

1. "Fentanyl Overtakes Heroin as Leading Cause of U.S. Drug Deaths" Response

Katz's article about the growing Fentanyl crisis in the United States is directed towards national and state government officials. I believe this is the target audience because Katz's purpose for writing this article seems to be a call to action against this epidemic, and the only people who can fight this are those with leverage in government. Another clue that points to this target audience is found in the final paragraph where Katz states, "the administration has yet to take concrete action" in reference to the commission President Trump put together to fight Fentanyl. This clearly was meant to put pressure on this commission to start producing some visible results.

This article was also published to let the country know that the Fentanyl problem is not isolated in impoverished areas, but nation-wide. The staggering numbers of the death toll are meant to give the audience an alarming wake-up call to how widespread this issue has become. It's easy to ignore an issue when it doesn't affect your life, but this article clearly shows the audience that this is a problem in many of their communities and if actions is not taken soon it will start to directly impact their lives.

To convey this message, Katz's first graphic shows how much more deadly Fentanyl has become than any other recreational drug in the United States. This shows the audience that we need to treat this situation differently than that of meth or heroin. The next visualization is a simple line graph of the total number of deaths over time. This rapid growth almost causes a sense of urgency to stop this issue before it goes too far. Finally, Katz shows how Fentanyl is affecting areas where most people would not imagine a drug epidemic. The graphic simply shows the overdoses by state for 2015 and 2016, but the states with the highest numbers of overdoses definitely will come as a shock to most viewers.

2. Graphics

Code:

```
# Author: Brian Lambert
# Name: module_2_homework_code.R
# Description: Graphics that compare the distribution of
# percapita GDP in the different continents in 2007.

# setwd("/Users/brianlambert/Desktop/STA404/Module_2")

##### Data #####

gap_2007 <- gapminder[gapminder$year==2007,]

##### Boxplots #####

# solid fill, no points plotted besides outliers
```

```
ggplot(data=gap_2007, aes(x=continent, y=gdpPercap, fill=continent)) +
  geom_boxplot() +
  labs(x="continent", y="GDP Percapita", title="GDP Percapita by Continent: 2007") +
  theme(legend.position="none")
```

```
# no fill, colored outline, points plotted
ggplot(data=gap_2007, aes(x=continent, y=gdpPercap, color=continent)) +
  geom_boxplot() +
  geom_jitter(alpha=.3) +
  labs(x="continent", y="GDP Percapita", title="GDP Percapita by Continent: 2007") +
  theme(legend.position="none")
```

```
# flipped coordinates of second plot. Source: https://plot.ly/ggplot2/box-plots/
ggplot(data=gap_2007, aes(x=continent, y=gdpPercap, color=continent)) +
  geom_boxplot() +
  geom_jitter(alpha=.3) +
  labs(x="continent", y="GDP Percapita", title="GDP Percapita by Continent: 2007") +
  theme(legend.position="none") +
  coord_flip()
```

Histograms

```
ggplot() + geom_histogram(data=gap_2007,
  aes(x=gdpPercap, fill=continent)) +
  facet_grid(continent ~ ., scales = "free_y") +
  labs(x="GDP Percapita", title="GDP Percapita by Continent: 2007")
```

```
# change facet grid y scale
ggplot() + geom_histogram(data=gap_2007,
  aes(x=gdpPercap, fill=continent)) +
  labs(x="GDP Percapita", title="GDP Percapita by Continent: 2007")
```

Density Plots

```
# divide gdp by 2000 to help show more accurate densities
ggplot() + geom_density(data=gap_2007,
  aes(x=gdpPercap/2000, color=continent, fill=continent)) +
  labs(x="GDP Percapita", title="GDP Percapita by Continent: 2007")
```

```
# divide gdp by 2000 to help show more accurate densities
ggplot() + geom_density(data=gap_2007,
  aes(x=gdpPercap/2000, color=continent, fill=continent),
  alpha = .4) +
  labs(x="GDP Percapita", title="GDP Percapita by Continent: 2007")
```

```
# change facet grid y scale
ggplot() + geom_density(data=gap_2007,
```

```

aes(x=gdpPercap, color=continent, fill=continent)) +
facet_grid(continent ~ ., scales = "free_y")+
labs(x="GDP Percapita", title="GDP Percapita by Continent: 2007")

