ETC 2420/5242 Lab 1 2017

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SOLUTION

Question 1 (2pts)

There could be many possible questions that might be answered by this data. Examples include these ones:

- Does the personal savings rate dip when unemployment is high?
- Is there a seasonal effect in unemployment?
- Is population increasing?

Question 2 (2pts)

There could be many possible questions that might be answered by this data. Examples include these ones:

- Is life expectancy positively associated with gdp percapita?
- Is life expectancy increasing over time?
- Is the trend in life expectancy similar across all countries?

Question 3 (2pts)

There could be many possible questions that might be answered by this data. Examples include these ones:

- What places in the city see the most pedestrians?
- What times would be rush hours on week days?
- Can you see the Wednesday night markets location and time based on pedestrian traffic?
- Is White Night visible in terms of pedestrian traffic?
- Are more people out and about in summer than in winter?

Question 4 (4pts)

1. Read in the OECD PISA data
2. (1pt) Tabulate the countries (CNT)
3. Extract the values for Australia (AUS) and Shanghai (QCN)
4. (1pt) Compute the average and standard deviation of the reading scores (PV1READ), for each country
5. (2pts) Write a few sentences explaining what you learn about reading scores in these two countries.

```
student2012.sub <- readRDS("../data/student_sub.rds")
table(student2012.sub$CNT)
#
#   ARE   AUS   AUT   BEL   BGR   BRA   CAN   CHL   COL   CZE   DEU   DNK
# 11500 14481  4755  8597  5282  5506 21544  6856  9073  5327  5001  7481
#   ESP   EST   FIN   FRA   GBR   HKG   HRV   HUN   IRL   ISR   ITA   JPN
# 10175  4779  8829  4613  4185  4670  5008  4810  5016  5055  5495  6351
#   KOR   MAC   MNE   MYS   NLD   NOR   POL   PRT   QCN   RUS   SGP   SRB
```

```
#  5033  5335  4744  5197  4460  4686  4607  5722  5177  5231  5546  4684
#   SVK   SVN   SWE   TAP   TUR   URY   USA
#  4678  5911  4736  6046  4848  5315  4978
australia <- student2012.sub[student2012.sub$CNT=="AUS",]
shanghai <- student2012.sub[student2012.sub$CNT=="QCN",]
mean(australia$PV1READ)
# [1] 500.8453
sd(australia$PV1READ)
# [1] 100.7817
mean(shanghai$PV1READ)
# [1] 567.4197
sd(shanghai$PV1READ)
# [1] 79.91869
```

The reading scores are higher in Shanghai than in Australia by about 67 points. The variation in scores in Australia is higher, with a standard deviation of 100 as opposed to 80 for Shanghai.

```
# Alternative way to do the code
library(dplyr)
library(knitr)
library(tidyr)
student2012.sub %>% select(CNT) %>% group_by(CNT) %>% tally()
# # A tibble: 43 x 2
#      CNT     n
#    <chr> <int>
#  1   ARE 11500
#  2   AUS 14481
#  3   AUT  4755
#  4   BEL  8597
#  5   BGR  5282
#  6   BRA  5506
#  7   CAN 21544
#  8   CHL  6856
#  9   COL  9073
# 10   CZE  5327
# # ... with 33 more rows
student2012.sub %>% filter(CNT %in% c("AUS", "QCN")) %>%
  group_by(CNT) %>%
  summarise(m=mean(PV1READ), s=sd(PV1READ)) %>% kable(digits=1)
```

CNT	m	s
AUS	500.8	100.8
QCN	567.4	79.9