Visualization

```r
library(ggplot2)
library(dplyr)
library(janitor)
library(gt)

library(ggplot2)
library(dplyr)
library(janitor)
library(gt)
library(tidyverse)
library(sf)
library(rnaturalearth)
library(rnaturalearthdata)
```

```r
#Demand for Faecal Sludge Emptying Services Globally
ggplot(tbl_emptying_demand_global, aes(x = emptying_method, y =
sum_population_emptying_method / 1000000, fill = emptying_method)) +
  geom_bar(stat = "identity") +
  labs(title = "Demand for Faecal Sludge Emptying Services Globally",
       x = "Emptying method",
       y = "Population (Millions)") +
  scale_y_continuous(labels = scales::comma) +
  theme_minimal() +
  theme(legend.position = "none")
```

```r
library(dplyr)
library(ggplot2)
library(dplyr)
library(ggplot2)
library(countrycode)

data_in_fsmglobal <- readr::read_csv("data-raw/fsmglobal.csv")

#Demand for Faecal Sludge Emptying Services per continent
data_in_continet <- data_in_fsmglobal %>%
  mutate(continent = countrycode(iso3c, "iso3c", "continent")) %>%
  group_by(continent, emptying_method) %>%
  summarize(total_population = sum(population_emptying_method))
```
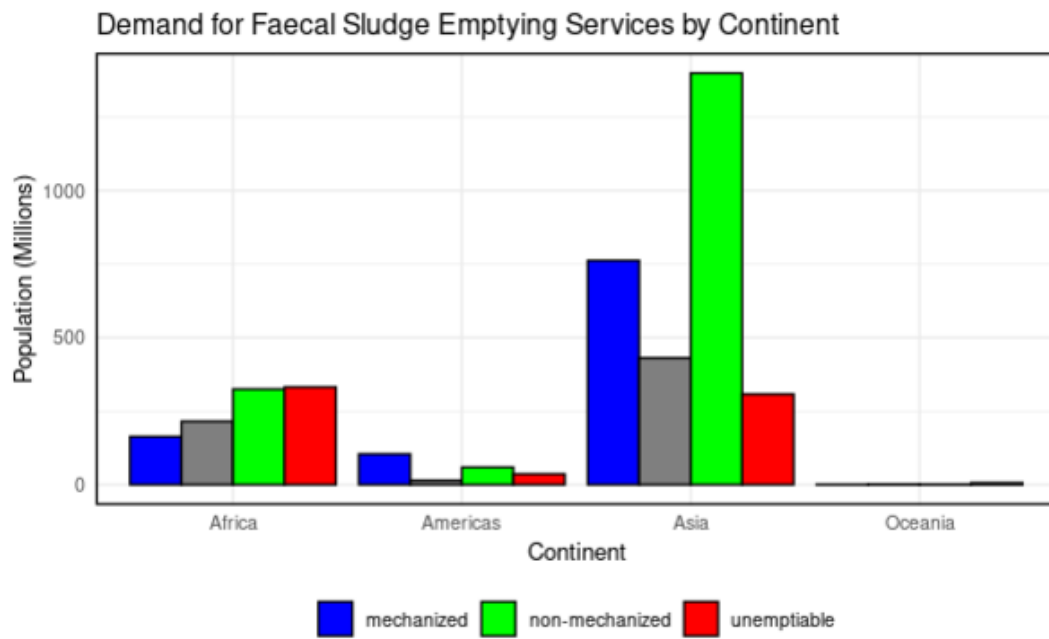
```r
{r}
# Bar plot
ggplot(data_in_continet, aes(x = continent, y = total_population / 1000000, fill =
emptying_method)) +
  geom_bar(stat = "identity", position = "dodge", color = "black", size = 0.5) +  # Add
inner border
  labs(title = "Demand for Faecal Sludge Emptying Services by Continent",
       x = "Continent",
       y = "Population (Millions)") +
  scale_fill_manual(values = c("mechanized" = "blue", "non-mechanized" = "green",
"unemptiable" = "red")) +
  theme_minimal() +
  theme(legend.position = "bottom",
        legend.title = element_blank(),
        panel.border = element_rect(color = "black", fill = NA, size = 1))
```