```

Violin Plots

```

ggplot(gap_2007, aes(x=continent, y=gdpPercap, color=continent)) +
  geom_violin()+
  labs(x="country", y="GDP Percapita", title="GDP Percapita by Continent: 2007")

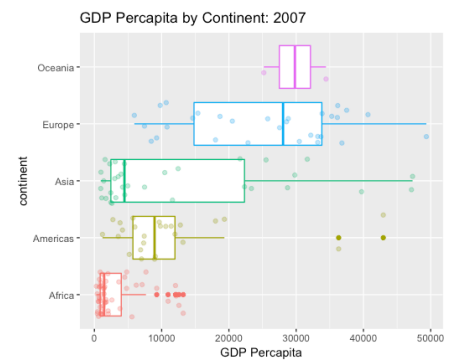
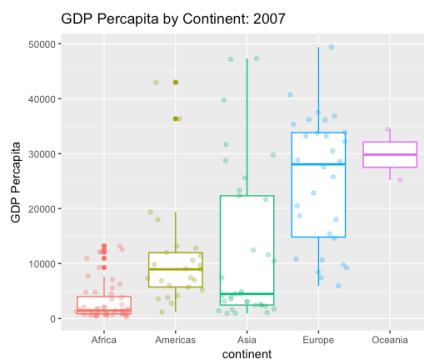
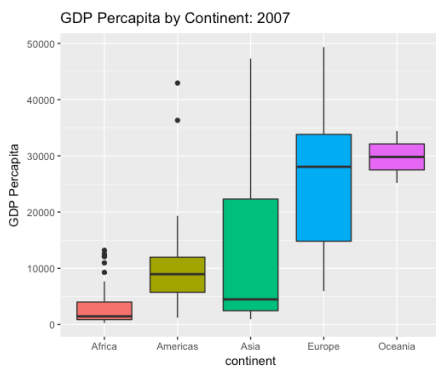
```

```

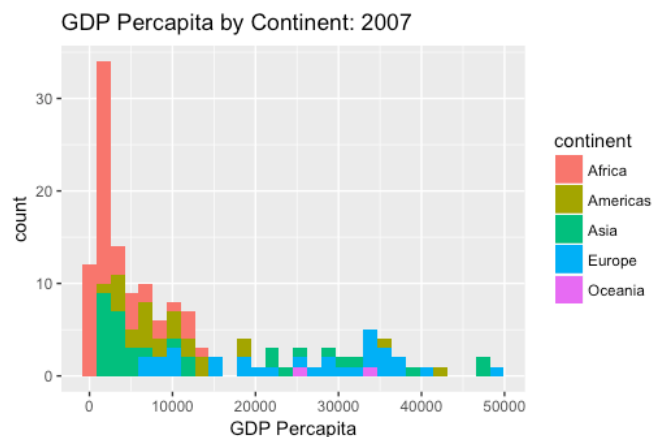
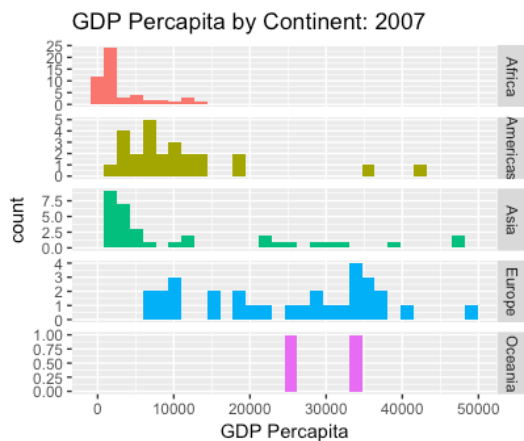
ggplot(gap_2007, aes(x=continent, y=gdpPercap, color=continent)) +
  geom_violin() +
  geom_jitter(alpha=0.4)+
  labs(x="country", y="GDP Percapita", title="GDP Percapita by Continent: 2007")

