

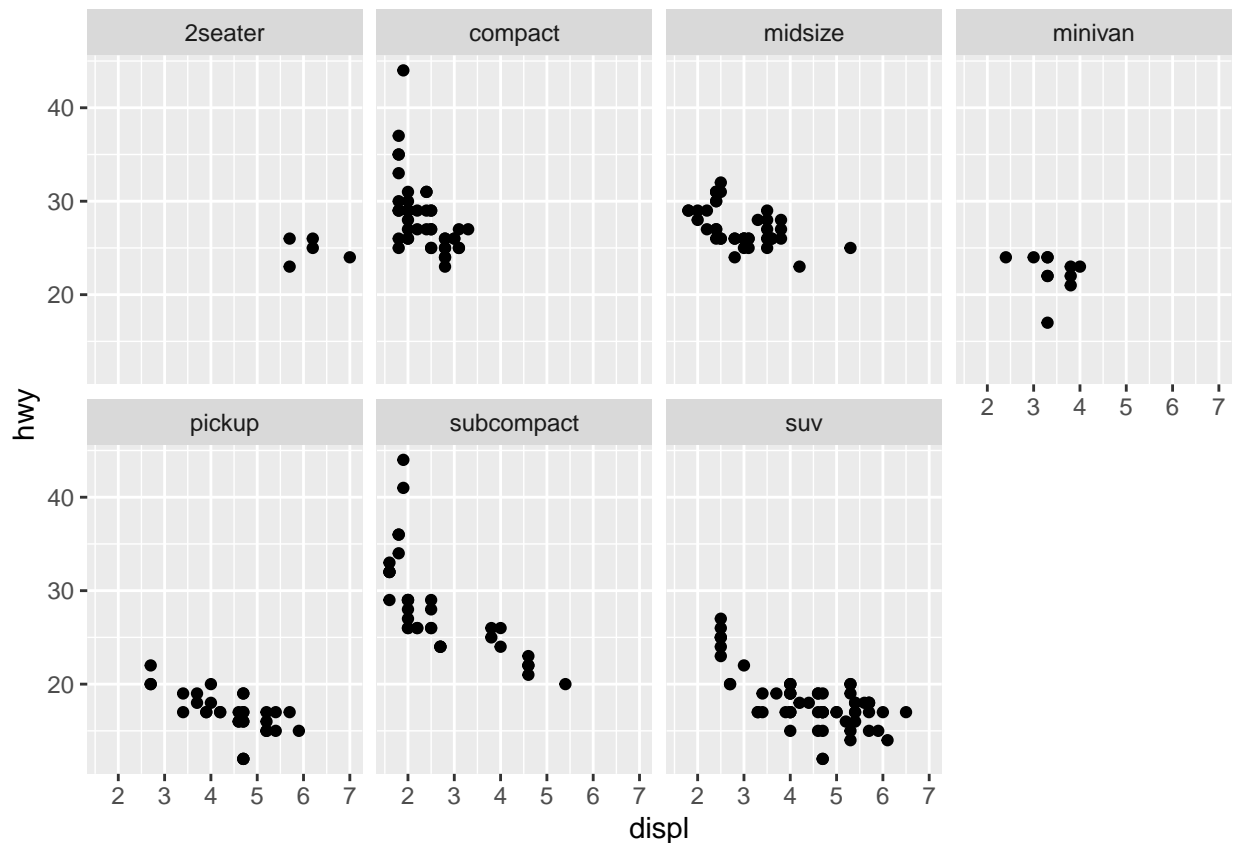
## Internal Assessment 2

ECON03SEC1  
Department of Economics  
Presidency University, Kolkata  
Full Marks: 40  
21/01/2022

### Group 1 (R)

Answer all of the following questions.  $[4 \times 5 = 20]$

1. Using the `mpg` dataset in the `ggplot2` package, replicate the following plot.



2. Which type of transmission (manual or automatic) has a higher variation (standard deviation) of `mpg` in the `mtcars` dataset in the base R `datasets` package?
3. Tidy and replicate the `relig_income` dataset in the `tidyr` package as given below.

