlere), .groups = 'drop') |>
   mutate(
    akom = "k0000",
    akom_navn = "TotaltBo"
  )
```

```r
pendle_data_02_24 <- bind_rows(
  pend_02_24,
  totalt_arb,
  totalt_bo,
  total
)
```

```r
dim(pendle_data_02_24)
```

```
[1] 11132     6
```

```r
print(pendle_data_02_24, n = 5)
```

```
# A tibble: 11,132 × 6
  aar   akom  akom_navn bkom  bkom_navn pendlere
  <chr> <chr> <chr>     <chr> <chr>        <int>
1 2002  k1103 Stavanger k1103 Stavanger    43142
2 2002  k1103 Stavanger k1106 Haugesund      347
3 2002  k1103 Stavanger k1108 Sandnes       8826
4 2002  k1103 Stavanger k1119 Hå             637
5 2002  k1103 Stavanger k1120 Klepp         1187
# ℹ 11,127 more rows
```

```r
dim(pendle_data_02_24)
```

```
[1] 11132     6
```

```r
names(pendle_data_02_24)
```

```
[1] "aar"       "akom"      "akom_navn" "bkom"      "bkom_navn" "pendlere"
```

```
print(pendle_data_02_24, n = 5)
```

```
# A tibble: 11,132 × 6
  aar   akom  akom_navn bkom  bkom_navn pendlere
  <chr> <chr> <chr>     <chr> <chr>        <int>
1 2002  k1103 Stavanger k1103 Stavanger    43142
2 2002  k1103 Stavanger k1106 Haugesund      347
3 2002  k1103 Stavanger k1108 Sandnes       8826
4 2002  k1103 Stavanger k1119 Hå             637
5 2002  k1103 Stavanger k1120 Klepp         1187
# ℹ 11,127 more rows
```

6.1 Andel Pendlere

```
andel_pendle_data_02_24 <- pendle_data_02_24 %>%
  unite(knrN, akom, akom_navn) %>%
  group_by(aar, bkom, bkom_navn) %>%
  pivot_wider(
    names_from = knrN,
    values_from = pendlere
  ) %>%
  as_tibble() %>%
  mutate(
    across(
      .cols = k1103_Stavanger:k0000_TotaltBo,

      .fns = function(x) round((x / k0000_TotaltBo) * 100, digits = 4)
    )
    ) %>%
  ungroup()
```

```
dim(andel_pendle_data_02_24)
```

```
[1] 506  25
```

```
names(andel_pendle_data_02_24)
```

```
 [1] "aar"              "bkom"             "bkom_navn"
"k1103_Stavanger"
 [5] "k1106_Haugesund"  "k1108_Sandnes"    "k1119_Hå"
"k1120_Klepp"
 [9] "k1121_Time"       "k1122_Gjesdal"    "k1124_Sola"
"k1127_Randaberg"
[13] "k1130_Strand"     "k1133_Hjelmeland" "k1134_Suldal"
```

```
"k1135_Sauda"
[17] "k1144_Kvitsøy"    "k1145_Bokn"       "k1146_Tysvær"
"k1149_Karmøy"
[21] "k1160_Vindafjord" "k4611_Etne"       "k4612_Sveio"
"k9999_RAL"
[25] "k0000_TotaltBo"
```

```
tab <- andel_pendle_data_02_24 |>
  filter(aar == 2017) |>
  select(-aar, -bkom_navn)
```

```
names(tab) <- str_replace_all(names(tab), "_", "\n")
```

```
tab |>
  as_flextable(
    show_coltype = FALSE,
    max_row = 30
  ) |>
  #rotate(rotation = "tbrl", part = "header") |>
  line_spacing(space = 0.5, part = "body") |>
  colformat_double(big.mark = ' ', digits = 2) |>
  set_table_properties(width = 0.25, layout = "autofit") |>
  padding(padding = 3) |>
  delete_part("footer")
```

Tabell 2: Pendlematrise for 2017 for Bokna-regionen. Data fra SSB statistikktabellene 03321 og 11616.

bkom	k1103 Stavanger	k1106 Haugesund	k1108 Sandnes	k1119 Hå	k1120 Klepp	k1121 Time	k1122 Gjesdal	k1124 Sola	k1127 Randaberg	k1130 Strand	k1133 Hjelmeland	k1134 Suldal	k1135 Sauda	k1144 Kvitsøy	k1145 Bokn	k1146 Tysvær	k1149 Karmøy	k1160 Vindafjord	k4611 Etne	k4612 Sveio	k9999 RAL	k0000 TotaltBo
k1103	68.80	0.21	10.23	0.28	0.70	0.38	0.29	9.66	1.85	0.22	0.03	0.05	0.01	0.07	0.00	0.04	0.09	0.03	0.01	0.00	7.04	100
k1106	1.89	66.80	0.39	0.03	0.02	0.03	0.02	0.61	0.02	0.00	0.00	0.01	0.02	0.03	0.15	5.23	13.28	1.40	0.13	1.16	8.79	100
k1108	27.53	0.17	47.70	0.91	3.21	1.70	1.88	9.54	0.44	0.34	0.03	0.03	0.00	0.05	0.00	0.03	0.08	0.03	0.01	0.00	6.33	100
k1119	6.70	0.10	7.13	58.64	6.48	11.36	0.76	3.04	0.10	0.04	0.02	0.04	0.03	0.03	0.00	0.01	0.05	0.02	0.00	0.00	5.45	100
k1120	14.45	0.05	17.42	5.02	37.03	10.63	0.98	8.40	0.32	0.15	0.01	0.01	0.00	0.09	0.00	0.03	0.05	0.03	0.00	0.01	5.33	100
k1121	14.55	0.08	13.10	7.47	13.64	38.40	1.66	5.74	0.11	0.10	0.00	0.04	0.01	0.03	0.00	0.03	0.09	0.04	0.01	0.00	4.89	100
k1122	15.73	0.14	22.16	1.80	5.19	3.26	38.44	6.96	0.24	0.21	0.00	0.05	0.00	0.00	0.00	0.02	0.03	0.03	0.00	0.00	5.75	100
k1124	35.01	0.19	14.01	0.56	1.82	0.74	0.38	39.44	0.96	0.13	0.02	0.03	0.02	0.07	0.01	0.03	0.06	0.04	0.01	0.00	6.47	100
k1127	43.27	0.33	7.86	0.24	0.71	0.33	0.15	10.43	29.42	0.35	0.02	0.04	0.00	0.46	0.02	0.02	0.07	0.11	0.00	0.00	6.18	100
k1130	15.49	0.13	7.98	0.15	0.21	0.15	0.08	3.60	0.28	60.55	2.99	0.12	0.00	0.00	0.00	0.03	0.05	0.13	0.03	0.00	8.03	100
k1133	5.71	0.15	1.98	0.22	0.37	0.15	0.15	2.34	0.29	5.56	74.76	2.78	0.07	0.00	0.00	0.00	0.51	0.15	0.00	0.00	4.83	100
k1134	2.85	1.00	1.00	0.15	0.10	0.05	0.05	0.85	0.00	0.10	1.20	82.08	3.59	0.05	0.00	0.20	0.50	1.50	0.05	0.00	4.69	100
k1135	1.83	2.19	0.67	0.04	0.00	0.09	0.00	0.89	0.00	0.04	0.00	3.13	81.32	0.00	0.00	0.09	0.31	1.03	0.36	0.00	8.00	100
k1144	27.01	0.00	2.92	0.00	0.00	0.73	0.00	4.01	3.65	0.73	0.00	0.00	0.00	54.01	0.00	0.36	0.36	0.00	0.00	0.00	6.20	100
k1145	2.12	12.94	0.94	0.00	0.24	0.00	0.00	0.71	0.24	0.00	0.00	0.24	0.00	1.18	51.06	9.41	7.29	3.76	0.00	0.47	9.41	100
k1146	1.97	29.31	0.37	0.02	0.00	0.07	0.02	0.57	0.07	0.02	0.02	0.15	0.02	0.04	0.52	42.43	10.40	4.88	0.20	0.75	8.19	100
k1149	1.99	24.87	0.44	0.06	0.05	0.01	0.02	0.98	0.07	0.01	0.00	0.03	0.02	0.13	0.11	3.24	58.86	0.92	0.10	0.22	7.86	100
k1160	1.54	6.64	0.43	0.09	0.02	0.04	0.00	0.33	0.02	0.00	0.13	0.74	0.15	0.09	0.02	3.47	1.85	73.98	3.24	0.28	6.93	100
k4611	1.17	2.79	0.24	0.05	0.05	0.00	0.00	0.34	0.00	0.05	0.05	0.10	0.05	0.15	0.05	1.13	1.08	18.20	64.58	0.15	9.78	100
k4612	1.67	29.68	0.18	0.07	0.00	0.00	0.04	0.71	0.00	0.00	0.04	0.00	0.00	0.04	0.11	5.09	6.41	3.03	0.46	38.72	13.75	100
k9999	0.25	0.04	0.08	0.02	0.01	0.01	0.01	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00	99.42	100
k0000	3.00	0.81	1.36	0.31	0.31	0.28	0.15	0.82	0.13	0.16	0.05	0.08	0.07	0.01	0.01	0.17	0.59	0.19	0.06	0.06	91.38	100

