

## MAR657: Visual Analytics

### Individual Assignment 5: Data Manipulation, Filtering, and Visualizations

**DATA SET:** 'SIVA.CSV'

**SUBMISSION:** A **PDF** FILE

The submission should be formatted in the following way: FirstNameLastName\_Individual Visual Analytics Assignment ##.pdf or FirstNameLastName\_Individual Visual Analytics Assignment ##.R) (**Example.** EmilyKo\_Individual Visual Analytics Assignment 1.pdf)

**Due date: 11:59 PM ET on October 14<sup>th</sup> (Tuesday)**

- 1) Create **FIVE Different** subsets of SIVA data or processed SIVA data using the data manipulating or filtering R functions (e.g., filter, select, ifelse, group\_by, summarise) that were discussed at the class meeting. Using head function, show the first 10 observations of each of the five data sets in addition to the R syntax used to create the data.

**Example)**

Code)

```
mpg %>%
  group_by(manufacturer, drv) %>%
  summarise(mean_cty = mean(cty)) %>%

head(10)
```

Output)

##		<chr>	<chr>	<dbl>
## 1		audi	4	16.81818
## 2		audi	f	18.85714
## 3		chevrolet	4	12.50000
## 4		chevrolet	f	18.80000
## 5		chevrolet	r	14.10000
## 6		dodge	4	12.00000
## 7		dodge	f	15.81818
## 8		ford	4	13.30769
## 9		ford	r	14.75000
## 10		honda	f	24.44444

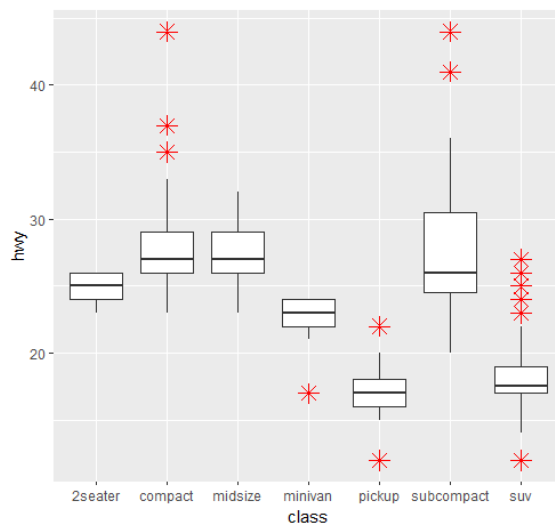
- 2) With SIVA data, create **FIVE Different** visualizations that were discussed at the class meeting. Using **Export function under Plots in R Studio**, export the plot and present it in the pdf file. Tell at least ONE interesting story (i.e., finding) from each of the visualizations.

### Example)

Code)

```
ggplot(mpg, aes(x=class, y=hwy)) +  
  geom_boxplot(outlier.colour="red", outlier.shape=8,  
    outlier.size=4)
```

Visualization)



## SIVA Data

This data set includes transactions of Siva rental cars in those locations in the U.S. and Canada and customer satisfaction surveys for those transactions. Customer satisfaction survey responses linked to car rental transactions, for randomly chosen customers.

### Variables

Column Name	Data Type	Human Notes
xgra_n1clb_nbr	String	Customer ID: Club number of customer if customer is part of Club
Siva_Rental_Number	String	Unique identifier of each rental transaction
Rent_area_loc	String	Code for rental location
Date_of_Survey	Datetime	The date on which the survey was taken
Day_of_Week	String	Day of the week when survey was taken
Time	Time	Time of day that the rental transaction started
Survey_Type	String	Method used by customer to complete survey
Purpose_of_Rental	String	All values are: Leisure/Personal, Business or Insurance Replacement/Loaners
Recom_mend_Siva	Integer	Score of 0=Not at All Likely to 9=Ext. Likely; question as it appears on survey instrument reads: "How likely is it that you would recommend Siva to a friend or colleague?"
Staff_Courtesy	Integer	How courteous the staff was, on scale of 0=not courteous at all to 9=extremely courteous. Survey instrument reads: "Please rate your experience with us in the following areas: Courtesy of staff"
Speed_of_Service	Integer	Speed of service, on a scale of 0=Extremely slow to 9=Extremely fast, Survey instrument reads: "Please rate your experience with us in the following areas: Speed of Service"
Veh_Equip_Condition	Integer	On a scale of 0=Poor, 9=excellent, the condition that the vehicle was in at the time of rental, Survey instrument reads: "Please rate your experience with us in the following areas: Condition of vehicle & equipment"
Trans_Billing_as_Expected	Integer	On a scale of 0=Poor to 9=Excellent, survey instrument reads: "Please rate your experience with us in the following areas: Transaction and/or Billing as Expected"
Value_for_the_Money	Integer	On a scale of 0=Poor to 9=Excellent, Survey Instrument reads: "Please rate your experience with us in the following areas: Value for the money"
Area	String	A code and description of the location
loc_nm	String	Location name for rental location
ga_region_desc	String	Siva administrative division of the location where the car was rented. NOTE: CA LICENSEES (less than 1% of transactions) are California businesses with the right to use the Siva name
xgra_ckot_ts	Datetime	Date of vehicle checkout
xgra_ckin_ts	Datetime	Date of vehicle return

xgra_vclass_reserv	String	Vehicle class that customer reserved
xgra_veh_class	String	Vehicle class that customer received/drove
xgra_birth_date	Date	Birth date of customer
rent_loc_type	String	Location Type: 51% of surveys are associated with AP (airport), 47% of surveys are associated with OFF AP (off airport), small percentage: other. Breakdown of Locations: 79% of all locations are OFF AP, 20% of all locations are AP, small percentage: other.
cust_tier_code	String	Alphanumeric code that describes the loyalty program membership tier of customer, vast majority are "NA" (no level) or "RG" (basic).
booking_channel_code	String	Retail channel through which the reservation was made.
col34_total_charges	Numeric	Total actual bill paid
col38_currency	String	Indicates if the customer paid in USD or CAD
Total_Charge USD	Numeric	Total Rental Charge in USD
Survey_checkout_diff	Numeric	Number of days between checkout and taking the survey
booking_Channel Dummy	Numeric	=1 if booking was done through Siva.com =0 otherwise