Week 15 - Tidy Tuesday 6, an Introduction to Quarto Articles (not a true publication)

Keanu Rochette-Yu Tsuen[1,2☯]

1 Department of Oceanography, University of Hawai'i, Honolulu, HI, USA,
2 MCR LTER, Paopao, Moorea, French Polynesia,

☯These authors contributed equally to this work.

¤Current Address: Dept/Program/Center, Institution Name, City, State, Country

†Deceased

¶Membership list can be found in the Acknowledgments sections

Abstract

Generated by ChatGPT as placeholder: The United States boasts one of the largest and most extensive highway systems in the world, facilitating efficient travel across its vast landscapes. The Interstate Highway System, established in 1956, is the backbone of long-distance road travel. These highways are numbered using a systematic scheme: odd-numbered interstates run north-south (e.g., I-5 on the West Coast), while even-numbered interstates run east-west (e.g., I-10 in the southern U.S.). Three-digit interstates typically serve metropolitan areas or act as bypasses and spurs. Speed limits on highways vary by state but generally range between 55 mph (88 km/h) and 75 mph (120 km/h). In rural areas, some highways allow speeds up to 80 mph (130 km/h), particularly in states like Texas and Utah. Urban interstates often have lower limits to accommodate heavier traffic and ensure safety.Safety on highways is paramount. Drivers should maintain a safe following distance, as high speeds reduce reaction times. Always use seat belts and adhere to posted speed limits. Stay vigilant in construction zones where conditions can change rapidly. Avoid distractions such as texting, and never drive under the influence of alcohol or drugs. In case of breakdowns, pull over safely, turn on hazard lights, and stay inside your vehicle if traffic is heavy.Planning your route with updated GPS and weather forecasts can make your highway travel smoother and safer. With proper precautions, highways can be an efficient and enjoyable way to explore the U.S.

Author summary

Hi, I'm Keanu and I am a first year master student at the University of Hawai'i at Mānoa. I'm currently taking the MBIO612/OCN682 class to learn how to code in R and use it for data science.

Introduction

This week, I decided to learn how to use RStudio and Quarto files to make publishable and reproducible journal articles. I chose the template from PLOS.

We'll be looking at the National Highway Traffic Flow data from Tidy Tuesday.

Materials and methods

```
library(tidyverse)
library(gt)
library(janitor)
library(ghibli)
```

```
tuesdata <- tidytuesdayR::tt_load('2024-12-03')
```

```
---- Compiling #TidyTuesday Information for 2024-12-03 ----
--- There is 1 file available ---


-- Downloading files -------------------------------------------------------------

  1 of 1: "A64_traffic.csv"
```

```
traffic <- tuesdata$A64_traffic
```

```
traffic_clean <- traffic %>% clean_names() %>%
  select(-site_id, -site_name, -report_date, -time_period_ending, -time_interval
         -name, -longitude, -latitude) %>%
  rename(`0-520` = x0_520_cm,
         `521-660` = x521_660_cm,
         `661-1160` = x661_1160_cm,
         `Over 1160` = x1160_cm) %>%
  pivot_longer(cols = `0-520`:`Over 1160`,
               names_to = "size_class_cm",
               values_to = "num_by_size") %>%
  pivot_longer(cols = x0_10_mph:x80_mph,
               names_to = "speed_cat_mph",
               values_to = "num_by_speed") %>%
  mutate(speed_cat_mph = str_replace(speed_cat_mph, "x", ""),
         speed_cat_mph = str_replace(speed_cat_mph, "_mph", ""),
         speed_cat_mph = str_replace(speed_cat_mph, "_", "-"),
         speed_cat_mph = ifelse(speed_cat_mph == "80", "Over 80", speed_cat_mph
         size_class_cm = as.factor(size_class_cm))
```

```
size <- traffic_clean %>%
  ggplot(aes(x= size_class_cm, y= num_by_size, fill = size_class_cm))+
  geom_boxplot() +
  labs(title = "Distribution of vehicules by size class",
```