```
andel_pendle_data_02_24_long <- andel_pendle_data_02_24 |>
  pivot_longer(
    cols = starts_with("k"),
    names_to  = "knrN",
    values_to = "andel"
  ) |>
  separate(knrN, into = c("akom", "akom_navn"), sep = "_") |>
  mutate(aar = ymd(paste0(aar, "-01-01"))) |>
  select(aar, akom, akom_navn, bkom, bkom_navn, andel)
```

```
pend_02_24 |>
  filter(aar == "2002") |>
  select(akom, akom_navn) |>
  distinct() |>
  as_flextable(max_row = 30, show_coltype = FALSE) |>
  line_spacing(space = 0.3) |>
  delete_part("footer")
```

akom	akom_navn
k1103	Stavanger
k1106	Haugesund
k1108	Sandnes
k1119	Hå
k1120	Klepp
k1121	Time
k1122	Gjesdal
k1124	Sola
k1127	Randaberg
k1130	Strand
k1133	Hjelmeland
k1134	Suldal
k1135	Sauda
k1144	Kvitsøy
k1145	Bokn
k1146	Tysvær
k1149	Karmøy
k1160	Vindafjord
k4611	Etne
k4612	Sveio
k9999	RAL

```
dim(andel_pendle_data_02_24_long)
```

```
[1] 11132     6
```

```
names(andel_pendle_data_02_24_long)
```

```
[1] "aar"       "akom"      "akom_navn" "bkom"      "bkom_navn" "andel"
```

```
print(andel_pendle_data_02_24_long, n = 8, width = 70)
```

```
# A tibble: 11,132 × 6
  aar        akom  akom_navn bkom  bkom_navn  andel
  <date>     <chr> <chr>     <chr> <chr>      <dbl>
1 2002-01-01 k1103 Stavanger k1103 Stavanger 73.1
2 2002-01-01 k1106 Haugesund k1103 Stavanger  0.203
3 2002-01-01 k1108 Sandnes   k1103 Stavanger  7.98
4 2002-01-01 k1119 Hå        k1103 Stavanger  0.154
5 2002-01-01 k1120 Klepp     k1103 Stavanger  0.332
6 2002-01-01 k1121 Time      k1103 Stavanger  0.373
7 2002-01-01 k1122 Gjesdal   k1103 Stavanger  0.144
8 2002-01-01 k1124 Sola      k1103 Stavanger  7.24
# ℹ 11,124 more rows
```

6.2 Bo- og arbeidsmarkedsregioner NIBR/TØI 2020

```
ba49 <- c("k1103", "k1108", "k1124", "k1127", "k1119", "k1120", "k1121",
"k1122", "k1130", "k1144")
ba50 <- c("k1106", "k1146", "k1149", "k4612", "k1145"
)
ba51 <- c("k1133"
)
ba52 <- c("k1134"
)
ba53 <- c("k1135"
)
ba55 <- c("k1160", "k4611"
)
```

```
pend_ba <- pendle_data_02_24 |>
  filter(akom != "k0000", bkom != "k0000") |>
  mutate(

    ba_reg_bo = case_when(
      bkom %in% ba49 ~ "bo49",
      bkom %in% ba50 ~ "bo50",
      bkom %in% ba51 ~ "bo51",
      bkom %in% ba52 ~ "bo52",
      bkom %in% ba53 ~ "bo53",
      bkom %in% ba55 ~ "bo55",
      bkom == "k9999" ~ "bo99",
      TRUE ~ NA_character_
    ),

    ba_reg_arb = case_when(
      akom %in% ba49 ~ "arb49",
```

```
      akom %in% ba50 ~ "arb50",
      akom %in% ba51 ~ "arb51",
      akom %in% ba52 ~ "arb52",
      akom %in% ba53 ~ "arb53",
      akom %in% ba55 ~ "arb55",
      akom == "k9999" ~ "arb99",
      TRUE ~ NA_character_
    )
  )
```

```
ba_mat_2010 <- pend_ba |>
  filter(aar == "2010") |>
  group_by(ba_reg_bo, ba_reg_arb) |>
  summarise(pendlere = sum(pendlere), .groups = "drop") |>
  tidyr::pivot_wider(
    names_from  = ba_reg_arb,
    values_from = pendlere
  ) |>
  arrange(ba_reg_bo)
```

```
ba_mat_2010
```

```
# A tibble: 7 × 8
  ba_reg_bo  arb49 arb50 arb51 arb52 arb53 arb55   arb99
  <chr>      <int> <int> <int> <int> <int> <int>   <int>
1 bo49      154469   399   263    87    13    66   10760
2 bo50        1657 38838    22    81    18   760    4077
3 bo51         229     9  1205    28     0     1      62
4 bo52         163    38    24  1660    80    15     120
5 bo53         120    54     5    50  2005    14     167
6 bo55         181   650     7    28    18  5055     528
7 bo99       11690  1716    54   166    46   255 2279047
```

6.3 Pendling internt i region 49

```
reg49_kom <- c("k1103","k1108","k1119","k1120","k1121",
               "k1122","k1124","k1127","k1130","k1144")
```

```
pend_49 <- pend_ba |>
  mutate(akom = case_when(
    ba_reg_arb == "arb49" ~ akom,
    .default = "k9999"
  ),
  bkom = case_when(
    ba_reg_bo == "bo49" ~ bkom,
    .default = "k9999"
  ))
```

```
mat_49_2020 <- pend_49 |>
  filter(aar == "2020") |>
  mutate(
    bkom = str_remove(bkom, "^k"),
    akom = str_remove(akom, "^k")
  ) |>
  group_by(bkom, akom) |>
  summarise(pendlere = sum(pendlere), .groups = "drop") |>
  pivot_wider(
    names_from  = akom,
    values_from = pendlere
  ) |>
  arrange(bkom)
```

```
mat_49_2020 |> print(width = 70)
```

```
# A tibble: 11 × 12
   bkom  `1103` `1108` `1119` `1120` `1121` `1122` `1124` `1127`
   <chr>  <int>  <int>  <int>  <int>  <int>  <int>  <int>  <int>
 1 1103   49390   7819    221    575    347    173   7575   1275
 2 1108   11231  18793    386   1378    773    783   4259    154
 3 1119     721    774   5478    651   1093     90    344      7
 4 1120    1556   1841    519   3714   1122    118    954     36
 5 1121    1487   1369    714   1466   3608    176    636     14
 6 1122     976   1415    114    351    204   2344    473     11
 7 1124    4928   2079     69    262    121     54   5523    146
 8 1127    2489    492     19     34     28     13    608   1582
 9 1130    1068    530      9     18     14      8    316     22
10 1144      72     11      0      2      0      0      9     11
11 9999    9636   4050    522    289    374    207   4680    166
# ℹ 3 more variables: `1130` <int>, `1144` <int>, `9999` <int>
```

```
rekkefolge <- c("1103","1108","1119","1120","1121",
                "1122","1124","1127","1130","1144","9999")

mat_49_2020_tab <- mat_49_2020 |>
  mutate(bkom = factor(bkom, levels = rekkefolge)) |>
  arrange(bkom) |>
  flextable() |>
  colformat_int(big.mark = " ") |>
  align(align = "center", part = "all") |>
  autofit()
# |>
#   set_caption("Pendlematrise for region 49, 2020")
```

```
mat_49_2020_tab
```

Tabell 3: Pendlematrise for region 49, 2020.

bkom	1103	1108	1119	1120	1121	1122	1124	1127	1130	1144	9999
1103	49 390	7 819	221	575	347	173	7 575	1 275	186	71	4 692
1108	11 231	18 793	386	1 378	773	783	4 259	154	164	20	2 376
1119	721	774	5 478	651	1 093	90	344	7	5	2	596
1120	1 556	1 841	519	3 714	1 122	118	954	36	18	7	531
1121	1 487	1 369	714	1 466	3 608	176	636	14	10	5	514
1122	976	1 415	114	351	204	2 344	473	11	17	1	353
1124	4 928	2 079	69	262	121	54	5 523	146	19	18	815
1127	2 489	492	19	34	28	13	608	1 582	14	28	321
1130	1 068	530	9	18	14	8	316	22	3 847	1	564
1144	72	11	0	2	0	0	9	11	0	137	13
9999	9 636	4 050	522	289	374	207	4 680	166	191	64	2 485 979

