```
cd "D:\Jason\workshop\Regression 2019\final"

log using  "D:\Jason\workshop\Regression 2019\final\regression1.log", replace

set more 1

use "D:\Jason\workshop\Regression 2019\final\regression.dta", clear

************************************
* Continuous dependent variable
************************************

******************
* Questions 1:
******************

        ***************************************
        * 1.1 Regression without complex survey data
        ***************************************

                ******************************************************
                * 1.1.0 Regression without using the weight variable
                ******************************************************

                reg illness sex age

                ************************************************************************
                * 1.1.1. Regression using a personal weight variable for the whole sample
                ************************************************************************

                reg illness sex age [pw=finalwgt]


                ************************************************************** *********
                * 1,1,2. Regression using a personal weight variable and adjusted for
                *dependent observations for the whole sample
                ************************************************************************

                reg illness sex age [pw=finalwgt], cluster(company_id)


                ************************************************************************
                * 1.1.3. Regression using a personal weight variable and adjusted for
                *dependent observations for white respondents
                ************************************************************************

                reg illness sex age if race ==1 [pw=finalwgt], cluster(company_id)


        ************************************
        * 1.2. Regression with complex survey data
        ************************************
        svydes
        svyset, clear
        svyset psuid [pweight=finalwgt], strata(stratid)


                ******************************************
                * 1.2.1. Regression using complex survey data  for the whole sample
                ******************************************

                svy: reg illness sex age


                ************************************************************************
                * 1,2,2. Regression using complex survey data and adjusted for
                *dependent observations for the whole sample
                ************************************************************************

                *Cluster option is not alllowed with the svy command
```

```
            ***************************************************************************
            * 1.2.3. Regression using a personal weight variable and adjusted for
            *dependent observations for white respondents only
            ***************************************************************************

            *correct specification*

            gen white = 0
            replace white =1 if race ==1
            svy, subpop(white): reg illness sex age

            *incorrect specification*
            svy: reg illness sex age if race ==1 /* incorrect specification */



*******************************************************************************
* Questions 2 and 3: the equality and linear combination of regression coefficients
*******************************************************************************


        ***********************************************************************
        * 2.1 Modifying Mdoel 1.1.3
        ***********************************************************************
        reg illness sex age if race ==1 [pw=finalwgt], cluster(company_id)

        *testing the equlaity of two regression coefficients
        test sex = age

        *testing the hypothesis that variables cancel out each other
        test sex = -age


        ***********************************************************************
        * 2.2 Regression Analysis Using Results from Model 1.2.3.
        ***********************************************************************

        svy, subpop(white): reg illness sex age hlthstat

        *testing the equlaity of two or three regression coefficients
        test sex =  age

        *testing the equlaity of two or three regression coefficients
        test sex = -age



*******************************************************************************
* Questions 4: testing the interaction effects
*******************************************************************************


        ***********************************************************************
        * 4.1.1 A two-way interaction: Modify the model 1.1.2
        ***********************************************************************
        reg illness i.sex##c.age, cluster(company_id)
        reg,  coeflegend
        test _b[2.sex#c.age] =0

        margins i.sex,  at(age=(20(10)80))
        marginsplot, yline(0)

        ***********************************************************************
        * 4.1.2 A three-way interactdion: Modify the model 1.2.3.
        ***********************************************************************
        reg illness i.sex##c.age##i.race [pw=finalwgt], cluster(company_id)
        reg,  coeflegend
        test _b[2.sex#c.age] =0
```

```
        margins i.sex , over(i.race)  at(age=(20(10)80))
        marginsplot, yline(0)


        ************************************************************************
        * 4.2.1 A two-way interaction Modify the model 1.2.1.
        ************************************************************************
        svy: reg illness i.sex##c.age
        reg,  coeflegend
        test _b[2.sex#c.age] =0

        margins i.sex,  at(age=(20(10)80)) vce(unconditional)
        marginsplot, yline(0)

        ************************************************************************
        * 4.2.1 A three-way interactdion: Modify the model 1.2.1
        ************************************************************************


        svy: reg illness i.sex##c.age##i.race
        reg,  coeflegend

        margins i.sex , over(i.race)  at(age=(20(10)80)) vce(unconditional)

        marginsplot, yline(0)


*******************************************************************************
* Questions 5: testing the total effects of X
*******************************************************************************

        ************************************************
        * 5.1 Regression using a simple survey data and a three-way interaction term
        ************************************************

        reg illness i.sex##c.age##hlthstat [pw=finalwgt], cluster(company_id)
        margins i.sex, atmeans
        margins, dydx(i.sex) atmeans


        ************************************************************************
        * 5.1 Regression using complex survey data and a three-way interaction term
        ************************************************************************

        svy: reg illness i.sex##c.age##hlthstat
        margins i.sex, atmeans vce(unconditional)
        margins, dydx(i.sex) atmeans vce(unconditional)


log close
```