Healthcare Worker Visit Analysis

```
options(warn = -1)
suppressPackageStartupMessages(library(dplyr))
suppressPackageStartupMessages(library(ggplot2))
```

Healthcare Worker Visit Analysis

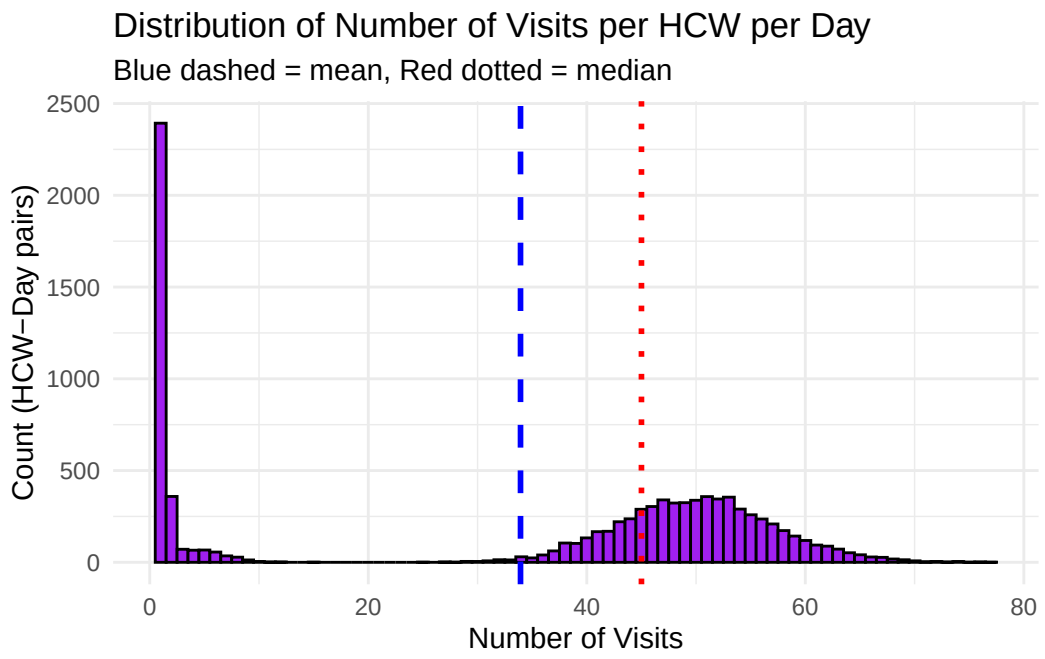
This document provides analysis of the visit rates and behaviors of health care worker agents (HCWs) in the simulation. All results and visualizations related to HCW visits will be presented here.

```
library(dplyr)

df2 <- read.table("visit_data.txt", header = TRUE, sep = ",", stringsAsFactors = FALSE)
df2$visitDay <- floor(df2$visitTime)

# Remove first 90 visitTime values
df2_filtered <- df2 %>% arrange(visitTime) %>% slice(-(1:90))

# Histogram: for each hcwId, each day, distribution of number of visits
visits_per_day <- df2_filtered %>% group_by(hcwId, visitDay) %>% summarise(n_visits = n())
```

```
`summarise()` has grouped output by 'hcwId'. You can override using the
`.groups` argument.
```

```
library(ggplot2)
ggplot(visits_per_day, aes(x = n_visits)) +
    geom_histogram(binwidth = 1, fill = "purple", color = "black") +
    geom_vline(aes(xintercept = mean(visits_per_day$n_visits)), color = "blue", linetype = "
    geom_vline(aes(xintercept = median(visits_per_day$n_visits)), color = "red", linetype = "
```

```
    labs(title = "Distribution of Number of Visits per HCW per Day",
             x = "Number of Visits",
             y = "Count (HCW-Day pairs)",
             subtitle = "Blue dashed = mean, Red dotted = median") +
    theme_minimal()
```




```
# Text output for min, max, IQR
min_visits <- min(visits_per_day$n_visits)
max_visits <- max(visits_per_day$n_visits)
iqr_visits <- IQR(visits_per_day$n_visits)
cat("Min visits per HCW per day:", min_visits, "\n")
```

```
Min visits per HCW per day: 1
```

```
cat("Max visits per HCW per day:", max_visits, "\n")
```

```
Max visits per HCW per day: 77
```

```
cat("Interquartile range (IQR):", iqr_visits, "\n")
```

```
Interquartile range (IQR): 51
```

```r
nvisits <- nrow(df2)

# Filter for nurse visits
df_nurse_visits <- df2[df2$hcwType == 'NURSE', ]
df_nurses <- distinct(df_nurse_visits, hcwType, hcwId)
nurse_count <- nrow(df_nurses)
# Filter for other HCW types
df_doctor_visits <- df2[df2$hcwType == 'DOCTOR', ]
df_doctors <- distinct(df_doctor_visits, hcwType, hcwId)
doctor_count <- nrow(df_doctors)
df_pt_visits     <- df2[df2$hcwType == 'PT', ]
df_pts <- distinct(df_pt_visits, hcwType, hcwId)
pt_count <- nrow(df_pts)

df_ot_visits     <- df2[df2$hcwType == 'OT', ]
df_ots <- distinct(df_ot_visits, hcwType, hcwId)
ot_count <- nrow(df_ots)

df_rt_visits     <- df2[df2$hcwType == 'RT', ]
df_rts <- distinct(df_rt_visits, hcwType, hcwId)
rt_count <- nrow(df_rts)
```