```
sola_kvitsoy_2020 <- mat_49_2020 |>
  dplyr::filter(bkom == "1124") |>
  dplyr::pull(`1144`)

sola_kvitsoy_2020
```

```
[1] 18
```

```
utenfor_til_sandnes_2020 <- mat_49_2020 |>
  dplyr::filter(bkom == "9999") |>
  dplyr::pull(`1108`)

utenfor_til_sandnes_2020
```

```
[1] 4050
```

```
komm <- mat_49_2020$bkom[mat_49_2020$bkom != "9999"]


ut <- mat_49_2020 |>
  filter(bkom %in% komm) |>
  select(bkom, `9999`) |>
  rename(ut = `9999`)


inn <- mat_49_2020 |>
  filter(bkom == "9999") |>
  select(-bkom) |>
  pivot_longer(cols = everything(),
               names_to = "bkom",
               values_to = "inn")

balanse <- left_join(ut, inn, by = "bkom")
```

```
balanse
```

```
# A tibble: 10 × 3
   bkom     ut   inn
   <chr> <int> <int>
 1 1103   4692  9636
 2 1108   2376  4050
 3 1119    596   522
 4 1120    531   289
 5 1121    514   374
 6 1122    353   207
 7 1124    815  4680
 8 1127    321   166
 9 1130    564   191
10 1144     13    64
```

```
kommuner_flere_ut <- balanse |>
  filter(ut > inn) |>
  pull(bkom)
```

```
kommuner_flere_ut |>
  (\(x) {
  paste(
    "Kommuner hvor flere pendler ut enn inn: ",
    paste(x, collapse = ", "
          )
  )
  })()
```

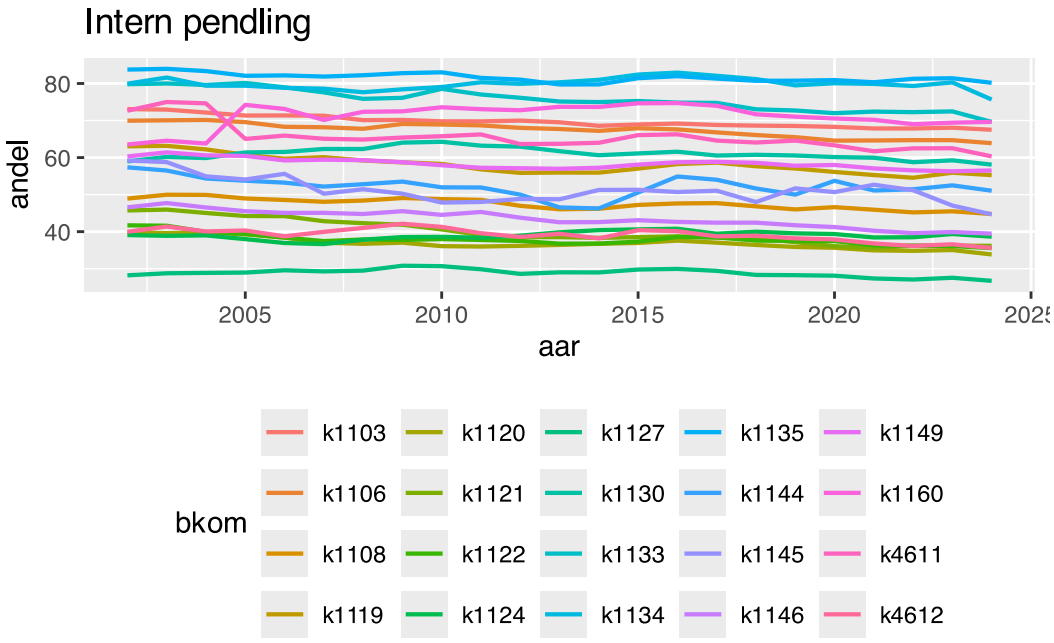
```
[1] "Kommuner hvor flere pendler ut enn inn:  1119, 1120, 1121, 1122, 1127,
1130"
```

6.4 Definerer funksjoner for plot og tabell

```
tab_pendlere <- function(data, knr, y = 2023, n = 7) {
  data = filter(data, bkom == knr)
  data = filter(data, !akom %in% c(knr, "k0000"))
  data = filter(data, year(aar) == y)
  data = arrange(data, desc(andel))
  data = head(data, n = n)
  data = select(data, `Place of work` = akom_navn, `Prop. in %` = andel)
  flxtab = as_flextable(data, show_coltype = FALSE, max_row = 30)
  flxtab = delete_part(flxtab, "footer")
  flxtab = theme_booktabs(flxtab)
  flxtab = line_spacing(flxtab, space = 0.3)
  flxtab
}
```

```
apd_0224_l <- andel_pendle_data_02_24_long
rm(andel_pendle_data_02_24_long)
```

```
apd_0224_l |>
  filter(akom == bkom) |>
  filter(!(akom == "k9999" & bkom == "k9999")) |>
  filter(!(akom == "k0000" & bkom == "k0000")) |>
  rename(
    Bosted = bkom_navn
  ) |>
  ggplot(
    mapping = aes(
      x = aar,
      y = andel,
      group = bkom,
      colour = bkom
      )
    ) +
  geom_line(lwd = 0.75) +
  theme(legend.position = 'bottom') +
  ggtitle("Intern pendling")
```




```
andel_samme_kommune_2023 <- apd_0224_l |>
  dplyr::filter(
    aar == as.Date("2023-01-01"),

    akom == bkom
  ) |>
  dplyr::mutate(
```

```
    Bosted = bkom_navn
  ) |>
  dplyr::select(
    aar, akom, akom_navn,
    bkom, Bosted,
    andel
  ) |>
  dplyr::arrange(dplyr::desc(andel))
```

```
andel_samme_kommune_2023_tab <- andel_samme_kommune_2023 |>
  knitr::kable(
    digits  = 1,
    caption = "Tabell som viser andelen av arbeidstakere som jobber i samme
kommune som hvor de bor i 2023.",
    booktabs = TRUE
  )
```

```
andel_samme_kommune_2023_tab
```

aar	akom	akom_navn	bkom	Bosted	andel
2023-01-01	k0000	TotaltBo	k0000	TotaltArb	100.0
2023-01-01	k9999	RAL	k9999	RAL	99.2
2023-01-01	k1135	Sauda	k1135	Sauda	81.4
2023-01-01	k1134	Suldal	k1134	Suldal	80.3
2023-01-01	k1133	Hjelmeland	k1133	Hjelmeland	72.5
2023-01-01	k1160	Vindafjord	k1160	Vindafjord	69.4
2023-01-01	k1103	Stavanger	k1103	Stavanger	68.1
2023-01-01	k1106	Haugesund	k1106	Haugesund	64.7
2023-01-01	k4611	Etne	k4611	Etne	62.5
2023-01-01	k1130	Strand	k1130	Strand	59.3
2023-01-01	k1149	Karmøy	k1149	Karmøy	56.3
2023-01-01	k1119	Hå	k1119	Hå	55.9
2023-01-01	k1144	Kvitsøy	k1144	Kvitsøy	52.5
2023-01-01	k1145	Bokn	k1145	Bokn	47.0
2023-01-01	k1108	Sandnes	k1108	Sandnes	45.5
2023-01-01	k1146	Tysvær	k1146	Tysvær	39.9
2023-01-01	k1124	Sola	k1124	Sola	39.4
2023-01-01	k4612	Sveio	k4612	Sveio	36.6
2023-01-01	k1121	Time	k1121	Time	36.2

aar	akom	akom_navn	bkom	Bosted	andel
2023-01-01	k1122	Gjesdal	k1122	Gjesdal	36.1
2023-01-01	k1120	Klepp	k1120	Klepp	35.0
2023-01-01	k1127	Randaberg	k1127	Randaberg	27.6

