



## Data Science Summer Professional Development for DCPS teachers and staff

### Day 1

#### 9:00am – 10:00am

- Greetings/Opening Messages/Introductions (AU Staff and DCPS attendees)
- What is Data Science? / The Growth and Influence and Importance of Data Science

#### 10:01am – 10:46am

- Introduction to the R Programming Language (Origin/Focus/Utility)
- R and R Studio installation support
- Overview of Tidyverse and its subpackages
- Installation of package(s)/Tidyverse
- Overview of the Rstudio IDE
- R Trouble Shooting Tips

#### Break 10:47am – 10:57am

#### 10:58am – 11:58am

- Usage of R as a powerful calculator / preliminary and basic R commands for calculations, analysis, and applications ; data frames / Vectors/Lists/ Variable types

#### Break 11:59am – 12:09pm

practice / reinforcement work/application activities    **12:10pm – 1:00pm**

Summary/Wrap Up/Reflections/Closure    **1:01pm – 1:10pm**

### Day 2

Exploration and Analysis of Data Sets    **9:00am to 10:45am**

- Retrieving and analyzing embedded R Data Sets
- Using R commands to import Data from an external location
- Using R to create Data Sets

**Break 10:46am to 10:56am**

**R for Data Visualization 10:57am to 11:48am**

Using R code to generate the following graphs and plots: Bar graphs/Histograms/Boxplots/Pie Charts/Scatter Plots/Stem and Leaf Plots/Violin Plots

**Break 11:49am 11:59am**

practice / reinforcement work/application activities **12 noon to 12:50pm**

Summary/Wrap Up/Reflections/Closure **12:51 pm to 1:00pm**

### **Day 3**

**Data Transformation 9:00am to 9:45am**

Introduction to and applications of the DPLYR functions:

Select/Filter/Arrange/Mutate/Group By-Summarize

**Tidying Data 9:46am to 10:31am**

Analysis of Nontidy Data, Tidy Data , Introduction to basic R code and techniques for Tidying Data,

**Break 10:32am to 10:42am**

**Miscellaneous R applications 10:43am to 11:43am**

Matrix operations, Writing Functions, Probability...

**Break (11:44am to 11:53am)**

practice / reinforcement work/application activities **11:54am to 12:49pm**

Summary/Wrap Up/Reflections/Closure **12:50pm to 1:00pm**