

week7_Activity

2025-06-25

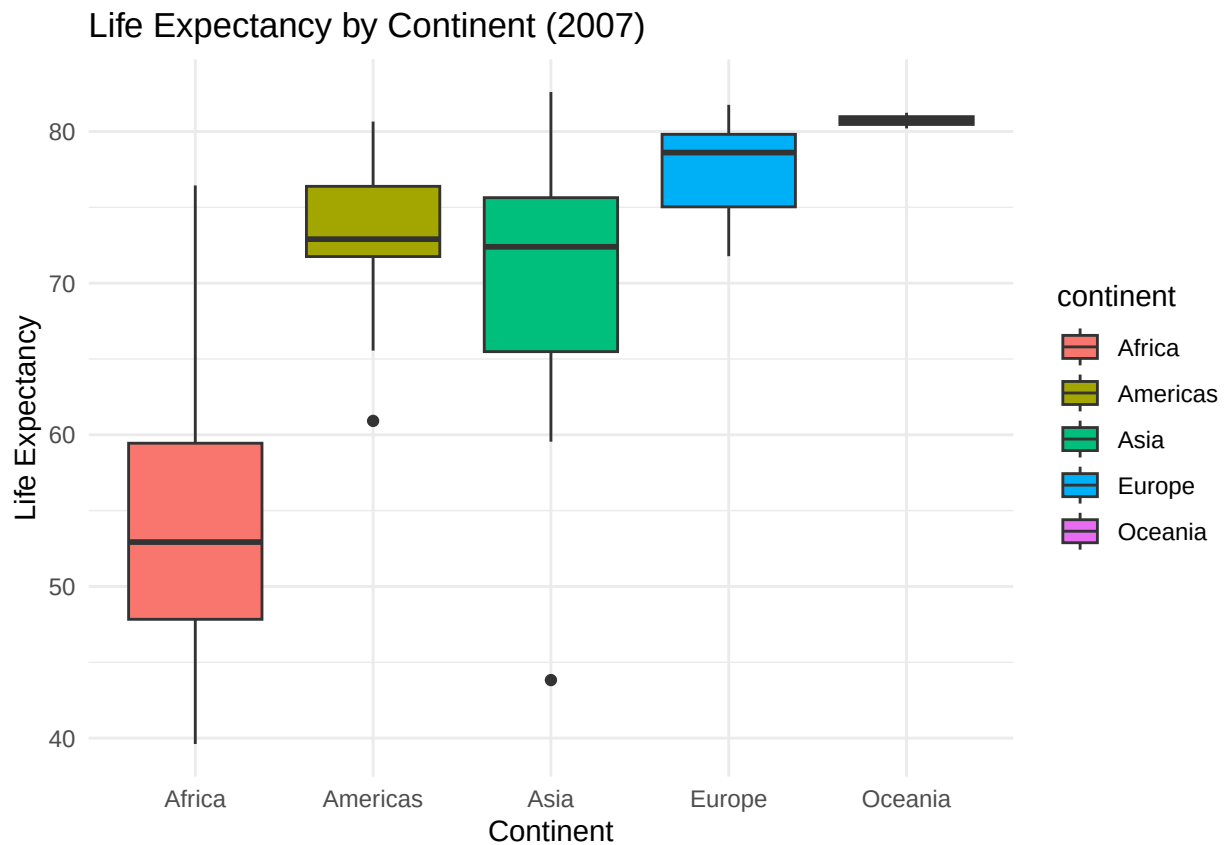
```
library(gapminder)
library(ggplot2)
library(dplyr)

##
## Attaching package: 'dplyr'
##
## The following objects are masked from 'package:stats':
##
##   filter, lag
##
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

# Load the data
data("gapminder")

# Filter data for the year 2007
gap_2007 <- gapminder %>%
  filter(year == 2007) %>%
  dplyr::select(continent, lifeExp)

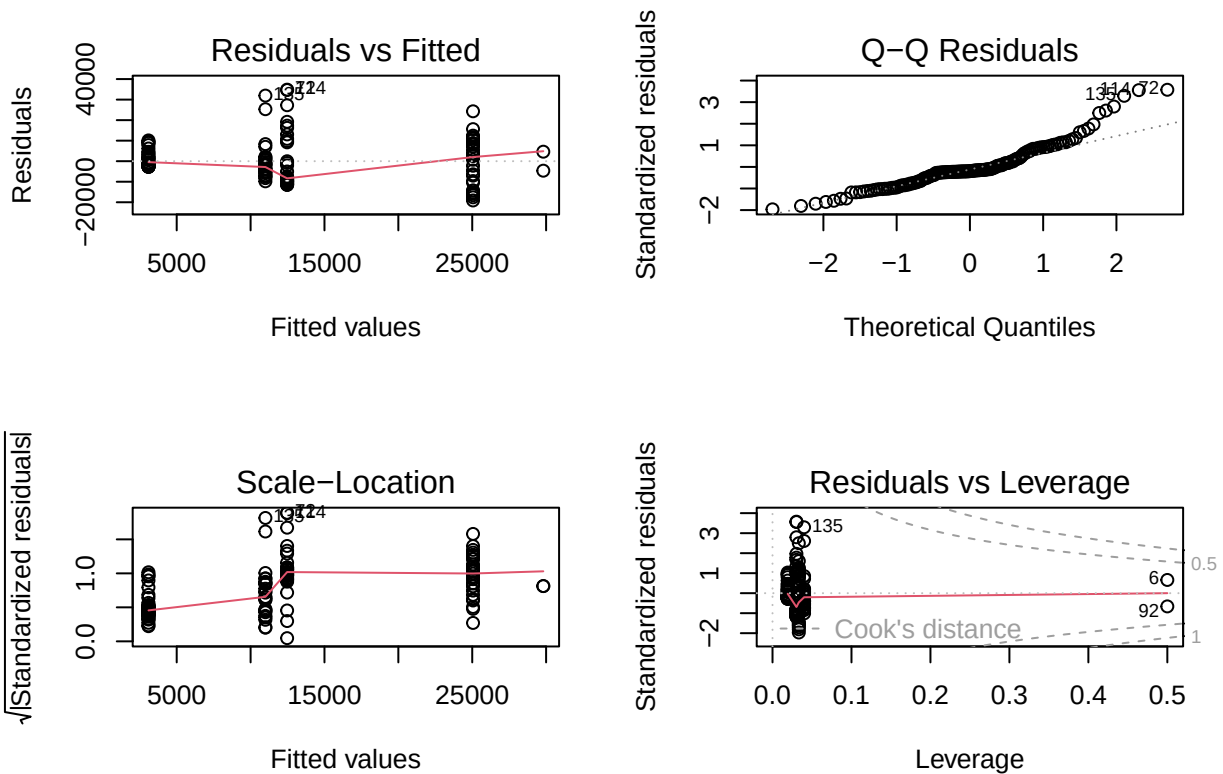
# Create a boxplot for life expectancy by continent
ggplot(gap_2007, aes(x = continent, y = lifeExp, fill = continent)) +
  geom_boxplot() +
  labs(title = "Life Expectancy by Continent (2007)",
       x = "Continent",
       y = "Life Expectancy") +
  theme_minimal()
```



```
# Filter data for GDP per capita
gap_2007_gdp <- gapminder %>%
  filter(year == 2007) %>%
  dplyr::select(continent, gdpPercap)

# Conduct ANOVA
anova_model <- aov(gdpPercap ~ continent, data = gap_2007_gdp)

# Check assumptions using diagnostic plots
par(mfrow = c(2, 2))
plot(anova_model)
```



```
# Perform Tukey HSD post-hoc test
tukey_result <- TukeyHSD(anova_model)
```