```
# ag: Hvordan jeg ville laget tabellen.
 andel_samme_kommune_2023 |>
  filter(!akom %in% c("k0000", "k9999")) |>
  arrange(akom) |>
  select(
    `Kommune-\nnummer` = akom,
    `Kommune-\nnavn` = akom_navn,
    Andel = andel
    ) |>
  mutate(
    Andel = paste0(as.character(round(Andel, 1)),"%")
  ) |>
  as_flextable(
    show_coltype = FALSE,
    max_row = 30
  ) |>
  line_spacing(space = 0.7) |>
  delete_part("footer")
```

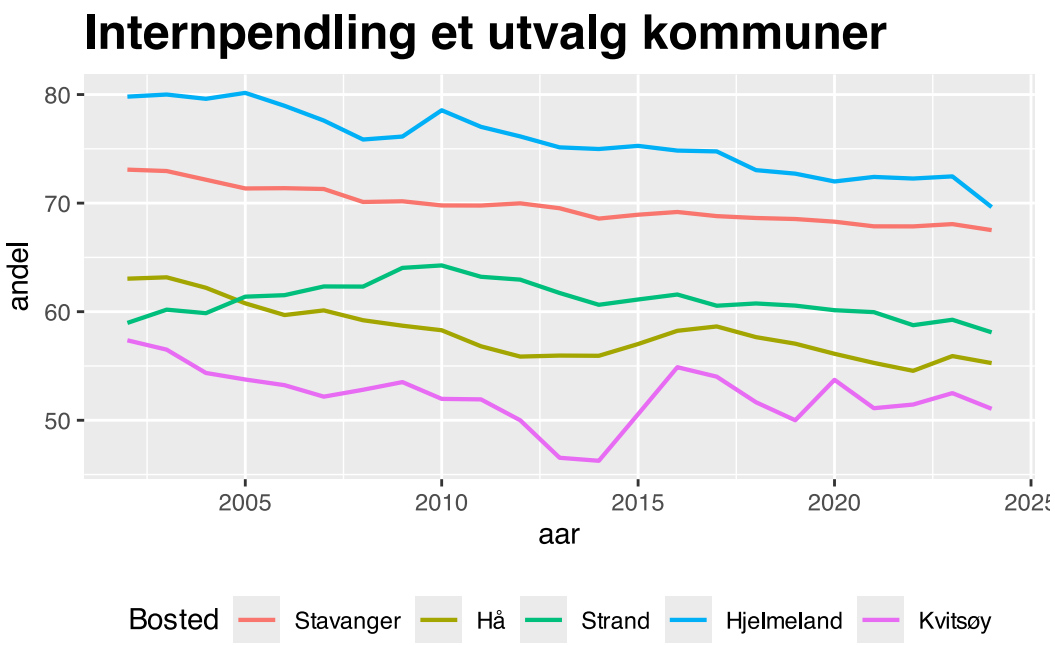
Tabell 4: Andelene av arbeidstakere som bor og jobber i samme kommune i 2023.

Kommune-nummer	Kommune-navn	Andel
k1103	Stavanger	68.1%
k1106	Haugesund	64.7%
k1108	Sandnes	45.5%
k1119	Hå	55.9%
k1120	Klepp	35%
k1121	Time	36.2%
k1122	Gjesdal	36.1%
k1124	Sola	39.4%
k1127	Randaberg	27.6%
k1130	Strand	59.3%
k1133	Hjelmeland	72.5%
k1134	Suldal	80.3%
k1135	Sauda	81.4%
k1144	Kvitsøy	52.5%
k1145	Bokn	47%
k1146	Tysvær	39.9%
k1149	Karmøy	56.3%
k1160	Vindafjord	69.4%
k4611	Etne	62.5%
k4612	Sveio	36.6%

I Tabell 4 er andelen internpendlere rapportert for kommunene i Bokna-regionen.

```
intern_utvalg <- apd_0224_l |>
  dplyr::filter(
    akom == bkom,
    !(akom == "k9999" & bkom == "k9999"),
    !(akom == "k0000" & bkom == "k0000"),
    bkom_navn %in% c("Hjelmeland", "Hå", "Kvitsøy", "Stavanger", "Strand")
  )


legend_labels <- intern_utvalg |>
  dplyr::distinct(bkom, bkom_navn) |>
  dplyr::arrange(bkom)

ggplot(
  intern_utvalg,
  aes(x = aar, y = andel, group = bkom, colour = bkom)
) +
  geom_line(linewidth = 0.75) +
  scale_colour_discrete(
    name   = "Bosted",
```

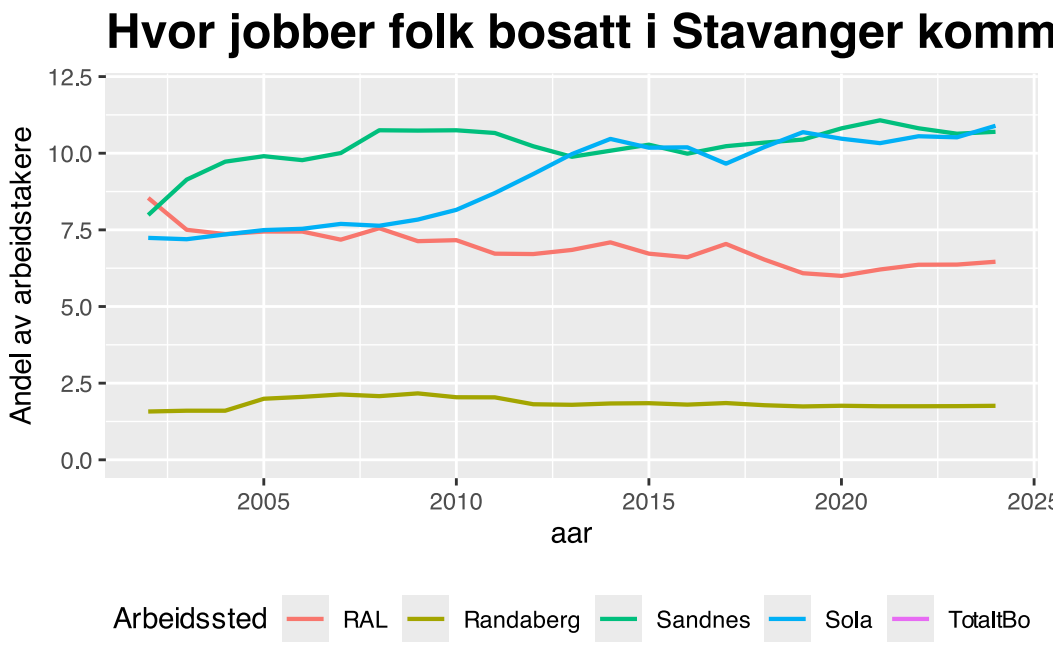
```
    breaks = legend_labels$bkom,
    labels = legend_labels$bkom_navn
  ) +
  labs(
    title = "Internpendling et utvalg kommuner",
    x     = "aar",
    y     = "andel"
  ) +
  theme(
    legend.position = "bottom",
    plot.title      = element_text(face = "bold", size = 18)
  )
```




```
plot_pendlere <- function(data, bosted_kode, grense = 1) {


  bosted_navn <- data |>
    dplyr::filter(bkom == bosted_kode) |>
    dplyr::distinct(bkom_navn) |>
    dplyr::pull()

  data |>
    dplyr::filter(bkom == bosted_kode) |>
    dplyr::filter(akom != bkom) |>

    dplyr::group_by(akom, akom_navn) |>
    dplyr::filter(max(andel, na.rm = TRUE) >= grense) |>
    dplyr::ungroup() |>

    ggplot(aes(x = aar, y = andel, colour = akom_navn, group = akom_navn))
```

```
+
    geom_line(linewidth = 0.75) +
    labs(
      title  = paste0("Hvor jobber folk bosatt i ", bosted_navn, "
kommune?"),
      x      = "aar",
      y      = "Andel av arbeidstakere",
      colour = "Arbeidssted"
    ) +
    theme(
      legend.position = "bottom",
      plot.title      = element_text(face = "bold", size = 18)
    )
}
```

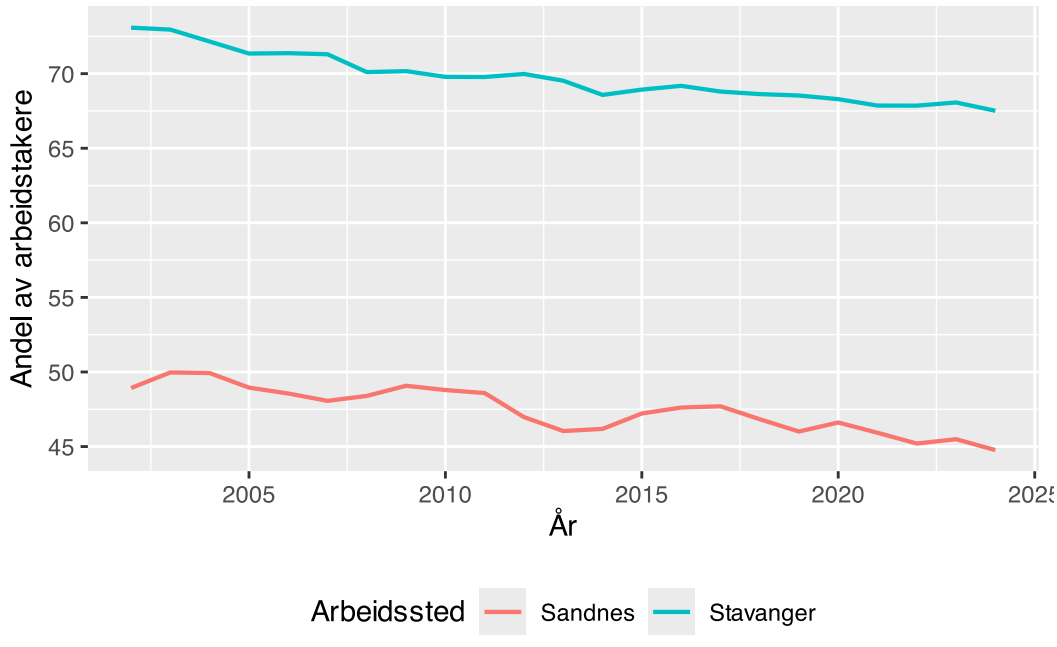
```
plot_pendlere(apd_0224_l, "k1103", grense = 1) +
  ylim(0, 12)
```