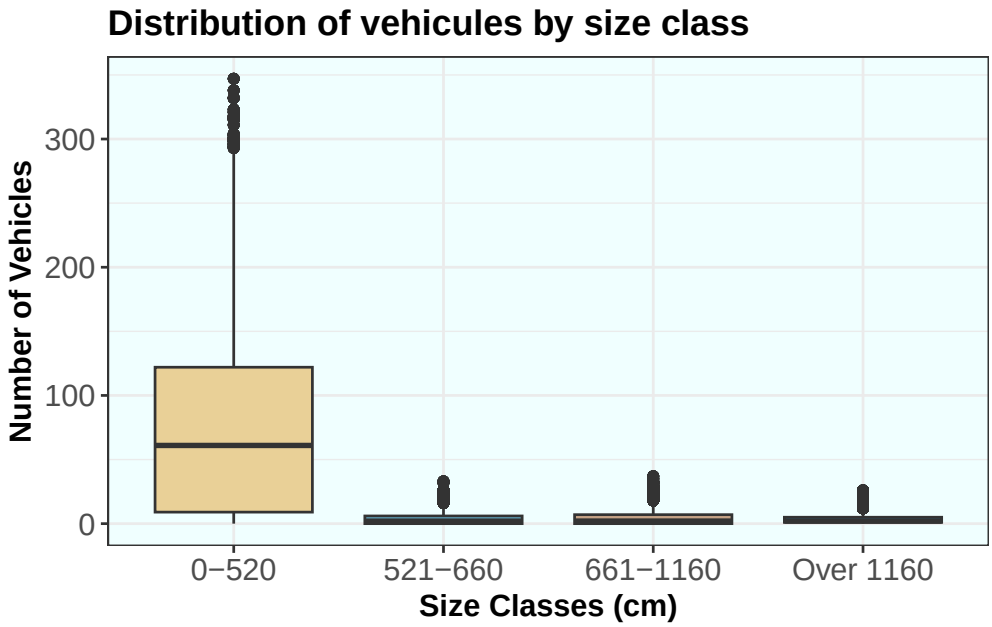
```
       x = "Size Classes (cm)",
       y = "Number of Vehicles") +
  theme_bw() +
  theme(plot.title = element_text(size=14, face = "bold"),
        plot.subtitle = element_text(size=12),
        axis.title = element_text(size = 12, face = "bold"),
        axis.text = element_text(size = 12),
        strip.text.x = element_text(size = 12, face = "bold"),
        legend.title=element_text(size=12, face = "bold"),
        legend.text=element_text(size=12),
        legend.position = "none",
        panel.background = element_rect(fill = "azure1"))+
  #custom the colors
  scale_fill_ghibli_d("MarnieMedium1", direction =-1)
```

```
speed <- traffic_clean %>% group_by(speed_cat_mph) %>%
  summarize(avg_by_speed = mean(num_by_speed, na.rm = T)) %>%
  ggplot(aes(x= speed_cat_mph, y= avg_by_speed, fill = speed_cat_mph))+
  geom_bar(stat= "identity")+
  labs(title = "Distribution of vehicules by speeding category",
       x = "Speed Categories",
       y = "Average Number of Vehicles") +
  theme_bw() +
  theme(plot.title = element_text(size=14, face = "bold"),
        plot.subtitle = element_text(size=12),
        axis.title = element_text(size = 12, face = "bold"),
        axis.text = element_text(size = 12),
        axis.text.x = element_text(angle = 30, vjust = 0.8, hjust=0.5),
        legend.title=element_text(size=12, face = "bold"),
        legend.text=element_text(size=12),
        legend.position = "none",
        panel.background = element_rect(fill = "azure1"))
```

Results

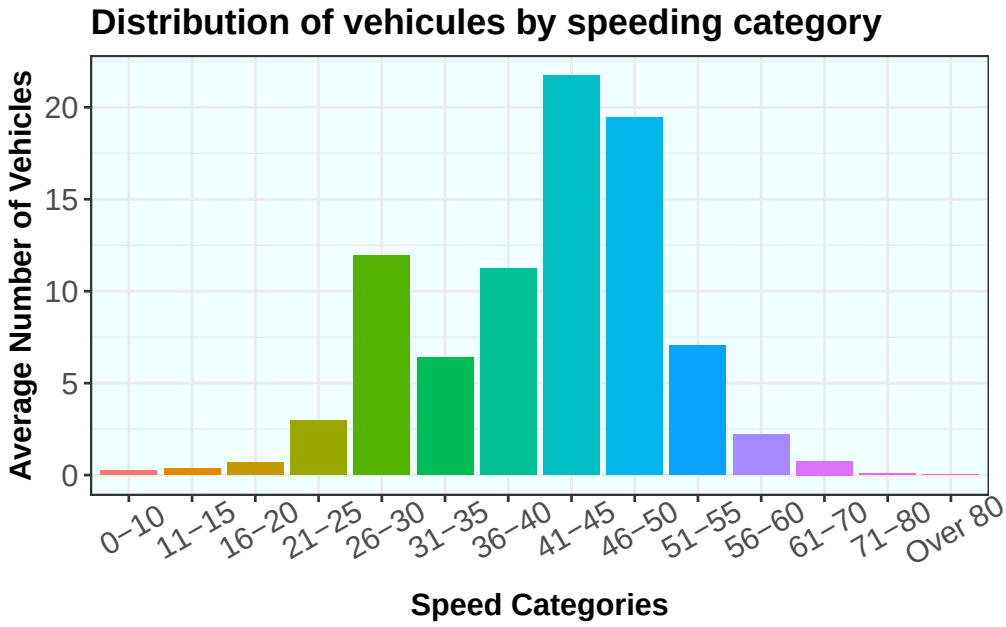
```
size
```

```
Warning: Removed 77336 rows containing non-finite outside the scale range
(`stat_boxplot()`).
```


Distribution of vehicules by size class
Number of Vehicles
300
200
100
0
0−520
521−660
661−1160
Over 1160
Size Classes (cm)

16

```
speed
```


Distribution of vehicules by speeding category
Average Number of Vehicles
20
15
10
5
0
0−10
11−15
16−20
21−25
26−30
31−35
36−40
41−45
46−50
51−55
56−60
61−70
71−80
Over 80
Speed Categories

17

Discussion

Conclusion

Acknowledgments

Cras egestas velit mauris, eu mollis turpis pellentesque sit amet. Interdum et malesuada fames ac ante ipsum primis in faucibus. Nam id pretium nisi. Sed ac quam id nisi malesuada congue. Sed interdum aliquet augue, at pellentesque quam rhoncus vitae.

References