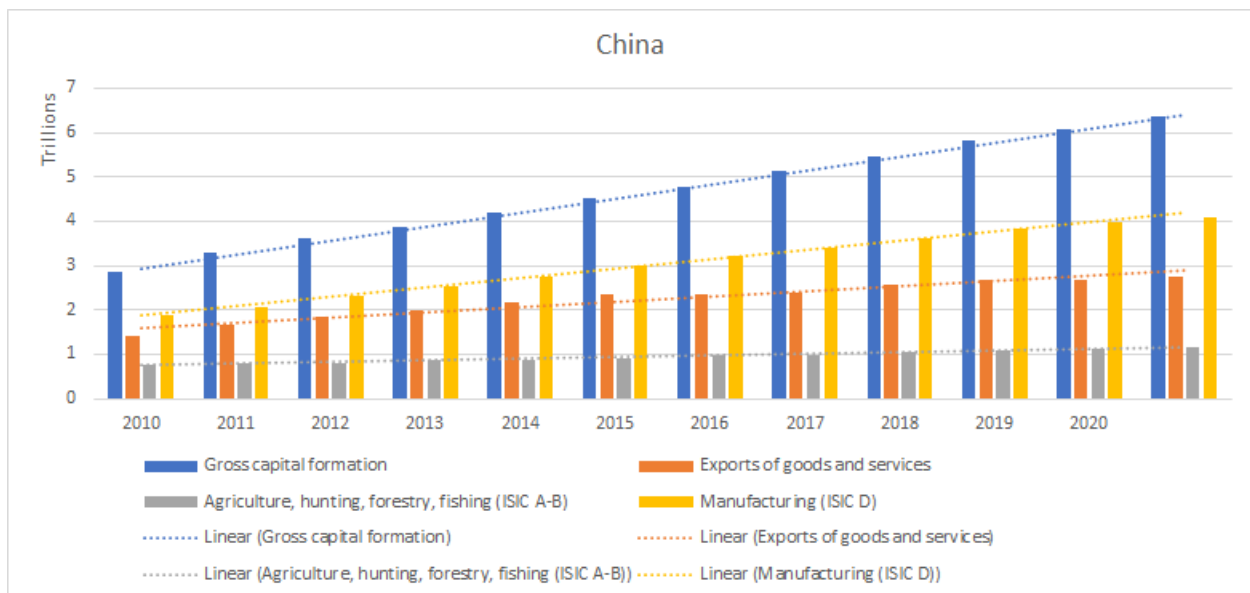
```
## # A tibble: 18 x 3
##   religion      Income Count
##   <chr>         <chr>  <dbl>
## 1 Hindu         <$10k     1
## 2 Other World Religions <$10k     5
## 3 Muslim        <$10k     6
## 4 Other Christian <$10k     9
## 5 Atheist       <$10k    12
## 6 Orthodox      <$10k    13
## 7 Don't know/refused <$10k    15
## 8 Jewish        <$10k    19
## 9 Jehovah's Witness <$10k    20
## 10 Other Faiths  <$10k    20
## 11 Agnostic     <$10k    27
## 12 Buddhist     <$10k    27
## 13 Mormon       <$10k    29
## 14 Unaffiliated <$10k   217
## 15 Historically Black Prot <$10k  228
## 16 Mainline Prot <$10k  289
## 17 Catholic     <$10k  418
## 18 Evangelical Prot <$10k  575
```

4. In the `geom_bar()` function explain the difference between the use of `stat = "identity"` and `stat = "count"`.

## Group 2 (Excel)

Answer all of the following questions.  $[4 \times 5 = 20]$

1. Using the `GDP.xlsx` data replicate the following plot.



2. Calculate the mean *mpg* (miles per gallon) of the cars with 6 and 4 cylinders in `mtcars.xlsx` dataset?

3. How many missing values are there in total in the `GDP.xlsx` dataset? Find how many countries are listed in the data without using the filter option?
4. Suppose that the firm's production function is  $Q = F(K, L) = 50K^{0.5}L^{0.5}$ . Suppose, too, that the price of labour  $w=5$  and the price of capital  $r=20$ . What is the cost minimising input bundle if the firm wants to produce 1,000 units per year?