```
tab_pendlere(apd_0224_l, "k1103") |>
  colformat_double(digits = 1)
```

Place of work	Prop. in %
Sandnes	10.6
Sola	10.5
RAL	6.4
Randaberg	1.8
Klepp	0.8
Time	0.4
Hå	0.3

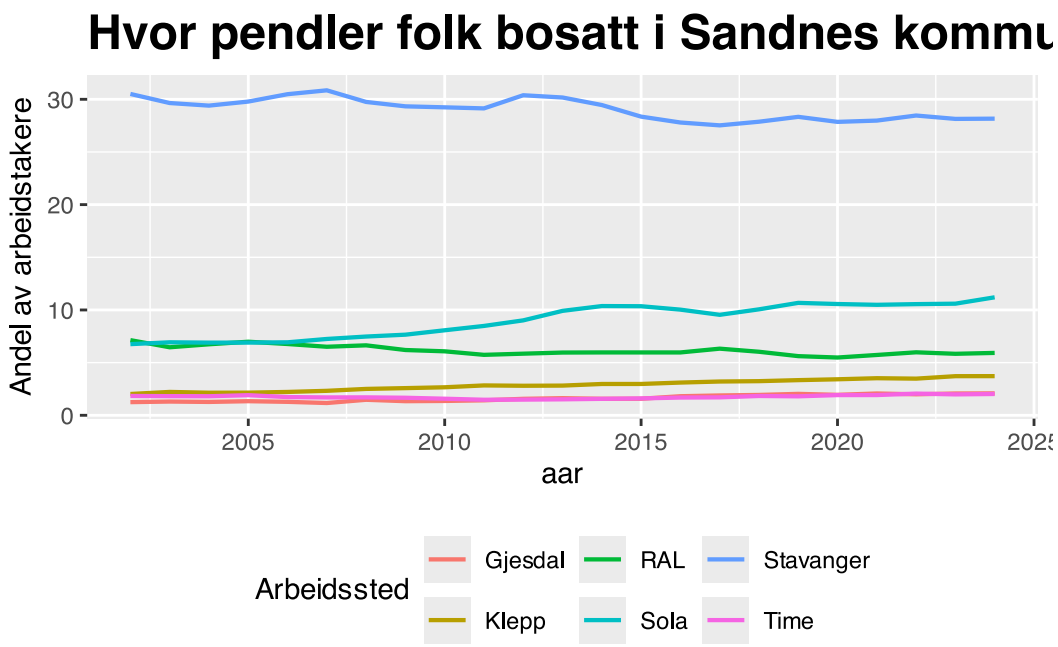
```
stav_sand <- apd_0224_l |>
  dplyr::filter(
    akom == bkom,
    bkom %in% c("k1103", "k1108")
  ) |>
  dplyr::mutate(Bosted = bkom_navn)

ggplot(stav_sand, aes(x = aar, y = andel, colour = Bosted)) +
  geom_line(linewidth = 0.75) +
  labs(
    #title = "Utvikling: Andel som både bor og jobber i Stavanger og
Sandnes",
    x      = "År",
    y      = "Andel av arbeidstakere",
    colour = "Arbeidssted"
  ) +
  theme(
    legend.position = "bottom",
    plot.title      = element_text(face = "bold", size = 18)
  )
```



Figur 1: Utvikling: Andel som både bor og jobber i Stavanger og Sandnes.

```r
plot_pendlere <- function(data, bosted_kode, grense = 1) {

  bosted_navn <- data |>
    dplyr::filter(bkom == bosted_kode) |>
    dplyr::distinct(bkom_navn) |>
    dplyr::pull()

  data |>
    dplyr::filter(bkom == bosted_kode) |>
    dplyr::filter(
      akom != bkom,
      akom != "k0000"
    ) |>

    dplyr::group_by(akom, akom_navn) |>
    dplyr::filter(max(andel, na.rm = TRUE) >= grense) |>
    dplyr::ungroup() |>


    ggplot(aes(x = aar, y = andel,
               colour = akom_navn, group = akom_navn)) +
    geom_line(linewidth = 0.75) +
    labs(
      title  = paste0("Hvor pendler folk bosatt i ", bosted_navn, " kommune
til?"),
      x      = "aar",
      y      = "Andel av arbeidstakere",
      colour = "Arbeidssted"
    ) +
    theme(
      legend.position = "bottom",
      plot.title      = element_text(face = "bold", size = 18)
    )
}
```

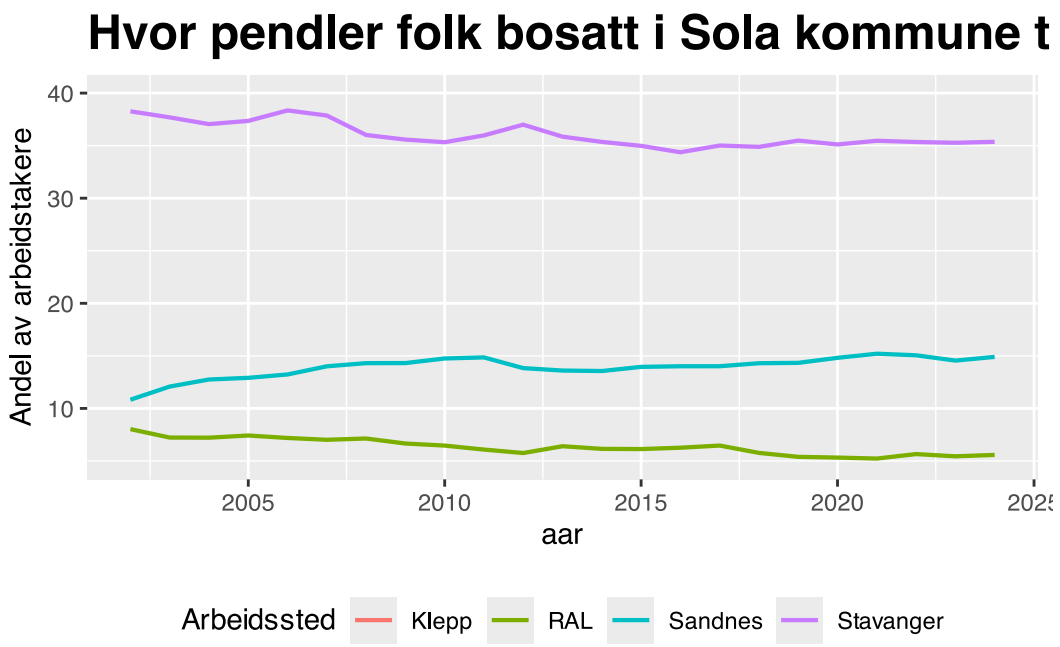
```r
plot_pendlere(apd_0224_l, "k1108", grense = 1.7)
```




```
tab_pendlere(apd_0224_l, "k1108") |>
  colformat_double(digits = 1)
```

Place of work	Prop. in %
Stavanger	28.1
Sola	10.6
RAL	5.8
Klepp	3.7
Gjesdal	2.1
Time	2.0
Hå	1.0

```
plot_pendlere(apd_0224_l, "k1124", grense = 1.7) +
  ylim(5, 40)
```

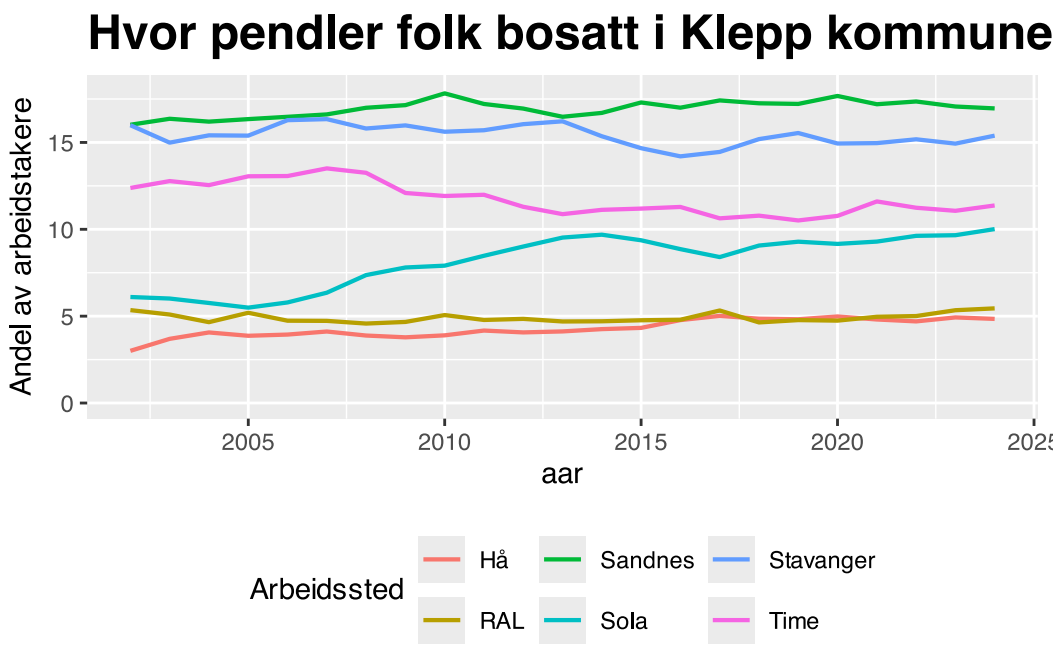