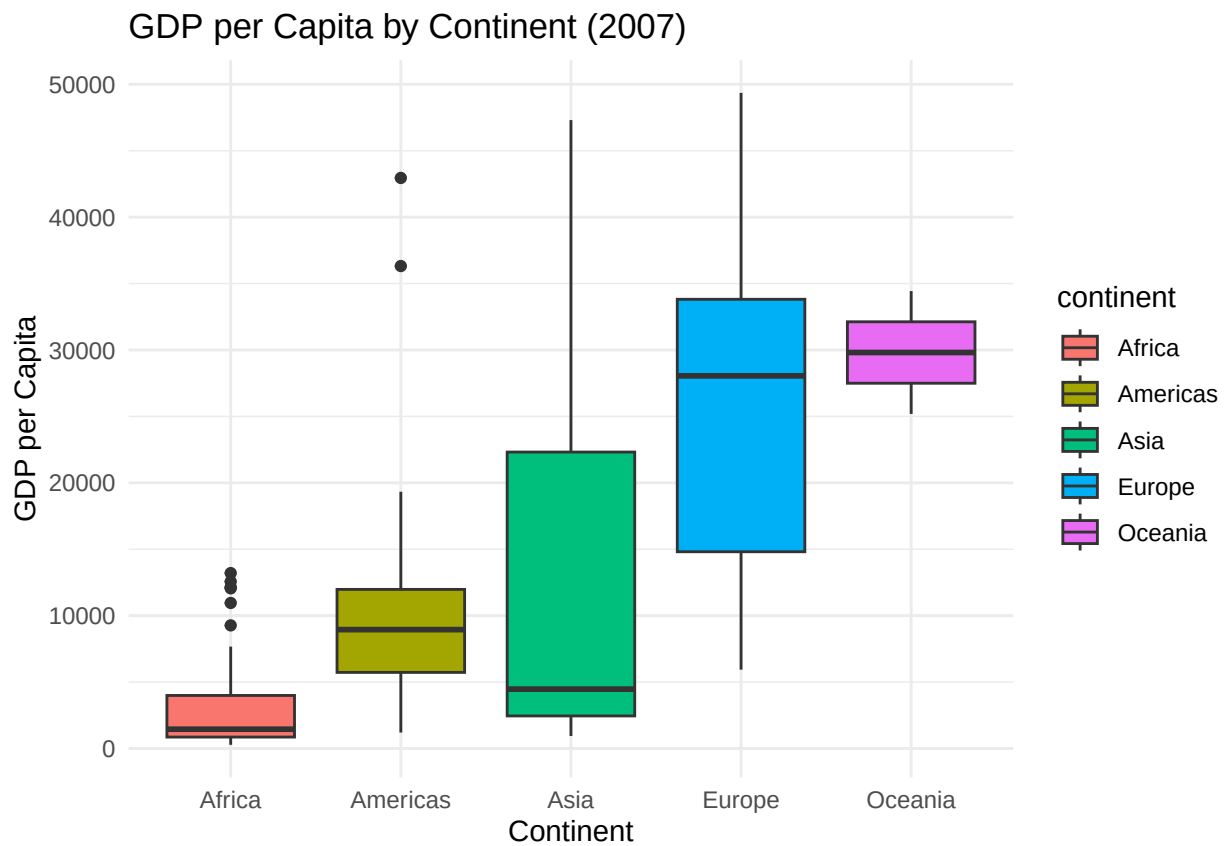
```
# Print Tukey HSD results
print(tukey_result)
```

