Prelab3

Shu Zhou

2020/9/23

```
##This is the Prelab3 of STATS 413
##Author: Shu Zhou
##UMID: 19342932
```

(1.) Quantitative predictor illustrates the numerical features of a variable, which must be represented by numeric values.

Qualitative predictor illustrates the categorical features of a variable, which cannot be represented by numeric values.

According to a height of a person, age is a good quantitative predictor, while gender is a quanlitative predictor.

(2.)

```
y<-c(c(1:5),c(11:15)) #y containing values 1-5 and 11-15

x<-factor(rep(c("YES", "NO"), each = 5)) #x containing YES as first 5 , NO as last 5
reg<-lm(y~x)
summary(reg)
```

```
##
## Call:
## lm(formula = y ~ x)
##
## Residuals:
##    Min     1Q Median     3Q    Max
##     -2     -1      0      1      2
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  13.0000     0.7071   18.39 7.89e-08 ***
## xYES        -10.0000     1.0000  -10.00 8.49e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.581 on 8 degrees of freedom
## Multiple R-squared:  0.9259, Adjusted R-squared:  0.9167
## F-statistic:   100 on 1 and 8 DF,  p-value: 8.488e-06
```

```
#The P-value based on X is 8.488e-06, which makes sense on how we
#generated the data

z<-rep(c(1, 0), each = 5)
typeof(z)
```

```
## [1] "double"
```

```r
summary(lm(y~z))
```

```
##
## Call:
## lm(formula = y ~ z)
##
## Residuals:
##    Min     1Q Median     3Q    Max
##     -2     -1      0      1      2
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  13.0000     0.7071   18.39 7.89e-08 ***
## z           -10.0000     1.0000  -10.00 8.49e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.581 on 8 degrees of freedom
## Multiple R-squared:  0.9259, Adjusted R-squared:  0.9167
## F-statistic:   100 on 1 and 8 DF,  p-value: 8.488e-06
```

```r
#I could not observe any change in the result, since the P-value is the same.
```