```
tab_pendlere(apd_0224_l, "k1124") |>
  colformat_double(digits = 1)
```

Tabell 5: Andelene som pendler ut av Sola kommune i 2023.

Place of work	Prop. in %
Stavanger	35.3
Sandnes	14.6
RAL	5.4
Klepp	2.0
Randaberg	1.0
Time	0.8
Hå	0.5

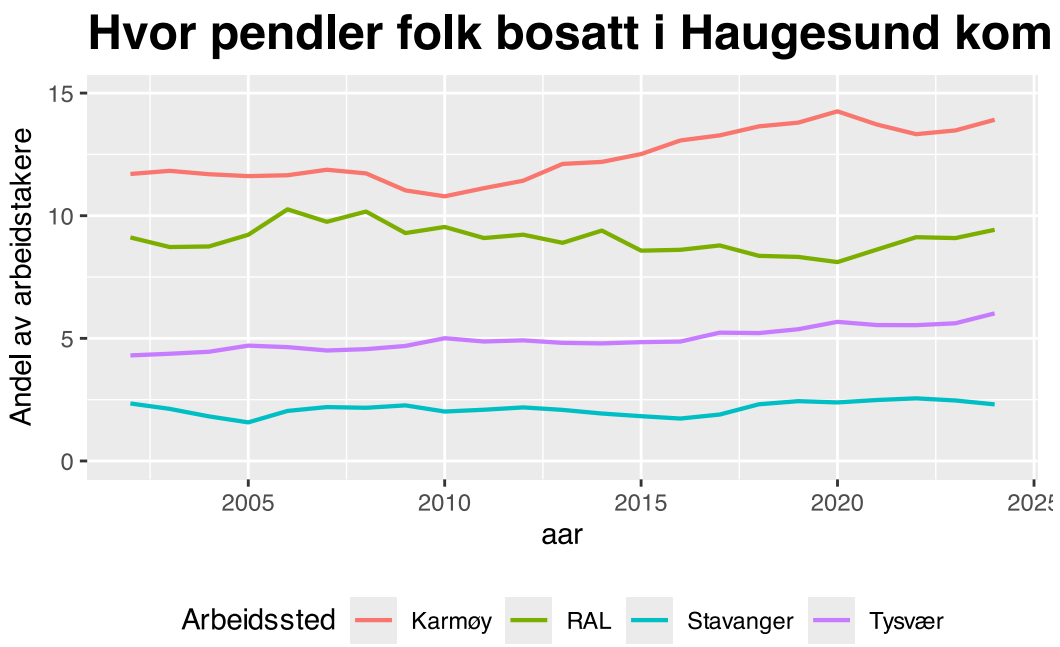
```
plot_pendlere(apd_0224_l, "k1120", grense = 3) +
  ylim(0, 18) +
  theme(
    legend.position = "bottom",
    plot.title = element_text(face = "bold", size = 18)
  )
```




```
tab_pendlere(apd_0224_l, "k1120", n = 7) |>
  colformat_double(digits = 1)
```

Place of work	Prop. in %
Sandnes	17.1
Stavanger	14.9
Time	11.1
Sola	9.7
RAL	5.3
Hå	4.9
Gjesdal	1.1

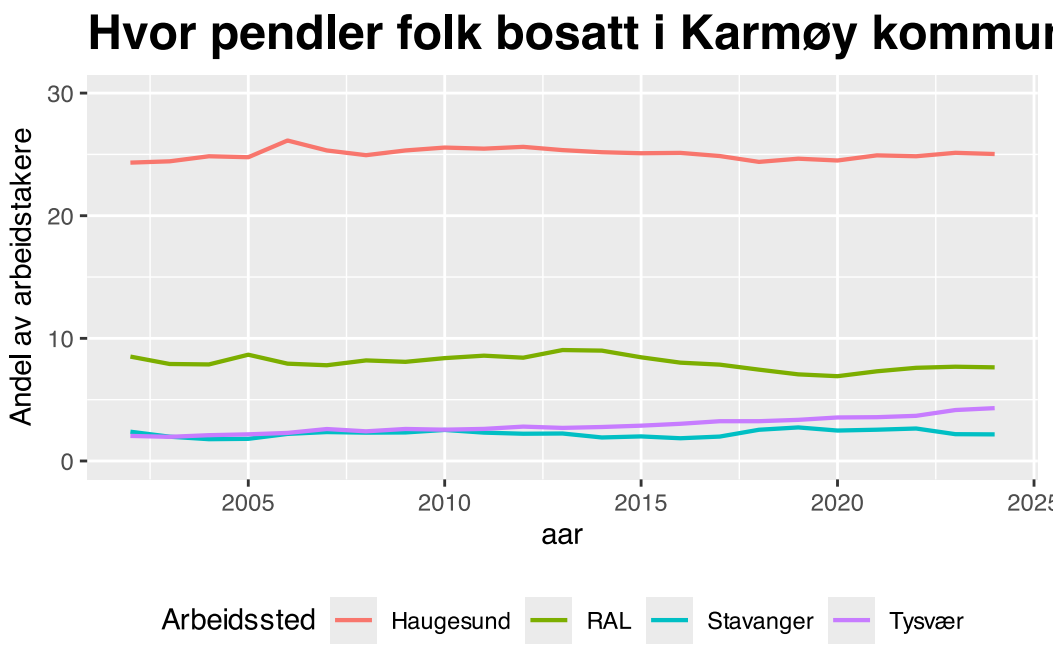
```
plot_pendlere(apd_0224_l, "k1106", grense = 2) +
  ylim(0, 15) +
  theme(
    legend.position = "bottom",
    plot.title = element_text(face = "bold", size = 18)
  )
```




```
tab_pendlere(apd_0224_l, "k1106", n = 7) |>
  colformat_double(digits = 1)
```

Place of work	Prop. in %
Karmøy	13.5
RAL	9.1
Tysvær	5.6
Stavanger	2.5
Vindafjord	1.2
Sveio	1.0
Sola	1.0

```
plot_pendlere(
  apd_0224_l,
  "k1149",
  grense = 2
) +
  ylim(0, 30) +
  theme(
    legend.position = "bottom",
    plot.title = element_text(face = "bold", size = 18)
  )
```




```
tab_pendlere(apd_0224_l, "k1149") |>
  colformat_double(digits = 1)
```

Place of work	Prop. in %
Haugesund	25.1
RAL	7.7
Tysvær	4.2
Stavanger	2.2
Sola	1.4
Sandnes	1.2
Vindafjord	0.9

7 Pendlematriser

```
pend_mat <- function(data, y) {
  data |>
    dplyr::filter(aar == y) |>
    dplyr::select(
      bkom,
      akom,
      pendlere
    ) |>
    tidyr::pivot_wider(
      id_cols     = bkom,
      names_from = akom,
      values_from = pendlere
    ) |>
    dplyr::arrange(bkom)
}
```