```

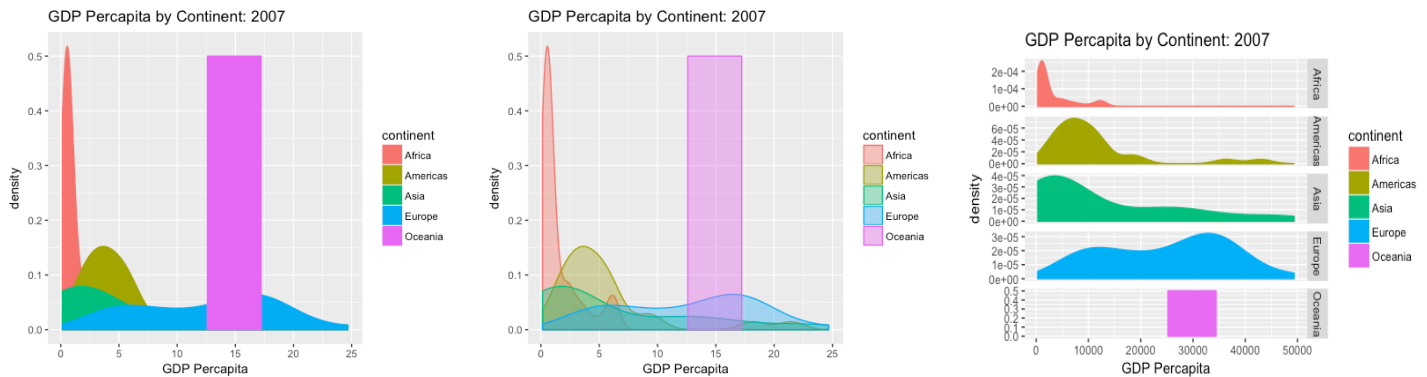
a. Boxplots



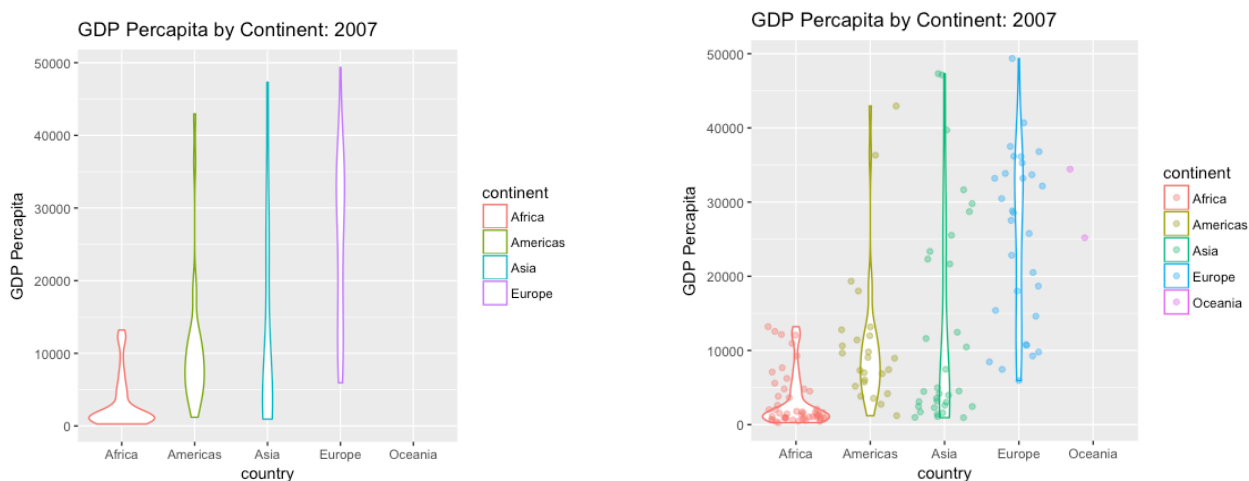
b. Histograms



c. Density Plots



d. Violin Plots



Conclusion:

I prefer my third boxplot with the inverted axis for this data. I believe this visualization provides the most straightforward look at the gdp for each continent and allows the audience to easily compare gdp's between countries. The other plots get a bit complicated because they rely on counts, categorical variables, but the boxplot is perfect for the continuous gdp variable. This allows the display to be spread out well compared to some of the other plots that are squeezed together and seem to hide some of the important data. The overlay of the points also gives the audience more insight into the true distribution for each country. Finally, I also like this plot because I think it looks the cleanest. Only giving the borders color specifies each distinct continent but it's not in your face like the full color fill is in the first plot.