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = gdpPercap ~ continent, data = gap_2007_gdp)
##
## $continent
##
```

	diff	lwr	upr	p adj
Americas-Africa	7913.999	1254.048	14573.95	0.0111618
Asia-Africa	9383.994	3293.561	15474.43	0.0003607
Europe-Africa	21965.449	15691.486	28239.41	0.0000000
Oceania-Africa	26721.156	7002.488	46439.82	0.0024141
Asia-Americas	1469.995	-5785.789	8725.78	0.9805078
Europe-Americas	14051.450	6640.940	21461.96	0.0000058
Oceania-Americas	18807.157	-1302.018	38916.33	0.0787121
Europe-Asia	12581.455	5678.261	19484.65	0.0000143
Oceania-Asia	17337.161	-2590.641	37264.96	0.1201389
Oceania-Europe	4755.707	-15228.952	24740.36	0.9648977

```
# Create a boxplot for GDP per capita by continent
ggplot(gap_2007_gdp, aes(x = continent, y = gdpPercap, fill = continent)) +
  geom_boxplot() +
  labs(title = "GDP per Capita by Continent (2007)",
       x = "Continent",
       y = "GDP per Capita") +
```

```
theme_minimal()
```



```
# Plot Tukey HSD results  
plot(tukey_result, las = 1)
```

95% family-wise confidence level