```
pend_mat_tab <- function(data, y) {
  mat = pend_mat(data, y)
  mat = flextable::as_flextable(mat, show_coltype = FALSE, max_row = 30)
  mat = flextable::colformat_num(mat, big.mark = " ")
  mat = flextable::fontsize(mat, size = 10, part = "all")
  mat = flextable::line_spacing(mat, space = 0.5)
  mat = flextable::align(mat, align = "center", part = "all")
  mat = flextable::autofit(mat)
  mat = flextable::delete_part(mat, "footer")
  # mat = flextable::set_caption(mat,
  #     if (is.null(caption)) paste0(caption, y, ".") else caption
  #   )
  mat
}
```

7.1 Pendlematriser

I Tabell 6, Tabell 7, Tabell 1, Tabell 9, Tabell 10 og Tabell 11 er gjengitt pendlematriser for Bokna-regionen for årene 2002, 2005, 2010B, 2015, 2023 og 2024.

Tabell 6: Pendlematrise år 2002.

bkom	k1103	k1106	k1108	k1119	k1120	k1121	k1122	k1124	k1127	k1130	k1133	k1134	k1135	k1144	k1145	k1146	k1149	k1160	k4611	k4612	k9999	k0000
k0000	68755	18312	26263	6109	5353	6127	2736	13824	2652	3175	1386	1883	2007	237	301	3486	13195	2054	1490	1052	2086603	2267000
k1103	43142	120	4713	91	196	220	85	4273	930	72	29	25	9	19	6	20	24	8	7	0	5042	59031
k1106	347	10353	87	5	0	0	0	64	3	1	3	8	3	5	19	637	1732	74	9	102	1349	14801
k1108	8826	51	14155	149	585	531	361	1954	107	82	8	13	0	8	1	7	27	1	1	0	2064	28931
k1119	637	7	442	4863	364	673	33	192	3	1	0	2	0	1	1	1	4	1	0	0	489	7714
k1120	1187	6	1189	223	2958	919	49	453	17	5	2	4	0	1	0	1	12	0	0	0	397	7423
k1121	1049	6	920	412	853	3400	102	266	6	3	2	0	0	1	0	2	6	0	1	1	407	7437
k1122	908	6	1004	40	125	117	1971	237	6	3	2	1	0	0	0	1	4	0	0	0	301	4726
k1124	3774	22	1068	30	119	68	16	3854	81	6	1	4	7	8	0	0	10	3	0	0	792	9863
k1127	2249	7	274	6	12	15	6	386	1295	4	1	3	0	3	0	0	4	0	1	0	325	4591
k1130	957	8	272	6	11	11	6	124	12	2910	114	5	0	0	0	1	5	0	0	0	493	4935
k1133	102	2	18	8	1	4	1	10	5	50	1158	23	0	1	0	0	2	6	1	0	59	1451
k1134	97	35	26	6	3	5	0	18	5	7	17	1631	58	0	0	4	5	10	0	0	113	2040
k1135	65	56	14	1	1	1	0	6	3	0	2	51	1887	0	0	2	2	10	6	0	146	2253
k1144	63	0	12	0	0	1	0	12	7	0	0	0	0	148	0	0	0	0	0	0	15	258
k1145	16	38	5	0	0	0	0	3	0	0	0	0	0	0	222	49	8	3	0	0	31	375
k1146	109	1369	28	0	0	4	1	28	4	0	16	14	0	4	22	2107	350	95	6	16	352	4525
k1149	416	4241	128	7	8	1	1	144	21	2	1	8	6	24	18	356	10513	25	8	20	1484	17432
k1160	93	309	20	1	0	1	1	23	2	0	3	31	8	0	1	135	74	1723	118	5	164	2712
k4611	39	57	6	0	2	1	0	10	0	0	0	2	1	0	0	23	9	56	1278	1	274	1759
k4612	41	756	17	1	0	0	0	10	2	0	1	2	0	4	5	73	111	12	3	883	288	2209
k9999	4638	863	1865	260	115	155	103	1757	143	29	26	56	28	10	6	67	293	27	51	24	2072018	2082534

Tabell 7: Pendlematrise Bokna-regionen 2005.

bkom	k1103	k1106	k1108	k1119	k1120	k1121	k1122	k1124	k1127	k1130	k1133	k1134	k1135	k1144	k1145	k1146	k1149	k1160	k4611	k4612	k9999	k0000
k0000	69146	18660	28678	6407	5648	6708	2814	14031	3149	3522	1454	1913	1983	264	280	3662	13890	4089	1491	1149	2119062	2308000
k1103	43962	83	6102	143	208	253	102	4617	1227	95	51	28	12	30	11	19	40	35	8	1	4588	61615
k1106	241	10650	69	8	0	1	0	62	34	1	3	26	7	8	21	720	1778	149	23	96	1412	15309
k1108	9155	22	15047	219	661	587	411	2121	172	107	9	14	0	9	2	7	31	16	1	0	2147	30738
k1119	635	3	515	4819	431	836	39	184	4	4	0	4	1	1	0	0	8	0	0	0	446	7930
k1120	1197	0	1271	301	3053	1015	53	427	28	5	2	3	0	2	0	0	14	2	0	0	404	7777
k1121	1176	4	1041	500	864	3537	109	289	16	3	3	1	0	1	0	3	11	5	0	0	435	7998
k1122	892	1	1146	82	145	166	1966	243	13	7	3	0	0	0	0	2	5	2	0	0	317	4990
k1124	3799	14	1313	37	121	79	23	3863	120	5	3	2	2	10	0	0	15	8	0	1	755	10170
k1127	2154	7	371	8	19	16	5	409	1351	4	2	2	0	5	1	2	3	2	0	0	305	4666
k1130	952	4	282	4	4	6	0	102	19	3187	119	7	0	1	1	1	10	1	1	0	491	5192
k1133	106	4	15	3	1	2	0	13	1	52	1155	18	0	1	0	0	8	1	0	0	61	1441
k1134	79	30	25	1	6	3	1	15	1	5	21	1550	55	2	0	2	7	28	1	0	120	1952
k1135	68	38	16	0	0	3	0	6	1	1	0	50	1855	0	0	7	7	23	2	0	183	2260
k1144	63	0	15	0	0	2	0	14	7	0	0	0	0	136	0	1	0	0	0	0	15	253
k1145	14	46	4	0	0	0	0	1	1	0	0	1	0	4	199	50	11	6	0	1	30	368
k1146	87	1393	18	1	1	4	1	26	4	1	25	16	1	2	27	2115	392	117	8	19	388	4646
k1149	325	4456	61	3	11	2	1	99	26	2	4	15	5	35	8	391	10877	74	8	28	1559	17990
k1160	61	321	20	2	2	1	1	17	3	0	13	28	13	1	3	130	74	3120	83	8	302	4203
k4611	39	65	8	0	3	1	1	4	0	0	1	5	4	1	0	22	11	275	1263	0	239	1942
k4612	27	788	10	0	0	0	0	10	5	1	1	11	0	1	5	97	125	33	2	943	280	2339
k9999	4114	731	1329	276	118	194	101	1509	116	42	39	132	28	14	2	93	463	192	91	52	2104585	2114221

Tabell 8: Pendlematrise Bokna-regionen 2010.

bkom	k1103	k1106	k1108	k1119	k1120	k1121	k1122	k1124	k1127	k1130	k1133	k1134	k1135	k1144	k1145	k1146	k1149	k1160	k4611	k4612	k9999	k0000
k0000	81231	21233	35471	7372	7125	7285	3362	18296	3760	4303	1580	2100	2180	304	291	4231	14592	4543	1623	1357	2294761	2517000
k1103	50038	119	7707	126	411	283	165	5846	1463	100	92	40	7	46	7	33	51	23	8	0	5137	71702
k1106	352	12034	111	5	2	3	0	65	12	4	4	30	8	10	23	874	1884	220	23	130	1666	17460
k1108	10577	42	17650	303	962	569	492	2920	209	158	23	17	3	16	1	6	21	8	0	2	2197	36176
k1119	677	6	696	5446	566	1021	58	323	16	4	2	2	0	1	0	0	2	2	1	0	520	9343
k1120	1499	6	1711	374	3464	1144	82	759	36	10	3	3	1	2	0	2	10	7	0	0	486	9599
k1121	1357	9	1316	587	1095	3724	134	458	18	4	4	0	0	1	0	1	2	2	2	0	459	9173
k1122	990	3	1478	94	211	176	2252	347	23	10	0	2	0	0	0	1	3	0	0	0	337	5927
k1124	4454	20	1860	37	200	92	31	4866	173	12	4	11	1	14	1	3	9	6	0	0	815	12609
k1127	2366	14	431	7	24	8	9	489	1626	8	5	2	0	9	0	0	2	3	0	0	297	5300
k1130	963	14	344	8	12	8	3	117	16	3839	129	10	1	1	1	3	4	4	0	0	497	5974
k1133	106	6	32	2	0	1	0	14	1	73	1205	28	0	0	0	2	1	1	0	0	62	1534
k1134	103	19	32	2	4	3	1	16	0	1	24	1660	80	1	0	3	16	15	0	0	120	2100
k1135	68	36	24	0	2	0	2	19	1	4	5	50	2005	0	1	2	13	10	4	2	167	2415
k1144	72	0	15	1	1	0	0	7	9	0	1	0	0	132	0	1	0	0	0	0	15	254
k1145	21	53	4	0	0	0	0	6	0	0	0	1	0	7	200	50	8	18	0	1	49	418
k1146	118	1566	23	1	0	4	1	31	4	2	5	19	3	3	27	2324	427	225	9	32	395	5219
k1149	500	5049	110	11	7	5	6	95	19	1	13	23	7	38	18	504	11444	202	14	32	1657	19755