Demand for Faecal Sludge Emptying Services by Continent

#Demand for Faecal Sludge Emptying Services in Africa

```r
{r}
install.packages(c("dplyr", "countrycode"))

library(dplyr)
library(countrycode)
```

```r
{r}
library(dplyr)
library(ggplot2)
library(countrycode)

# Creating African data
fsmgafrica <- data_in_fsmglobal %>%
  mutate(continent = countrycode(iso3c, "iso3c", "continent")) %>%
  filter(continent == "Africa") %>%
  mutate(region = case_when(
    iso3c %in% c("DZA", "EGY", "LBY", "MAR", "TUN") ~ "North Africa",
    iso3c %in% c("ERI", "ETH", "SDN", "SSD", "DJI") ~ "East Africa",
    iso3c %in% c("AGO", "BWA", "LSO", "MOZ", "NAM", "ZAF", "SWZ", "ZMB", "ZWE") ~
"Southern Africa",
    iso3c %in% c("BEN", "BFA", "BKI", "CMR", "CPV", "GMB", "GHA", "GIN", "GNB", "CIV",
"LBR", "MLI", "MRT", "NGA", "SEN", "SLE", "TGO") ~ "West Africa",
    iso3c %in% c("COG", "COD", "GAB", "KEN", "RWA", "SOM", "UGA", "TZA") ~ "Central
Africa",
    TRUE ~ "Islandic Africa"
  ))

# Bar plot

ggplot(fsmgafrica, aes(x = region, y = population_emptying_method / 1e6, fill =
emptying_method)) +
  geom_bar(stat = "identity", position = "dodge", color = "black", linewidth = 0.5) +  #
Replaced size with linewidth
  labs(title = "Demand for Faecal Sludge Emptying Services by African Region",
       x = "Region",
       y = "Population (Millions)") +
  scale_fill_manual(values = c("mechanized" = "blue", "non-mechanized" = "green",
"unemptiable" = "red")) +
  theme_minimal() +
  theme(
    legend.position = "right",
    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    panel.border = element_rect(color = "black", fill = NA, linewidth = 1)  # Changed
size to linewidth
  )
```
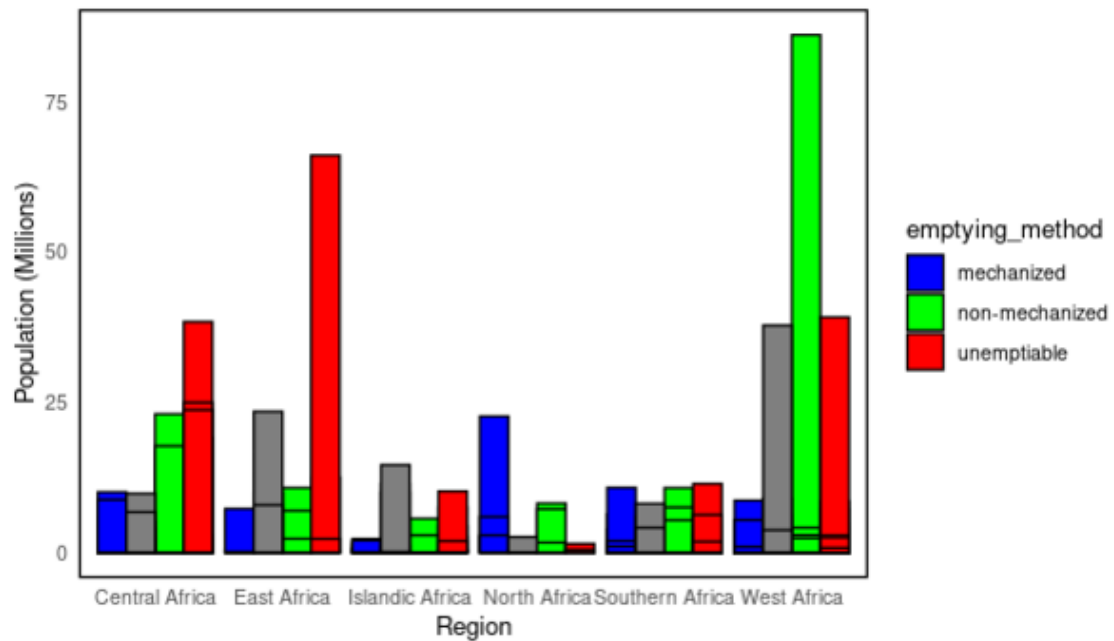
ples

Demand for Faecal Sludge Emptying Services by African Region


```r
{r}
# Dataset for South Africa
south_africa_data <- data_in_fsmglobal %>%
  filter(country == "South Africa")



# Bar plot for South Africa data
ggplot(south_africa_data, aes(x = emptying_method, y = population_emptying_method / 1e6,
fill = emptying_method)) +
  geom_bar(stat = "identity", position = "dodge", color = "black", linewidth = 0.5) +  #
Replaced size with linewidth
  labs(title = "Demand for Faecal Sludge Emptying Services in South Africa",
       x = "Emptying Method",
       y = "Population (Millions)") +
  scale_fill_manual(values = c("mechanized" = "blue", "non-mechanized" = "green",
"unemptiable" = "red")) +
  theme_minimal() +
  theme(
    legend.position = "right",
    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    panel.border = element_rect(color = "black", fill = NA, linewidth = 1)  # Changed
size to linewidth
  )
```

Demand for Faecal Sludge Emptying Services in South Africa