Total patient visits by hcw type

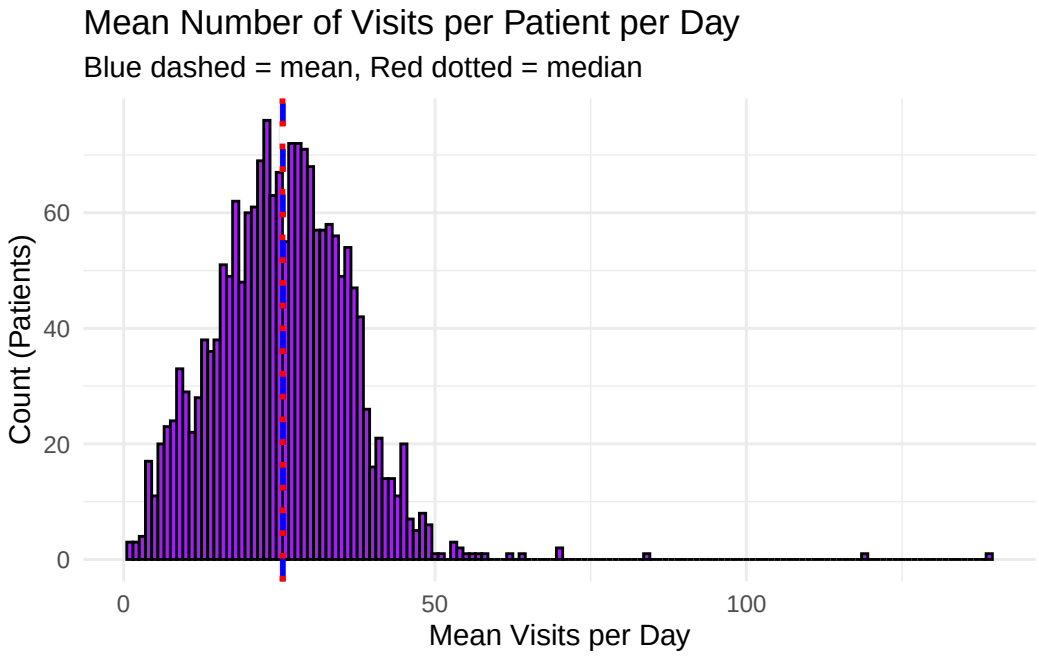
HCW Type	Total visits (365d)	mean/day
NURSE (26)	357	0.0376185
DOCTOR (18)	312606	47.5808219
OT (9)	765	0.2328767
PT (9)	1019	0.3101979
RT (9)	978	0.2977169

Histogram: Mean Number of Visits per Patient per Day

```r
# Calculate mean number of visits per patientId per day
visits_per_patient_day <- df2_filtered %>% group_by(patientId, visitDay) %>% summarise(n_visi
```

```
`summarise()` has grouped output by 'patientId'. You can override using the
`.groups` argument.
```

```r
mean_visits <- visits_per_patient_day %>% group_by(patientId) %>% summarise(mean_visits = mea
ggplot(mean_visits, aes(x = mean_visits)) +
    geom_histogram(binwidth = 1, fill = "purple", color = "black") +
    geom_vline(xintercept = mean(mean_visits$mean_visits), color = "blue", linetype = "dashed
    geom_vline(xintercept = median(mean_visits$mean_visits), color = "red", linetype = "dotte
  labs(title = "Mean Number of Visits per Patient per Day",
       x = "Mean Visits per Day",
       y = "Count (Patients)",
       subtitle = "Blue dashed = mean, Red dotted = median") +
  theme_minimal()
```




```r
min_mean_visits <- min(mean_visits$mean_visits)
max_mean_visits <- max(mean_visits$mean_visits)
mean_mean_visits <- mean(mean_visits$mean_visits)
median_mean_visits <- median(mean_visits$mean_visits)
cat("Min  visits per patient per day:", min_mean_visits, "\n")
```

```
Min  visits per patient per day: 1
```

```r
cat("Max  visits per patient per day:", max_mean_visits, "\n")
```

```
Max  visits per patient per day: 139
```

```r
cat("Mean visits per patient per day:", mean_mean_visits, "\n")
```

```
Mean visits per patient per day: 25.57558
```

```r
cat("Median visits per patient per day:", median_mean_visits, "\n")
```

```
Median visits per patient per day: 25.5
```