k1160	80	316	20	3	0	0	2	19	1	2	7	27	15	3	1	141	72	3241	120	9	326	4405
k4611	27	70	12	1	1	1	0	6	1	0	0	1	3	2	1	18	20	338	1356	2	202	2062
k4612	49	816	10	0	1	0	0	11	2	2	0	8	0	1	7	121	140	41	8	1074	310	2601
k9999	6814	1035	1885	364	162	243	124	1882	130	69	54	166	46	17	3	142	463	177	78	73	2279047	2292974

Tabell 9: Pendlematrise Bokna-regionen 2015.

bkom	k1103	k1106	k1108	k1119	k1120	k1121	k1122	k1124	k1127	k1130	k1133	k1134	k1135	k1144	k1145	k1146	k1149	k1160	k4611	k4612	k9999	k0000
k0000	81115	21328	36350	7865	8032	7554	3688	23124	3551	4154	1292	2192	1978	317	301	4303	15066	4970	1686	1519	2366679	2597064
k1103	49833	142	7431	150	420	239	165	7360	1335	130	32	33	8	48	0	10	54	32	5	6	4861	72294
k1106	326	12126	115	2	7	4	3	81	9	4	0	19	3	6	18	865	2234	274	18	209	1531	17854
k1108	11116	55	18511	323	1166	628	616	4059	183	126	10	19	2	18	1	5	16	7	1	2	2339	39203
k1119	744	10	699	5656	622	1172	56	350	11	3	1	2	1	2	0	0	4	2	0	0	584	9919
k1120	1472	7	1736	434	3708	1123	84	940	28	10	1	4	0	6	0	0	1	2	0	0	478	10034
k1121	1473	7	1339	701	1267	3807	137	635	23	3	1	2	0	4	0	2	5	2	2	0	473	9883
k1122	1021	4	1508	118	297	222	2394	464	22	9	1	3	1	0	0	3	4	2	0	1	342	6416
k1124	4716	18	1881	51	210	79	49	5476	131	14	2	6	0	8	0	2	3	8	1	0	827	13482
k1127	2412	7	411	8	31	10	6	621	1630	19	2	1	0	17	1	1	3	1	0	0	294	5475
k1130	975	7	396	2	14	5	6	218	15	3679	145	6	0	0	0	3	2	4	0	0	542	6019
k1133	80	0	33	4	4	1	0	15	5	90	1038	39	0	0	0	0	1	0	0	0	69	1379
k1134	67	20	26	1	3	0	3	16	0	4	22	1683	63	1	0	3	12	34	1	0	83	2042
k1135	48	31	15	1	0	1	2	28	0	7	1	66	1846	0	1	1	14	23	7	1	174	2267
k1144	77	0	9	0	1	3	0	13	12	2	0	1	0	135	0	1	1	0	0	0	12	267
k1145	13	51	3	0	1	0	0	1	3	0	0	1	0	9	217	40	25	14	0	0	45	423
k1146	87	1578	33	1	3	2	3	50	2	1	1	24	4	2	30	2333	520	253	14	42	430	5413
k1149	398	4984	116	6	12	1	2	181	13	2	2	38	5	35	26	572	11539	187	22	41	1679	19861
k1160	71	308	22	2	1	0	1	22	1	0	4	37	6	4	1	147	73	3452	150	11	311	4624
k4611	29	54	9	4	3	0	0	10	0	0	1	0	2	3	1	20	18	372	1380	2	181	2089
k4612	43	805	7	1	1	1	1	20	0	0	2	10	0	1	3	129	156	84	5	1105	361	2735
k9999	6114	1114	2050	400	261	256	160	2564	128	51	26	198	37	18	2	166	381	217	80	99	2351063	2365385

Tabell 10: Pendlematrise Bokna-regionen 2023.

bkom	k1103	k1106	k1108	k1119	k1120	k1121	k1122	k1124	k1127	k1130	k1133	k1134	k1135	k1144	k1145	k1146	k1149	k1160	k4611	k4612	k9999	k0000
k0000	89513	22683	41793	8600	9597	8253	4177	27454	3643	4681	1328	1922	1946	349	301	5048	16370	4959	1625	1528	2589537	2845307
k1103	53630	181	8380	210	646	352	208	8288	1379	209	50	33	4	68	0	25	63	33	6	7	5017	78789
k1106	477	12515	156	3	15	6	1	200	7	2	0	13	13	1	16	1086	2607	239	26	203	1758	19344
k1108	12316	59	19912	428	1625	868	906	4638	177	156	15	9	2	35	1	12	39	14	0	2	2555	43769
k1119	732	5	758	5707	770	1168	87	346	16	9	2	1	1	1	0	3	4	4	0	0	593	10207
k1120	1691	7	1933	558	3968	1253	128	1094	38	15	2	1	0	12	0	3	12	5	0	0	605	11325
k1121	1570	10	1441	843	1487	3882	172	696	11	10	0	0	1	6	0	3	5	6	1	0	574	10718
k1122	1058	8	1433	146	355	223	2366	506	18	11	1	0	0	5	0	0	3	2	0	0	416	6551
k1124	5384	29	2221	69	308	129	65	6009	149	16	5	10	3	17	0	3	11	5	0	0	831	15264
k1127	2619	14	532	18	41	29	11	683	1668	17	0	2	0	20	0	3	4	9	1	0	383	6054
k1130	1222	11	536	14	39	11	8	300	27	4023	201	9	1	0	0	4	5	3	0	1	374	6789
k1133	83	1	29	1	3	1	1	40	3	113	992	45	3	0	0	0	0	3	0	0	51	1369
k1134	52	29	25	6	4	4	2	17	1	3	20	1565	84	0	0	3	4	27	7	0	96	1949
k1135	60	29	31	2	0	2	0	42	0	1	0	76	1775	0	0	8	15	25	2	1	111	2180
k1144	69	1	19	1	4	1	0	14	6	0	1	0	0	147	0	0	0	0	0	0	17	280
k1145	16	63	15	0	2	0	0	11	0	0	0	2	0	1	223	48	46	10	1	1	35	474
k1146	137	1680	61	9	4	4	0	62	3	1	1	7	2	3	34	2327	667	290	12	53	476	5833
k1149	464	5335	257	10	12	6	2	298	13	1	2	7	6	17	23	882	11953	200	18	92	1632	21230
k1160	86	336	33	6	2	1	0	30	2	1	6	47	10	0	1	237	133	3329	169	25	341	4795
k4611	29	72	14	3	3	2	1	7	1	0	1	1	2	1	0	38	30	392	1303	3	181	2084
k4612	48	857	17	0	0	1	1	21	0	0	0	1	2	1	1	180	190	62	5	1036	409	2832
k9999	7770	1441	3990	566	309	310	218	4152	124	93	29	93	37	14	2	183	579	301	74	104	2573082	2593471

Tabell 11: Pendlematrise Bokna-regionen 2024.

bkom	k1103	k1106	k1108	k1119	k1120	k1121	k1122	k1124	k1127	k1130	k1133	k1134	k1135	k1144	k1145	k1146	k1149	k1160	k4611	k4612	k9999	k0000
k0000	89969	22915	42084	8665	9651	8531	4198	28506	3715	4646	1310	1838	1990	348	301	5249	16796	5045	1602	1500	2604458	2863317
k1103	53588	174	8493	208	670	354	191	8648	1398	204	53	47	7	71	1	35	55	40	5	5	5128	79375
k1106	449	12431	120	2	12	5	2	219	7	1	1	12	10	1	15	1171	2707	222	25	211	1834	19457
k1108	12526	62	19910	426	1653	900	926	4982	187	147	9	13	3	35	1	14	36	13	0	1	2634	44478
k1119	754	13	799	5742	778	1204	75	392	19	11	1	1	1	0	0	2	5	2	0	0	591	10390
k1120	1777	11	1958	559	3908	1313	147	1156	35	15	1	0	1	15	0	4	14	3	0	0	629	11546
k1121	1571	11	1459	846	1502	3960	181	777	16	11	1	0	0	6	0	4	7	7	2	0	584	10945
k1122	1038	8	1447	139	374	250	2370	533	17	10	2	0	0	5	0	0	3	4	0	0	467	6667
k1124	5579	32	2351	81	324	129	70	6097	165	16	4	4	3	15	0	8	14	4	0	0	880	15776
k1127	2681	13	534	18	36	30	13	711	1628	14	0	2	0	21	0	5	4	7	0	0	375	6092
k1130	1280	14	528	15	37	14	6	316	30	3996	197	11	0	1	2	5	3	6	0	1	416	6878
k1133	124	1	35	3	4	2	0	38	4	96	970	49	6	0	0	0	2	3	3	0	53	1393
k1134	90	28	23	5	1	3	1	22	2	4	22	1456	90	0	0	6	5	36	16	0	114	1924
k1135	86	29	34	1	0	3	3	38	3	1	2	73	1797	0	0	6	14	27	3	3	118	2241
k1144	65	1	17	1	6	0	0	16	11	0	1	0	0	145	0	0	1	0	0	0	20	284
k1145	16	63	16	1	0	0	0	7	0	0	0	2	0	1	218	54	49	18	2	1	40	488
k1146	130	1735	64	8	4	8	0	59	5	2	3	6	2	3	40	2367	721	272	8	59	502	5998
k1149	467	5390	239	11	13	6	4	287	19	0	2	10	10	13	20	928	12170	198	19	83	1644	21533
k1160	74	327	28	5	2	1	0	38	2	0	13	46	8	0	1	236	158	3393	170	21	350	4873
k4611	23	70	18	5	1	1	0	13	1	0	2	3	3	1	0	39	37	410	1274	4	207	2112
k4612	44	861	20	3	1	1	1	22	0	0	0	0	2	2	1	179	193	68	5	1016	435	2854
k9999	7607	1641	3991	586	325	347	208	4135	166	118	26	103	47	13	2	186	598	312	70	95	2587437	2608013