```
*;
*;
* Kings County House Sales - Principal Components Analysis;
*;
*    ods graphics on;
*;
*options ls=80 ps=50 nodate pageno=1;
*;
* Input Kings County House Sales ;
*;

ods pdf file="\\Mac\Home\Downloads\KCHouseSales_FactorAnalysis_Final.pdf";

Title 'Kings County House Sales Factor Analysis Scores and Summated Scales';

proc import datafile="\\Mac\Home\Downloads\kc_house_data_1K_new.csv"
        out=kingscountyhousesales
        dbms=csv
        replace;

     *getnames=no;
run;
proc print data=work.kingscountyhousesales;
*;
* Principal Components Analysis - All Variables;
*;
*Proc Princomp Data = work.kingscountyhousesales Plots = ALL;
*    Var bedrooms bathrooms sqft_living sqft_lot floors sqft_basement
sqft_living15 sqft_lot15 Age_At_Sale;
*;
*;
************ All Variables - Method=Principal Rotation: None and
Varimax*****************;
*;
* Exploratory Factor Analysis Rotate=NONE All Variables ;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal Rotate=None
NFactors=3 Simple MSA Plots = Scree MINEIGEN=0 Reorder;
*   Var bedrooms bathrooms sqft_living sqft_lot floors sqft_basement
sqft_living15 sqft_lot15 Age_At_Sale;
*;
*********************Exploratory Factor Analysis Rotate=Varimax All
Variables*****************************;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal
Rotate=Varimax NFactors=3 Print Score Simple Corr MSA Plots = Scree
MINEIGEN=0 Reorder;
*    Var bedrooms bathrooms sqft_living sqft_lot floors sqft_basement
sqft_living15 sqft_lot15 Age_At_Sale;
*;
*********************Exploratory Factor Analysis Rotate=None Age At Sale
Deleted and NFactors=3*************;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal Rotate=None
NFactors=3 Simple Corr MSA Plots = Scree MINEIGEN=0 Reorder;
*   Var bedrooms bathrooms sqft_living sqft_lot floors sqft_basement
sqft_living15 sqft_lot15;
```

```
*;
***************Exploratory Factor Analysis Rotate=Varimax Age At Sale Deleted
and NFactors=3****************;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal
Rotate=Varimax NFactors=3 Print Score Simple Corr MSA Plots = Scree
MINEIGEN=0 Reorder;
*    Var bedrooms bathrooms sqft_living sqft_lot floors sqft_basement
sqft_living15 sqft_lot15;
*;
********************Exploratory Factor Analysis Rotate=None Age At Sale Added
Back and sqft_basement deleted and NFactors=3*************;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal Rotate=None
NFactors=3 Simple Corr MSA Plots = Scree MINEIGEN=0 Reorder;
*   Var bedrooms bathrooms sqft_living sqft_lot floors sqft_living15
sqft_lot15 Age_At_Sale;
*;
***************Exploratory Factor Analysis Rotate=Varimax sqft_basement
Deleted and NFactors=3*****************;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal
Rotate=Varimax NFactors=3 Print Score Simple Corr MSA Plots = Scree
MINEIGEN=0 Reorder;
*    Var bedrooms bathrooms sqft_living sqft_lot floors sqft_living15
sqft_lot15 Age_At_Sale;
*;
********************Exploratory Factor Analysis Rotate=None sqft_basement &
Bathrooms deleted and NFactors=3*************;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal Rotate=None
NFactors=3 Simple Corr MSA Plots = Scree MINEIGEN=0 Reorder;
*   Var bedrooms sqft_living sqft_lot floors sqft_living15 sqft_lot15
Age_At_Sale;
*;
***************Exploratory Factor Analysis Rotate=Varimax sqft_basement &
Bathrooms Deleted and NFactors=3*****************;
*;
*Proc Factor Data = work.kingscountyhousesales Method=Principal
Rotate=Varimax NFactors=3 Print Score Simple Corr MSA Plots = Scree
MINEIGEN=0 Reorder;
*    Var bedrooms sqft_living sqft_lot floors sqft_living15 sqft_lot15
Age_At_Sale;
*;
*************  Compute Factor and Summated Scores*****************;
*;
Proc Factor Data = work.kingscountyhousesales Outstat=FactOut
Method=Principal Rotate=Varimax NFactors=3 Print Score Simple MSA Plots = ALL
MINEIGEN=0 Reorder;
    Var bedrooms sqft_living sqft_lot floors sqft_living15 sqft_lot15
Age_At_Sale;
Proc Score Data=work.kingscountyhousesales Score=FactOut Out=FScore;
      Var bedrooms sqft_living sqft_lot floors sqft_living15 sqft_lot15
Age_At_Sale;
*;
Proc Print Data = FactOut;
*;
```

```
Proc Print Data = FScore;
*;
Data FScore;
      Set FScore;
      Label SumScale1 = 'SumScale1 - House Size'
            SumScale2 = 'SumScale2 - Lot Size'
          SumScale3 = 'SumScale3 - Structural Characteristics';
      SumScale1 = (sqft_living + sqft_living15 + bedrooms) / 3;
      SumScale2 = (sqft_lot + sqft_lot15) / 2;
      SumScale3 = (floors + (115 - Age_At_Sale)) / 2;
*;
Proc Print Data = FScore;
*;
Proc Means Data = FScore;
   Var Factor1 Factor2 Factor3 SumScale1 SumScale2 SumScale3;
*;
*;
************  Compute Factor and Summated Correlations ***************;
*;
Proc Corr Data = FScore;
   Var Factor1 Factor2 Factor3 SumScale1 SumScale2 SumScale3;
*;
*;
**** STOP Examples HERE ********;
Run;
Quit;

ods pdf close;
```